



KES Co., Ltd.

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Report No.:
KES-EM-20T0684
Page (1) of (67)

EMC TEST REPORT For CE

Test Report No. : KES-EM-20T0684
Date of Issue : Oct. 16, 2020
Product name : NETWORK CAMERA
Model/Type No. : PNM-9322VQP
Variant Model : -
Applicant : Hanwha Techwin Co., Ltd.
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea
Manufacturer : 1. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.
2. D-TECH CO.,LTD.
Manufacturer Address : 1. Lot O-2, Que Vo Industrial Zone extended area,
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do,
Korea (Suwon Industrial Complex)
Date of Receipt : Aug. 19, 2020
Test date : Aug. 27, 2020 ~ Aug. 31, 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 No.:
KES-EM-20T0684
Page (2) of (67)

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Oct. 16, 2020	KES-EM-20T0684	Issued

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TABLE OF CONTENTS

1.0	General Product Description	4
1.1	Test Voltage & Frequency	6
1.2	Variant Model Differences	6
1.3	Device Modifications	6
1.4	Equipment Under Test	6
1.5	Support Equipments	7
1.6	External I/O Cabling	8
1.7	EUT Operating Mode(s)	8
1.8	Configuration	9
1.9	Remarks when standards applied	10
1.10	Calibration Details of Equipment Used for Measurement	10
1.11	Test Facility	10
1.12	Laboratory Accreditations and Listings	10
2.0	Test Regulations	11
2.1	Conducted Emissions at Mains Power Ports	13
2.2	Conducted Emissions at Telecommunication Ports	14
2.3	Radiated Electric Field Emissions(Below 1 GHz)	15
2.4	Radiated Electric Field Emissions(Above 1 GHz)	16
2.5	Harmonic Current Emissions	17
2.6	Voltage Fluctuations and Flicker	18
3.0	Criteria for compliance	19
3.1	Electrostatic Discharge	21
3.2	Radiated Electric Field Immunity	25
3.3	Electrical Fast Transients/Bursts	28
3.4	Surge Transients	30
3.5	Conducted Disturbance	33
3.6	Voltage Dips and Short Interruptions	35
APPENDIX A – TEST DATA		37
Conducted Emissions at Mains Power Ports		37
Conducted Emissions at Telecommunication Ports		39
Radiated Electric Field Emissions(Below 1 GHz)		40
Radiated Electric Field Emissions(Above 1 GHz)		41
Harmonic Current Emissions and Voltage Fluctuations and Flicker		42
Test Setup Photos and Configuration		45
Conducted Emissions at Mains Power Ports		45
Conducted Emissions at Telecommunication Ports		46
Radiated Electric Field Emissions(Below 1 GHz)		47
Radiated Electric Field Emissions(Above 1 GHz)		48
Harmonic Current Emissions and Voltage Fluctuations and Flicker		49
Electrostatic Discharge		50
Radiated Electric Field Immunity		50
Electrical Fast Transients/Bursts		51
Surge Transients		51
Conducted Disturbance		52
Voltage Dips and Short Interruptions		52
EUT External Photographs		53
EUT Internal Photographs		54

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Report No.:
 KES-EM-20T0684
 Page (4) of (67)

1.0 General Product Description

Main Specifications of EUT are:

Video	
Imaging Device	1~4CH: Optional lens / 5CH: 1/2.8" CMOS
Resolution	[5MP] 2560x1920, 2560x1440, 1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 320x240 [2MP] 1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	H.265/H.264: 2MP Max. 60fps/50fps(60Hz/50Hz), 5MP Max. 30fps/25fps(60Hz/50Hz) MJPEG: Max. 30fps/25fps(60Hz/50Hz)
Video Out	CVBS : 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P), for installation
Lens	
Focal Length (Zoom Ratio)	1~4CH: Optional lens / 5CH: 4.44~142.6mm(32x) zoom
Optional Lens	SLA-2M2400P(2MP 2.4mm) SLA-2M2800P(2MP 2.8mm) SLA-2M3600P(2MP 3.6mm) SLA-2M6000P(2MP 6.0mm) SLA-2M1200P(2MP 12mm) SLA-5M3700P(5MP 3.7mm) SLA-5M4600P(5MP 4.6mm) SLA-5M7000P(5MP 7.0mm)
Operational	
Camera Title	Displayed up to 85 characters
Day & Night	Auto(Electrical)
Backlight Compensation	BLC, HLC, WDR, SSSDR
Wide Dynamic Range	2MP 150dB, 5MP 120dB
Digital Noise Reduction	SSNRV
Digital Image Stabilization	Support
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	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, Face detection, Fog detection, Motion detection, Appear/Disappear, Enter/Exit, Loitering, Tampering, Virtual line
Alarm Triggers	Analytics, Network disconnect, Alarm input
Alarm I/O	Input 1ea / Output 2ea

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Report No.:
 KES-EM-20T0684
 Page (5) of (67)

Alarm Events	File upload via FTP and e-mail Notification via e-mail SD/SDHC/SDXC recording at event triggers
Audio In	Selectable(mic in/line in) - PTZ(CH5) only Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
Audio Out	Line out, Max.output level: 1Vrms - PTZ(CH5) only
Network	
Ethernet	Metal shielded RJ-45(10/100/1000BASE-T)
Video Compression	H.265/H.264: Main/Baseline/High, MJPEG
Smart Codec	Manual(Sea area), WiseStreamII
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
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 4slot 256GB(Each CH)
Application Programming Interface	ONVIF Profile S SUNAPI(HTTP API)
Web Viewer	Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10, 10.11, 10.12 Recommended Browser: Google Chrome Supported Browser: MS Explore11, MS Edge, Mozilla Firefox(Window 64bit only), Apple Safari(Mac OS X only)
Memory	5GB RAM, 1280MB Flash
Environmental	
Operating Temperature / Humidity	-35°C ~ +55°C (-31°F ~ +131°F) / Less than 90% RH
Storage Temperature / Humidity	-50°C ~ +60°C(-58°F ~ +140°F) / Less than 90% RH
Certification	IP66, IK10
Electrical	
Input Voltage	HPoE(IEEE802.3bt)
Power Consumption	HPoE: Max 65W
Mechanical	
Color / Material	White / Aluminum
Product dimensions / weight	Ø367.8x335.7mm (Ø14.48"x13.22"), 7.05kg (16.1 lb)

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Report No.:
KES-EM-20T0684
Page (6) of (67)

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-9322VQP	-	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	EUT
PoE Adapter 1	PT-PSE109GBRO-AH-S	-	Dongguan PROCET Network Technology Co.,Ltd	EUT

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Report No.:
KES-EM-20T0684
Page (7) of (67)

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE Adapter 2	GS728TPP V1H1	-	-	-
Notebook	P95G001	8KM8HT2	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	CMK-303	-	CAMAC	-
Controller	SPC-1010	C50E67WG10100 F	SamSung Techwin Co.,Ltd.	-
Controller Adapter	RS-AB1000	-	Dongguan Jinhuasheng Power Technology Co.,Ltd.	-
Alarm	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-
Button Alarm	SLE-0001 DO	C64167JDB6012 68 F	-	-
Smart Phone	SM-J500N0	-	Samsung Electronics Co.,Ltd.	-
Micro SD Card	-	-	-	16 GB

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1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45	PoE Adapter 1 (EUT)	RJ-45	3.0	U
	3.5mm	Speaker	3.5mm	1.4	U
	3.5mm	MIC	3.5mm	1.7	U
	RS-485	Controller	RS-485	10.0	U
	Alarm OUT	Alarm	Alarm IN	10.0	U
	Alarm IN	Button Alarm	Alarm OUT	10.0	U
	Slot	Micro SD Card	Slot	-	-
PoE Adapter 1 (EUT)	Optical	PoE Adapter 2	Optical	1.8	U
	RJ-45	Notebook	RJ-45	4.0	U
Notebook	3.5mm	Smart Phone	3.5mm	1.2	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

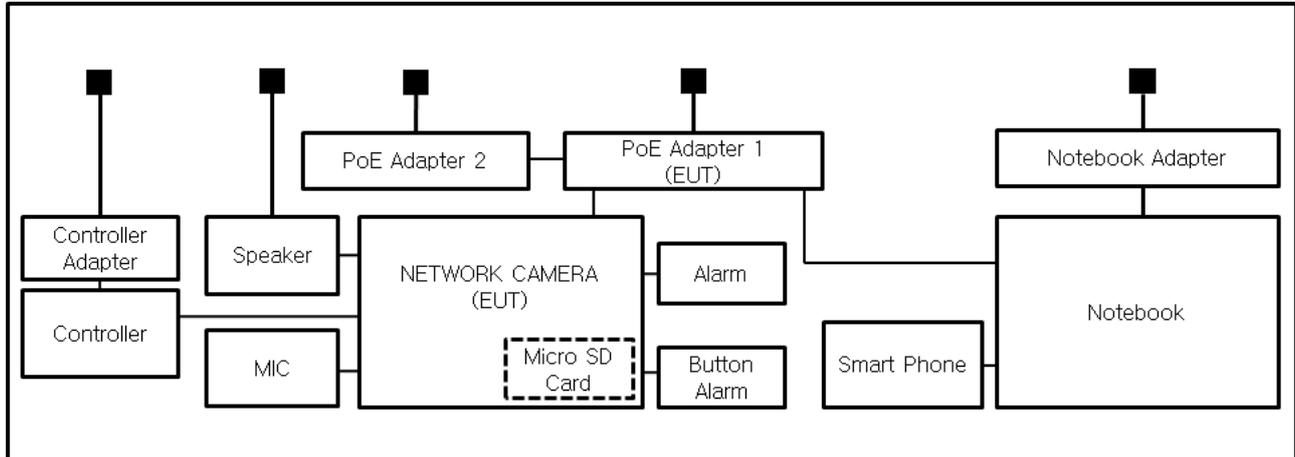
Test Mode	operating
Operation mode	EUT Monitoring, Ping Test

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

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1.8 Configuration

■ AC Main
 □ DC Main



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

1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Anechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Anechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298-1
JAPAN	VCCI	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	 R-20056, C-20036, T-20040, G-20057
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 001633 0004

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2.0 Test Regulations

The emissions tests were performed according to following regulations:

- EMC – Directive 2014/30/EU

- EN 61000-6-3: 2011
- EN 61000-6-1: 2007
- EN 61000-6-4: 2007 +A1: 2011
- EN 61000-6-2: 2005
- EN 55011: 2007 +A1: 2010 Group 1 Group 2
 Class A Class B
- EN 55014-1: 2006 +A2: 2011
- EN 55014-2: 1997 +A2: 2008
- EN 55015: 2013
- EN 61547: 2009
- EN 55032: 2012/AC: 2013 Class A Class B
- EN 55024: 2010 +A1: 2015
- EN 50130-4: 2011
- EN 61000-3-2: 2014
- EN 61000-3-3: 2013
- EN 61326-1: 2013



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Report No.:
KES-EM-20T0684
Page (12) of (67)

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

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Report No.:
KES-EM-20T0684
Page (13) of (67)

2.1 Conducted Emissions at Mains Power Ports

Test Date
Aug. 27, 2020

Test Location
Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EMC32	R & S	9.12.00	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESR3	R & S	101783	01, 20, 2021
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	01, 02, 2021
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	01, 02, 2021
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	01, 02, 2021

Test Conditions

Temperature: 23.8 °C
Relative Humidity: 51.7 % 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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2.2 Conducted Emissions at Telecommunication Ports

Test Date
Aug. 27, 2020

Test Location
Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EMC32	R & S	9.12.00	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESR3	R & S	101783	01, 20, 2021
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	01, 02, 2021
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	01, 02, 2021
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	01, 02, 2021
<input type="checkbox"/>	8-WIRE ISN CAT3,5	ENY81	R & S	100174	01, 07, 2021
<input checked="" type="checkbox"/>	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	01, 07, 2021
<input type="checkbox"/>	CDN	CDNS502A	TESEQ	40431	01, 02, 2021

Test Conditions

Temperature: 23,8 °C
Relative Humidity: 51,7 % 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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Report No.:
KES-EM-20T0684
Page (16) of (67)

2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date
Aug. 28, 2020

Test Location
SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESR7	R & S	101190	08, 05, 2021
<input checked="" type="checkbox"/>	PREAMPLIFIER	8449B	AGILENT	3008A01967	04, 20, 2021
<input type="checkbox"/>	ATTENUATOR	8491A	HP	35496	03, 10, 2021
<input checked="" type="checkbox"/>	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2021

Test Conditions

Temperature: 23,4 °C
Relative Humidity: 51,1 % 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

Remarks

See Appendix A for test data.

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Report No.:
KES-EM-20T0684
Page (17) of (67)

2.5 Harmonic Current Emissions

Test Date
Aug. 31, 2020

Test Location
Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	net.control	EM TEST	2.1.4	-
<input checked="" type="checkbox"/>	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	04, 06, 2021
<input checked="" type="checkbox"/>	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: 24,0 °C
Relative Humidity: 51,0 % 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.

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Report No.:
KES-EM-20T0684
Page (18) of (67)

2.6 Voltage Fluctuations and Flicker

Test Date
Aug. 31, 2020

Test Location
Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	net.control	EM TEST	2.1.4	-
<input checked="" type="checkbox"/>	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	04, 06, 2021
<input checked="" type="checkbox"/>	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: 24,0 °C
Relative Humidity: 51,0 % R.H.

Test Results

The requirements are:

- PASS
- NOT PASS
- NOT APPLICABLE

Remarks

See Appendix A for test data.

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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
Aug. 31, 2020

Test Location
EMS-ESD: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	ESD SIMULATOR	ESS-2000	Noise Ken	ESS05X4620	01, 28, 2021
<input checked="" type="checkbox"/>	HCP	-	KES	-	-
<input checked="" type="checkbox"/>	VCP	-	Noise Ken	-	-

Test Conditions

Temperature: 23,6 °C
Relative Humidity: 50,4 % R.H.
Atmospheric Pressure: 99,6 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

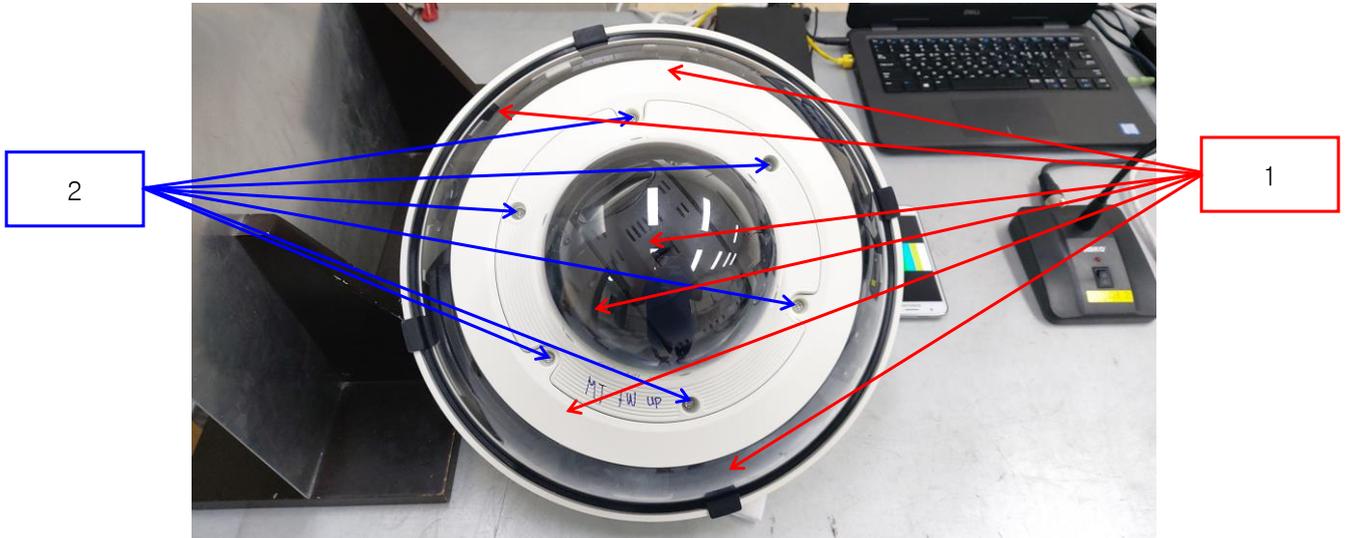
Discharge Voltage:	Contact	Air	HCP	VCP
	<input type="checkbox"/> 2 kV	<input checked="" type="checkbox"/> 2 kV	<input type="checkbox"/> 2 kV	<input type="checkbox"/> 2 kV
	<input type="checkbox"/> 4 kV	<input checked="" type="checkbox"/> 4 kV	<input type="checkbox"/> 4 kV	<input type="checkbox"/> 4 kV
	<input checked="" type="checkbox"/> 6 kV	<input type="checkbox"/> 6 kV	<input checked="" type="checkbox"/> 6 kV	<input checked="" type="checkbox"/> 6 kV
	<input type="checkbox"/> 8 kV	<input checked="" type="checkbox"/> 8 kV	<input type="checkbox"/> 8 kV	<input type="checkbox"/> 8 kV
	<input type="checkbox"/> 15 kV			

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

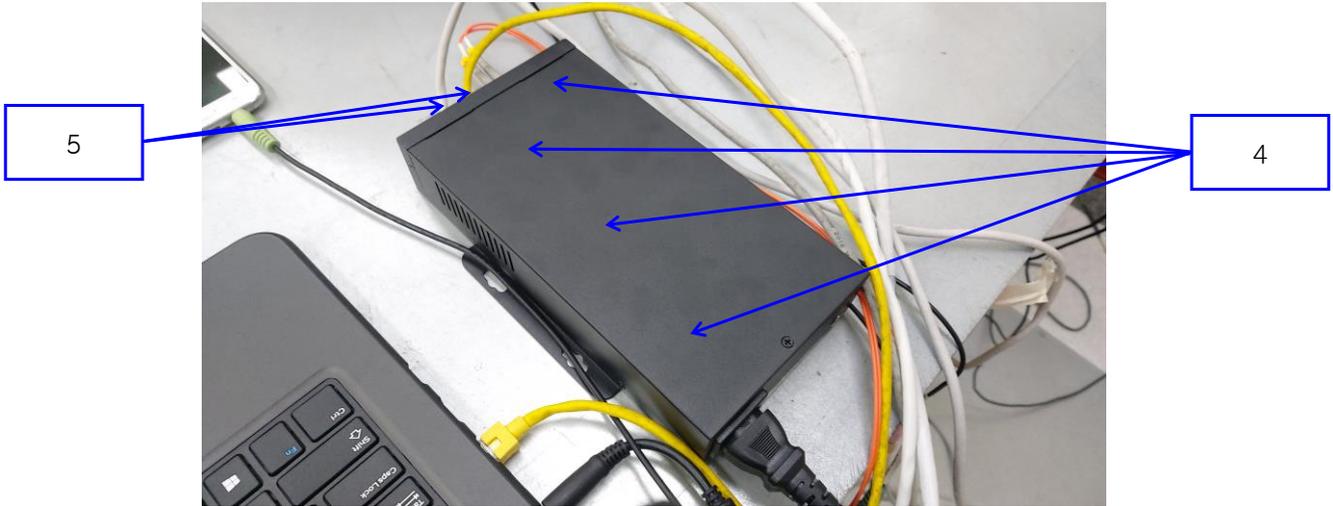
Required Performance Criteria: Complied

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Location of Discharge:



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Report No.:
KES-EM-20T0684
Page (24) of (67)

Test Data

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	Air Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-
3	Enclosure 2	Contact Discharge	Complied	-
4	PoE Adapter	Contact Discharge	Complied	-
5	LAN Port	Contact 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

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Report No.:
KES-EM-20T0684
Page (25) of (67)

3.2 Radiated Electric Field Immunity

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

Test Date
Aug. 28, 2020

Test Location
EMS-RS: SEMI ANECHOIC CHAMBER #2 SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMS Test S/W	EMC32	R & S	9.12.00	-
<input checked="" type="checkbox"/>	SIGNAL GENERATOR	SMB 100A	Rohde & Schwarz	108252	08, 05, 2021
<input checked="" type="checkbox"/>	HIGH POWER DUAL AMP	SSA532	SUNGSAN	SSA532-001	-
<input checked="" type="checkbox"/>	POWER METER	E4419B	Agilent	GB40203000	04, 20, 2021
<input checked="" type="checkbox"/>	CW POWER SENSOR	E4412A	Agilent	US38488240	04, 20, 2021
<input checked="" type="checkbox"/>	CW POWER SENSOR	E4412A	Agilent	MY41501662	04, 20, 2021
<input checked="" type="checkbox"/>	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
<input checked="" type="checkbox"/>	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2021

Test Conditions
Temperature: 23,4 °C
Relative Humidity: 51,1 % R.H.
Atmospheric Pressure: 99,7 kPa

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Report No.:
KES-EM-20T0684
Page (26) of (67)

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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Report No.:
KES-EM-20T0684
Page (27) of (67)

Test Data

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

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Report No.:
KES-EM-20T0684
Page (28) of (67)

3.3 Electrical Fast Transients/Bursts

Reference Standard
EN 61000-4-4: 2012

Test Date
Aug. 30, 2020

Test Location
EMS-EFT: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMS Test S/W	iec.control	EM TEST	5.4.7	-
<input checked="" type="checkbox"/>	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 27, 2020
<input checked="" type="checkbox"/>	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2020
<input checked="" type="checkbox"/>	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	11, 27, 2020

Test Conditions

Temperature: 23,5 °C
Relative Humidity: 51,7 % R.H.
Atmospheric Pressure: 99,8 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

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Test Data

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
RS-485	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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Report No.:
KES-EM-20T0684
Page (30) of (67)

3.4 Surge Transients

Reference Standard
EN 61000-4-5: 2014

Test Date
Aug. 30, 2020

Test Location
EMS-EFT: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMS Test S/W	iec.control	EM TEST	5.4.7	-
<input checked="" type="checkbox"/>	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 27, 2020
<input checked="" type="checkbox"/>	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2020
<input checked="" type="checkbox"/>	CDN	CNV 508N1	EM TEST	P1610176296	11, 27, 2020

Test Conditions

Temperature: 23,5 °C
Relative Humidity: 51,7 % R.H.
Atmospheric Pressure: 99,8 kPa

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Report No.:
KES-EM-20T0684
Page (31) of (67)

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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Report No.:
KES-EM-20T0684
Page (32) of (67)

Test Data

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

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
Aug. 27, 2020

Test Location
EMS-CS: Electro wave Shieldroom #3

Test Equipment

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

Test Conditions

Temperature: 22,9 °C
Relative Humidity: 52,0 % R.H.
Atmospheric Pressure: 99,2 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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Report No.:
KES-EM-20T0684
Page (34) of (67)

Test Data

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
RS-485	Clamp	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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Report No.:
KES-EM-20T0684
Page (35) of (67)

3.6 Voltage Dips and Short Interruptions

Reference Standard
EN 61000-4-11:2004

Test Date
Aug. 30, 2020

Test Location
EMS-Voltage dip: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMS Test S/W	iec.control	EM TEST	5.4.7	-
<input checked="" type="checkbox"/>	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 27, 2020
<input checked="" type="checkbox"/>	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2020

Test Conditions

Temperature: 23,5 °C
Relative Humidity: 51,7 % R.H.
Atmospheric Pressure: 99,8 kPa

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Report No.:
KES-EM-20T0684
Page (36) of (67)

Test Specifications & Observations/Remarks

- Voltage Dips and Short Interruptions

<u>Test Level</u>	<u>Duration [in period/ms (50 Hz)]</u>	<u>Results</u>
<input checked="" type="checkbox"/> 20 % dip	<input checked="" type="checkbox"/> 250 / 5 000	<u>Complied</u>
<input checked="" type="checkbox"/> 30 % dip	<input checked="" type="checkbox"/> 25 / 500	<u>Complied</u>
<input checked="" type="checkbox"/> 60 % dip	<input checked="" type="checkbox"/> 10 / 200	<u>Complied</u>
<input checked="" type="checkbox"/> 100 % dip	<input checked="" type="checkbox"/> 250 / 5 000	<u>Degradation</u>

- Voltage variations

<input checked="" type="checkbox"/> Unom + 10 %	<input checked="" type="checkbox"/> 253.0 V (ac)	<u>Complied</u>
<input checked="" type="checkbox"/> Unom - 15 %	<input checked="" type="checkbox"/> 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

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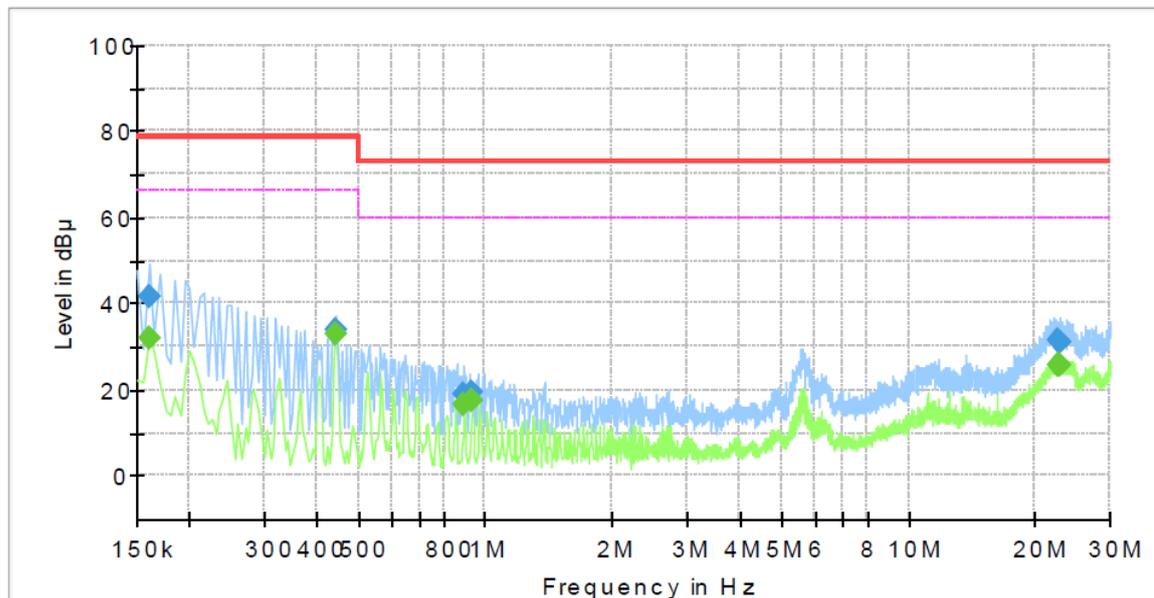
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	PNM-9322VQP
Phase:	
Mode:	H
Operator Name:	KES



Final Result

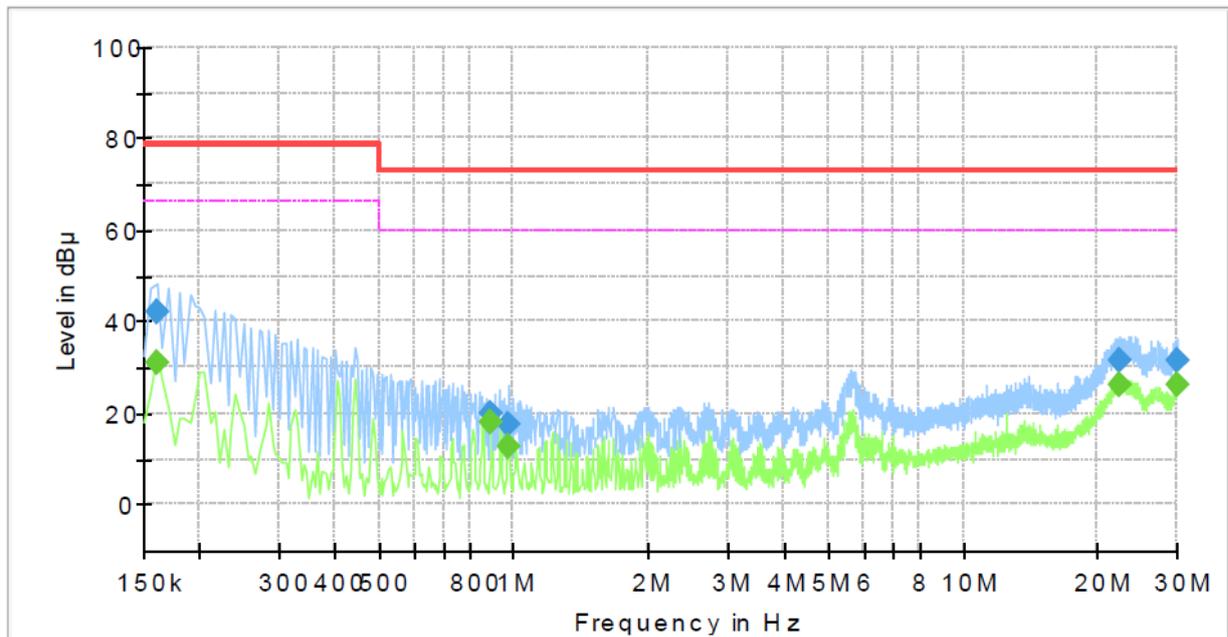
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	31.97	66.00	34.03	1000.0	9.000	L1	19.5
0.160000	41.71	---	79.00	37.29	1000.0	9.000	L1	19.5
0.445000	---	32.93	66.00	33.07	1000.0	9.000	L1	19.7
0.445000	33.91	---	79.00	45.09	1000.0	9.000	L1	19.7
0.890000	---	16.49	60.00	43.51	1000.0	9.000	L1	20.1
0.890000	18.84	---	73.00	54.16	1000.0	9.000	L1	20.1
0.930000	---	17.63	60.00	42.37	1000.0	9.000	L1	20.1
0.930000	19.54	---	73.00	53.46	1000.0	9.000	L1	20.1
22.450000	---	25.77	60.00	34.23	1000.0	9.000	L1	20.2
22.450000	31.26	---	73.00	41.74	1000.0	9.000	L1	20.2
22.715000	---	25.76	60.00	34.24	1000.0	9.000	L1	20.2
22.715000	31.23	---	73.00	41.77	1000.0	9.000	L1	20.2

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[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Model No.:	PNM-9322VQP
Phase:	
Mode:	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	---	31.03	66.00	34.97	1000.0	9.000	N	19.4
0.160000	42.14	---	79.00	36.86	1000.0	9.000	N	19.4
0.890000	---	18.20	60.00	41.80	1000.0	9.000	N	20.1
0.890000	19.78	---	73.00	53.22	1000.0	9.000	N	20.1
0.975000	---	12.80	60.00	47.20	1000.0	9.000	N	20.1
0.975000	17.27	---	73.00	55.73	1000.0	9.000	N	20.1
22.240000	---	26.03	60.00	33.97	1000.0	9.000	N	20.3
22.240000	31.62	---	73.00	41.38	1000.0	9.000	N	20.3
29.925000	---	26.15	60.00	33.85	1000.0	9.000	N	20.5
29.925000	31.64	---	73.00	41.36	1000.0	9.000	N	20.5

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

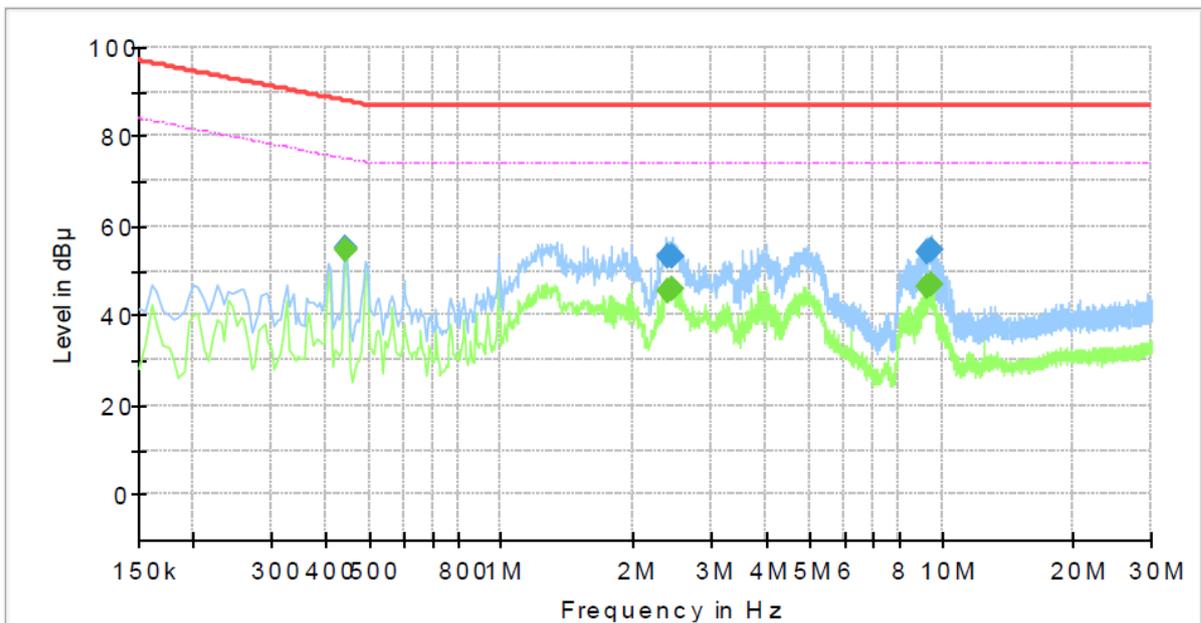
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Conducted Emissions at Telecommunication Ports

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	PNM-9322VQP
Mode :	
Speed :	1 000 Mbps
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.445000	---	54.76	74.97	20.21	1000.0	9.000	Single Line	19.7
0.445000	55.09	---	87.97	32.88	1000.0	9.000	Single Line	19.7
2.395000	---	45.50	74.00	28.50	1000.0	9.000	Single Line	19.9
2.395000	53.25	---	87.00	33.75	1000.0	9.000	Single Line	19.9
2.445000	---	45.82	74.00	28.18	1000.0	9.000	Single Line	19.9
2.445000	53.27	---	87.00	33.73	1000.0	9.000	Single Line	19.9
9.250000	---	46.27	74.00	27.73	1000.0	9.000	Single Line	19.7
9.250000	53.96	---	87.00	33.04	1000.0	9.000	Single Line	19.7
9.470000	---	47.07	74.00	26.93	1000.0	9.000	Single Line	19.7
9.470000	54.68	---	87.00	32.32	1000.0	9.000	Single Line	19.7

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

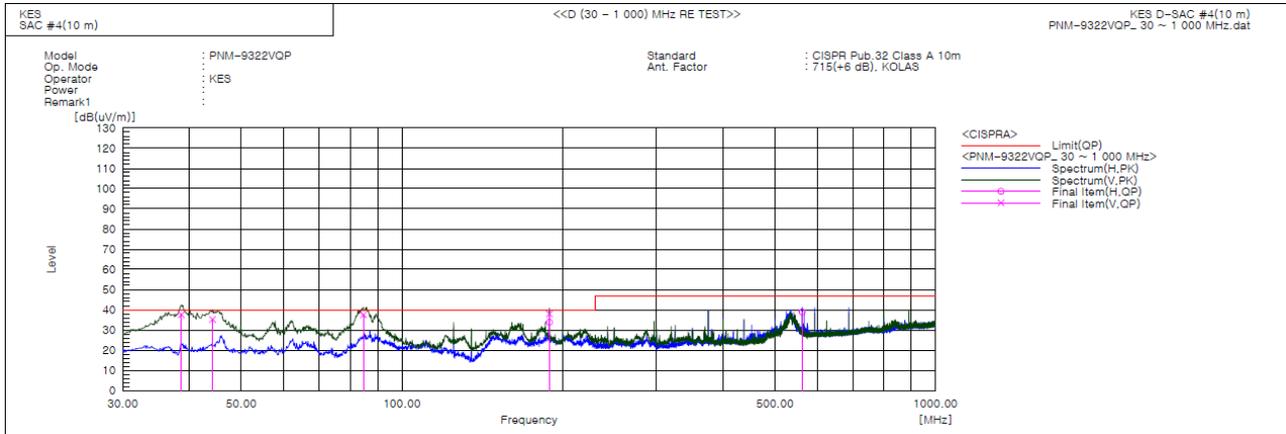
Reading Value : Not shown in the table.

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

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Radiated Electric Field Emissions(Below 1 GHz)



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	38.609	V	61.1	-23.5	37.6	40.0	2.4	150.0	281.0	
2	44.186	V	57.2	-22.0	35.2	40.0	4.8	149.0	184.0	
3	84.684	V	63.9	-26.4	37.5	40.0	2.5	153.0	118.0	
4	188.997	H	56.7	-22.9	33.8	40.0	6.2	385.0	162.0	
5	189.003	V	60.9	-22.9	38.0	40.0	2.0	116.0	230.0	
6	562.530	H	50.2	-11.3	38.9	47.0	8.1	210.0	331.0	

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

$$\text{Result(QP)} [\text{dB}(\mu\text{V}/\text{m})] = (\text{Reading(QP)}[\text{dB}(\mu\text{V})] + \text{c.f}[\text{dB}(1/\text{m})])$$

$$\text{Margin(QP)}[\text{dB}] = \text{Limit}[\text{dB}(\mu\text{V}/\text{m})] - \text{Result(QP)} [\text{dB}(\mu\text{V}/\text{m})]$$

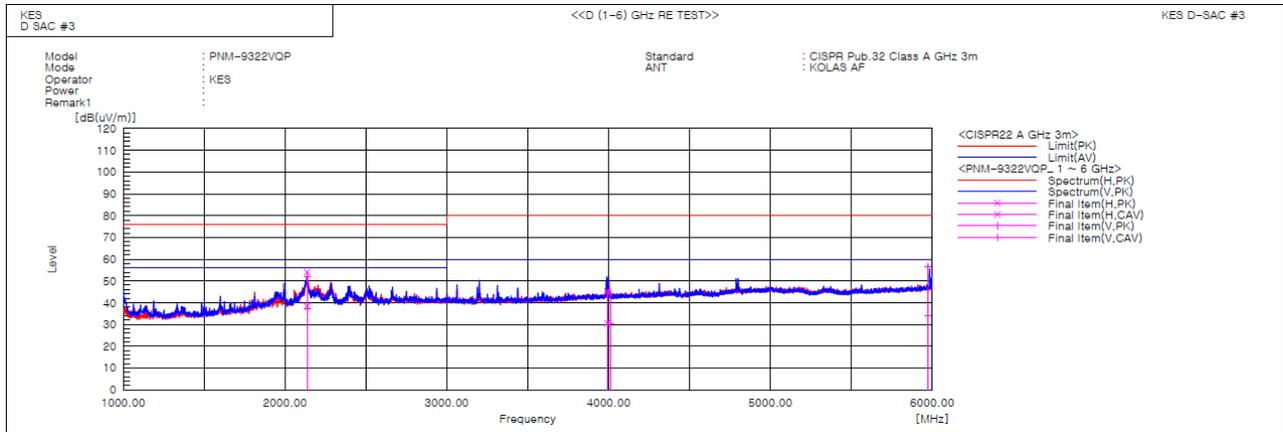
Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

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

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Radiated Electric Field Emissions(Above 1 GHz)



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	2135.220	V	53.3	38.8	-1.6	51.7	37.2	76.0	56.0	24.3	18.8	100.0	43.2	
2	2135.810	H	55.6	40.0	-1.6	54.0	38.4	76.0	56.0	22.0	17.6	100.0	161.9	
3	3991.892	H	40.6	26.0	4.6	45.2	30.6	80.0	60.0	34.8	29.4	100.0	169.3	
4	4014.325	V	39.3	25.8	4.7	44.0	30.5	80.0	60.0	36.0	29.5	100.0	167.1	
5	5971.163	V	47.1	24.1	9.7	56.8	33.8	80.0	60.0	23.2	26.2	100.0	315.4	

◆ Calculation

$$\text{Result(PK/CAV)} \text{ [dB}(\mu\text{V/m)}] = (\text{Reading(PK/CAV)} \text{ [dB}(\mu\text{V)}] + \text{c.f} \text{ [dB(1/m)}])$$

$$\text{Margin(PK/CAV)} \text{ [dB]} = \text{Limit} \text{ [dB}(\mu\text{V/m)}] - \text{Result(PK/CAV)} \text{ [dB}(\mu\text{V/m)}]$$

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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Report No.:
 KES-EM-20T0684
 Page (42) of (67)

Harmonic Current Emissions and Voltage Fluctuations and Flicker

Average harmonic current results				
Hn	leff [A]	% of Limit	Limit [A]	Result
1	0.145			
2	0.003	0.279	1.080	n/a
3	0.136	5.909	2.300	PASS
4	0.005	1.088	0.430	n/a
5	0.130	11.396	1.140	PASS
6	0.004	1.332	0.300	n/a
7	0.122	15.855	0.770	PASS
8	0.004	1.590	0.230	n/a
9	0.112	27.882	0.400	PASS
10	0.004	2.198	0.184	n/a
11	0.100	30.173	0.330	PASS
12	0.004	2.303	0.153	n/a
13	0.087	41.436	0.210	PASS
14	0.003	2.283	0.131	n/a
15	0.074	49.197	0.150	PASS
16	0.003	2.319	0.115	n/a
17	0.060	45.610	0.132	PASS
18	0.002	2.044	0.102	n/a
19	0.047	39.909	0.118	PASS
20	0.002	1.667	0.092	n/a
21	0.035	21.830	0.161	PASS
22	0.001	1.529	0.084	n/a
23	0.025	16.743	0.147	PASS
24	0.001	1.306	0.077	n/a
25	0.016	11.674	0.135	PASS
26	0.001	1.179	0.071	n/a
27	0.009	6.897	0.125	PASS
28	0.001	1.217	0.066	n/a
29	0.003	2.699	0.116	n/a
30	0.001	1.076	0.061	n/a
31	0.002	1.936	0.109	n/a
32	0.001	1.049	0.058	n/a
33	0.004	3.936	0.102	n/a
34	0.001	1.157	0.054	n/a
35	0.005	5.465	0.096	PASS
36	0.001	1.326	0.051	n/a
37	0.005	6.011	0.091	PASS
38	0.001	1.407	0.048	n/a
39	0.005	5.604	0.087	n/a
40	0.001	1.374	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.

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Report No.:
 KES-EM-20T0684
 Page (43) of (67)

Test Data - Harmonics (continued)

Maximum harmonic current results				
Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.145			
2	0.004	0.229	1.620	n/a
3	0.136	3.950	3.450	PASS
4	0.005	0.846	0.645	PASS
5	0.130	7.614	1.710	PASS
6	0.005	1.051	0.450	n/a
7	0.122	10.601	1.155	PASS
8	0.004	1.279	0.345	n/a
9	0.112	18.637	0.600	PASS
10	0.005	1.690	0.276	n/a
11	0.100	20.180	0.495	PASS
12	0.004	1.778	0.230	n/a
13	0.087	27.710	0.315	PASS
14	0.004	1.850	0.197	n/a
15	0.074	32.963	0.225	PASS
16	0.003	1.867	0.173	n/a
17	0.061	30.546	0.199	PASS
18	0.003	1.649	0.153	n/a
19	0.048	26.770	0.178	PASS
20	0.002	1.389	0.138	n/a
21	0.035	22.005	0.161	PASS
22	0.002	1.272	0.125	n/a
23	0.025	16.915	0.147	PASS
24	0.001	1.088	0.115	n/a
25	0.016	11.832	0.135	PASS
26	0.001	0.929	0.106	n/a
27	0.009	7.058	0.125	PASS
28	0.001	0.922	0.099	n/a
29	0.003	2.885	0.116	n/a
30	0.001	0.812	0.092	n/a
31	0.002	2.087	0.109	n/a
32	0.001	0.820	0.086	n/a
33	0.004	4.092	0.102	n/a
34	0.001	0.877	0.081	n/a
35	0.005	5.619	0.096	PASS
36	0.001	0.983	0.077	n/a
37	0.006	6.113	0.091	PASS
38	0.001	1.081	0.073	n/a
39	0.005	5.821	0.087	PASS
40	0.001	1.046	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-20T0684
Page (44) of (67)

Test Data - Voltage Fluctuations

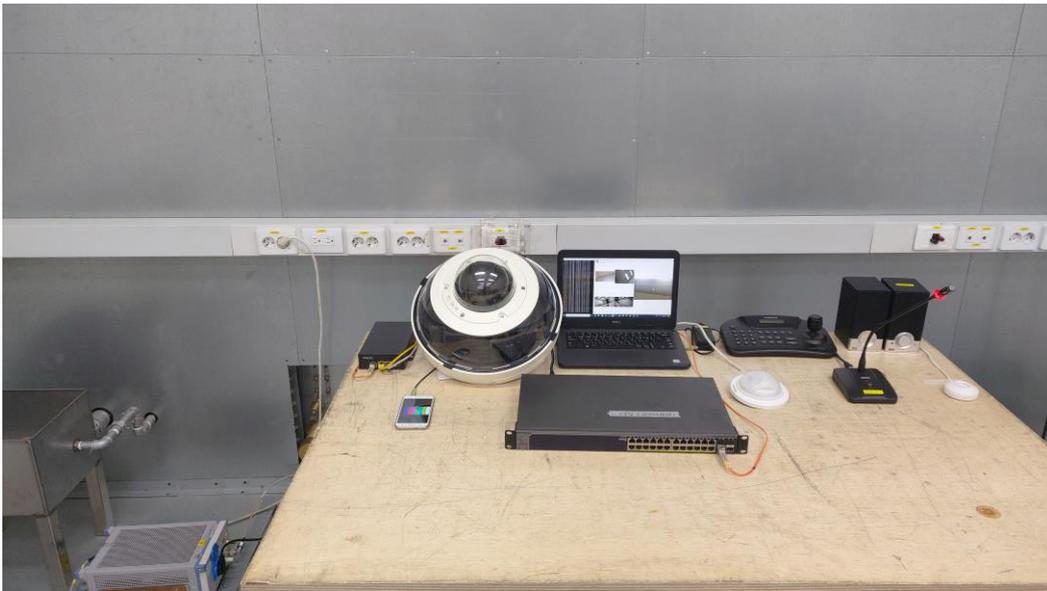
Maximum Flicker results

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



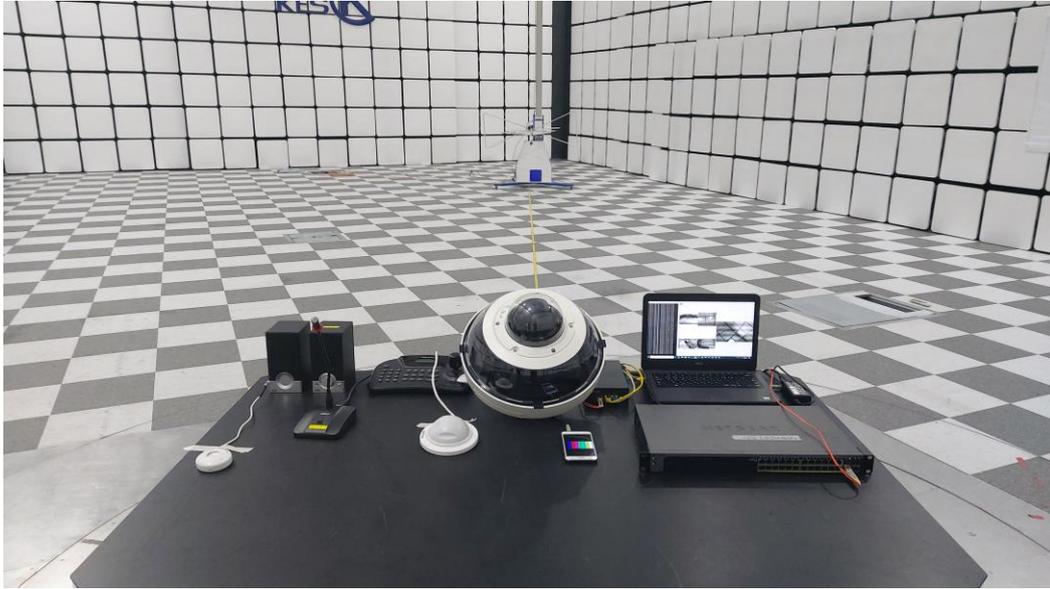
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Conducted Emissions at Telecommunication Ports



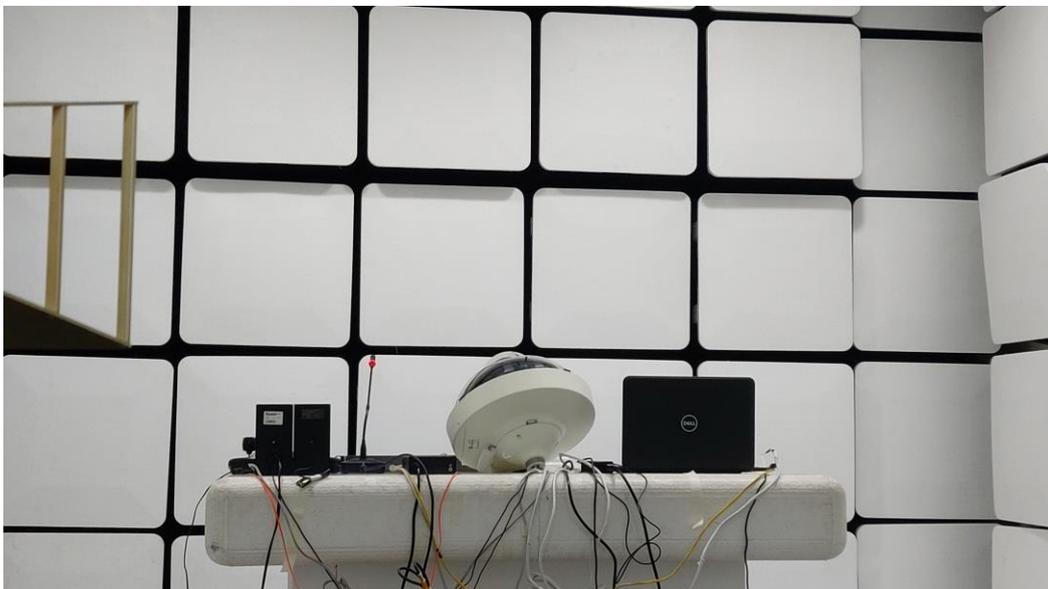
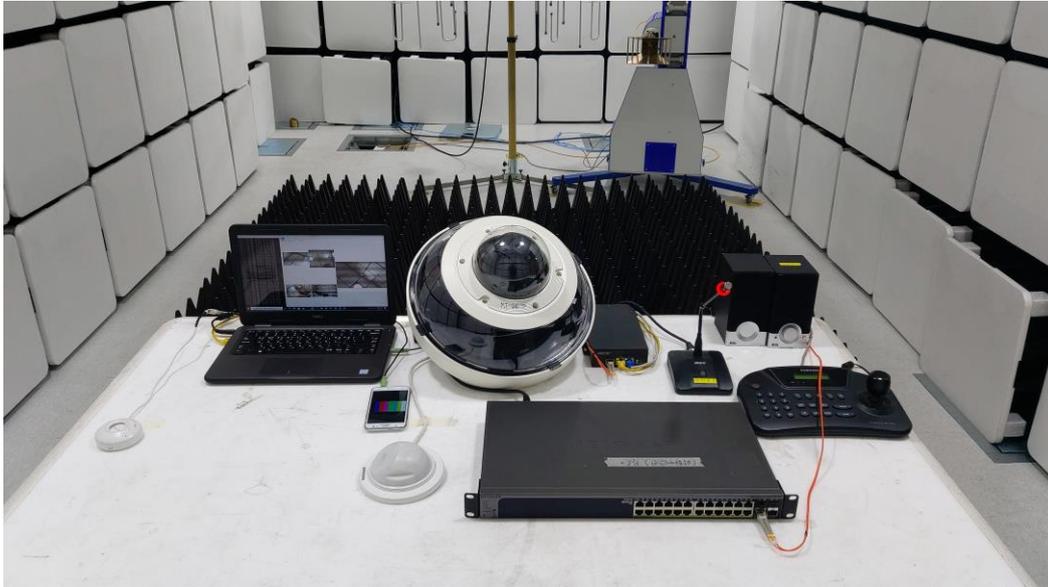
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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



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Harmonic Current Emissions and Voltage Fluctuations and Flicker

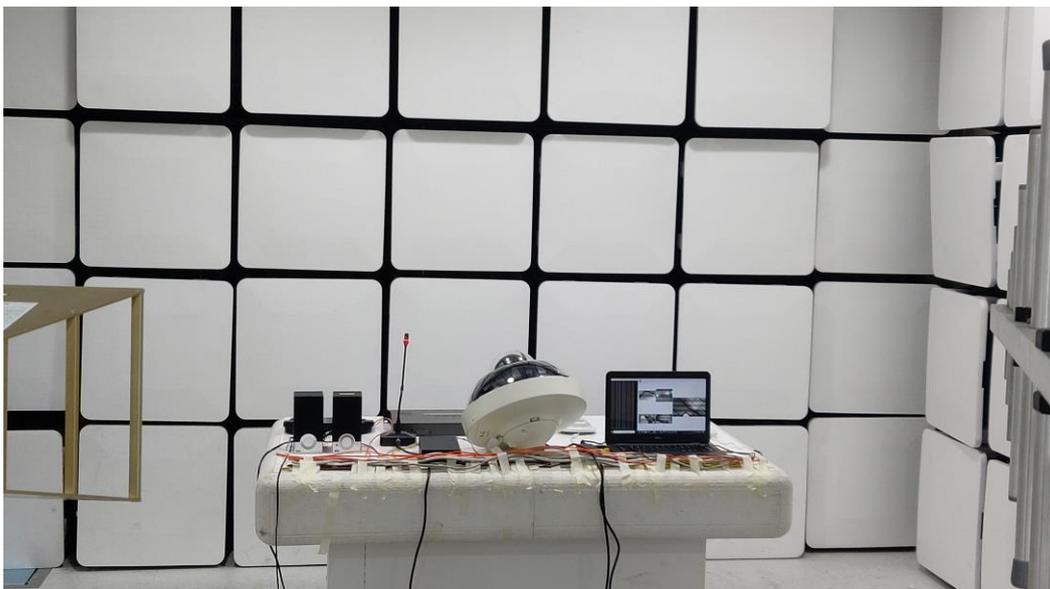


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Electrostatic Discharge



Radiated Electric Field Immunity

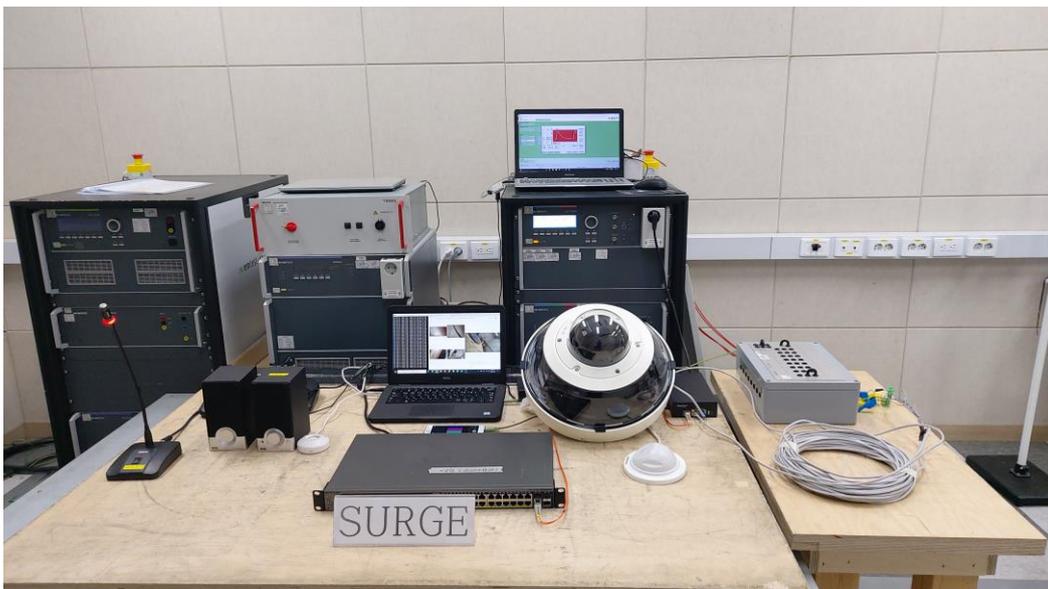


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Electrical Fast Transients/Bursts



Surge Transients

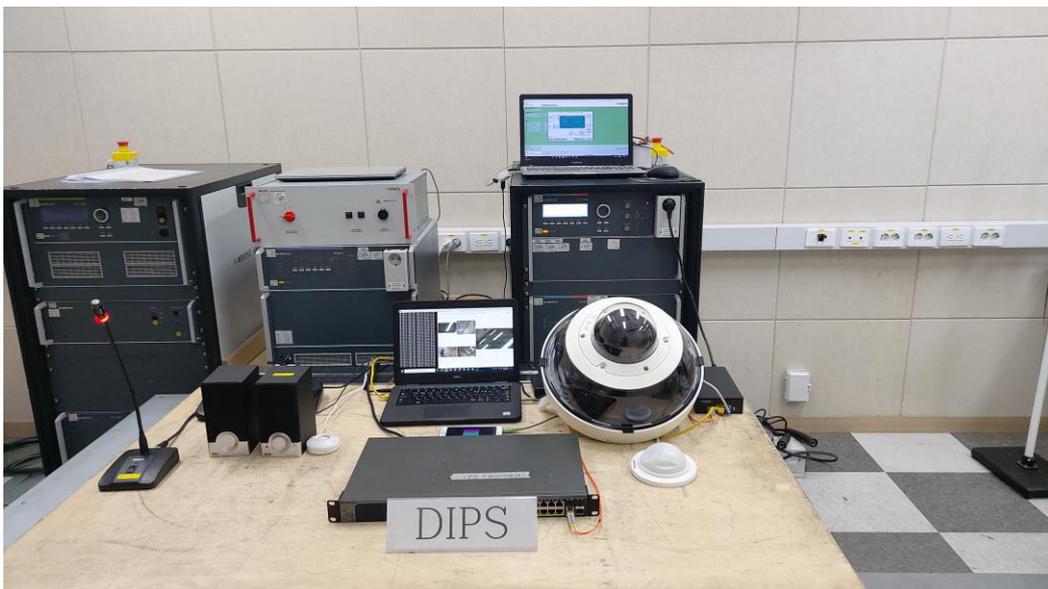


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Conducted Disturbance



Voltage Dips and Short Interruptions



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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

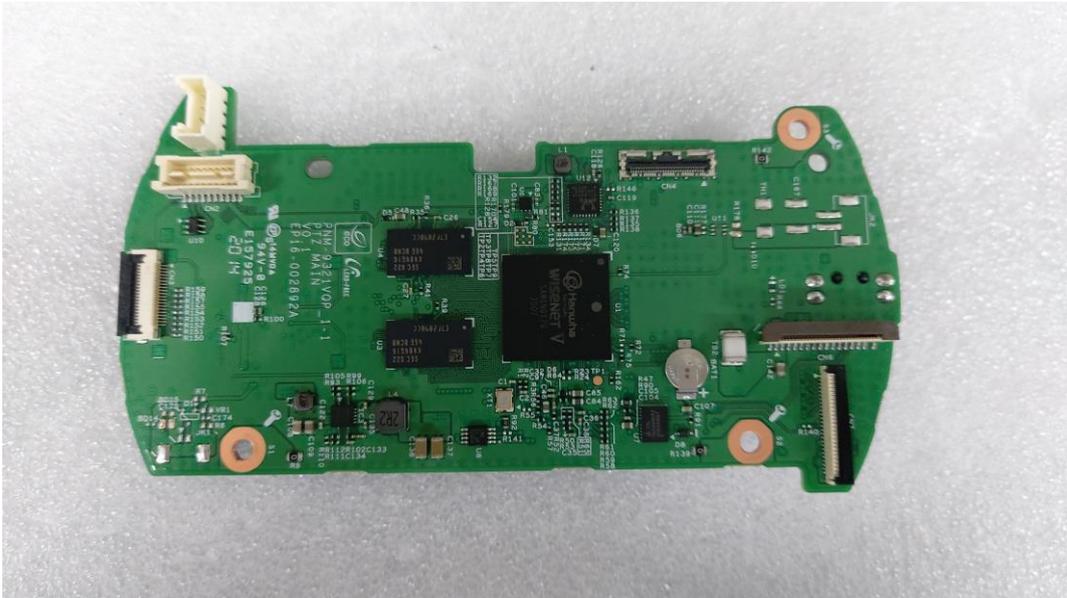
(Internal View)



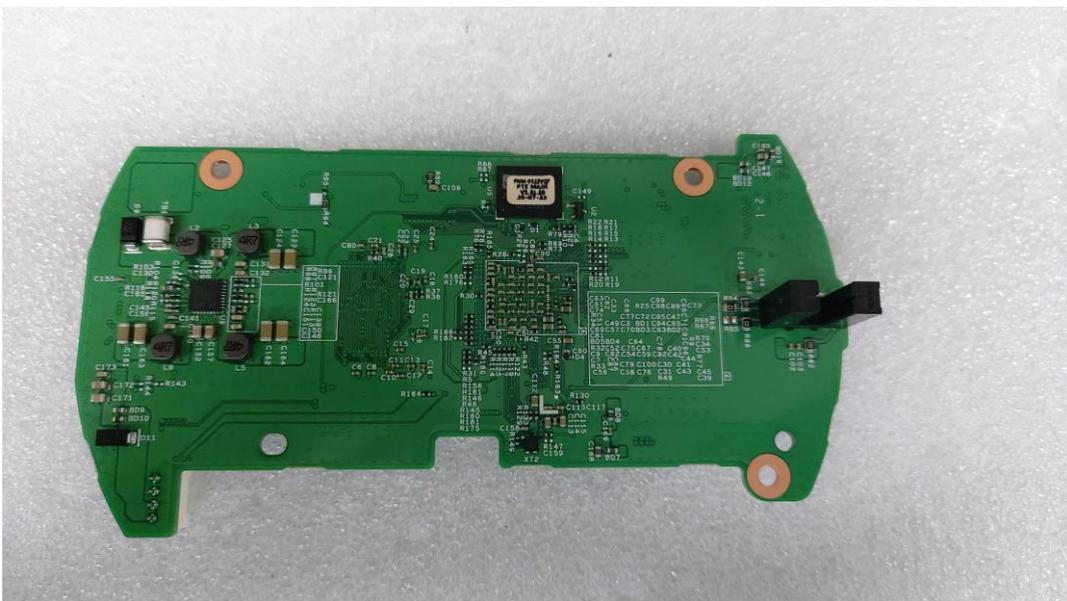
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EUT Internal View – Main Board

(Top)



(Bottom)



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EUT Internal View – Lens

(Top)



(Bottom)



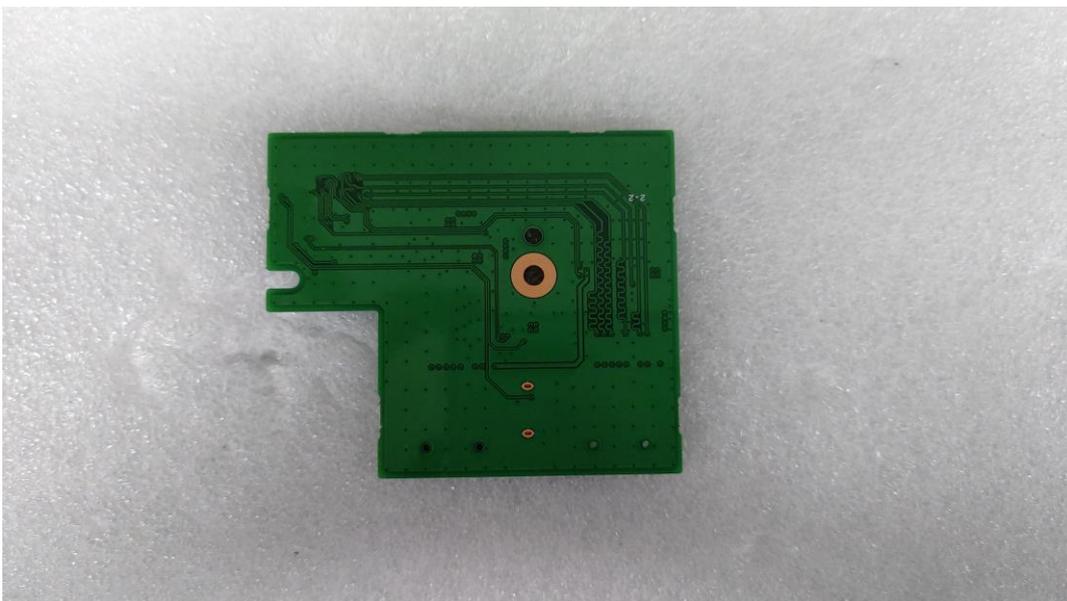
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EUT Internal View – SD Card Board

(Top)



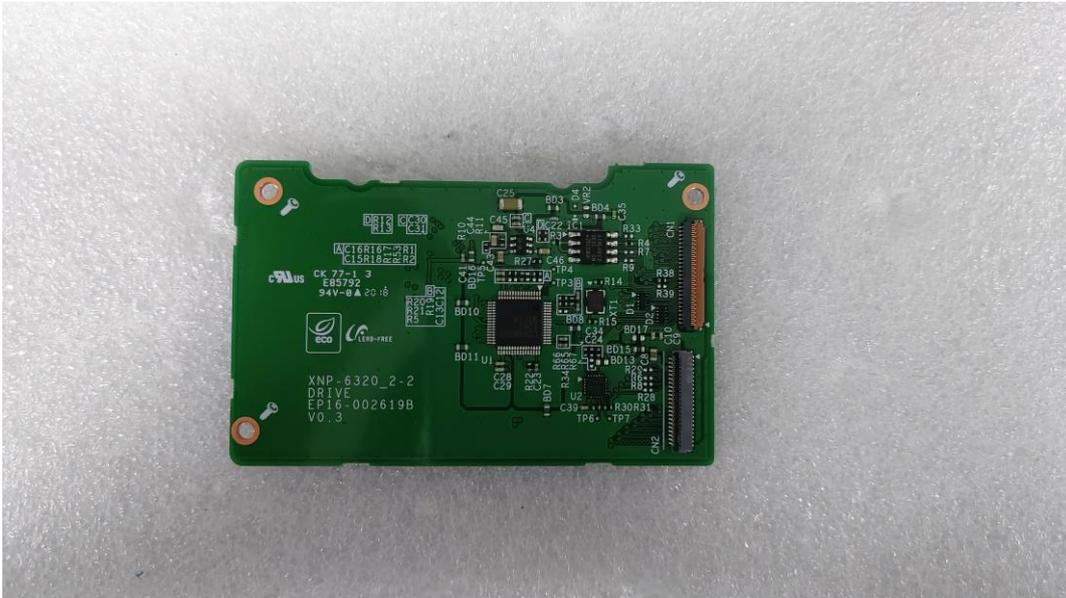
(Bottom)



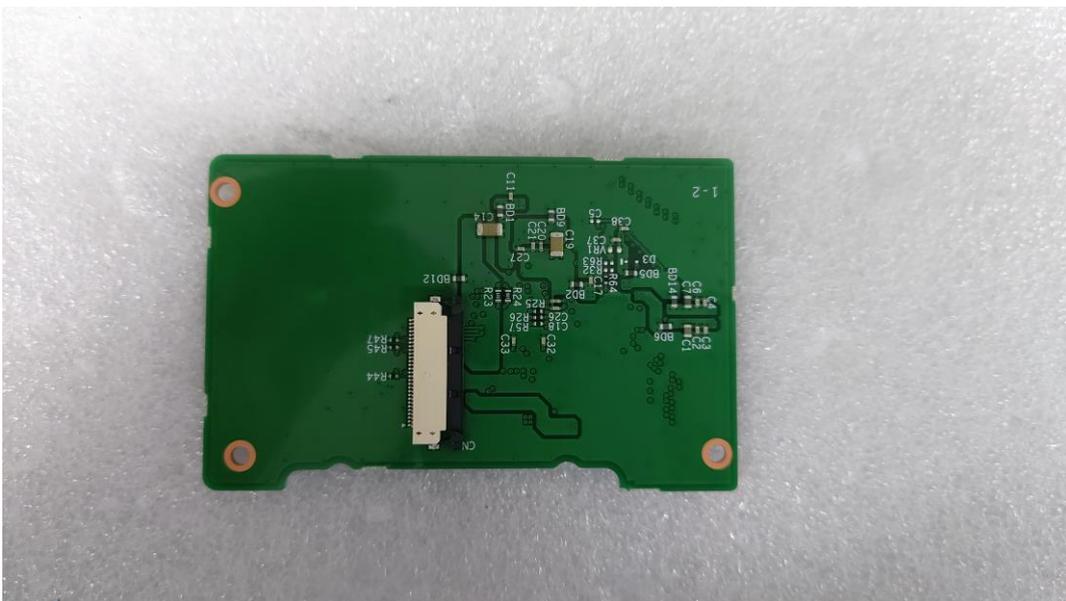
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EUT Internal View – Drive Board

(Top)



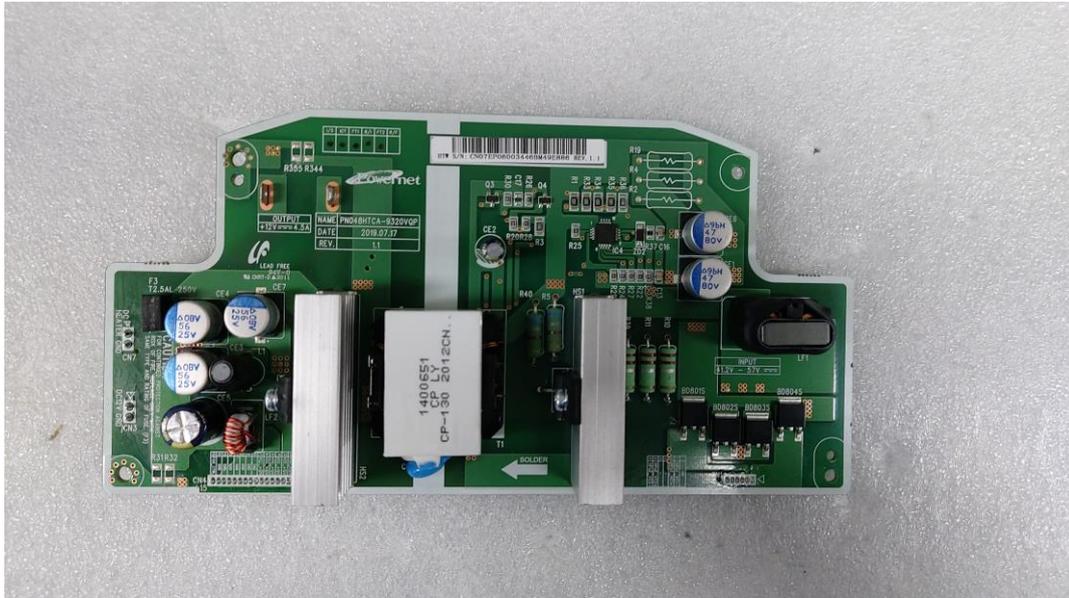
(Bottom)



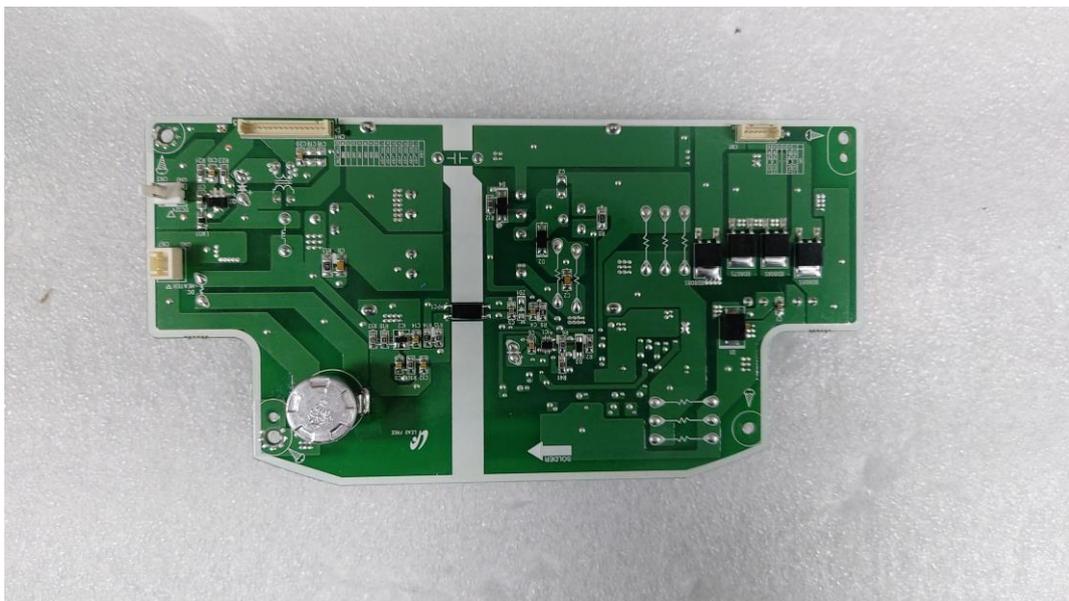
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EUT Internal View – Board 1

(Top)



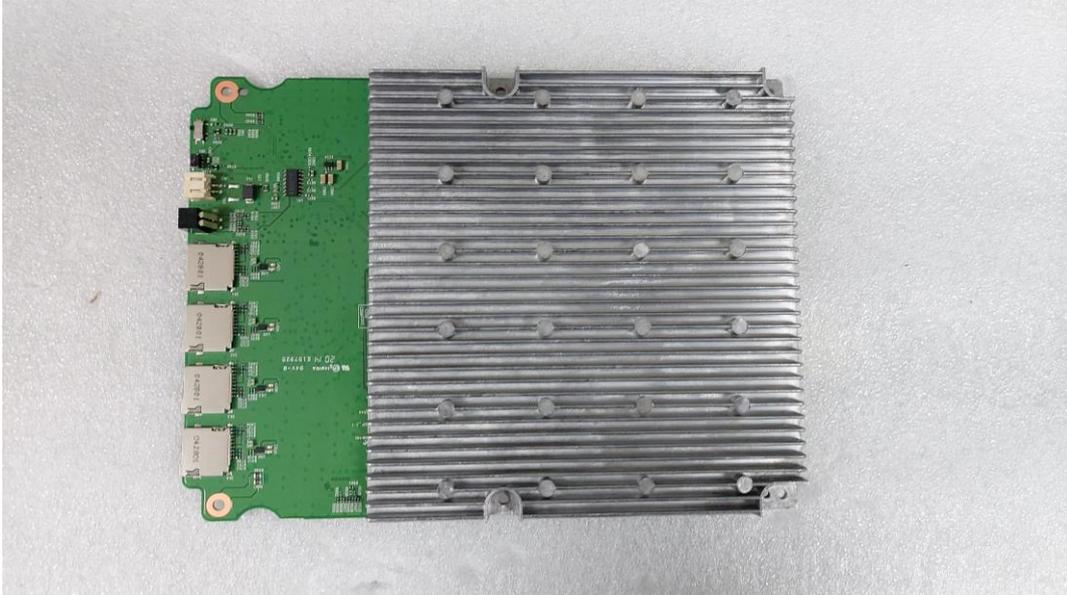
(Bottom)



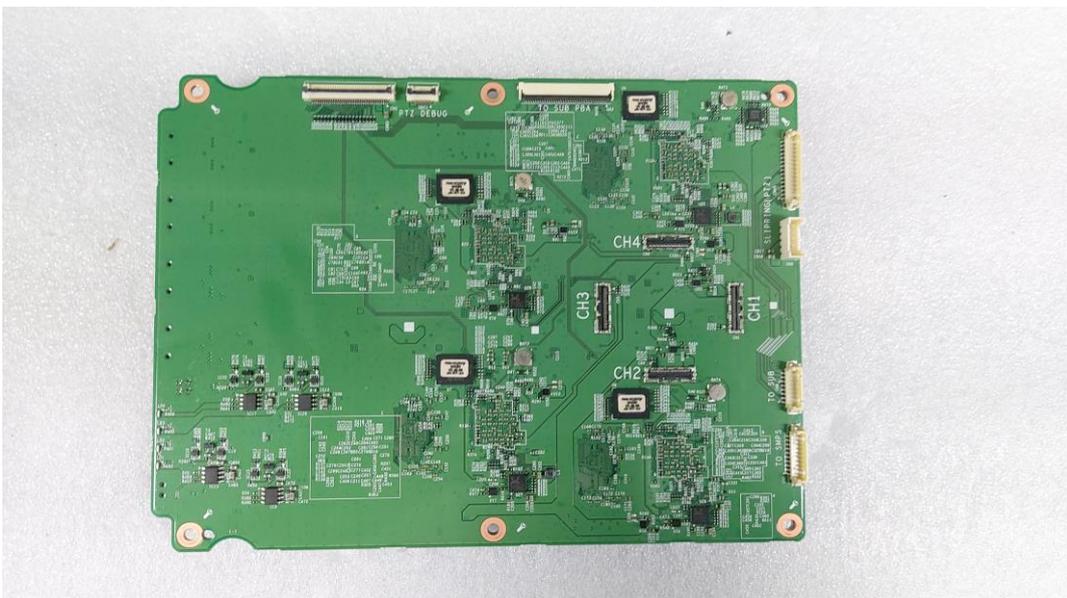
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EUT Internal View – Board 2

(Top)



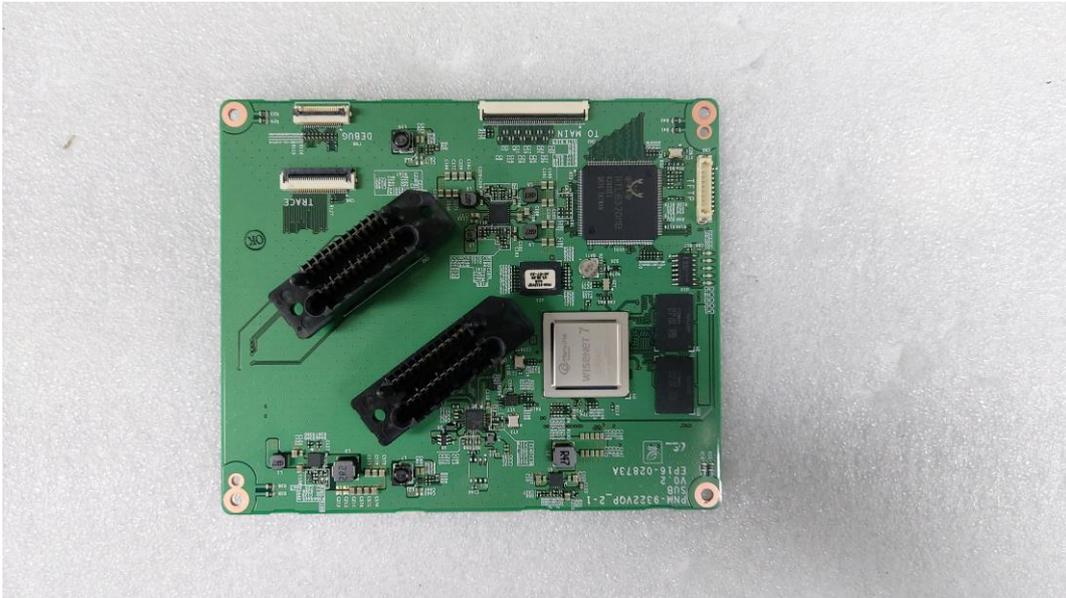
(Bottom)



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EUT Internal View – Board 3

(Top)



(Bottom)



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EUT Internal View – Camera Board

(Top)



(Bottom)



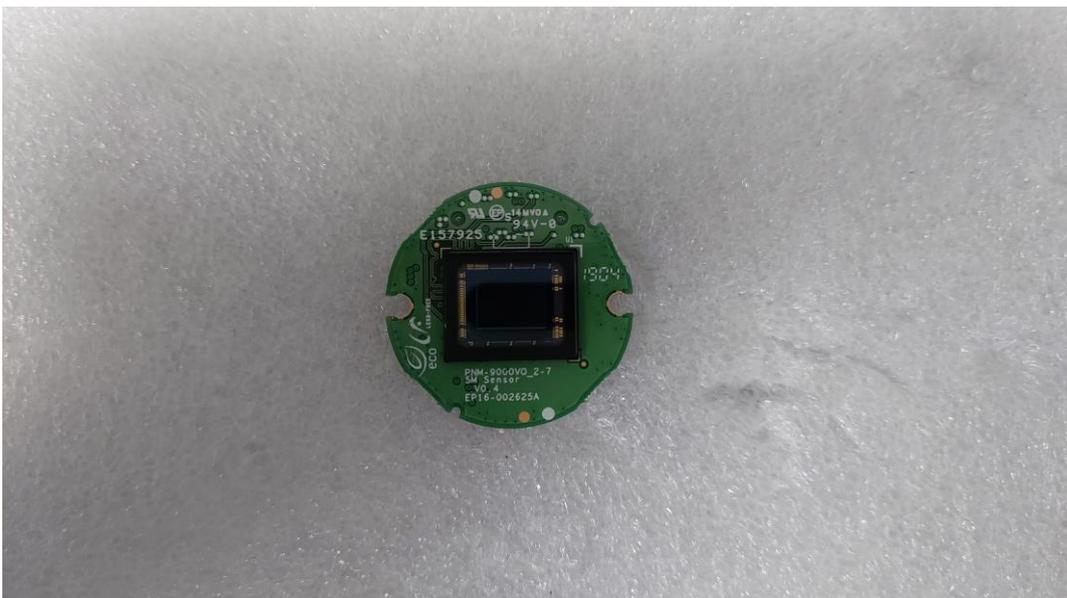
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The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact shchoi@kes.co.kr

EUT Internal View – Camera 1 ~ 4

(Top)



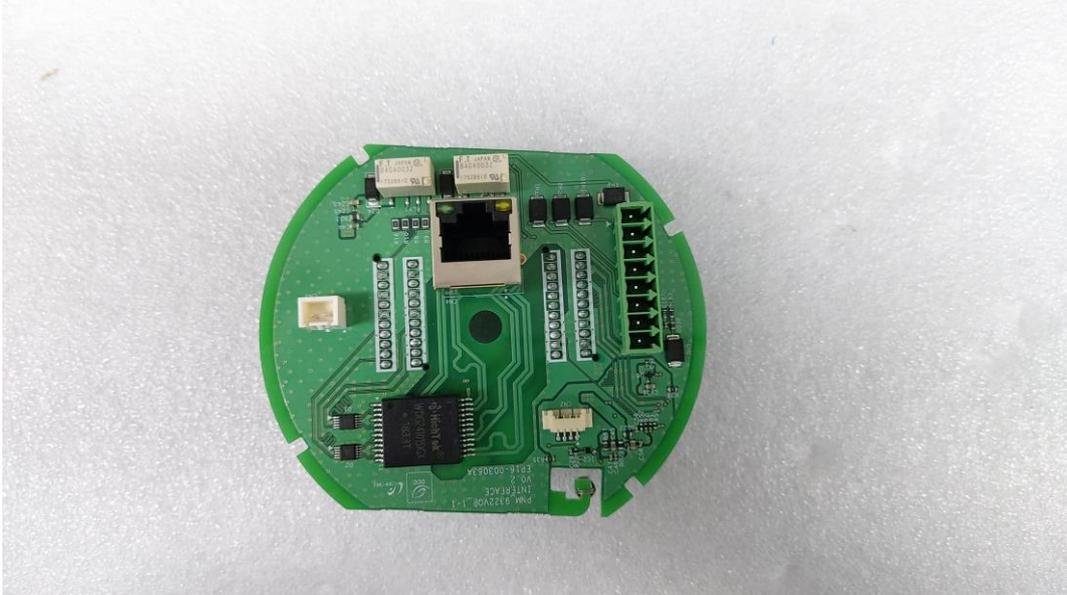
(Bottom)



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

EUT Internal View – Power Board

(Top)



(Bottom)



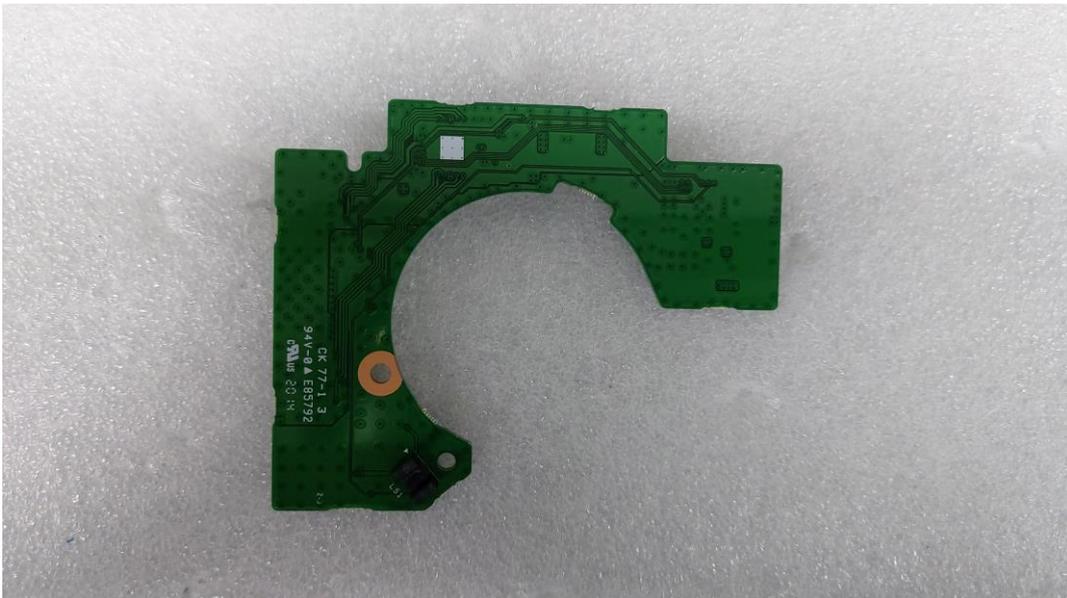
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EUT Internal View – Fan Board

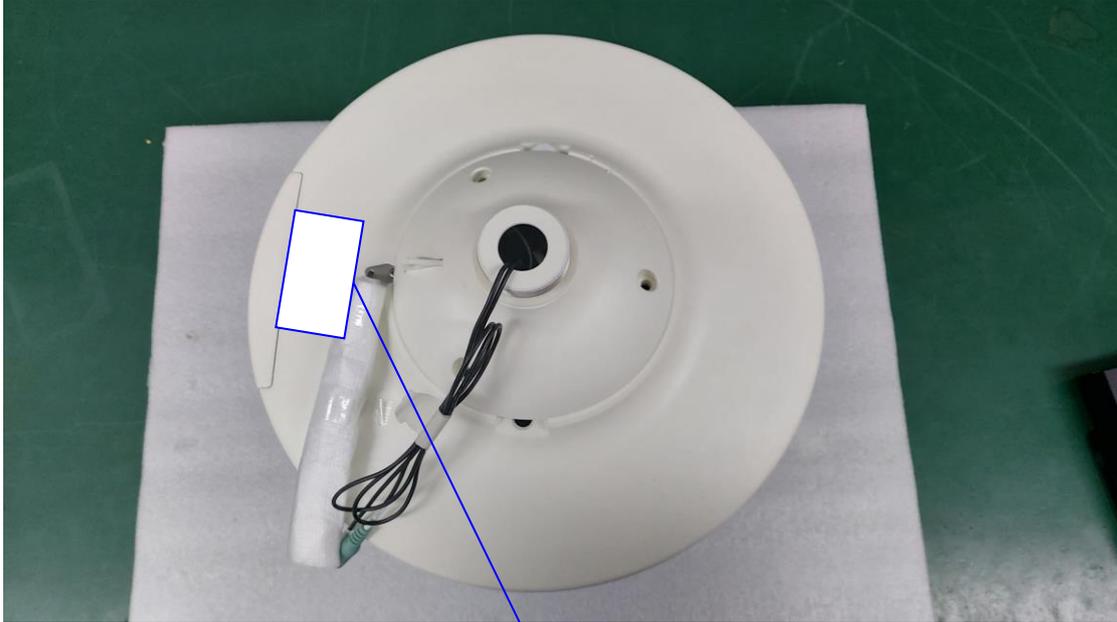
(Top)



(Bottom)



Label and Location



NETWORK CAMERA

Model No : PNM-9322VQP

Manufacturer : HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.

Made in Vietnam

