



EMC TEST REPORT For CE

Test Report No. : KES-EM-21T1200-R1
Date of Issue : Feb. 24, 2023
Product name : NETWORK CAMERA
Model/Type No. : XNZ-6320A
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 : Nov. 12, 2021
Test date : Nov. 19, 2021 ~ Nov. 30, 2021
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Sung Keun, Park
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

Tested by Ki Man, Kim
(Retired person)
Proxy signature : Sung Keun, Park

This test report is not related to KS Q ISO/IEC 17025 and KOLAS.

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Report No.:

KES-EM-21T1200-R1

Page (2) of (108)

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Dec. 21, 2021	KES-EM-21T1200	Issued
Feb. 24, 2023	KES-EM-21T1200-R1	Change the Applicant and manufacturer at the request of the customer

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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)	12
1.8	Configuration.....	13
1.9	Remarks when standards applied	14
1.10	Calibration Details of Equipment Used for Measurement	15
1.11	Test Facility	15
1.12	Laboratory Accreditations and Listings	15
2.0	Test Regulations.....	15
2.1	Conducted Emissions at Mains Power Ports	17
2.2	Conducted Emissions at Telecommunication Ports	18
2.3	Radiated Electric Field Emissions(Below 1 GHz)	19
2.4	Radiated Electric Field Emissions(Above 1 GHz)	20
2.5	Harmonic Current Emissions	21
2.6	Voltage Fluctuations and Flicker	22
3.0	Criteria for compliance	23
3.1	Electrostatic Discharge.....	25
3.2	Radiated Electric Field Immunity	32
3.3	Electrical Fast Transients/Bursts	35
3.4	Surge Transients	40
3.5	Conducted Disturbance	45
3.6	Voltage Dips and Short Interruptions	50
APPENDIX A – TEST DATA.....		53
Conducted Emissions at Mains Power Ports.....		53
Conducted Emissions at Telecommunication Ports		59
Radiated Electric Field Emissions(Below 1 GHz)		61
Radiated Electric Field Emissions(Above 1 GHz).....		65
Harmonic Current Emissions and Voltage Fluctuations and Flicker		69
Test Setup Photos and Configuration		76
Conducted Emissions at Mains Power Ports.....		76
Conducted Emissions at Telecommunication Ports		79
Radiated Electric Field Emissions(Below 1 GHz)		81
Radiated Electric Field Emissions(Above 1 GHz).....		85
Harmonic Current Emissions and Voltage Fluctuations and Flicker		89
Electrostatic Discharge		91
Radiated Electric Field Immunity		93
Electrical Fast Transients/Bursts		95
Surge Transients.....		97
Conducted Disturbance.....		99
Voltage Dips and Short Interruptions.....		101
EUT External Photographs		103
EUT Internal Photographs		104



1.0 General Product Description

Main Specifications of EUT are:

Video	
Imaging Device	1/2.8" 2MP CMOS
Effective Pixels	1944(H)x1212(V)
Min. Illumination	Color: 0.05Lux (1/30sec, F1.6) B/W: 0.005 Lux (1/30sec, F1.6)
Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation USB: Micro USB Type B, 1280x720 for installation
Lens	
Focal Length (Zoom Ratio)	4.44 ~ 142.6mm(Optical 32X)
Max. Aperture Ratio	F1.6(Wide)~F4.4(Tele)
Angular Field of View	H: 64.66°(Wide)~2.29°(Tele) / V: 38.08°(Wide)~1.30°(Tele)
Min. Object Distance	Wide 1.5m(4.92ft) ,Tele 2m(6.56ft)
Focus Control	Auto, One shot AF
Lens Type	DC auto Iris
Operational	
Camera Title	Displayed up to 85 characters
Day & Night	Auto(ICR)
Backlight Compensation	BLC, HLC, WDR, SSDR
Wide Dynamic Range	120dB
Digital Noise Reduction	SSNR V
Digital Image Stabilization	Support
Defog	Support
Motion Detection	8ea, 8point polygonal zones
Privacy Masking	32ea, rectangular zones - Color: Grey/Green/Red/Blue/Black/White - Mosaic
Gain Control	OFF/ LOW/ MID/ HIGH
White Balance	ATW / AWC / Manual / Indoor / Outdoor / Mercury / Sodium
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2~1/12,000sec)
Video Rotation	Flip, Mirror
Analytics	Defocus detection, Directional detection, Fog detection, Face detection, Motion detection, Appear/Disappear, Enter/Exit, Loitering, Tampering, Virtual line, Audio detection, Sound classification, Shock detection
Serial Interface	RS-485/422(Samsung-T, Pelco-D/P, Panasonic, Bosch, AD, GE, Vicon, Honeywell)
Alarm I/O	Input 1ea / Output 2ea
Alarm Triggers	Analytics, Network disconnect, Alarm input
Alarm Events	File upload via FTP and e-mail Notification via e-mail SD/SDHC/SDXC or NAS recording at event triggers Alarm output PTZ Preset
Audio In	Selectable(mic in/line in) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
Audio Out	Line out, Max.output level: 1Vrms
Network	
Ethernet	RJ-45(10/100BASE-T), SFP(100BASE-FX)
Video Compression	H.265/H.264: Main/Baseline/High, MJPEG
Resolution	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600,

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Report No.:

KES-EM-21T1200-R1

Page (5) of (108)

	800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	H.265/H.264: Max. 60fps/50fps(60Hz/50Hz) MJPEG: Max. 30fps/25fps(60Hz/50Hz)
Smart Codec	Manual(5ea area), WiseStream II
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 10 profiles)
Audio Compression	G.711 u-law /G.726 Selectable G.726(ADPCM) 8KHz, G.711 8KHz G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC: 48Kbps at 16KHz
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, 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)
Edge Storage	Micro SD/SDHC/SDXC 2 slot 512GB
Application Programming Interface	ONVIF Profile S/G/T SUNAPI(HTTP API) Wisenet open platform
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Web Viewer	None
Memory	1024MB RAM, 256MB Flash
Environmental	
Operating Temperature / Humidity	-10°C ~ +55°C(+14°F ~ +131°F) / Less than 90% RH
Storage Temperature / Humidity	-30°C ~ +60°C(-22°F ~ +140°F) / Less than 90% RH
Electrical	
Input Voltage	PoE(IEEE802.3af, Class3), 12VDC
Power Consumption	PoE: Max 7.5W, Typical 4.5W 12VDC: Max 7.0W, Typical 4.0W
Mechanical	
Color / Material	Dark grey / Aluminum
Product dimensions / weight	96 x 76 x 143.5mm, 578g
DORI (EN62676-4 standard)	
Detect (25PPM/ 8PPF)	Wide: 64.2m(199.1ft) / Tele: 192.1m(630.4ft)
Observe (63PPM/ 19PPF)	Wide: 24.3m(79.6ft) / Tele: 768.5m(2521.4ft)
Recognize (125PPM/ 38PPF)	Wide: 12.1m(39.8ft) / Tele: 384.3m(1260.7ft)
Identify (250PPM/ 76PPF)	Wide: 6.1m(19.9ft) / Tele: 192.1m(630.3ft)

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1.1 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

☒ AC 230 V, 50 Hz(DC Adapter) ☒ PoE

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	XNZ-6320A	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT



1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Adaptor	2ACB022F	-	Channel Well Technology (Guangzhou) Co., Ltd.	-
PoE Adaptor	PT-PSE106GBR-AH-S	-	Dongguan PROCET Network Technology Co., Ltd	-
Notebook	Latitude 5300	8C47BE45C060	DELL INC.	-
Notebook Adaptor	HA65NM130	-	Chicony Power Technology(Suzhou)Co., Ltd.	-
Gender	-	-	-	-
Converter	FIBERFLY-5001NZ	-	KTS OPTONICS CO., LTD.	-
Converter Adaptor	SAW06D-050-1000KD	-	SHENZHEN SHI YINGYUAN ELECTRONICS CO.,LTD	-
Smartphone	LG-SU760	108KPQJ0186212	LG	-
Headset	K550	-	Britz®	-
Alarm1	-	-	-	-
Alarm2	-	-	-	-
Controller1	SPC-1010	-	SamSung Techwin Co.,Ltd.	-
Controller1 Adaptor	AP-12005A	-	A-power.	-
Controller2	SPC-1010	-	SamSung Techwin Co.,Ltd.	-
Controller2 Adaptor	AP-12005A	-	A-power.	-
Micro SD Card	-	-	SanDisk	-
Optical Module1	SFP-SM	-	Interlink Telecom Co., Limited	-
Optical Module2	SFP-SM	-	Interlink Telecom Co., Limited	-

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Report No.:

KES-EM-21T1200-R1

Page (8) of (108)

1.6 External I/O Cabling

■ DC Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	2 Pin	Adaptor	2 Pin	1.2	U
	RJ-45	Notebook	RJ-45	3.0	S
	3.5 mm	Headset	3.5 mm	1.7	U
	3.5 mm		3.5 mm	1.7	U
	RS-485	Controller1	RS-485	3.0	U
	RS-422	Controller2	RS-422	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
	2 Pin	Alarm1	2 Pin	3.0	U
	2 Pin	Alarm2	2 Pin	3.0	U
Notebook	DC Jack	Notebook Adaptor	DC Jack	1.2	U
	3.5 mm	Gender	3.5 mm	0.1	U
Gender	3.5 mm	Smartphone	3.5 mm	1.0	U
Controller1	DC Jack	Controller1 Adaptor	DC Jack	1.6	U
Controller2	DC Jack	Controller2 Adaptor	DC Jack	1.6	U

* Unshielded=U, Shielded=S

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■ DC_Optical Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	2 Pin	Adaptor	2 Pin	1.2	U
	SFP	Optical Module1	SFP	-	-
	3.5 mm	Headset	3.5 mm	1.7	U
	3.5 mm		3.5 mm	1.7	U
	RS-485	Controller1	RS-485	3.0	U
	RS-422	Controller2	RS-422	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
	2 Pin	Alarm1	2 Pin	3.0	U
	2 Pin	Alarm2	2 Pin	3.0	U
Notebook	DC Jack	Notebook Adaptor	DC Jack	1.2	U
	3.5 mm	Gender	3.5 mm	0.1	U
	RJ-45	Converter	RJ-45	1.5	U
Gender	3.5 mm	Smartphone	3.5 mm	1.0	U
Controller1	DC Jack	Controller1 Adaptor	DC Jack	1.6	U
Controller2	DC Jack	Controller2 Adaptor	DC Jack	1.6	U
Optical Module1	Optical	Optical Module2	Optical	5.0	U
Converter	SFP	Optical Module2	SFP	-	-
	DC Jack	Converter Adaptor	DC Jack	1.4	U

* Unshielded=U, Shielded=S

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Report No.:
KES-EM-21T1200-R1
Page (10) of (108)

■ PoE Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45 (PoE)	PoE Adaptor	RJ-45 (PoE)	3.0	S
	3.5 mm	Headset	3.5 mm	1.7	U
	3.5 mm		3.5 mm	1.7	U
	RS-485	Controller1	RS-485	3.0	U
	RS-422	Controller2	RS-422	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
	2 Pin	Alarm1	2 Pin	3.0	U
	2 Pin	Alarm2	2 Pin	3.0	U
Notebook	DC Jack	Notebook Adaptor	DC Jack	1.2	U
	3.5 mm	Gender	3.5 mm	0.1	U
	RJ-45 (LAN)	PoE Adaptor	RJ-45 (LAN)	3.0	S
Gender	3.5 mm	Smartphone	3.5 mm	1.0	U
Controller1	DC Jack	Controller1 Adaptor	DC Jack	1.6	U
Controller2	DC Jack	Controller2 Adaptor	DC Jack	1.6	U

* Unshielded=U, Shielded=S

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■ PoE_Optical Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45 (PoE)	PoE Adaptor	RJ-45 (PoE)	3.0	S
	SFP	Optical Module1	SFP	-	-
	3.5 mm	Headset	3.5 mm	1.7	U
	3.5 mm		3.5 mm	1.7	U
	RS-485	Controller1	RS-485	3.0	U
	RS-422	Controller2	RS-422	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
	2 Pin	Alarm1	2 Pin	3.0	U
	2 Pin	Alarm2	2 Pin	3.0	U
Notebook	DC Jack	Notebook Adaptor	DC Jack	1.2	U
	3.5 mm	Gender	3.5 mm	0.1	U
	RJ-45	Converter	RJ-45	1.5	U
Gender	3.5 mm	Smartphone	3.5 mm	1.0	U
Controller1	DC Jack	Controller1 Adaptor	DC Jack	1.6	U
Controller2	DC Jack	Controller2 Adaptor	DC Jack	1.6	U
Optical Module1	Optical	Optical Module2	Optical	5.0	U
Converter	SFP	Optical Module2	SFP	-	-
	DC Jack	Converter Adaptor	DC Jack	1.4	U

* Unshielded=U, Shielded=S

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Report No.:

KES-EM-21T1200-R1

Page (12) of (108)

1.7 EUT Operating Mode(s)

operating
EUT Monitoring, Ping Test

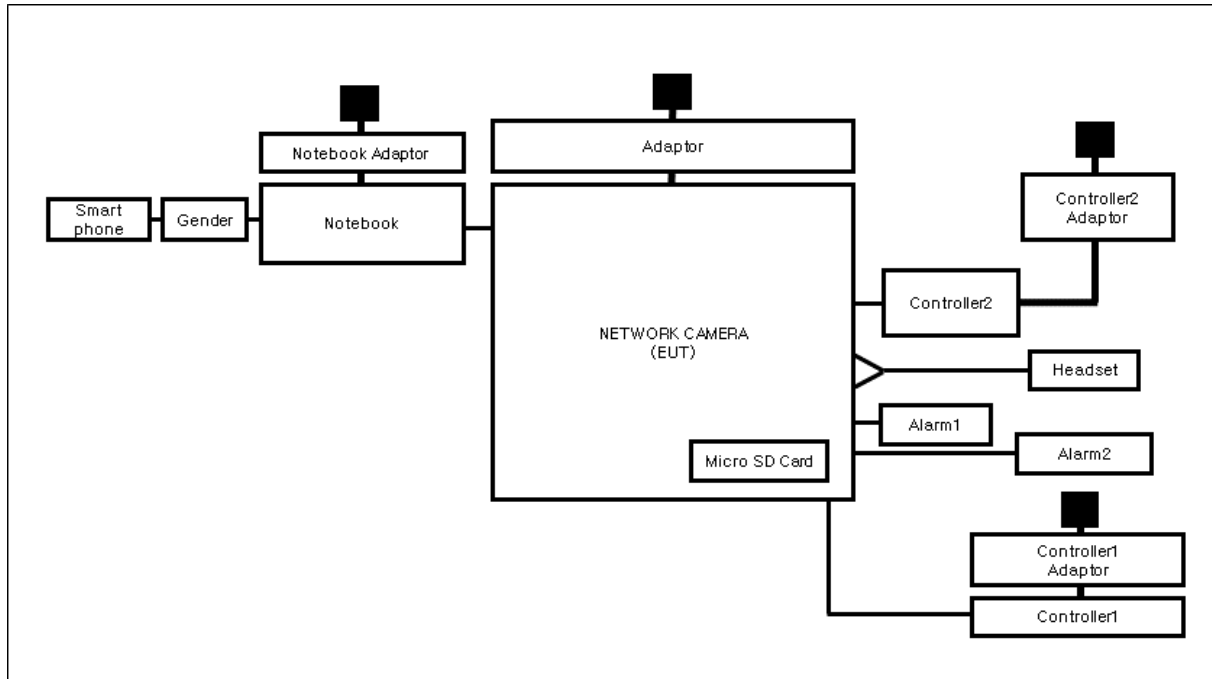
EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	Hanwha Vision Co., Ltd

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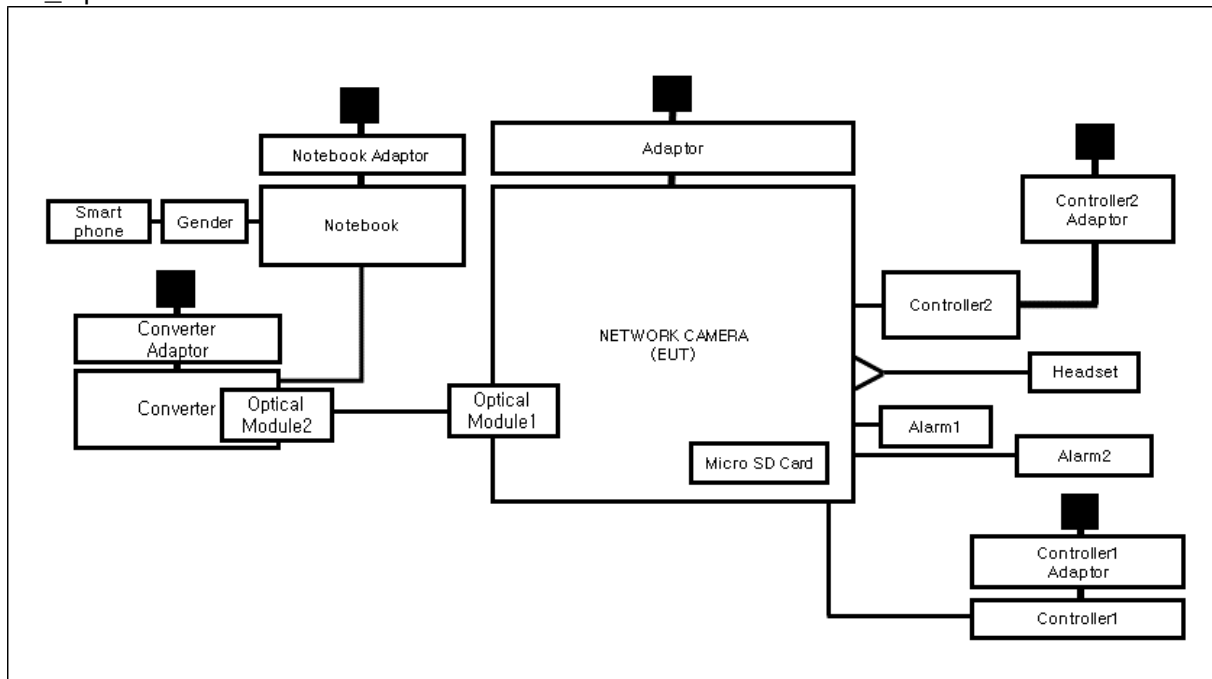
1.8 Configuration

■ AC Main
 □ DC Main

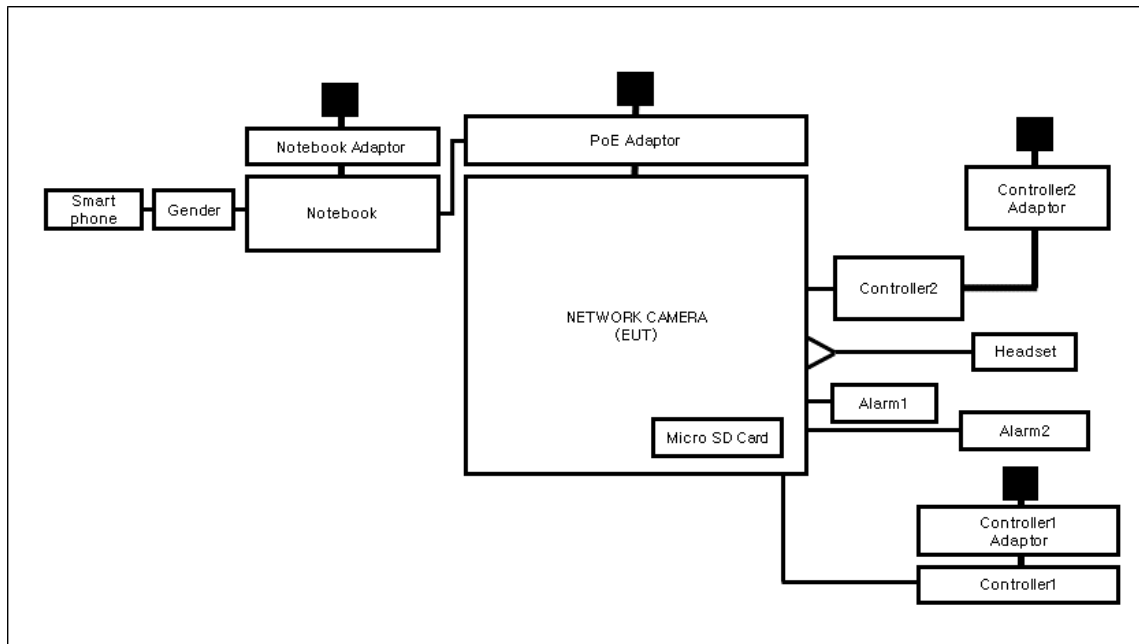
■ DC Mode



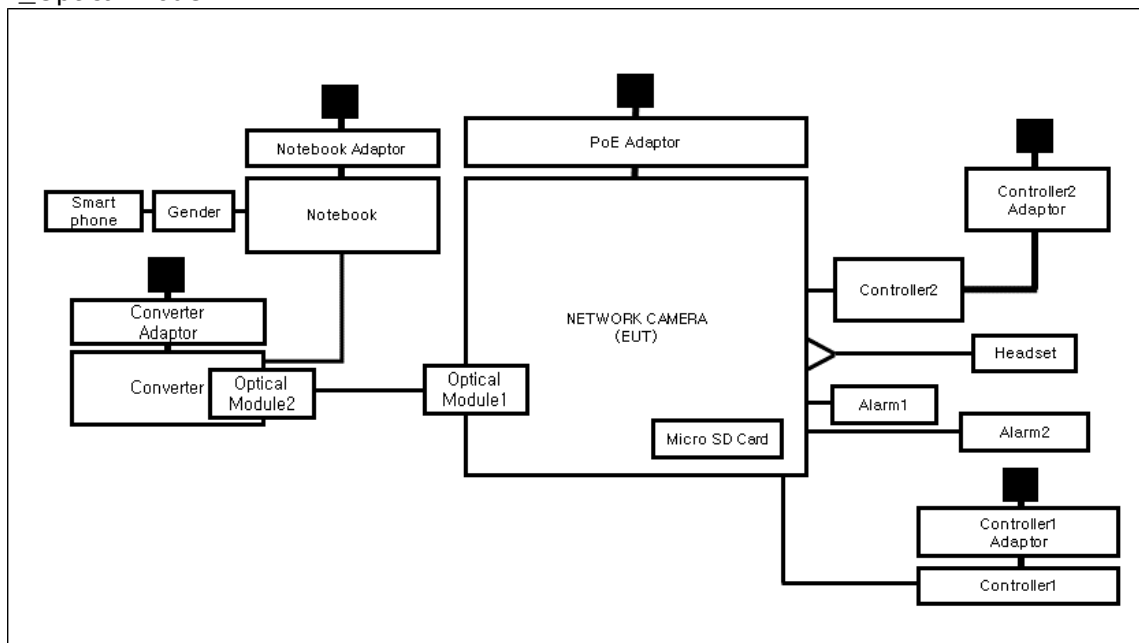
■ DC_Optical Mode



■ PoE Mode



■ PoE_Optical Mode



1.9 Remarks when standards applied

- When connecting optical ports, RJ-45 ports were tested by mode as they did not communicate data.
- USB, VIDEO port is not tested because it is an unused port.
- Power-related ports are not tested because power and data communication are used together in PoE mode.
- Power-related ports were tested because only power was used in PoE_optical mode.

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 2016/1091**

☒ EN 55032:2015/A11:2020

☒ Class A

☐ Class B

☒ EN 50130-4:2011

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013



2.1 Conducted Emissions at Mains Power Ports

Test Date

Nov. 25, 2021

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	01, 15, 2022
☒	LISN	ENV216	R & S	101787	12, 29, 2021
☒	LISN	ESH2-Z5	R & S	100450	12, 29, 2021
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 29, 2021

Test Conditions

Temperature: (22,8 ± 0,2) °C

Relative Humidity: (43,7 ± 0,2) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Nov. 25, 2021

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	01, 15, 2022
☒	LISN	ENV216	R & S	101787	12, 29, 2021
☒	LISN	ESH2-Z5	R & S	100450	12, 29, 2021
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 29, 2021
☒	ISN	ISN S8	SCHWARZBECK	ISN-S8-0019	03, 10, 2022
☐	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	12, 30, 2021

Test Conditions

Temperature: (22,8 ± 0,1) °C

Relative Humidity: (43,7 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

- See Appendix A for test data.
- For Ethernet interfaces, measurements are required at the highest data rate supported by the interface.

2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Nov. 24, 2021 / Nov. 25, 2021

Test Location

☐ OPEN AREA TEST SITE #2 ☒ SEMI ANECHOIC CHAMBER #4(10m)

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	04, 01, 2022
☒	AMPLIFIER	SCU 01	R & S	100603	11, 24, 2022
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
☒	ATTENUATOR	8491A	HP	32173	03, 10, 2022

Test Conditions

Test Date: Nov. 24, 2021 Nov. 25, 2021
Temperature: (23,1 ± 0,2) °C (22,6 ± 0,3) °C
Relative Humidity: (44,0 ± 0,2)% R.H. (44,0 ± 0,4)% R.H.

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Nov. 26, 2021

Test Location

SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESR7	R & S	101190	08, 03, 2022
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	04, 07, 2022
☐	ATTENUATOR	8491A	HP	35496	03, 10, 2022
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2022

Test Conditions

Temperature: (23,2 ± 0,2) °C

Relative Humidity: (43,1 ± 0,4) % R.H.

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.5 Harmonic Current Emissions

Test Date

Nov. 30, 2021

Test Location

Electro wave Shieldroom #7

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, 2022
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (22,9 ± 0,1) °C
Relative Humidity: (43,8 ± 0,2) % 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

Nov. 30, 2021

Test Location

Electro wave Shieldroom #7

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, 2022
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (22,9 ± 0,3) °C
Relative Humidity: (43,8 ± 0,5) % 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 / BS EN 50130-4:2011/A1:2014 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
BS EN 61000-4-2:2009

Test Date

Nov. 29, 2021

Test Location

EMS-ESD: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS01Z0454	02, 01, 2022
☒	HCP	-	KES	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions

Temperature: (23,1 ± 0,2) °C
Relative Humidity: (43,3 ± 0,2) % R.H.
Atmospheric Pressure: (100,8 ± 0,0) 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

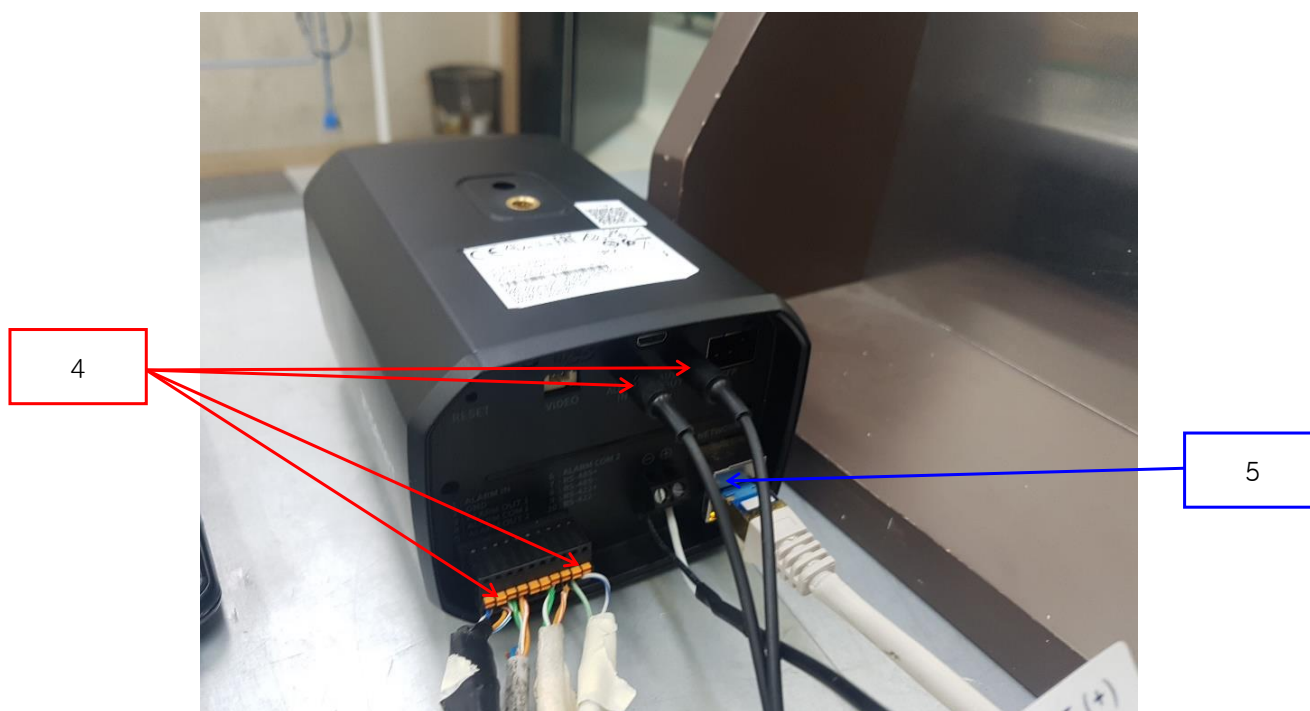
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Location of Discharge:

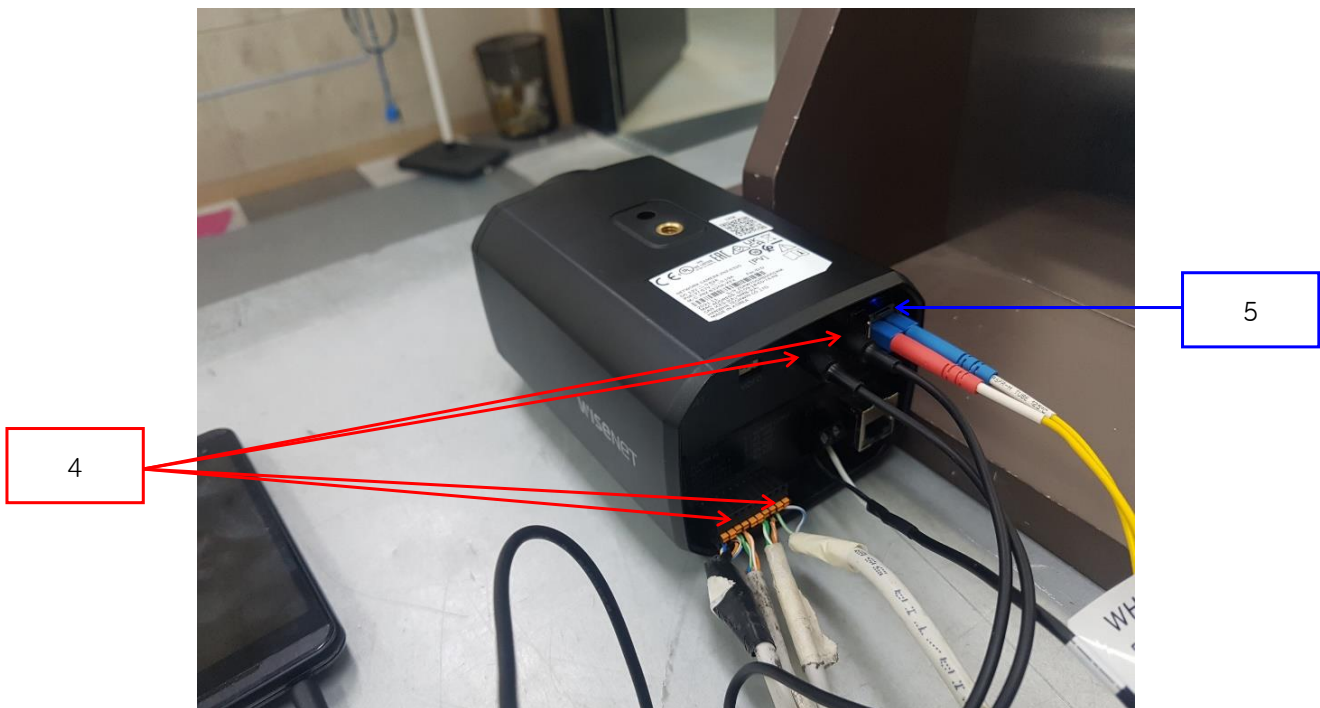
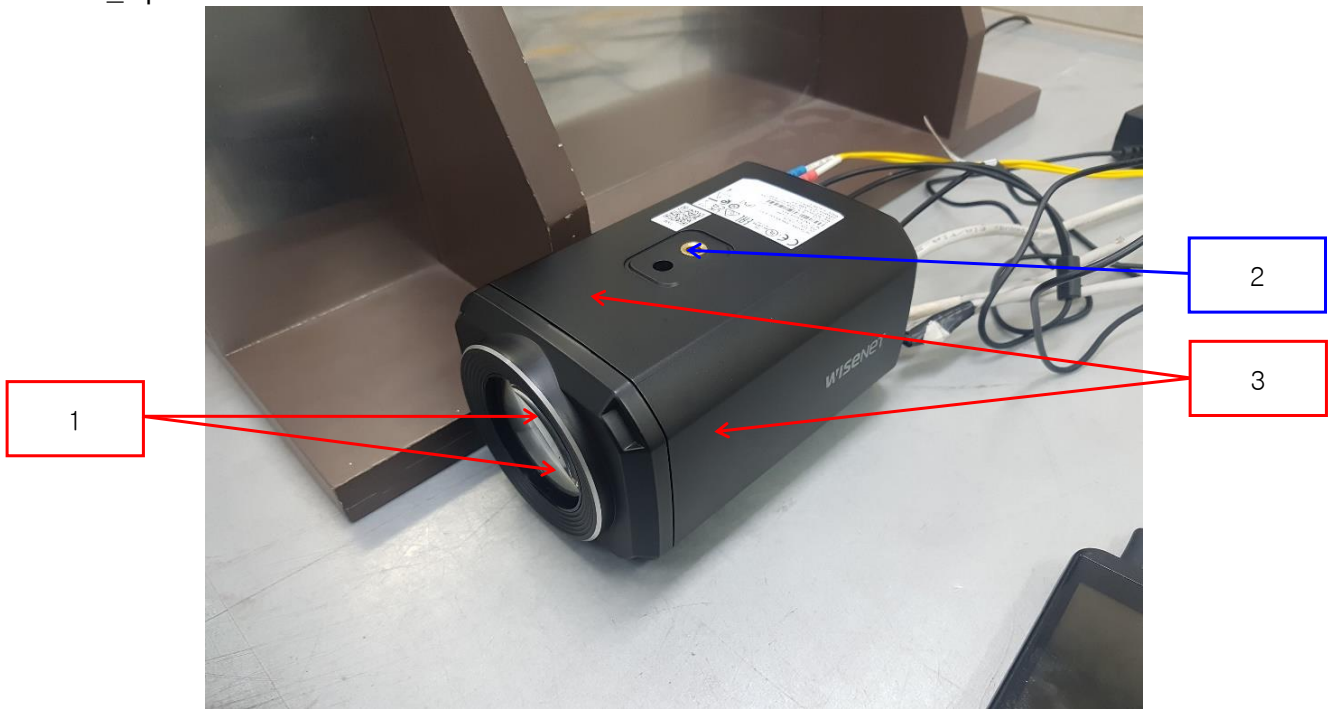
Air
Contact



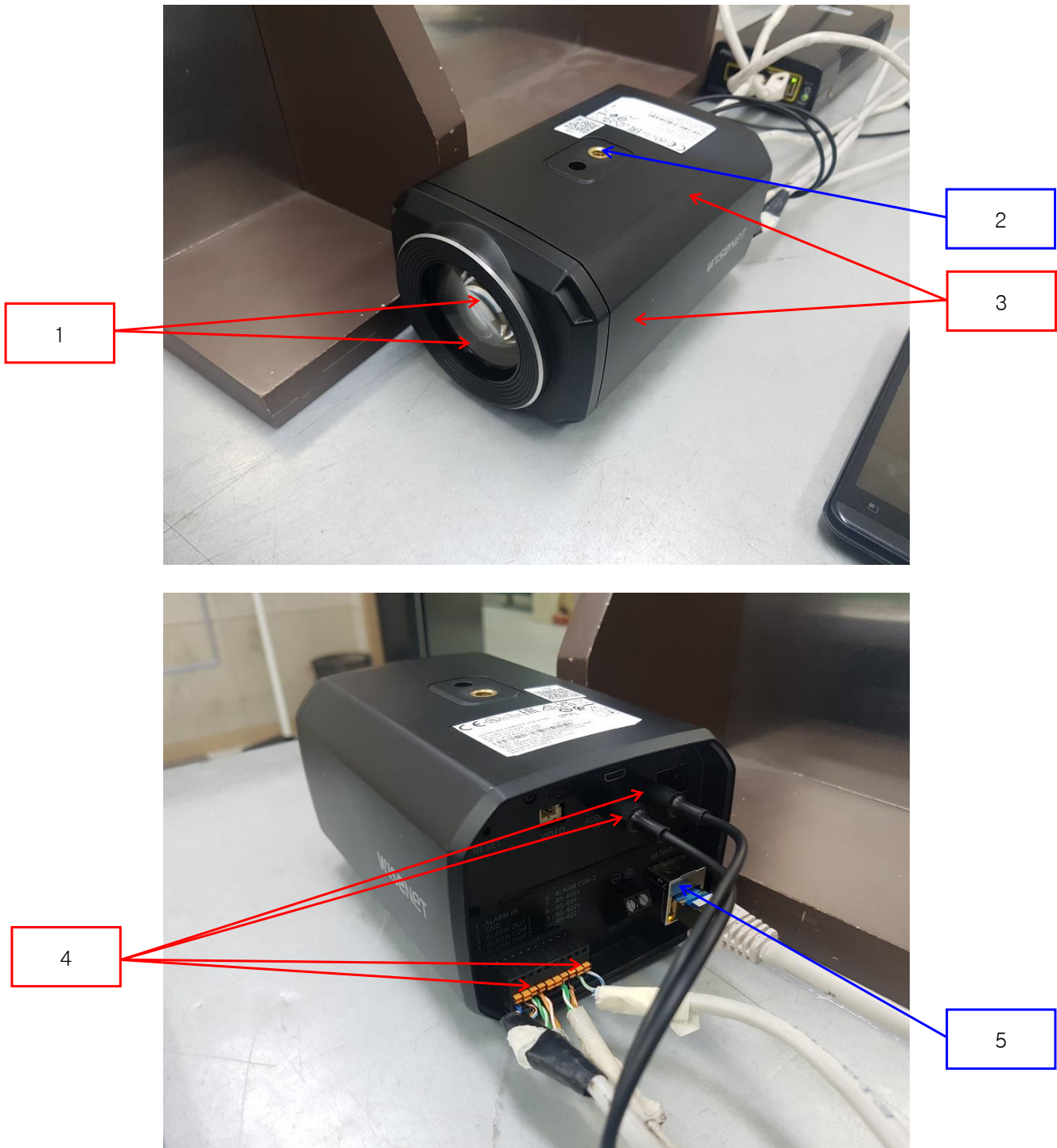
■ DC Mode

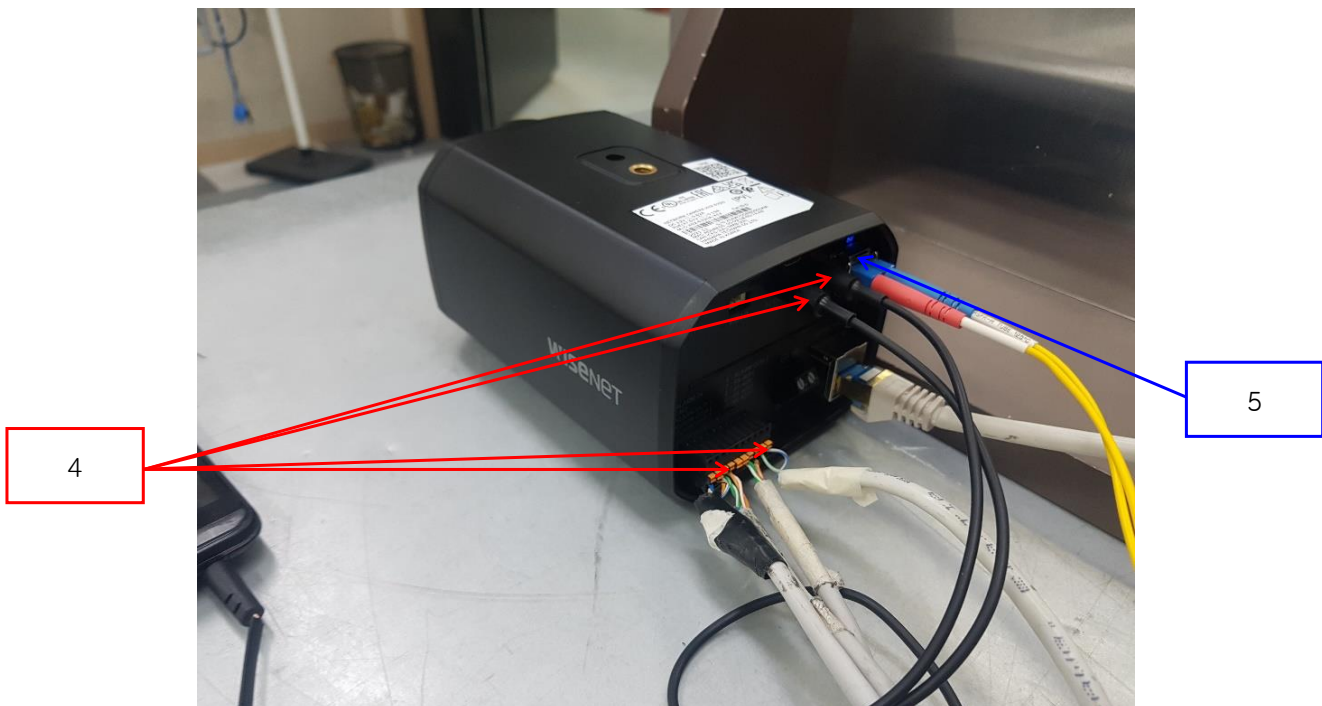
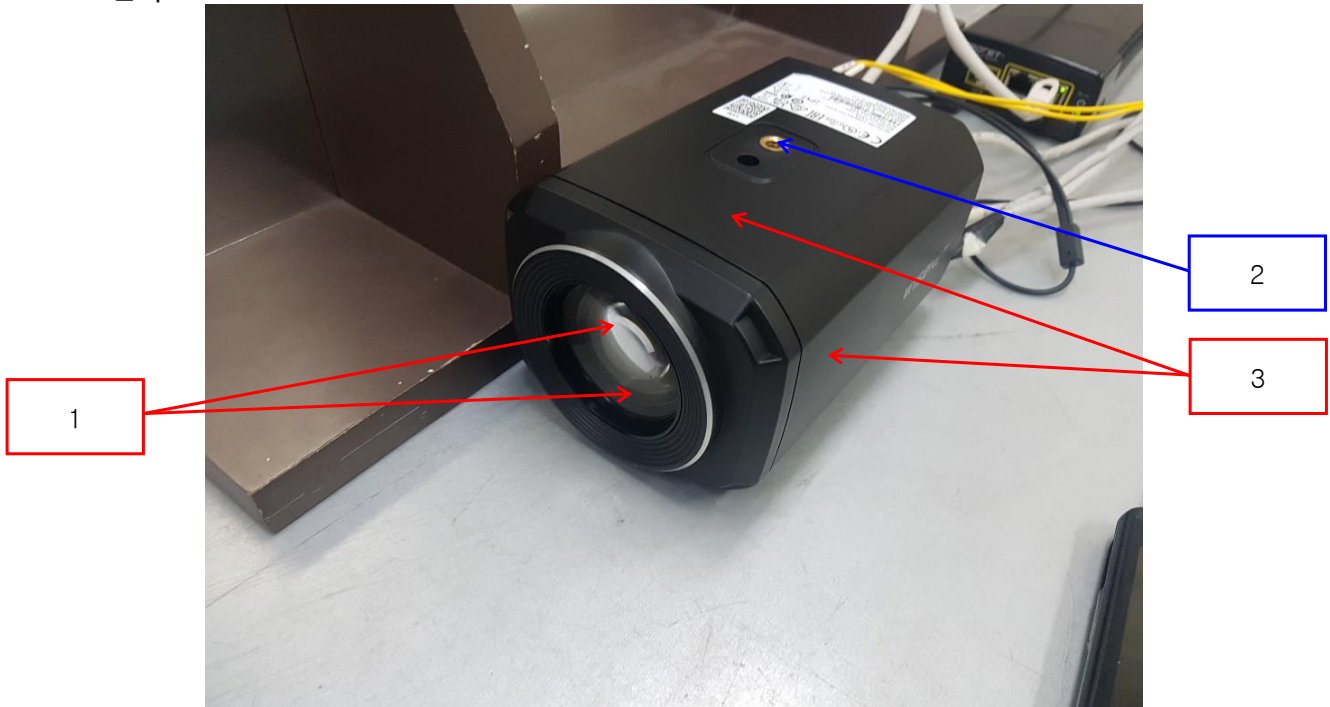


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■ DC_Optical Mode

■ PoE Mode



■ PoE_Optical Mode

Test Data

■ DC Mode

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	Lens	Air Discharge	Complied	-
2	Enclosure 1	Contact Discharge	Complied	-
3	Enclosure 2	Air Discharge	Complied	-
4	Around the port1	Air Discharge	Complied	-
5	Around the port2	Contact Discharge	Complied	-

■ DC_Optical 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	Lens	Air Discharge	Complied	-
2	Enclosure 1	Contact Discharge	Complied	-
3	Enclosure 2	Air Discharge	Complied	-
4	Around the port1	Air Discharge	Complied	-
5	Around the port2	Contact Discharge	Complied	-

■ PoE 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	Lens	Air Discharge	Complied	-
2	Enclosure 1	Contact Discharge	Complied	-
3	Enclosure 2	Air Discharge	Complied	-
4	Around the port1	Air Discharge	Complied	-
5	Around the port2	Contact Discharge	Complied	-

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Report No.:
KES-EM-21T1200-R1
Page (31) of (108)

■ PoE_Optical 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	Lens	Air Discharge	Complied	-
2	Enclosure 1	Contact Discharge	Complied	-
3	Enclosure 2	Air Discharge	Complied	-
4	Around the port1	Air Discharge	Complied	-
5	Around the port2	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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3.2 Radiated Electric Field Immunity

Reference Standard

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

Test Date

Nov. 19, 2021 / Nov. 22, 2021

Test Location

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

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	EMC32	R & S	10.10.02	-
☒	SIGNAL GENERATOR	SMB 100A	Rohde & Schwarz	108252	08, 03, 2022
☒	HIGH POWER DUAL AMP	SSA532	SUNGSAN	SSA532-001	-
☒	POWER METER	E4419B	Agilent	GB40203000	04, 01, 2022
☒	CW POWER SENSOR	E4412A	Agilent	US38488240	04, 01, 2022
☒	CW POWER SENSOR	E4412A	Agilent	MY41501662	04, 01, 2022
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2022

Test Conditions

Test Date:	Nov. 19, 2021	Nov. 22, 2021
Temperature:	(23,1 ± 0,2) °C	(23,1 ± 0,3) °C
Relative Humidity:	(44,8 ± 0,3)% R.H.	(44,5 ± 0,4)% R.H.
Atmospheric Pressure:	(100,2 ± 0,0) kPa	(100,7 ± 0,0) kPa



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Report No.:
KES-EM-21T1200-R1
Page (33) of (108)

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 Mode

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

■ DC_Optical Mode

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

■ PoE Mode

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

■ PoE_Optical 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

Remarks

PASS Required Performance Criteria

3.3 Electrical Fast Transients/Bursts

Reference Standard

EN 61000-4-4:2012
BS EN 61000-4-4:2012

Test Date

Nov. 29, 2021

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	AMETEK CTS	7.1.2	-
☒	ULTRA COMPACT SIMULATOR	UCS 500 N5	EM TEST	V0936105120	04, 02, 2022
☒	MOTOR VARIAC	MV2616	EM TEST	V0936105123	04, 02, 2022
☒	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	070925	04, 02, 2022

Test Conditions

Temperature: (23,1 ± 0,2) °C
Relative Humidity: (43,3 ± 0,3) % R.H.
Atmospheric Pressure: (100,8 ± 0,0) 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 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	-	-
L – N	Complied	Complied
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
RS-485	Complied	Complied
RS-422	Complied	Complied
Alarm 1	Complied	Complied
Alarm 2	Complied	Complied

■ DC_Optical 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	-	-
L – N	Complied	Complied
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)
RS-485	Complied	Complied
RS-422	Complied	Complied
Alarm 1	Complied	Complied
Alarm 2	Complied	Complied

☒ PoE 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 (PoE)	Complied	Complied
RS-485	Complied	Complied
RS-422	Complied	Complied
Alarm 1	Complied	Complied
Alarm 2	Complied	Complied

■ PoE_Optical 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)
RS-485	Complied	Complied
RS-422	Complied	Complied
Alarm 1	Complied	Complied
Alarm 2	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-21T1200-R1

Page (40) of (108)

3.4 Surge Transients

Reference Standard

EN 61000-4-5:2014

BS EN 61000-4-5:2014

Test Date

Nov. 29, 2021

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	AMETEK CTS	7.1.2	-
☒	ULTRA COMPACT SIMULATOR	UCS 500 N5	EM TEST	V0936105120	04, 02, 2022
☒	MOTOR VARIAC	MV2616	EM TEST	V0936105123	04, 02, 2022

Test Conditions

Temperature: (23,1 ± 0,2) °C
Relative Humidity: (43,3 ± 0,3) % R.H.
Atmospheric Pressure: (100,8 ± 0,0) kPa

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Report No.:
KES-EM-21T1200-R1
Page (41) of (108)

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 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	-	-
N – PE	-	-

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

☒ DC_Optical 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	-	-
N – PE	-	-

Signal Lines
☐ Line to Earth – Common Mode

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

☒ PoE Mode

☐ Line to Line – Differential Mode

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

☐ Line to Earth – Common Mode

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

Signal Lines

☒ Line to Earth – Common Mode

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

☒ PoE_Optical 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)
-	CDN	-	-
	LINE	-	-



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Report No.:
KES-EM-21T1200-R1
Page (44) of (108)

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

BS EN 61000-4-6:2014

Test Date

Nov. 23, 2021 / Nov. 24, 2021

Test Location

EMS-CS: Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	icd.control	EM TEST	5.3.12	-
☒	CONTINUOUS WAVE SIMULATOR	CWS 500N1.4	EM TEST	P1602169880	11, 24, 2022
☒	ATTENUATOR	ATT 6/80	EM TEST	P1614178148	11, 24, 2022
☒	CDN	CDN M016	TESEQ	43694	11, 24, 2022
☒	CDN	CDN M016	TESEQ	43697	11, 24, 2022
☒	CDN	CDN ST08A	TESEQ	43886	11, 24, 2022
☒	EM CLAMP	KEMZ 801A	TESEQ	44099	11, 25, 2022

Test Conditions

Test Date:	Nov. 23, 2021	Nov. 24, 2021
Temperature:	(22,9 ± 0,2) °C	(23,2 ± 0,2) °C
Relative Humidity:	(43,8 ± 0,3)% R.H.	(43,7 ± 0,4)% R.H.
Atmospheric Pressure:	(100,4 ± 0,0) kPa	(100,5 ± 0,0) kPa



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Report No.:

KES-EM-21T1200-R1

Page (46) of (108)

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 Mode

☒ Input a.c. power ports

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

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45	CDN	Complied
RS-485	Clamp	Complied
RS-422	Clamp	Complied
Alarm 1	Clamp	Complied
Alarm 2	Clamp	Complied

■ DC_Optical Mode

☒ Input a.c. power ports

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

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RS-485	Clamp	Complied
RS-422	Clamp	Complied
Alarm 1	Clamp	Complied
Alarm 2	Clamp	Complied

☒ PoE 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(PoE)	CDN	Complied
RS-485	Clamp	Complied
RS-422	Clamp	Complied
Alarm 1	Clamp	Complied
Alarm 2	Clamp	Complied

☒ PoE_Optical 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
RS-485	Clamp	Complied
RS-422	Clamp	Complied
Alarm 1	Clamp	Complied
Alarm 2	Clamp	Complied



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Report No.:

KES-EM-21T1200-R1

Page (49) of (108)

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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KES-EM-21T1200-R1

Page (50) of (108)

3.6 Voltage Dips and Short Interruptions

Reference Standard

EN 61000-4-11:2004

BS EN 61000-4-11:2004

Test Date

Nov. 29, 2021

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	AMETEK CTS	7.1.2	-
☒	ULTRA COMPACT SIMULATOR	UCS 500 N5	EM TEST	V0936105120	04, 02, 2022
☒	MOTOR VARIAC	MV2616	EM TEST	V0936105123	04, 02, 2022

Test Conditions

Temperature: (23,1 ± 0,2) °C
Relative Humidity: (43,3 ± 0,2) % R.H.
Atmospheric Pressure: (100,8 ± 0,0) kPa

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Report No.:
KES-EM-21T1200-R1
Page (51) of (108)

Test Specifications & Observations/Remarks**■ DC 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>

■ DC_Optical 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>

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Report No.:
KES-EM-21T1200-R1
Page (52) of (108)

■ PoE_Optical 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

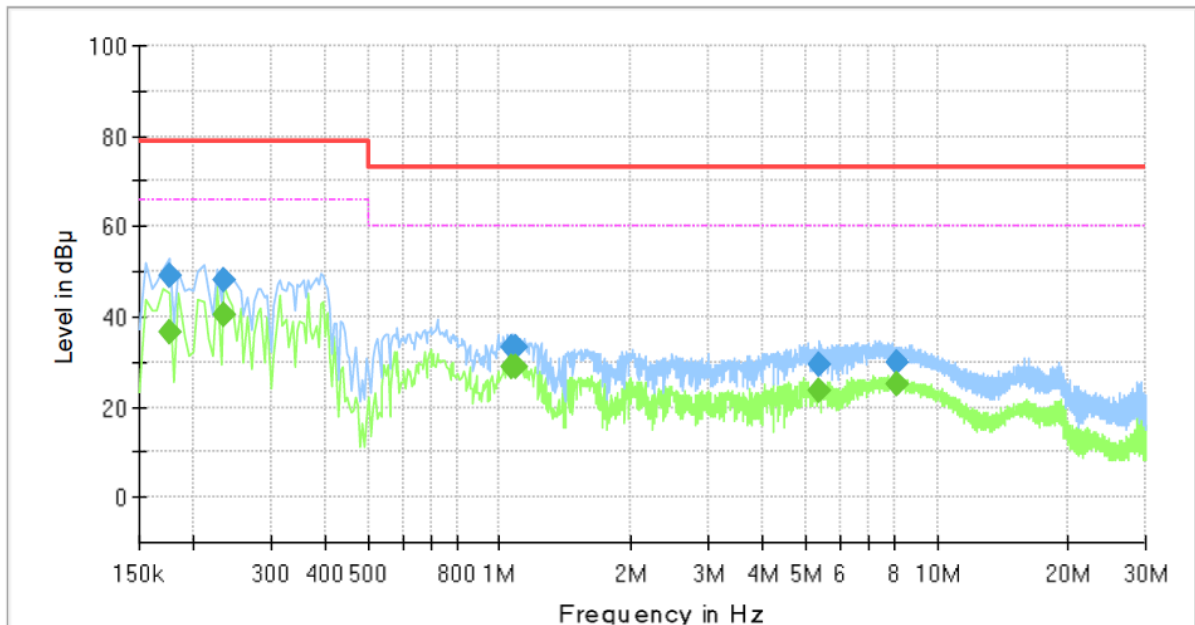
Conducted Emissions at Mains Power Ports

■ DC Mode

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	XNZ-6320A
Phase:	L1
Mode:	DC
Operator Name:	KES



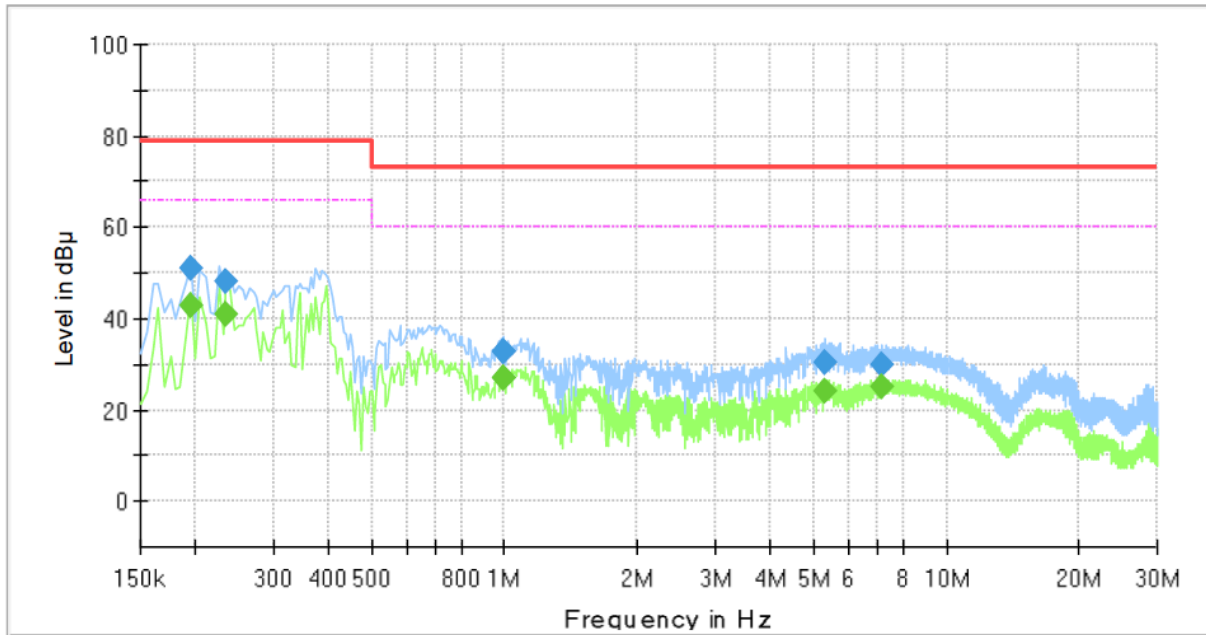
Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.175000	---	36.66	66.00	29.34	1000.0	9.000	L1	19.5
0.175000	49.02	---	79.00	29.98	1000.0	9.000	L1	19.5
0.235000	---	40.66	66.00	25.34	1000.0	9.000	L1	19.5
0.235000	48.11	---	79.00	30.89	1000.0	9.000	L1	19.5
1.070000	---	28.88	60.00	31.12	1000.0	9.000	L1	20.1
1.070000	33.19	---	73.00	39.81	1000.0	9.000	L1	20.1
1.095000	---	29.09	60.00	30.91	1000.0	9.000	L1	20.1
1.095000	33.10	---	73.00	39.90	1000.0	9.000	L1	20.1
5.395000	---	23.48	60.00	36.52	1000.0	9.000	L1	19.6
5.395000	29.61	---	73.00	43.39	1000.0	9.000	L1	19.6
8.095000	---	25.14	60.00	34.86	1000.0	9.000	L1	19.7
8.095000	29.90	---	73.00	43.10	1000.0	9.000	L1	19.7

[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Model No.:	XNZ-6320A
Phase:	N
Mode:	DC
Operator Name:	KES



Final Result

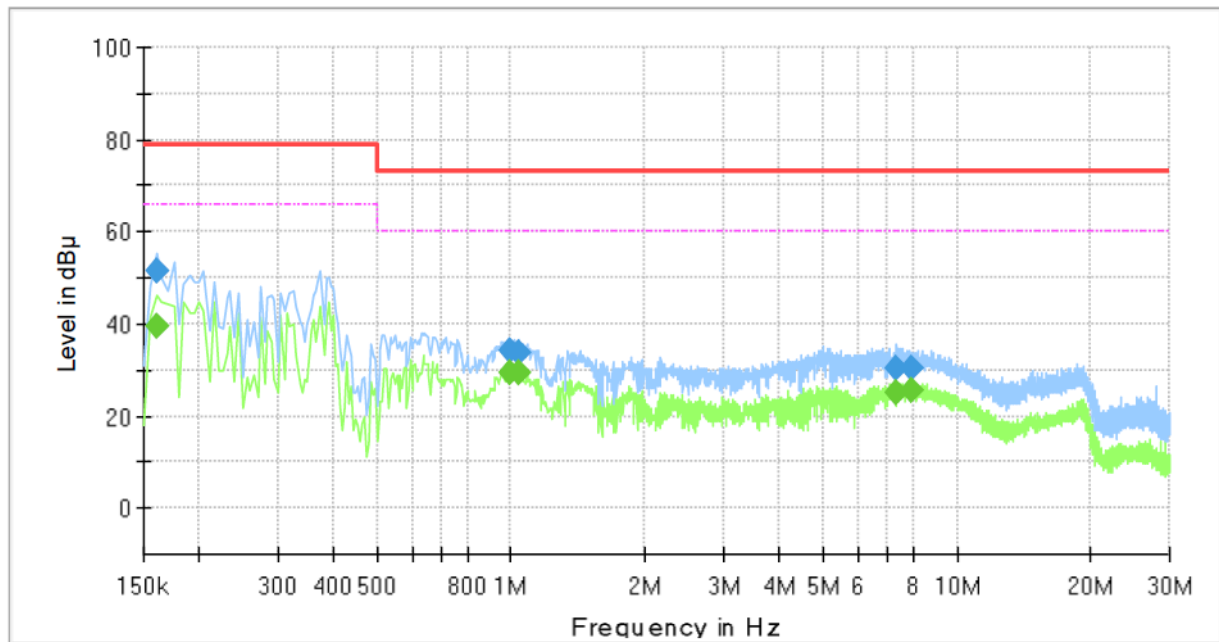
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.195000	---	42.60	66.00	23.40	1000.0	9.000	N	19.5
0.195000	50.82	---	79.00	28.18	1000.0	9.000	N	19.5
0.235000	---	40.93	66.00	25.07	1000.0	9.000	N	19.5
0.235000	48.25	---	79.00	30.75	1000.0	9.000	N	19.5
0.990000	---	27.11	60.00	32.89	1000.0	9.000	N	20.1
0.990000	32.66	---	73.00	40.34	1000.0	9.000	N	20.1
1.000000	---	27.09	60.00	32.91	1000.0	9.000	N	20.1
1.000000	32.52	---	73.00	40.48	1000.0	9.000	N	20.1
5.290000	---	23.88	60.00	36.12	1000.0	9.000	N	19.6
5.290000	30.34	---	73.00	42.66	1000.0	9.000	N	19.6
7.160000	---	24.96	60.00	35.04	1000.0	9.000	N	19.6
7.160000	30.04	---	73.00	42.96	1000.0	9.000	N	19.6

■ DC_Optical Mode

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	XNZ-6320A
Phase:	DC_Optical
Mode:	L1
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	---	39.47	66.00	26.53	1000.0	9.000	L1	19.5
0.160000	51.55	---	79.00	27.45	1000.0	9.000	L1	19.5
0.990000	---	29.40	60.00	30.60	1000.0	9.000	L1	20.1
0.990000	34.19	---	73.00	38.81	1000.0	9.000	L1	20.1
1.040000	---	29.55	60.00	30.45	1000.0	9.000	L1	20.1
1.040000	33.95	---	73.00	39.05	1000.0	9.000	L1	20.1
7.340000	---	25.22	60.00	34.78	1000.0	9.000	L1	19.6
7.340000	30.43	---	73.00	42.57	1000.0	9.000	L1	19.6
7.865000	---	25.32	60.00	34.68	1000.0	9.000	L1	19.6
7.865000	30.25	---	73.00	42.75	1000.0	9.000	L1	19.6

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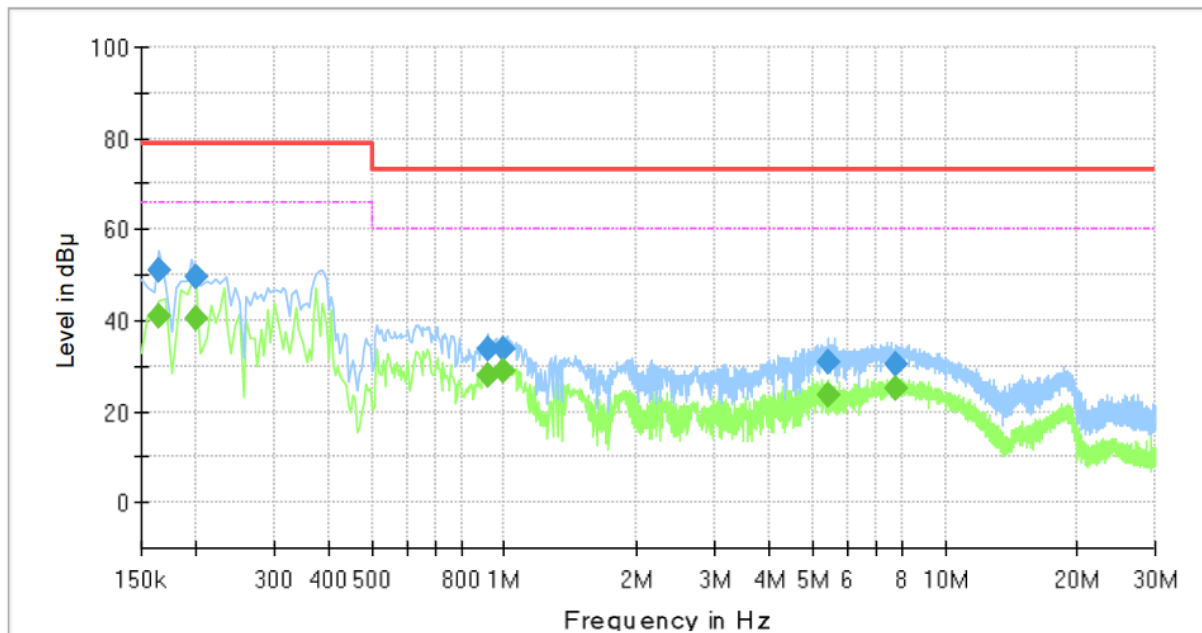
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[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Model No.:	XNZ-6320A
Phase:	DC_Optical
Mode:	N
Operator Name:	KES



Final Result

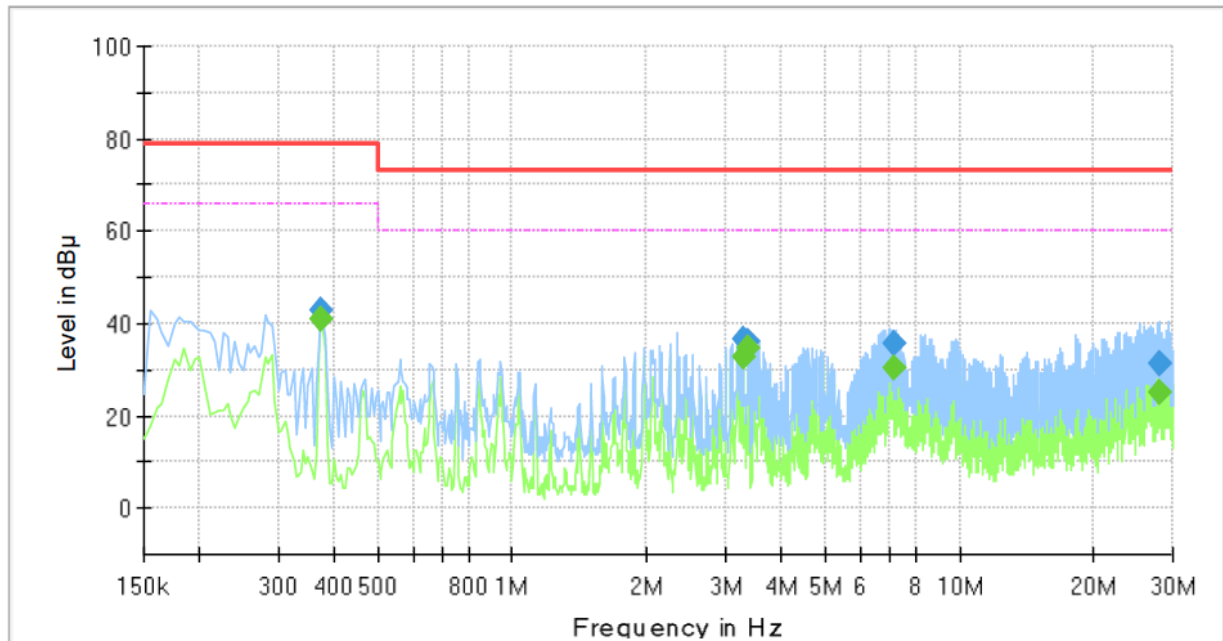
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165000	---	40.80	66.00	25.20	1000.0	9.000	N	19.4
0.165000	50.87	---	79.00	28.13	1000.0	9.000	N	19.4
0.200000	---	40.35	66.00	25.65	1000.0	9.000	N	19.5
0.200000	49.78	---	79.00	29.22	1000.0	9.000	N	19.5
0.915000	---	27.83	60.00	32.17	1000.0	9.000	N	20.1
0.915000	33.50	---	73.00	39.50	1000.0	9.000	N	20.1
1.000000	---	29.05	60.00	30.95	1000.0	9.000	N	20.1
1.000000	33.87	---	73.00	39.13	1000.0	9.000	N	20.1
5.440000	---	23.67	60.00	36.33	1000.0	9.000	N	19.6
5.440000	30.63	---	73.00	42.37	1000.0	9.000	N	19.6
7.770000	---	25.18	60.00	34.82	1000.0	9.000	N	19.6
7.770000	30.42	---	73.00	42.58	1000.0	9.000	N	19.6

PoE_Optical Mode

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	XNZ-6320A
Phase:	L1
Mode:	PoE_Optical
Operator Name:	KES



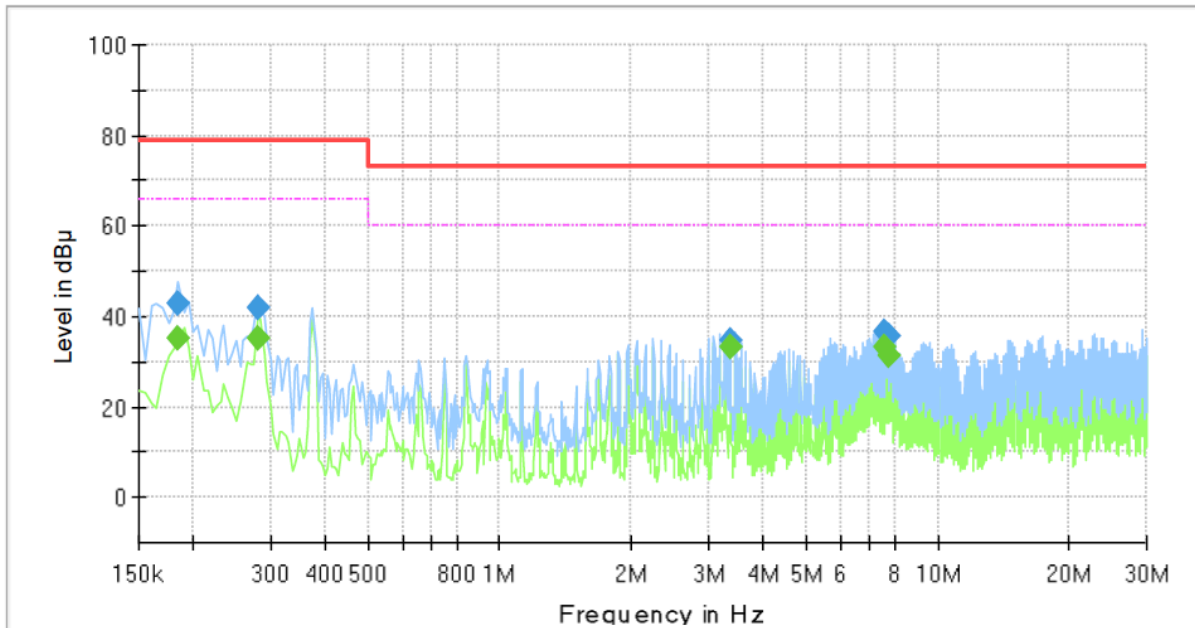
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.375000	---	40.98	66.00	25.02	1000.0	9.000	L1	19.6
0.375000	42.79	---	79.00	36.21	1000.0	9.000	L1	19.6
3.285000	---	32.86	60.00	27.14	1000.0	9.000	L1	20.1
3.285000	36.57	---	73.00	36.43	1000.0	9.000	L1	20.1
3.380000	---	34.81	60.00	25.19	1000.0	9.000	L1	20.1
3.380000	35.99	---	73.00	37.01	1000.0	9.000	L1	20.1
7.135000	---	30.36	60.00	29.64	1000.0	9.000	L1	19.6
7.135000	35.53	---	73.00	37.47	1000.0	9.000	L1	19.6
28.170000	---	25.25	60.00	34.75	1000.0	9.000	L1	20.3
28.170000	31.12	---	73.00	41.88	1000.0	9.000	L1	20.3

[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Model No.:	XNZ-6320A
Phase:	N
Mode:	PoE_Optical
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.185000	---	35.34	66.00	30.66	1000.0	9.000	N	19.4
0.185000	42.73	---	79.00	36.27	1000.0	9.000	N	19.4
0.280000	---	35.32	66.00	30.68	1000.0	9.000	N	19.5
0.280000	41.71	---	79.00	37.29	1000.0	9.000	N	19.5
3.370000	---	33.28	60.00	26.72	1000.0	9.000	N	20.1
3.370000	34.56	---	73.00	38.44	1000.0	9.000	N	20.1
7.575000	---	33.08	60.00	26.92	1000.0	9.000	N	19.6
7.575000	36.44	---	73.00	36.56	1000.0	9.000	N	19.6
7.765000	---	31.55	60.00	28.45	1000.0	9.000	N	19.6
7.765000	35.86	---	73.00	37.14	1000.0	9.000	N	19.6

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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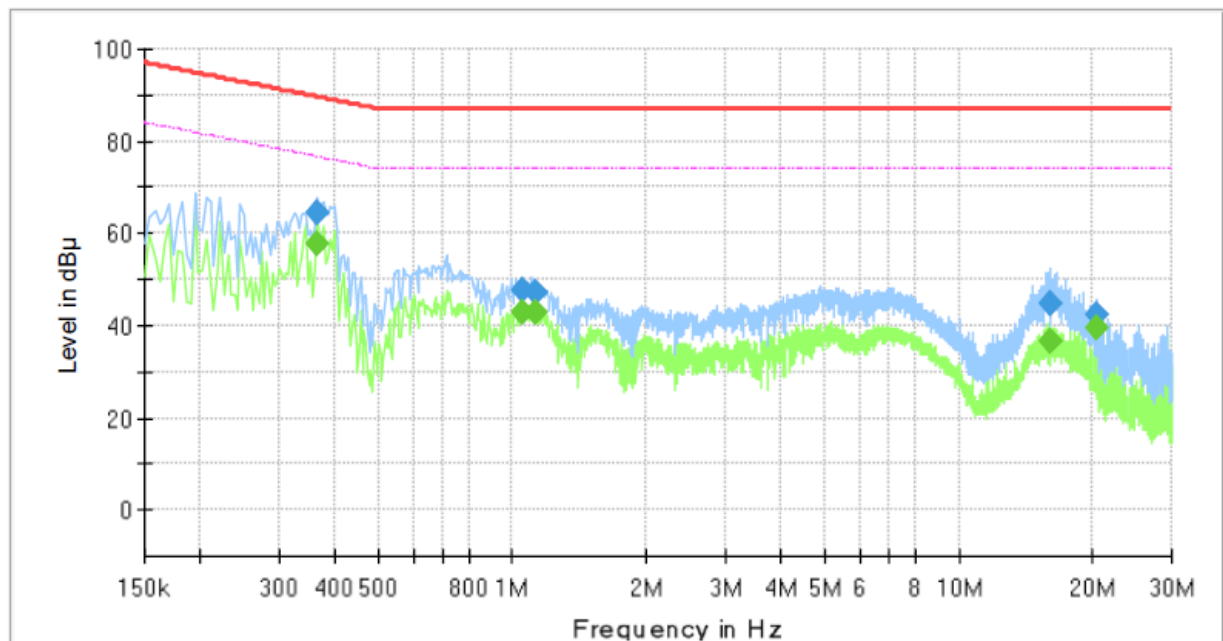
Conducted Emissions at Telecommunication Ports

■ DC Mode

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNZ-6320A
Mode :	DC
Speed :	100 Mbps
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.366000	---	57.69	76.59	18.90	1000.0	9.000	Single Line	19.6
0.366000	64.60	---	89.59	24.99	1000.0	9.000	Single Line	19.6
1.058000	---	42.63	74.00	31.37	1000.0	9.000	Single Line	20.0
1.058000	47.65	---	87.00	39.35	1000.0	9.000	Single Line	20.0
1.126000	---	42.76	74.00	31.24	1000.0	9.000	Single Line	20.0
1.126000	47.30	---	87.00	39.70	1000.0	9.000	Single Line	20.0
16.074000	---	36.41	74.00	37.59	1000.0	9.000	Single Line	19.9
16.074000	44.76	---	87.00	42.24	1000.0	9.000	Single Line	19.9
20.258000	---	39.35	74.00	34.65	1000.0	9.000	Single Line	20.2
20.258000	42.17	---	87.00	44.83	1000.0	9.000	Single Line	20.2

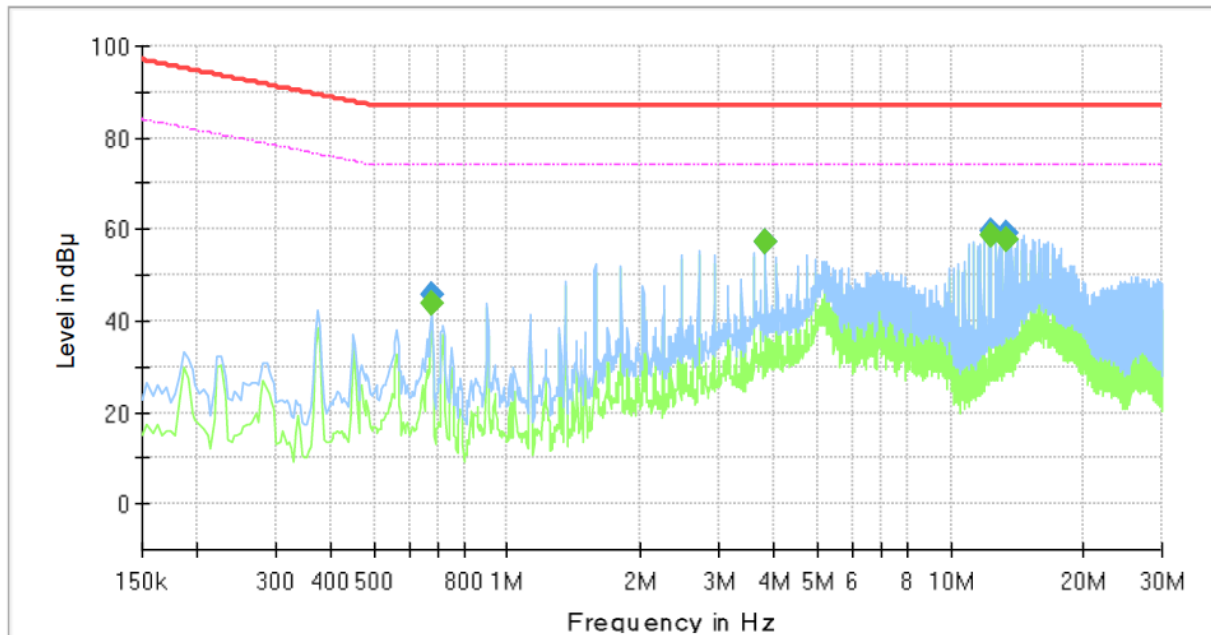
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PoE Mode
[100 Mbps]
Common Information

Test Description:	Telecommunication Emission
Model No.:	XNZ-6320A
Mode :	PoE
Speed :	100 Mbps
Operator Name:	KES


Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.678000	---	43.85	74.00	30.15	1000.0	9.000	Single Line	19.8
0.678000	45.49	---	87.00	41.51	1000.0	9.000	Single Line	19.8
3.830000	---	57.09	74.00	16.91	1000.0	9.000	Single Line	19.8
3.830000	57.29	---	87.00	29.71	1000.0	9.000	Single Line	19.8
12.390000	---	58.72	74.00	15.28	1000.0	9.000	Single Line	19.9
12.390000	59.83	---	87.00	27.17	1000.0	9.000	Single Line	19.9
13.290000	---	57.59	74.00	16.41	1000.0	9.000	Single Line	19.9
13.290000	59.00	---	87.00	28.00	1000.0	9.000	Single Line	19.9

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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



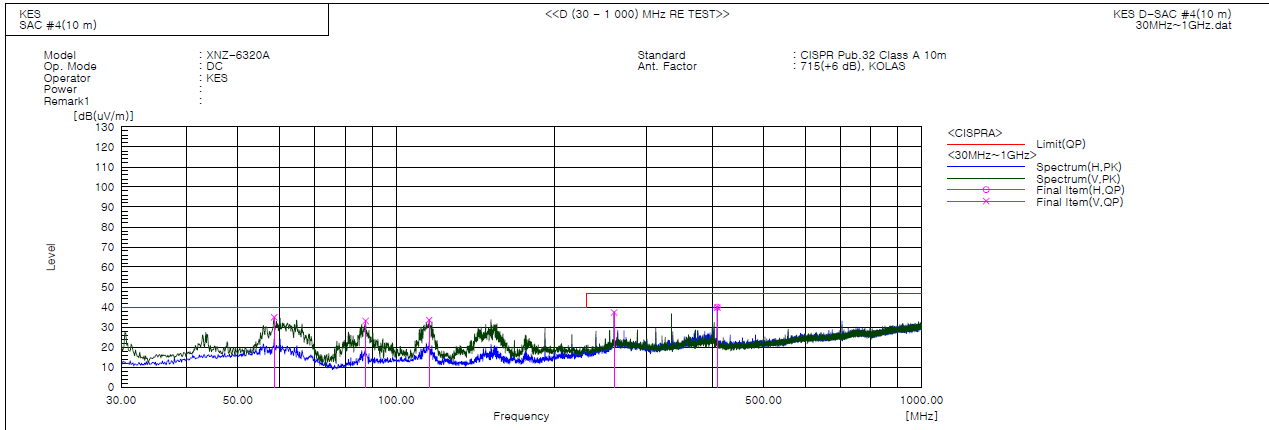
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Report No.:
KES-EM-21T1200-R1
Page (61) of (108)

Radiated Electric Field Emissions(Below 1 GHz)

■ DC Mode



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	58.615	V	56.7	-21.8	34.9	40.0	5.1	112.0	82.0	
2	87.473	V	58.2	-25.1	33.1	40.0	6.9	142.0	75.0	
3	115.603	V	56.7	-23.1	33.6	40.0	6.4	117.0	272.0	
4	259.890	V	56.2	-18.9	37.3	47.0	9.7	251.0	188.0	
5	408.421	H	54.1	-14.1	40.0	47.0	7.0	231.0	171.0	
6	408.433	V	53.9	-14.1	39.8	47.0	7.2	400.0	142.0	

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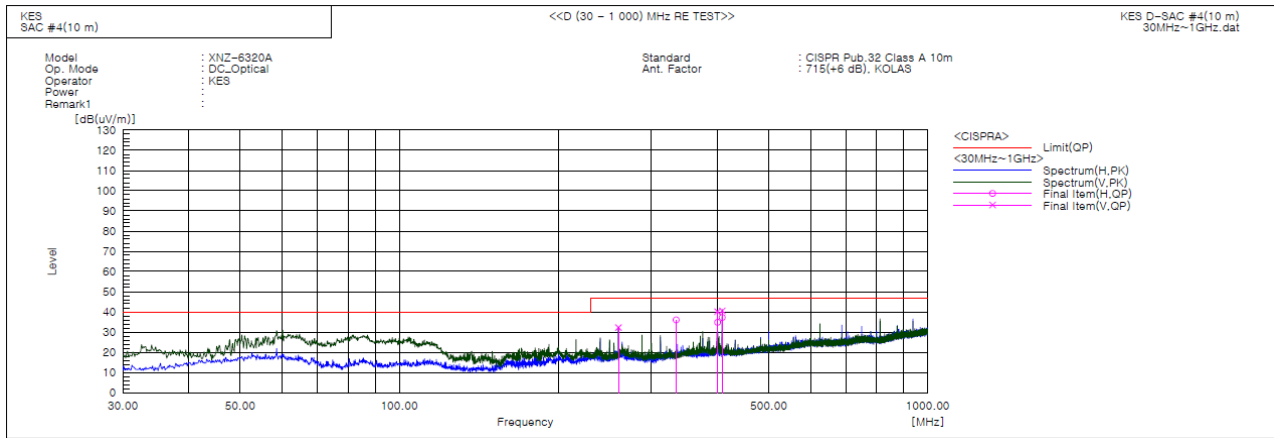


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Report No.:
KES-EM-21T1200-R1
Page (62) of (108)

DC_Optical 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	259.890	V	51.2	-18.9	32.3	47.0	14.7	146.0	190.0	
2	334.095	H	51.8	-15.8	36.0	47.0	11.0	246.0	97.0	
3	400.055	V	54.2	-14.0	40.2	47.0	6.8	105.0	167.0	
4	400.258	H	48.8	-14.0	34.8	47.0	12.2	356.0	195.0	
5	408.421	V	54.4	-13.9	40.5	47.0	6.5	100.0	197.0	
6	408.434	H	51.1	-13.9	37.2	47.0	9.8	179.0	127.0	

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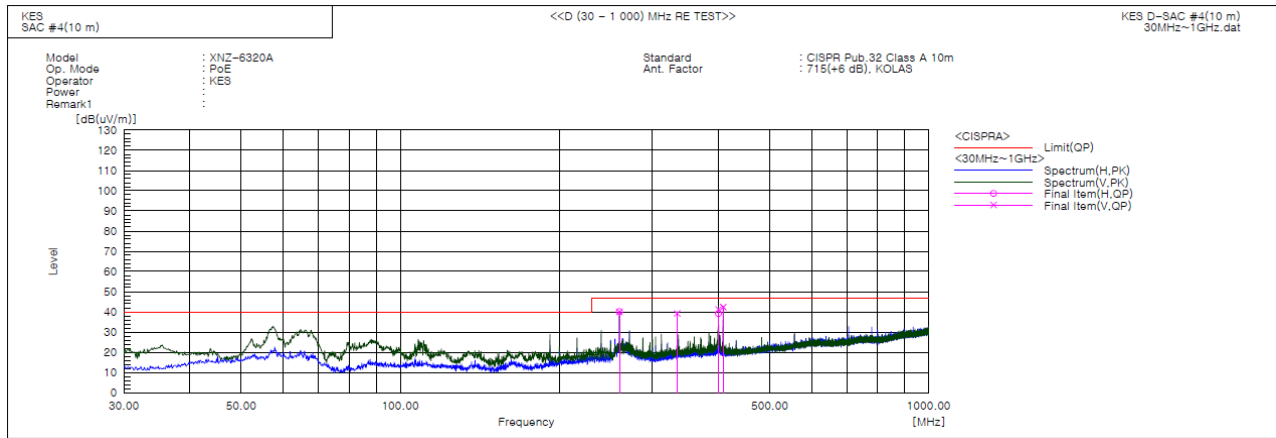


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Report No.:
KES-EM-21T1200-R1
Page (63) of (108)

PoE Mode



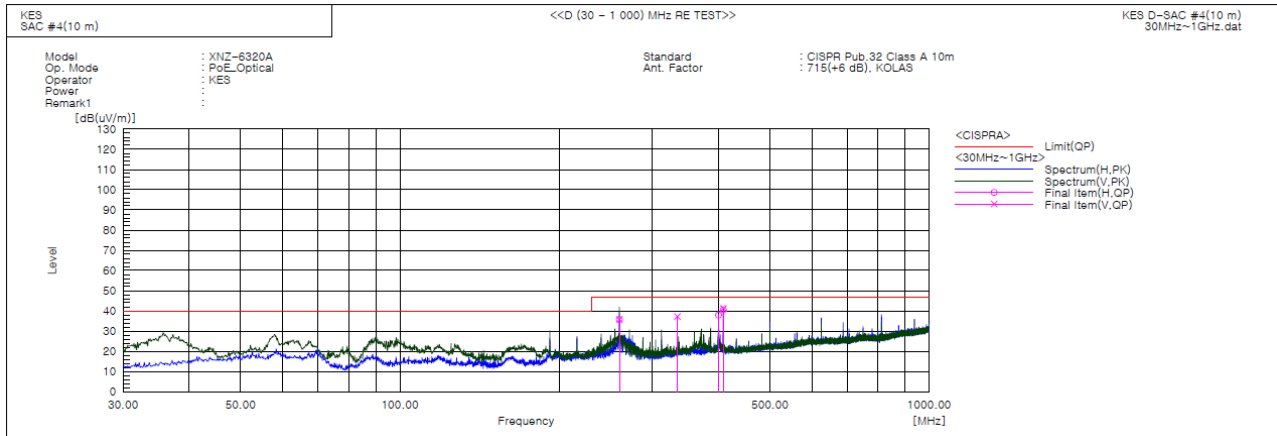
Final Result

No.	Frequency	(P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		QP		QP	QP	QP			
			[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[cm]	[deg]	
1	259.890	V	58.9	-18.9	40.0	47.0	7.0	109.0	324.0	
2	259.896	H	59.1	-18.9	40.2	47.0	6.8	199.0	39.0	
3	334.095	V	55.1	-15.8	39.3	47.0	7.7	112.0	340.0	
4	400.055	V	55.2	-14.0	41.2	47.0	5.8	100.0	166.0	
5	400.058	H	53.2	-14.0	39.2	47.0	7.8	221.0	257.0	
6	408.421	V	56.3	-13.9	42.4	47.0	4.6	116.0	158.0	

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■ PoE_Optical 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	259.890	V	54.8	-18.9	35.9	47.0	11.1	400.0	261.0	
2	259.899	H	54.7	-18.9	35.8	47.0	11.2	231.0	19.0	
3	334.095	V	53.0	-15.8	37.2	47.0	9.8	109.0	347.0	
4	400.055	H	52.0	-14.0	38.0	47.0	9.0	221.0	263.0	
5	408.421	H	54.4	-13.9	40.5	47.0	6.5	190.0	120.0	
6	408.425	V	55.2	-13.9	41.3	47.0	5.7	100.0	151.0	

◆ 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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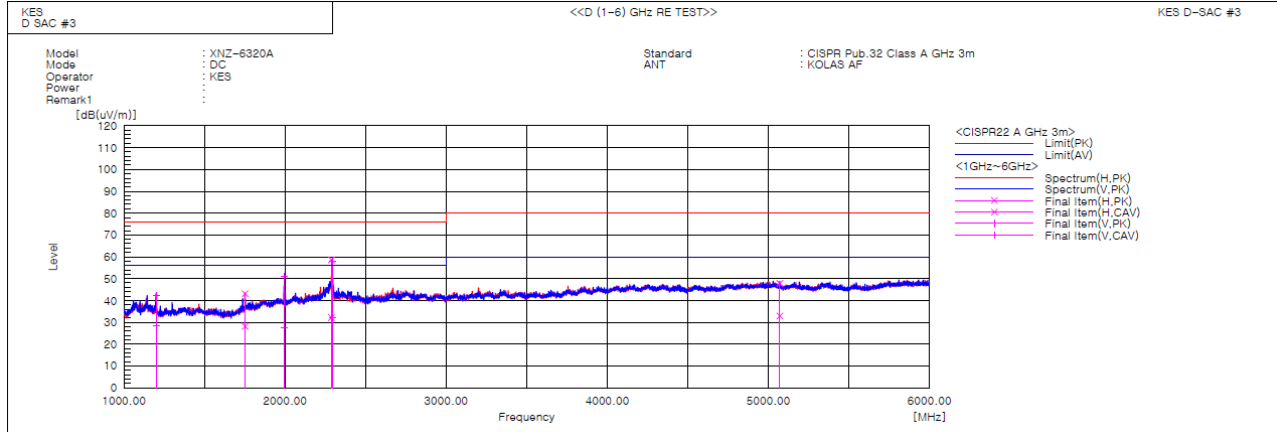
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Page (65) of (108)

Radiated Electric Field Emissions(Above 1 GHz)

■ DC Mode



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1200.451	V	50.9	37.1	-8.5	42.4	28.6	76.0	56.0	33.6	27.4	100.0	6.2	
2	1751.220	H	46.8	31.9	-3.7	43.1	28.2	76.0	56.0	32.9	27.8	100.0	353.7	
3	1993.510	V	52.0	28.5	-1.1	50.9	27.4	76.0	56.0	25.1	28.6	100.0	165.6	
4	2287.000	H	58.8	32.4	-0.2	58.6	32.2	76.0	56.0	17.4	23.8	100.0	72.4	
5	2296.241	V	58.2	32.1	-0.1	58.1	32.0	76.0	56.0	17.9	24.0	100.0	57.7	
6	5070.000	H	39.2	24.2	8.7	47.9	32.9	80.0	60.0	32.1	27.1	100.0	39.0	

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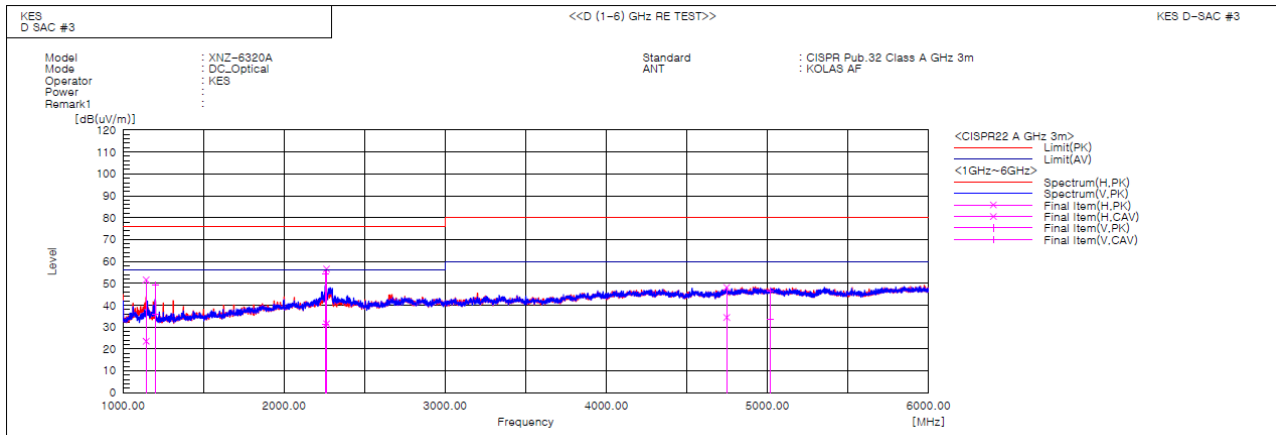


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Report No.:
KES-EM-21T1200-R1
Page (66) of (108)

DC_Optical Mode



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	1144.241	H	60.5	32.4	-8.9	51.6	23.5	76.0	56.0	24.4	32.5	100.0	347.1	
2	1199.000	V	57.7	44.5	-8.5	49.2	36.0	76.0	56.0	26.8	20.0	100.0	349.7	
3	2255.050	V	54.4	31.5	-0.3	54.1	31.2	76.0	56.0	21.9	24.8	100.0	326.4	
4	2263.200	H	56.8	31.8	-0.3	56.5	31.5	76.0	56.0	19.5	24.5	100.0	53.3	
5	4747.500	H	40.4	26.7	7.7	48.1	34.4	80.0	60.0	31.9	25.6	100.0	63.7	
6	5019.000	V	37.8	24.8	8.8	46.6	33.6	80.0	60.0	33.4	26.4	100.0	330.1	

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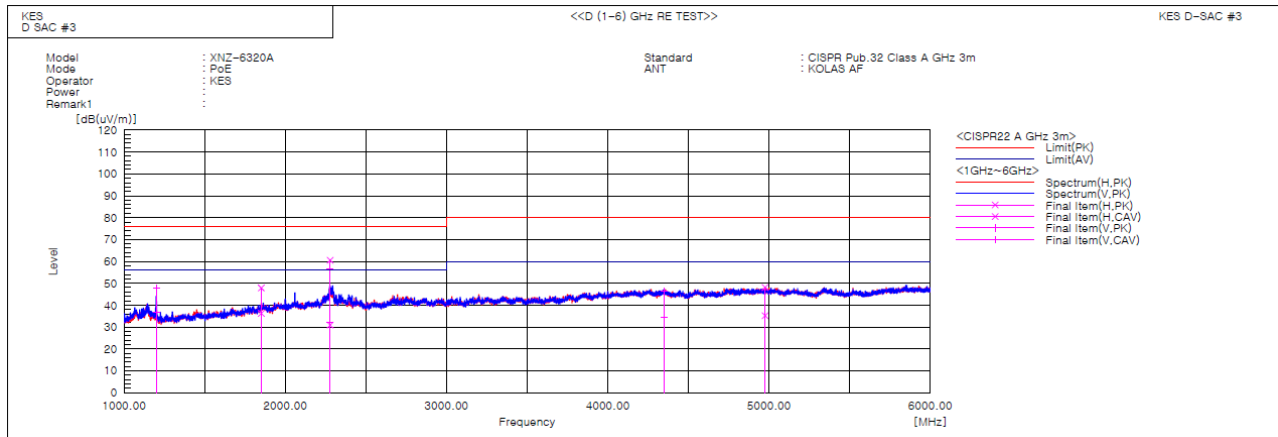
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KES-EM-21T1200-R1

Page (67) of (108)

■ PoE Mode



No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1199.240	V	56.1	45.2	-8.5	47.6	36.7	76.0	56.0	28.4	19.3	100.0	25.9	
2	1851.050	H	50.3	38.6	-2.4	47.9	36.2	76.0	56.0	28.1	19.8	100.0	265.6	
3	2277.000	V	56.7	32.4	-0.2	56.5	32.2	76.0	56.0	19.5	23.8	100.0	329.9	
4	2278.031	H	60.7	31.1	-0.2	60.5	30.9	76.0	56.0	15.5	25.1	100.0	53.5	
5	4351.000	V	39.6	27.2	7.0	46.6	34.2	80.0	60.0	33.4	25.8	100.0	115.4	
6	4975.025	H	39.3	26.4	8.8	48.1	35.2	80.0	60.0	31.9	24.8	100.0	319.5	

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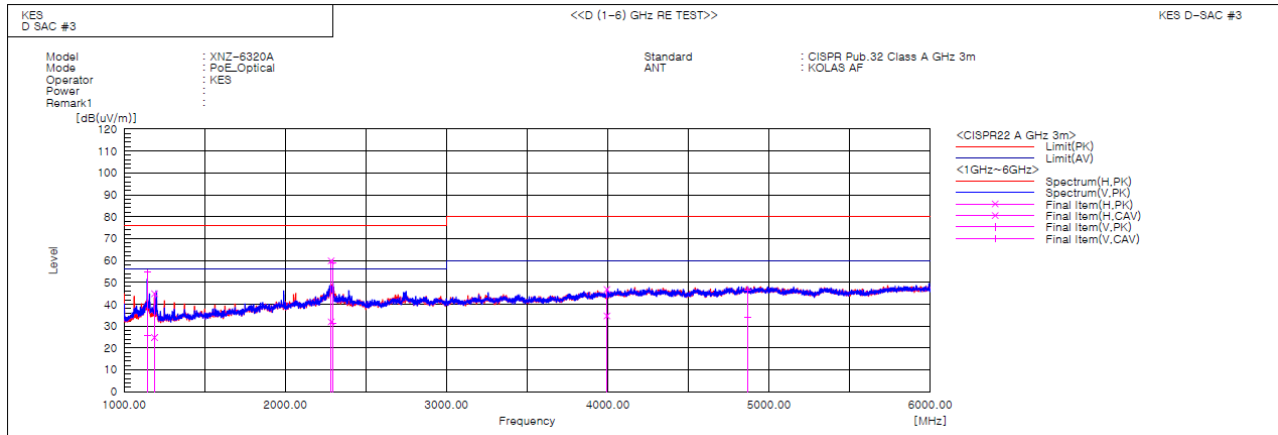


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Page (68) of (108)

PoE_Optical 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	1143.005	V	63.7	34.9	-9.0	54.7	25.9	76.0	56.0	21.3	30.1	100.0	5.8	
2	1188.052	H	53.4	33.4	-8.6	44.8	24.8	76.0	56.0	31.2	31.2	100.0	354.1	
3	2284.056	H	60.0	32.1	-0.2	59.8	31.9	76.0	56.0	16.2	24.1	100.0	63.1	
4	2297.000	V	59.2	31.2	-0.1	59.1	31.1	76.0	56.0	16.9	24.9	100.0	300.8	
5	3994.214	H	40.9	28.7	5.9	46.8	34.6	80.0	60.0	33.2	25.4	100.0	354.9	
6	4869.000	V	38.0	25.6	8.4	46.4	34.0	80.0	60.0	33.6	26.0	100.0	357.8	

◆ 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 Mode

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.026			
2	0.001	0.120	1.080	n/a
3	0.016	0.698	2.300	PASS
4	0.002	0.419	0.430	n/a
5	0.017	1.452	1.140	PASS
6	0.001	0.466	0.300	n/a
7	0.017	2.247	0.770	PASS
8	0.001	0.596	0.230	n/a
9	0.016	4.046	0.400	PASS
10	0.001	0.768	0.184	n/a
11	0.015	4.678	0.330	PASS
12	0.001	0.899	0.153	n/a
13	0.015	7.179	0.210	PASS
14	0.001	1.067	0.131	n/a
15	0.014	9.655	0.150	PASS
16	0.001	1.132	0.115	n/a
17	0.014	10.567	0.132	PASS
18	0.001	1.253	0.102	n/a
19	0.013	11.231	0.118	PASS
20	0.001	1.397	0.092	n/a
21	0.012	7.740	0.161	PASS
22	0.001	1.409	0.084	n/a
23	0.012	8.025	0.147	PASS
24	0.001	1.578	0.077	n/a
25	0.011	8.201	0.135	PASS
26	0.001	1.612	0.071	n/a
27	0.010	8.251	0.125	PASS
28	0.001	1.699	0.066	n/a
29	0.009	8.075	0.116	PASS
30	0.001	1.709	0.061	n/a
31	0.009	7.895	0.109	PASS
32	0.001	1.705	0.058	n/a
33	0.008	7.746	0.102	PASS
34	0.001	1.888	0.054	n/a
35	0.007	7.195	0.096	PASS
36	0.001	1.817	0.051	n/a
37	0.006	6.799	0.091	PASS
38	0.001	1.856	0.048	n/a
39	0.006	6.395	0.087	PASS
40	0.001	1.941	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	0.027			
2	0.002	0.096	1.620	n/a
3	0.018	0.511	3.450	PASS
4	0.002	0.362	0.645	n/a
5	0.018	1.041	1.710	PASS
6	0.002	0.362	0.450	n/a
7	0.018	1.595	1.155	PASS
8	0.002	0.488	0.345	n/a
9	0.017	2.882	0.600	PASS
10	0.002	0.558	0.276	n/a
11	0.017	3.355	0.495	PASS
12	0.002	0.654	0.230	n/a
13	0.016	5.082	0.315	PASS
14	0.002	0.785	0.197	n/a
15	0.015	6.819	0.225	PASS
16	0.001	0.840	0.173	n/a
17	0.015	7.437	0.199	PASS
18	0.001	0.902	0.153	n/a
19	0.014	7.905	0.178	PASS
20	0.001	1.016	0.138	n/a
21	0.013	8.141	0.161	PASS
22	0.001	1.013	0.125	n/a
23	0.012	8.416	0.147	PASS
24	0.001	1.142	0.115	n/a
25	0.012	8.572	0.135	PASS
26	0.001	1.154	0.106	n/a
27	0.011	8.637	0.125	PASS
28	0.001	1.260	0.099	n/a
29	0.010	8.423	0.116	PASS
30	0.001	1.245	0.092	n/a
31	0.009	8.168	0.109	PASS
32	0.001	1.271	0.086	n/a
33	0.008	8.038	0.102	PASS
34	0.001	1.396	0.081	n/a
35	0.007	7.402	0.096	PASS
36	0.001	1.329	0.077	n/a
37	0.006	7.087	0.091	PASS
38	0.001	1.373	0.073	n/a
39	0.006	6.615	0.087	PASS
40	0.001	1.406	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.



■ DC_Optical Mode

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.028			
2	0.001	0.132	1.080	n/a
3	0.019	0.832	2.300	PASS
4	0.002	0.473	0.430	n/a
5	0.019	1.693	1.140	PASS
6	0.002	0.500	0.300	n/a
7	0.020	2.544	0.770	PASS
8	0.002	0.653	0.230	n/a
9	0.019	4.661	0.400	PASS
10	0.001	0.800	0.184	n/a
11	0.018	5.423	0.330	PASS
12	0.001	0.909	0.153	n/a
13	0.017	8.217	0.210	PASS
14	0.001	1.090	0.131	n/a
15	0.016	10.964	0.150	PASS
16	0.001	1.148	0.115	n/a
17	0.016	11.916	0.132	PASS
18	0.001	1.244	0.102	n/a
19	0.015	12.598	0.118	PASS
20	0.001	1.374	0.092	n/a
21	0.014	8.641	0.161	PASS
22	0.001	1.393	0.084	n/a
23	0.013	8.849	0.147	PASS
24	0.001	1.545	0.077	n/a
25	0.012	8.923	0.135	PASS
26	0.001	1.563	0.071	n/a
27	0.011	8.903	0.125	PASS
28	0.001	1.686	0.066	n/a
29	0.010	8.611	0.116	PASS
30	0.001	1.676	0.061	n/a
31	0.009	8.311	0.109	PASS
32	0.001	1.694	0.058	n/a
33	0.008	8.036	0.102	PASS
34	0.001	1.912	0.054	n/a
35	0.007	7.349	0.096	PASS
36	0.001	1.795	0.051	n/a
37	0.006	6.850	0.091	PASS
38	0.001	1.887	0.048	n/a
39	0.005	6.269	0.087	PASS
40	0.001	1.965	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	0.028			
2	0.002	0.111	1.620	n/a
3	0.021	0.596	3.450	PASS
4	0.003	0.411	0.645	n/a
5	0.019	1.137	1.710	PASS
6	0.003	0.572	0.450	n/a
7	0.020	1.740	1.155	PASS
8	0.002	0.612	0.345	n/a
9	0.019	3.138	0.600	PASS
10	0.002	0.616	0.276	n/a
11	0.018	3.686	0.495	PASS
12	0.002	0.670	0.230	n/a
13	0.018	5.584	0.315	PASS
14	0.002	0.791	0.197	n/a
15	0.017	7.496	0.225	PASS
16	0.001	0.836	0.173	n/a
17	0.016	8.053	0.199	PASS
18	0.001	0.959	0.153	n/a
19	0.015	8.466	0.178	PASS
20	0.001	1.040	0.138	n/a
21	0.014	8.761	0.161	PASS
22	0.001	1.154	0.125	n/a
23	0.013	8.989	0.147	PASS
24	0.001	1.198	0.115	n/a
25	0.012	8.993	0.135	PASS
26	0.001	1.172	0.106	n/a
27	0.011	8.980	0.125	PASS
28	0.001	1.321	0.099	n/a
29	0.010	8.691	0.116	PASS
30	0.001	1.255	0.092	n/a
31	0.009	8.393	0.109	PASS
32	0.001	1.344	0.086	n/a
33	0.008	8.156	0.102	PASS
34	0.001	1.475	0.081	n/a
35	0.007	7.460	0.096	PASS
36	0.001	1.420	0.077	n/a
37	0.006	6.935	0.091	PASS
38	0.001	1.521	0.073	n/a
39	0.006	6.411	0.087	PASS
40	0.001	1.696	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.



■ PoE_Optical Mode

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.048			
2	0.002	0.170	1.080	n/a
3	0.033	1.449	2.300	PASS
4	0.003	0.739	0.430	n/a
5	0.033	2.859	1.140	PASS
6	0.002	0.735	0.300	n/a
7	0.032	4.147	0.770	PASS
8	0.002	1.030	0.230	n/a
9	0.030	7.591	0.400	PASS
10	0.003	1.810	0.184	n/a
11	0.029	8.841	0.330	PASS
12	0.003	1.665	0.153	n/a
13	0.028	13.431	0.210	PASS
14	0.002	1.458	0.131	n/a
15	0.027	17.830	0.150	PASS
16	0.002	1.673	0.115	n/a
17	0.025	18.818	0.132	PASS
18	0.002	2.068	0.102	n/a
19	0.023	19.148	0.118	PASS
20	0.002	2.018	0.092	n/a
21	0.020	12.755	0.161	PASS
22	0.001	1.790	0.084	n/a
23	0.019	12.757	0.147	PASS
24	0.001	1.888	0.077	n/a
25	0.017	12.385	0.135	PASS
26	0.001	1.592	0.071	n/a
27	0.015	11.687	0.125	PASS
28	0.001	1.260	0.066	n/a
29	0.013	10.935	0.116	PASS
30	0.001	1.377	0.061	n/a
31	0.011	9.962	0.109	PASS
32	0.001	1.255	0.058	n/a
33	0.009	8.741	0.102	PASS
34	0.001	1.390	0.054	n/a
35	0.007	7.356	0.096	PASS
36	0.001	1.318	0.051	n/a
37	0.005	6.025	0.091	PASS
38	0.001	1.430	0.048	n/a
39	0.004	4.828	0.087	n/a
40	0.001	1.769	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	0.049			
2	0.002	0.133	1.620	n/a
3	0.035	1.002	3.450	PASS
4	0.004	0.567	0.645	n/a
5	0.034	1.980	1.710	PASS
6	0.002	0.547	0.450	n/a
7	0.033	2.869	1.155	PASS
8	0.003	0.741	0.345	n/a
9	0.032	5.304	0.600	PASS
10	0.004	1.354	0.276	n/a
11	0.031	6.205	0.495	PASS
12	0.003	1.190	0.230	n/a
13	0.029	9.261	0.315	PASS
14	0.002	1.052	0.197	n/a
15	0.028	12.300	0.225	PASS
16	0.002	1.200	0.173	n/a
17	0.026	12.938	0.199	PASS
18	0.002	1.502	0.153	n/a
19	0.023	13.192	0.178	PASS
20	0.002	1.439	0.138	n/a
21	0.021	13.109	0.161	PASS
22	0.002	1.291	0.125	n/a
23	0.019	13.132	0.147	PASS
24	0.002	1.366	0.115	n/a
25	0.017	12.700	0.135	PASS
26	0.001	1.179	0.106	n/a
27	0.015	11.945	0.125	PASS
28	0.001	0.938	0.099	n/a
29	0.013	11.093	0.116	PASS
30	0.001	1.020	0.092	n/a
31	0.011	10.068	0.109	PASS
32	0.001	0.917	0.086	n/a
33	0.009	8.826	0.102	PASS
34	0.001	1.144	0.081	n/a
35	0.007	7.524	0.096	PASS
36	0.001	1.042	0.077	n/a
37	0.006	6.141	0.091	PASS
38	0.001	1.075	0.073	n/a
39	0.004	4.977	0.087	n/a
40	0.001	1.306	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.



Test Data - Voltage Fluctuations

Maximum Flicker results

■ DC 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

■ DC_Optical 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

■ PoE_Optical 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

Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

■ DC Mode



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■ DC_Optical Mode

■ PoE_Optical Mode

Conducted Emissions at Telecommunication Ports

■ DC Mode



■ PoE Mode



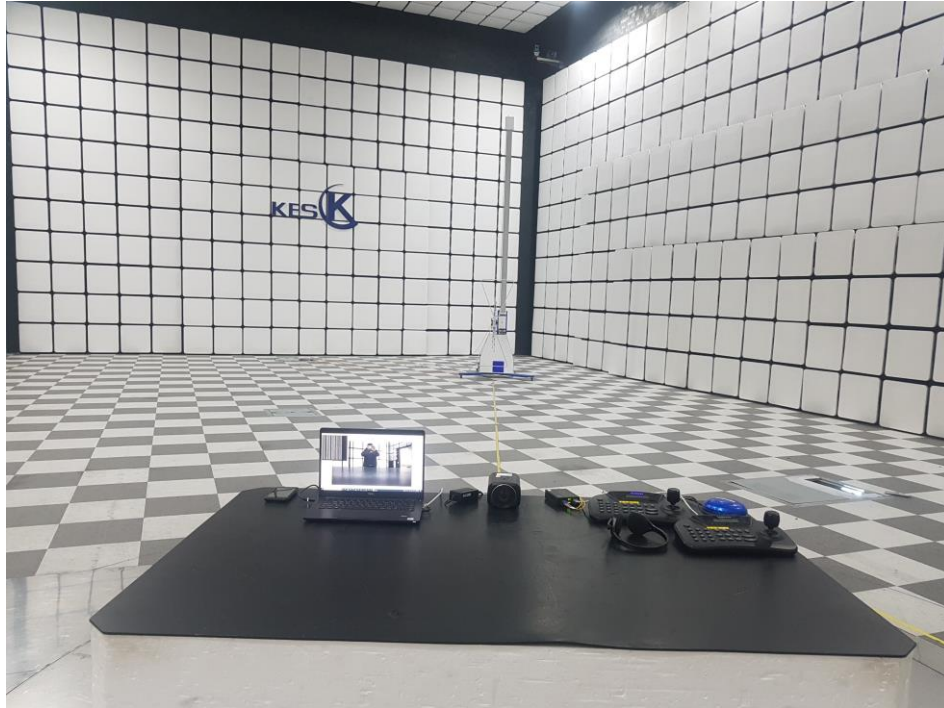
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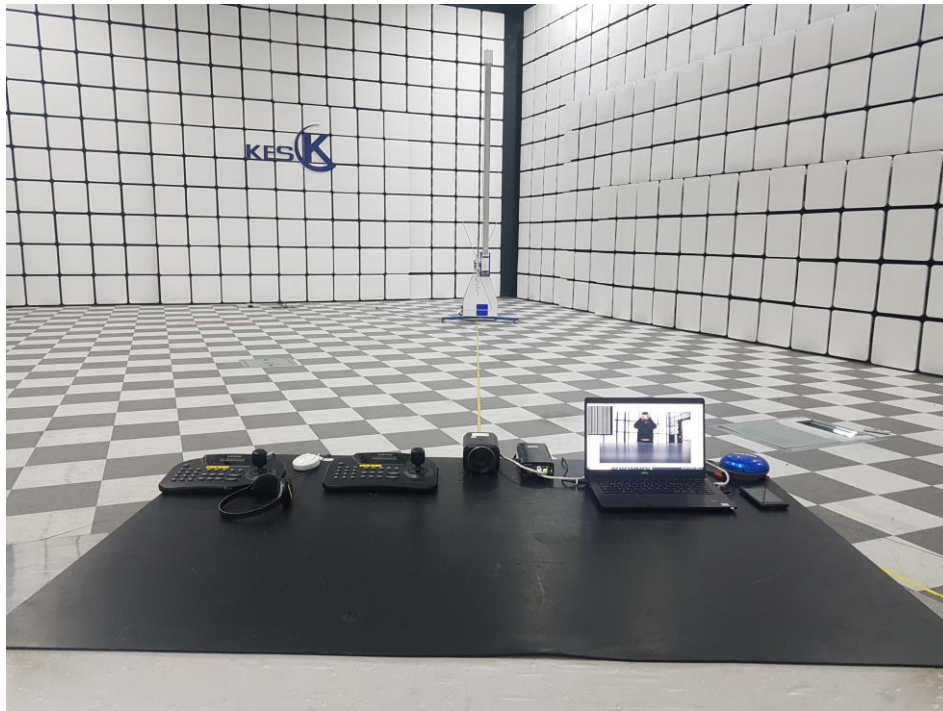
Radiated Electric Field Emissions(Below 1 GHz)

■ DC Mode



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■ DC_Optical Mode

■ PoE Mode

■ PoE_Optical Mode

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Radiated Electric Field Emissions(Above 1 GHz)

■ DC Mode



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■ DC_Optical Mode

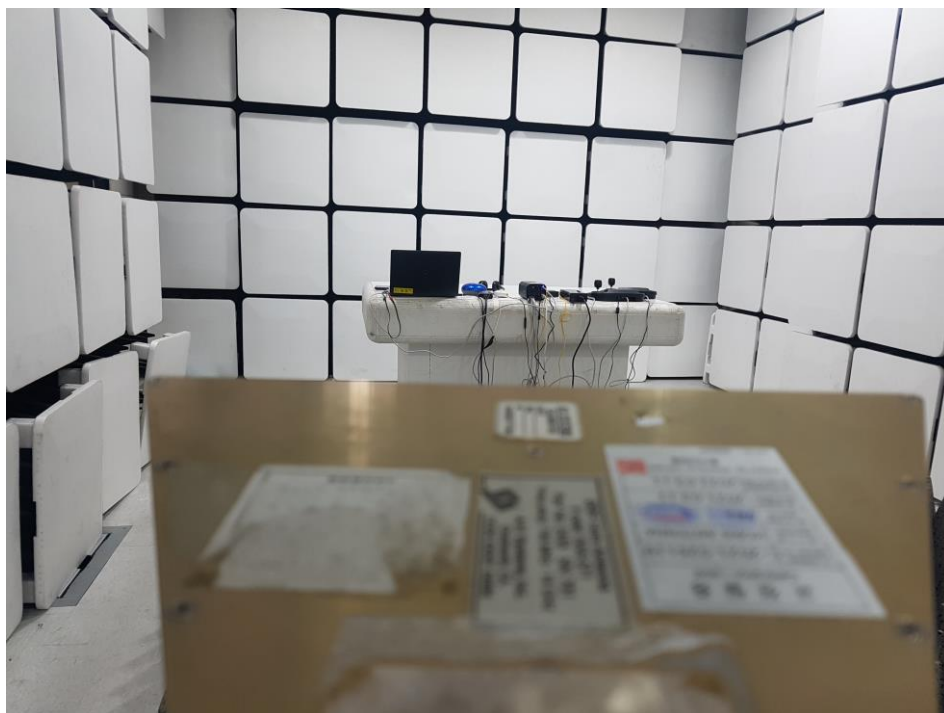


■ PoE Mode



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■ PoE_Optical Mode



Harmonic Current Emissions and Voltage Fluctuations and Flicker

■ DC Mode



■ DC_Optical Mode



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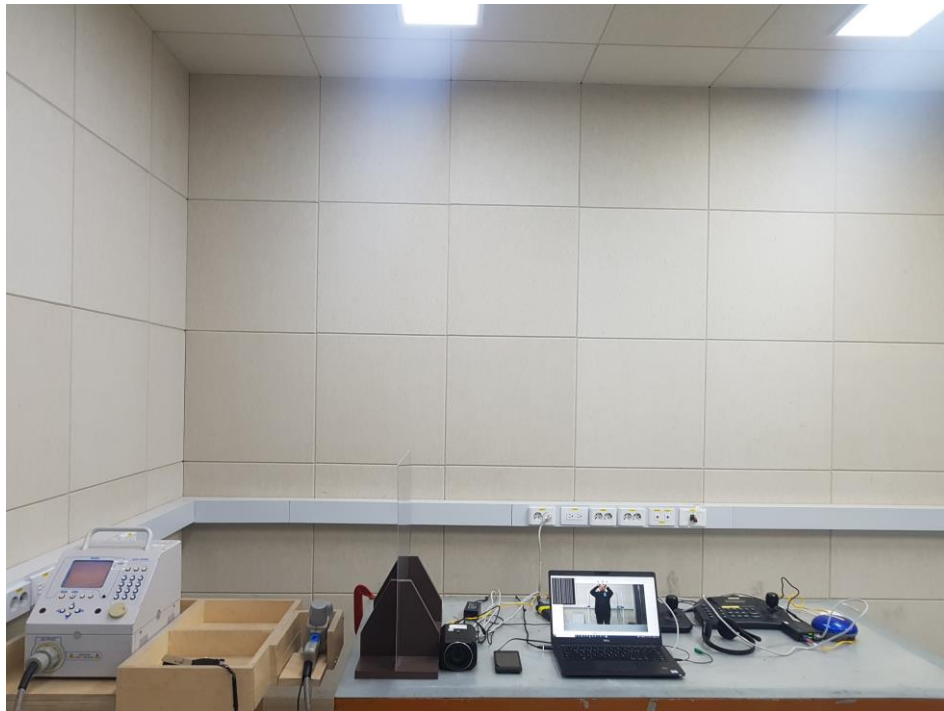
■ PoE_Optical Mode

Electrostatic Discharge

■ DC Mode



■ DC_Optical Mode



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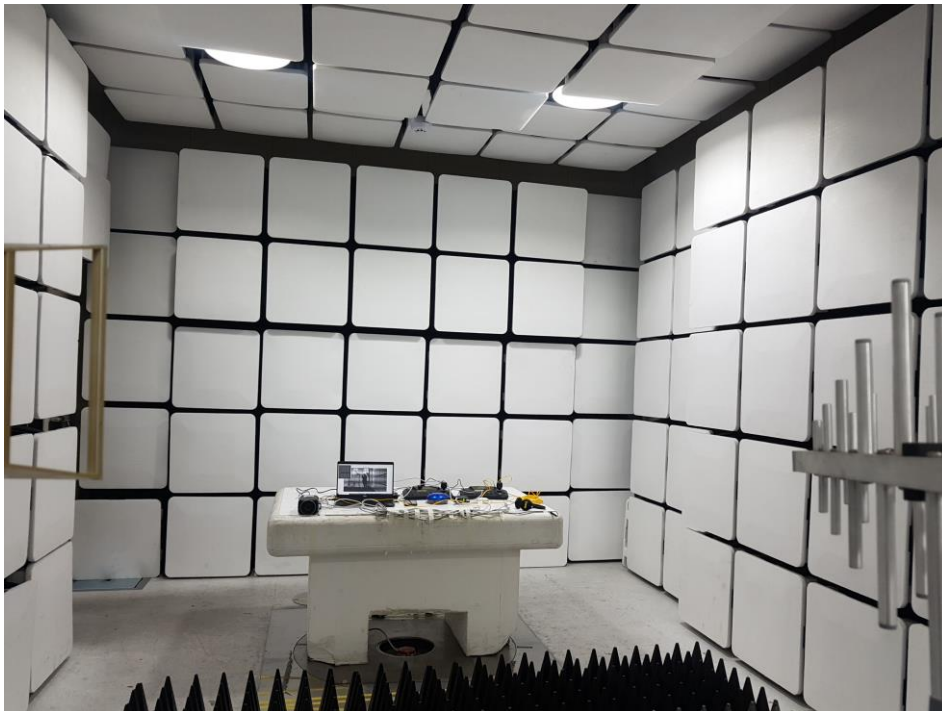
■ PoE Mode**■ PoE_Optical Mode**

Radiated Electric Field Immunity

■ DC Mode



■ DC_Optical Mode



■ PoE Mode



■ PoE_Optical Mode



Electrical Fast Transients/Bursts

■ DC Mode



■ DC_Optical Mode



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■ PoE Mode**■ PoE_Optical Mode**

Surge Transients

■ DC Mode



■ DC_Optical Mode



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■ PoE Mode**■ PoE_Optical Mode**

Conducted Disturbance

■ DC Mode



■ DC_Optical Mode



■ PoE Mode**■ PoE_Optical Mode**

Voltage Dips and Short Interruptions

■ DC Mode



■ DC_Optical Mode



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■ PoE_Optical Mode

EUT External Photographs

(Top)



(Bottom)



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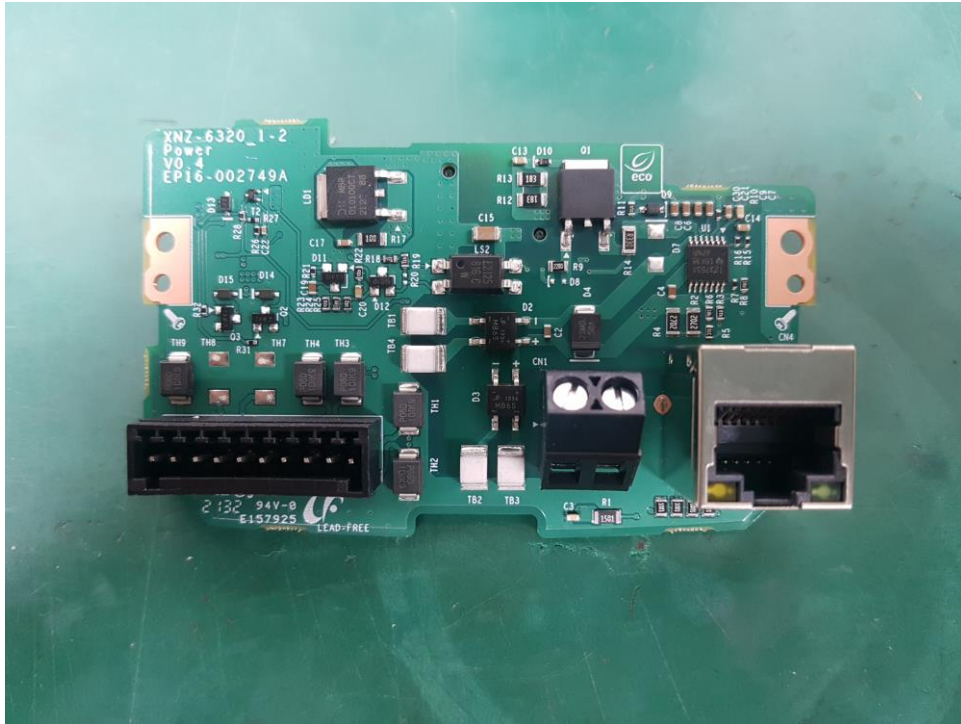
EUT Internal Photographs

(Internal View)

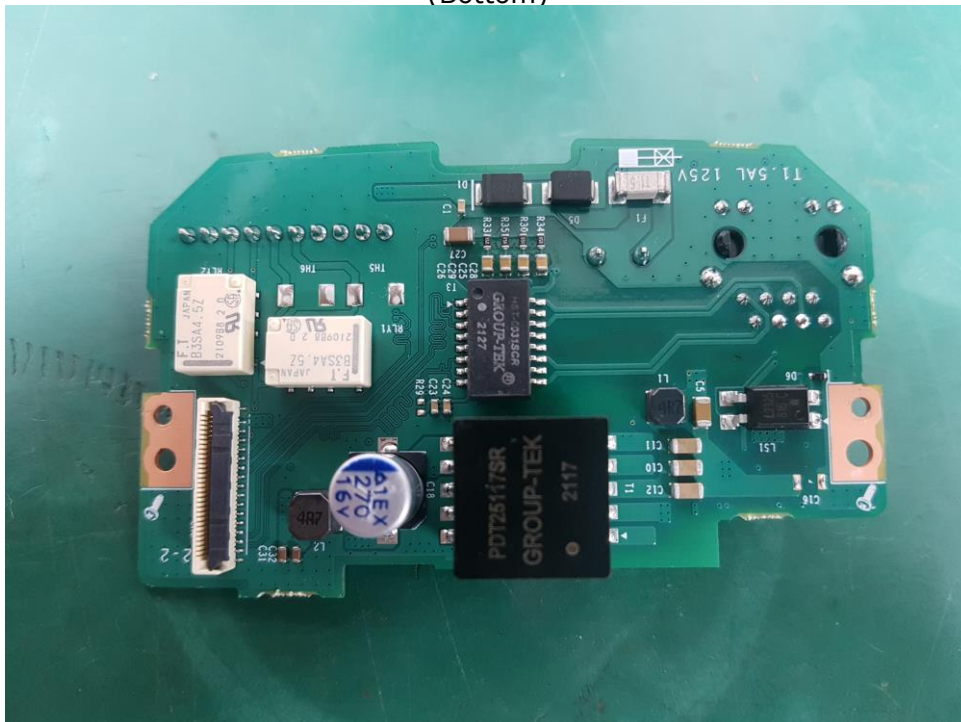


EUT Internal View – Board 1

(Top)



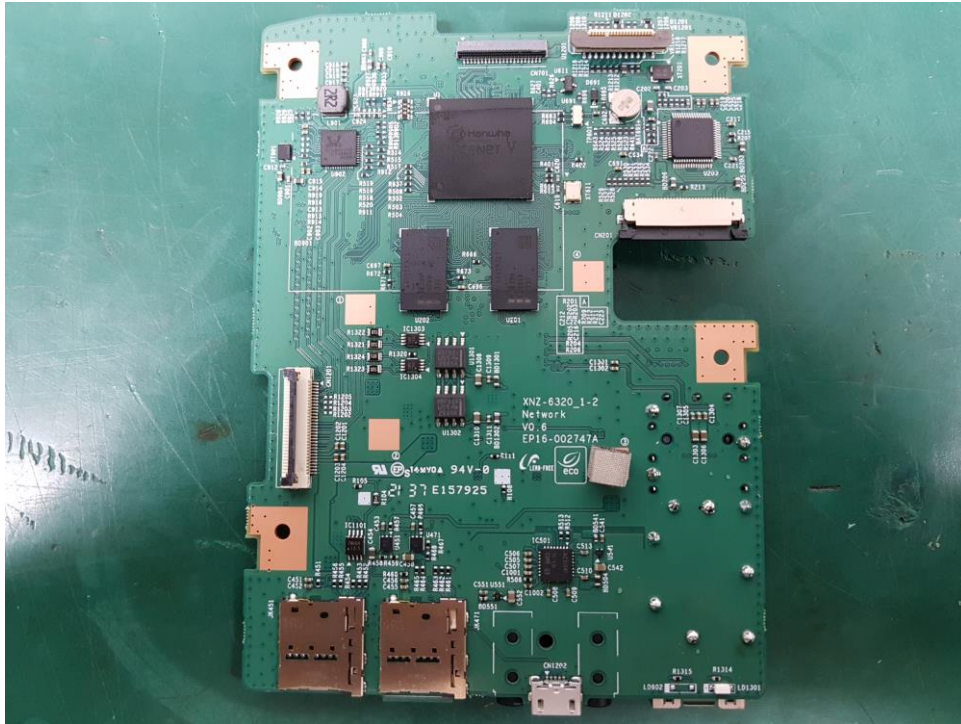
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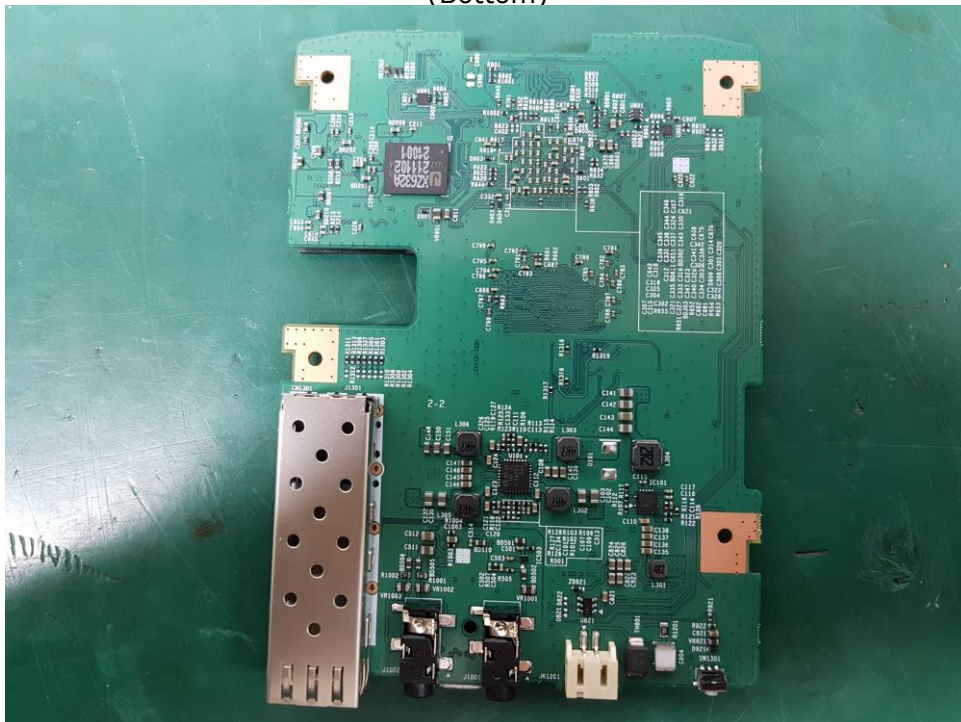
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EUT Internal View – Board 2

(Top)



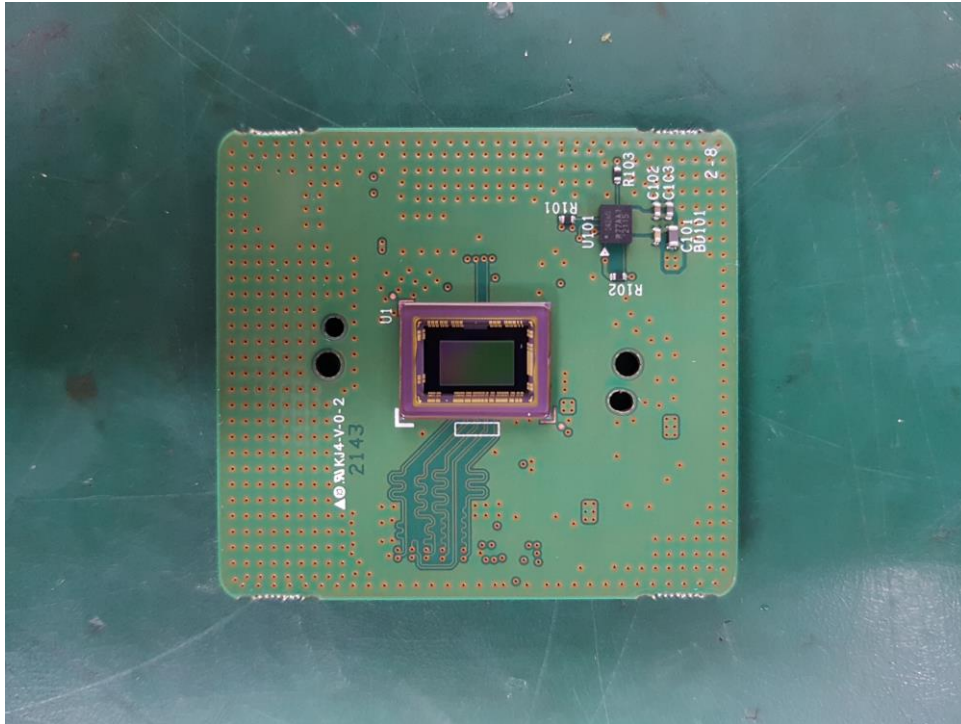
(Bottom)



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EUT Internal View – Camera Board

(Top)

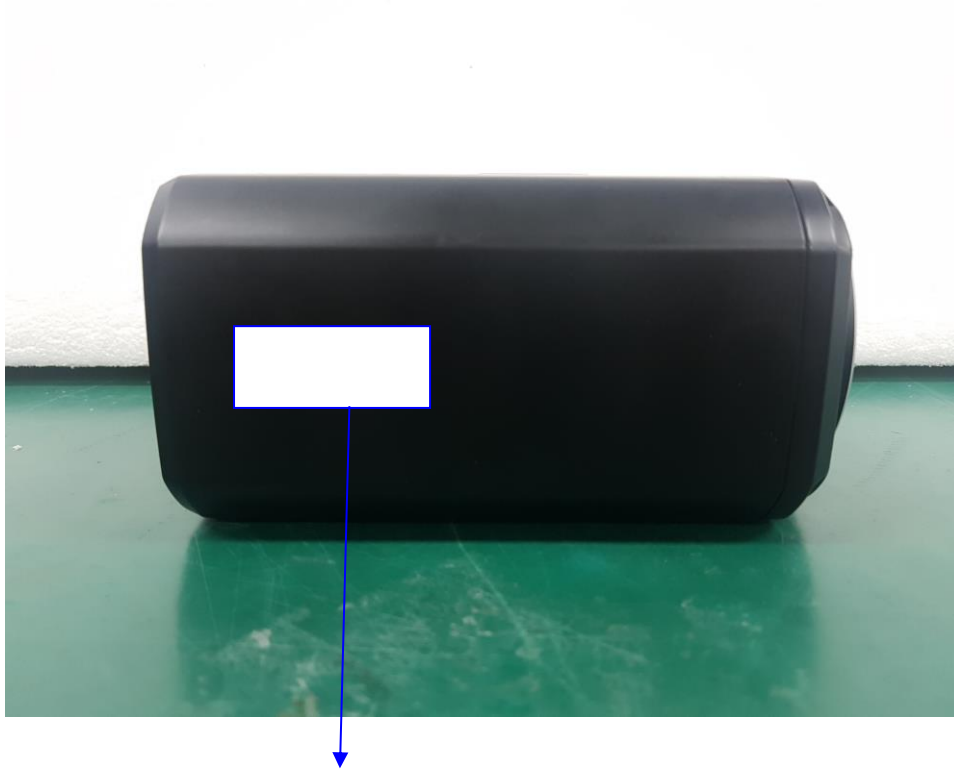


(Bottom)



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Label and Location



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Model No : XNZ-6320A

Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED

Made in Vietnam

