



## EMC TEST REPORT For CE

Test Report No. : KES-E1-19T0138-R3  
Date of Issue : Jan. 15, 2021  
Product name : Network Camera  
Model/Type No. : XNP-6320RH  
Variant Model : XNP-6250RH, QNP-6230RH  
Applicant : Hanwha Techwin Co., Ltd.  
Applicant Address : 6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si,  
Gyeonggi-do, 13488, 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 : Feb. 20, 2019  
Test date : Mar. 02, 2019 ~ Mar. 05, 2019  
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Min Seong, Kim  
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.

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,  
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea  
Tel: +82-31-425-6200 / Fax: +82-31-424-0450  
www.kes.co.kr

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**REPORT REVISION HISTORY**

Date	Test Report No.	Revision History
Mar. 06, 2019	KES-E1-19T0138	Issued
Sep. 18, 2019	KES-E1-19T0138-R1	Re-issue due to additional derivative and specification updates
Sep. 03, 2020	KES-E1-19T0138-R2	Reissue due to test regulation correction of mistake
Jan. 15, 2021	KES-E1-19T0138-R3	Delete Manufacturer on Customer Request

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3701, 40, Simin-daero 365beon-gil,  
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea  
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## 1.0 General Product Description

### Main Specifications of EUT are:

Video	
Imaging Device	1/2.8" 2MP CMOS
Effective Pixels	1944(H)x1212(V)
NETD	None
Pixel Size	None
Min. Illumination	Color: 0.05Lux(F1.6, 1/30sec) BW: 0Lux(IR LED On)
Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation
Lens	
Focal Length (Zoom Ratio)	4.44~111mm(25x) 줌 렌즈
Max. Aperture Ratio	F1.6(Wide)~F3.9(Tele)
Angular Field of View	H: 61.8°(Wide)~2.84°(Tele) / V: 36.2°(Wide)~1.60°(Tele)
Min. Object Distance	Wide: 1.5m(4.92ft), Tele: 2m(6.56ft)
Focus Control	Oneshot AF
Lens Type	DC auto iris
Mount Type	None
Optional Lens	None
Pan / Tilt / Rotate	
Pan / Tilt / Rotate Range	None
Pan Range	360° Endless
Pan Speed	Preset: 400°/sec, Manual: 0.024°/sec~250°/sec
Tilt Range	95°(-5°~90°)
Tilt Speed	Preset: 250°/sec, Manual: 0.024°/sec~250°/sec
Rotate Range	None
Sequence	Preset(300ea), Swing, Group(6ea), Trace, Tour, Auto Run, Schedule
Preset Accuracy	±0.2°
Azimuth	Support
Auto Tracking	Support
Operational	
IR Viewable Length	200m(656.17ft)
Camera Title	Displayed up to 85 characters
Day & Night	Auto(ICR)
Backlight Compensation	BLC, HLC, WDR, SSDR
Wide Dynamic Range	150dB
Digital Noise Reduction	SSNRV
Digital Image Stabilization	Support(built-in gyro sensor)
Defog	Support
Motion Detection	8ea, 8point polygonal zones
Privacy Masking	32ea, rectangular Support - Color: Grey/Green/Red/Blue/Black/White - Mosaic
Gain Control	Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC	None

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Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2~1/12,000sec)
Digital PTZ	None
Video Rotation	Flip, Mirror
Analytics	Directional detection, Fog detection, Face detection, Motion detection, Appear/Disappear, Enter/Exit, Loitering, Tampering, Virtual line, Audio detection, Sound classification, Shock detection
Business Intelligence	None
Serial Interface	RS-485(Samsung-T, Pelco-D/P, Panasonic, Bosch, AD, GE, Vicon, Honeywell)
Alarm I/O	Input 4ea / 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
IR Illuminator (Optional)	None
Wiper	None
Coaxial Protocol	None
Video Transmission Distance	None
<b>Radiometry</b>	
Temperature detect range	None
Temperature accuracy	None
Temperature detection	None
Additional	None
<b>Network</b>	
Ethernet	RJ-45(10/100BASE-T), SFP(Optional)
Video Compression	H.265/H.264,MJPEG
Resolution	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	H.265/H.264: Max. 60fps/50fps(60Hz/50Hz) MJPEG: Max. 30fps/25fps(60Hz/50Hz)
Smart Codec	Manual(5ea area), WiseStreamII
Video Quality Adjustment	H.264/H.265: Target bitrate level control MJPEG: Target bitrate level control
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast (128 user) 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

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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 2slot 512GB
Application Programming In	ONVIF Profile S/G/T SUNAPI(HTTP API) Wisenet open platform
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish,, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Web Viewer	Supported OS: Windows 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	1024MB RAM, 256MB Flash
<b>Environmental</b>	
Operating Temperature / Humidity	24VAC : -50°C~-55°C (-58°F ~ +131°F) / Less than 90% RH HPoE : -40°C~-55°C (-40°F ~ +131°F) / Less than 90% RH * Start up should be done at above -35°C
Storage Temperature / Humidity	-50°C~-60°C (-58°F~+140°F) / Less than 90% RH
Certification	IP66, IK10
<b>Electrical</b>	
Input Voltage	24VAC, HPoE(IEEE802.3bt, Class7)
Power Consumption	24VAC: Max. 83W (typical : 30W) HPoE : Max. 51W (typical : 30W)
<b>Mechanical</b>	
Color / Material	Body: Ivory / Plastic, Head: Black / Plastic
RAL Code	None
Product dimensions / weight	Ø236.9x407.7mm(9.33x16.05"), 6.8Kg(14.99 lb)
Conduit hole	None
Hanging mount(Dome)	SBP-303HF(SFP)
Skin cover(Dome)	None
Weather cap(Dome)	None
Power module	None
Backbox	None

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## 1.1 Test Voltage & Frequency

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

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

## 1.2 Variant Model Differences

Model name	Differences
XNP-6250RH	Added a simple derivative model for classification by vendor
QNP-6230RH	Added device to block 1 SD card slot. Software specifications are the same as basic model.

## 1.3 Device Modifications

Not applicable

## 1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
Network Camera	XNP-6320RH	-	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	EUT
PoE Adapter	PT-PSE109GBRO-AH	-	Dongguan PROCET Network Technology Co.,Ltd	

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## 1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook	NT500R5M	0Q7491AJ800552B	Samsung Electronics Co., Ltd.	-
Notebook Adapter	A13-040N2A	AD-4019C	Chicony Power Technology Co., Ltd.	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-
MIC	MP1000	-	-	-
Alarm	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-
Button Alarm	-	-	-	-
Controller	SPC-1010	C60E67WD601003	SamSung Techwin Co.,Ltd.	-
Controller Adapter	RS-AB1000	-	Dongguan Jinhua Sheng Power Technology Co.,Ltd.	-
Micro SD Card	-	-	SanDisk	4 GB
Smart Phone	A1303	-	APPLE .Inc	-

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## 1.6 External I/O Cabling

### ■ AC 24 V

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Camera (EUT)	RJ-45	Notebook	RJ-45	3.5	U
	3.5 mm	Speaker	3.5 mm	1.4	U
	3.5 mm	MIC	XLR	1.4	U
	2 Pin	Alarm	Line-In	3.0	U
	2 Pin	Button Alarm	Line-Out	3.0	U
	2 Pin	Controller	2 Pin	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
Notebook	3.5 mm	Smart Phone	3.5 mm	1.0	U

\* Unshielded=U, Shielded=S

### ■ PoE

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Camera (EUT)	RJ-45 (PoE)	PoE Adaptor	RJ-45 (PoE)	2.5	U
	3.5 mm	Speaker	3.5 mm	1.4	U
	3.5 mm	MIC	XLR	1.4	U
	2 Pin	Alarm	Line-In	3.0	U
	2 Pin	Button Alarm	Line-Out	3.0	U
	2 Pin	Controller	2 Pin	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
Notebook	3.5 mm	Smart Phone	3.5 mm	1.0	U
	RJ-45 (DATA)	PoE Adaptor	RJ-45 (DATA)	3.5	U

\* Unshielded=U, Shielded=S

## 1.7 EUT Operating Mode(s)

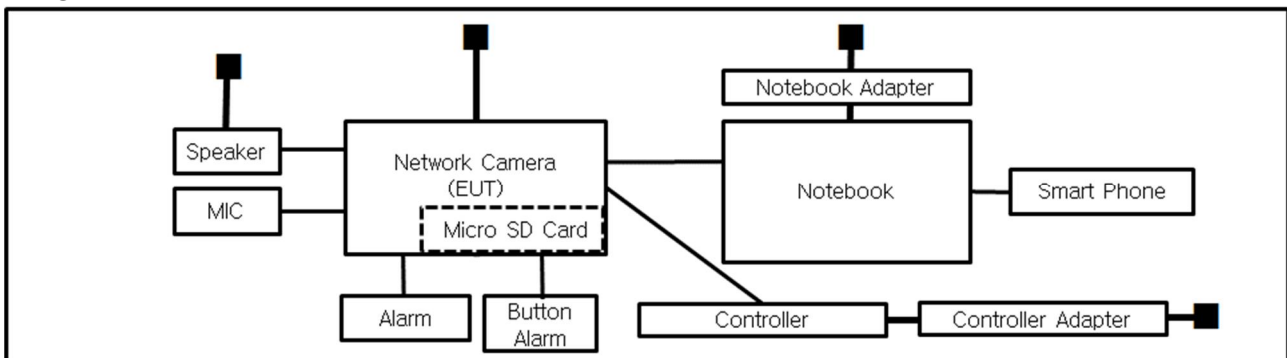
Test Mode	operating
AC 24 V	EUT Monitoring, Ping Test
PoE	EUT Monitoring, Ping Test

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

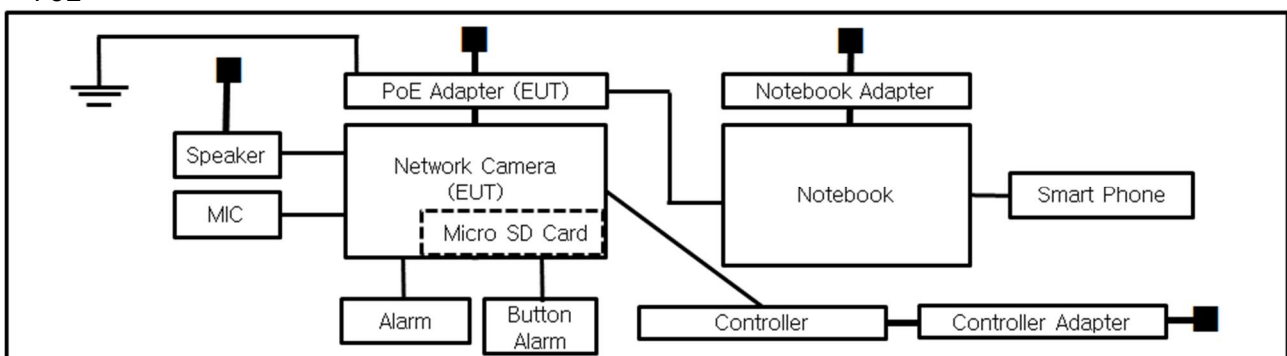
## 1.8 Configuration

■ AC Main  
 □ DC Main

### ■ AC 24 V



### ■ PoE



## 1.9 Remarks when standards applied

N/A







## 1.10 Calibration Details of Equipment Used for Measurement

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

## 1.11 Test Facility

The measurement facility is located at 473-21 Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea. 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	<b>RRA</b>	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	<b>KOLAS</b>	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	<b>FCC</b>	3 m & 10 m Semi-Anechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	<b>ISED</b>	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298-1
JAPAN	<b>VCCI</b>	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	<b>TÜV SÜD</b>	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

## 2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010

☐ Group 1  
☐ Class A

☐ Group 2  
☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 61547:2009

☒ EN 55032:2012/AC:2013

☒ Class A

☐ Class B

☐ EN 55024:2010 +A1:2015

☒ EN 50130-4:2011+A1:2014

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013

☐ EN 61326-1:2013



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- |   |                                  |                                  |
|---|----------------------------------|----------------------------------|
| <input type="checkbox"/> <b>VCCI-CISPR 32:2016</b>            | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> <b>AS/NZS CISPR32:2015</b>           | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> <b>47 CFR Part 15, Subpart B</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"/> <b>IC Regulation ICES-003 : 2016</b> |                                  |                                  |
| <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"/> <b>RE- Directive 2014/53/EU</b>      |                                  |                                  |
| <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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## 2.1 Conducted Emissions at Mains Power Ports

### Test Date

Mar. 03, 2019

### 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	101781	04, 25, 2019
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	01, 04, 2020
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	04, 25, 2019

### Test Conditions

Temperature: 21,4 °C  
Relative Humidity: 42,5 % R.H.

### Frequency Range of Measurement

150 kHz to 30 MHz

### Instrument Settings

IF Band Width: 9 kHz

### Test Results

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.



## 2.2 Conducted Emissions at Telecommunication Ports

### Test Date

Mar. 03, 2019

### 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	101781	04, 25, 2019
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	01, 04, 2020
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	04, 25, 2019
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 26, 2019
<input checked="" type="checkbox"/>	8-WIRE ISN CAT3,5	ENY81	R & S	100174	01, 07, 2020
<input type="checkbox"/>	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	01, 07, 2020

### Test Conditions

Temperature: 21,4 °C  
Relative Humidity: 42,5 % R.H.

### Frequency Range of Measurement

150 kHz to 30 MHz

### Instrument Settings

IF Band Width: 9 kHz

### Test Results

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.



## 2.3 Radiated Electric Field Emissions(Below 1 GHz)

### Test Date

Mar. 02, 2019

### Test Location

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

### 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	ESU26	R & S	100551	04, 11, 2019
<input checked="" type="checkbox"/>	AMPLIFIER	SCU 01	R & S	100603	11, 26, 2019
<input checked="" type="checkbox"/>	ATTENUATOR	8491A	HP	32173	03, 21, 2019
<input checked="" type="checkbox"/>	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 29, 2020

### Test Conditions

Temperature: 21,8 °C  
Relative Humidity: 40,9 % 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

Mar. 02, 2019

### 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, 06, 2019
<input checked="" type="checkbox"/>	PREAMPLIFIER	8449B	AGILENT	3008A01967	05, 31, 2019
<input type="checkbox"/>	ATTENUATOR	8491A	HP	35496	03, 21, 2019
<input checked="" type="checkbox"/>	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 02, 2019

### Test Conditions

Temperature: 22,6 °C  
Relative Humidity: 41,7 % 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

Mar. 02, 2019

### 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	dpa.control	EM TEST	5.4.11.0	-
<input checked="" type="checkbox"/>	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	08, 08, 2019
<input checked="" type="checkbox"/>	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

### Test Conditions

Temperature: 20,7 °C  
Relative Humidity: 41,8 % 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

Mar. 02, 2019

### 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	dpa.control	EM TEST	5.4.11.0	-
<input checked="" type="checkbox"/>	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	08, 08, 2019
<input checked="" type="checkbox"/>	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

### Test Conditions

Temperature: 20,7 °C  
Relative Humidity: 41,8 % 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+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

#### Test Date

Mar. 05, 2019

#### 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	ESS01Z0454	10, 11, 2019
<input checked="" type="checkbox"/>	HCP	-	KES	-	-
<input checked="" type="checkbox"/>	VCP	-	KES	-	-

#### Test Conditions

Temperature: 21,7 °C  
Relative Humidity: 42,6 % R.H.  
Atmospheric Pressure: 101,1 kPa

#### Test Specifications

Discharge Factor:  $\geq 1$  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

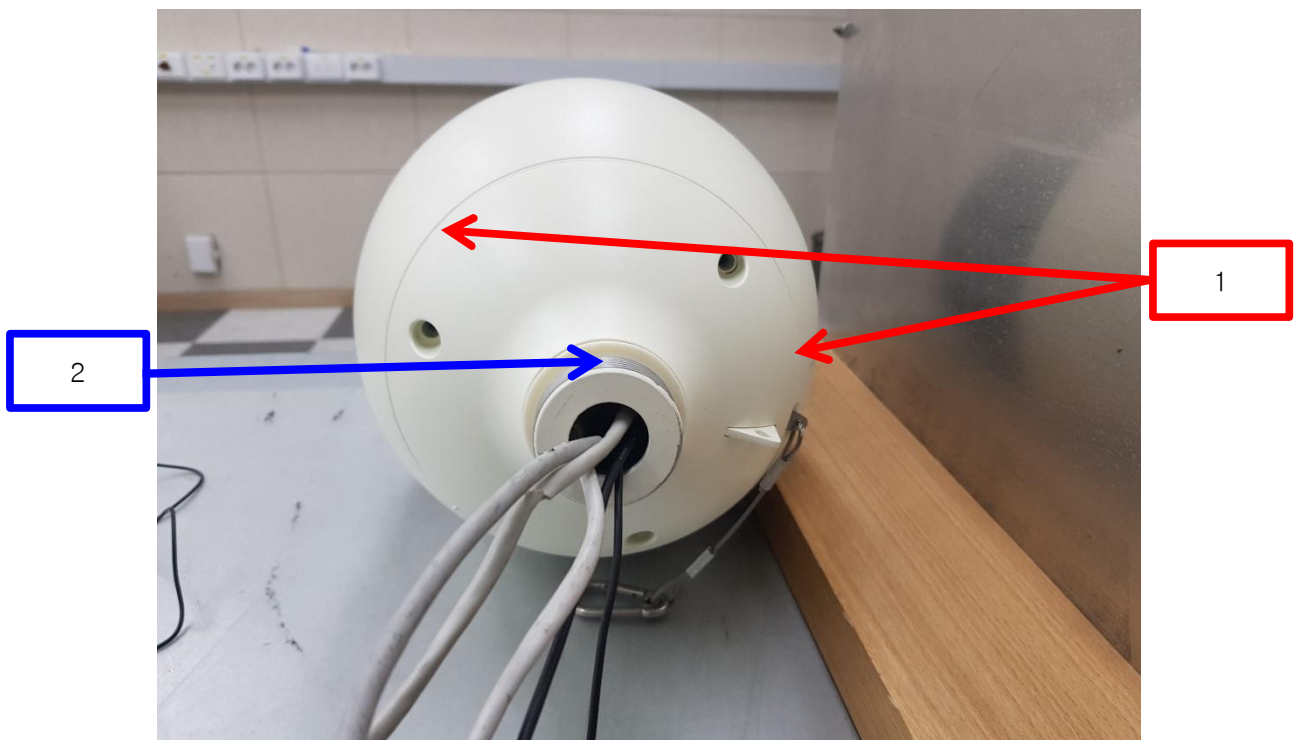
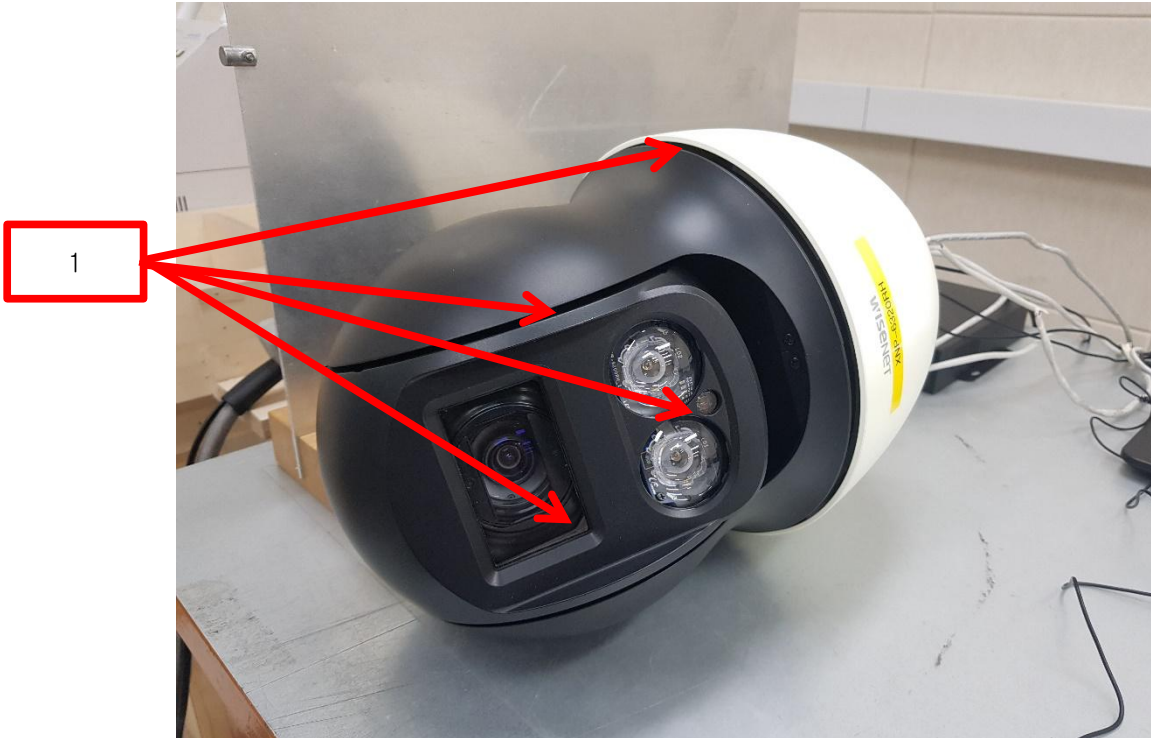
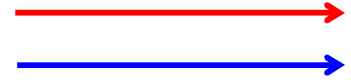
Discharge Voltage:	Contact	Air	HCP	VCP
	<input type="checkbox"/> 2 kV	<input checked="" type="checkbox"/> 2 kV	<input type="checkbox"/> 2 kV	<input type="checkbox"/> 2 kV
	<input type="checkbox"/> 4 kV	<input checked="" type="checkbox"/> 4 kV	<input type="checkbox"/> 4 kV	<input type="checkbox"/> 4 kV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

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

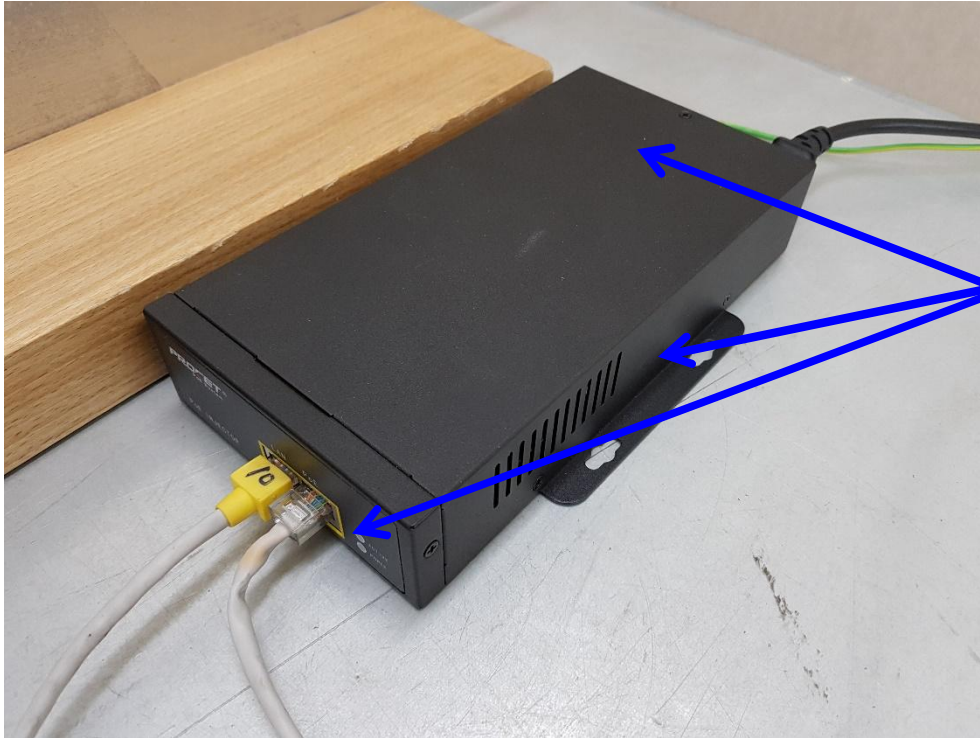
Required Performance Criteria: ☒ Complied

**Location of Discharge:**

Air
Contact



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## Test Data

### ■ AC 24 V

#### Indirect Discharge

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

#### Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	EUT Enclosure	Air Discharge	Complied	-
2	EUT Conductor	Contact Discharge	Complied	-

Note: "Blank" = Not performed

### ■ PoE

#### Indirect Discharge

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

#### Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Surface	Contact Discharge	Complied	-
2	EUT Conductor	Contact Discharge	Complied	-
3	PoE Adapter Surface	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



## 3.2 Radiated Electric Field Immunity

### Reference Standard

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

### Test Date

Mar. 04, 2019

### 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	10.10.02	-
<input checked="" type="checkbox"/>	SIGNAL GENERATOR	SMB 100A	R & S	177586	08, 06, 2019
<input checked="" type="checkbox"/>	BROADBAND AMPLIFIER	BBA100	R & S	101239	08, 06, 2019
<input checked="" type="checkbox"/>	BROADBAND AMPLIFIER	100S1G6M1	AR	579931	08, 06, 2019
<input checked="" type="checkbox"/>	POWER METER	NRP2	R & S	103475	08, 06, 2019
<input checked="" type="checkbox"/>	AVG POWER SENSOR	NRP-Z91	R & S	102526	08, 06, 2019
<input checked="" type="checkbox"/>	AVG POWER SENSOR	NRP-Z91	R & S	102527	08, 06, 2019
<input checked="" type="checkbox"/>	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
<input checked="" type="checkbox"/>	DIRECTIONAL COUPLER	KYDC-D1070-DX40	KY TELECOM	KY150001	08, 06, 2019
<input checked="" type="checkbox"/>	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM, INC	781	05, 02, 2019

### Test Conditions

Temperature: 23,8 °C  
Relative Humidity: 40,1 % R.H.  
Atmospheric Pressure: 100,8 kPa



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### Test Specifications

Antenna Polarization: Horizontal & vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

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

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

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

Frequency step: ☒ 1 % step

Dwell Time: ☒ 1 s ☐ 3 s

# of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ Complied

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## Test Data

### ■ AC 24 V

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

### ■ PoE

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

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

### Test Results

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

### Remarks

PASS Required Performance Criteria



### 3.3 Electrical Fast Transients/Bursts

#### Reference Standard

EN 61000-4-4:2012

#### Test Date

Mar. 05, 2019

#### 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, 2019
<input checked="" type="checkbox"/>	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2019
<input checked="" type="checkbox"/>	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	11, 26, 2019

#### Test Conditions

Temperature: 21,7 °C  
Relative Humidity: 42,6 % R.H.  
Atmospheric Pressure: 101,1 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****■ AC 24 V**

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

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

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

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

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45	Complied	Complied
Alarm (2 Pin)	Complied	Complied
Button Alarm OUT (2 Pin)	Complied	Complied
Controller (2 Pin)	Complied	Complied

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**■ PoE**☒ 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)
Alarm (2 Pin)	Complied	Complied
Button Alarm OUT (2 Pin)	Complied	Complied
Controller (2 Pin)	Complied	Complied
RJ-45 (DATA)	Complied	Complied

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

**Test Results**

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

**Remarks**

PASS Required Performance Criteria

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### 3.4 Surge Transients

**Reference Standard**

EN 61000-4-5:2014

**Test Date**

Mar. 05, 2019

**Test Location**

EMS-Surge: 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, 26, 2019
<input checked="" type="checkbox"/>	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2019
<input checked="" type="checkbox"/>	CDN	CNV 508N1	EM TEST	P1610176296	11, 28, 2019

**Test Conditions**

Temperature: 21,7 °C  
Relative Humidity: 42,6 % R.H.  
Atmospheric Pressure: 101,1 kPa

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Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea  
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### Test Specifications

#### AC Power Lines

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

Surge Amplitude :

Common Mode

☒ (0,5 / 1,0 / 2,0) kV

Differential Mode

☒ (0,5 / 1,0) kV

Number of Surges:

☒ 5 surges per angle

Angle:

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

Polarity:

☒ Positive & Negative

Repetition Rate:

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

Required Performance Criteria: ☒ Complied

#### Other supply / Signal Lines

Source Impedance:

42 ohm for common Mode

Surge Amplitude:

Common Mode

☒ (0,5 / 1,0) kV

Number of Surges:

☒ 5 Surges

Polarity:

☒ Positive & Negative

Repetition Rate:

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

Required Performance Criteria: ☒ Complied

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**Test Data**

## ■ AC 24 V

☒ Line to Line – Differential Mode

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

☐ Line to Earth – Common Mode

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

**Signal Lines**☐ Line to Earth – Common Mode

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

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Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea  
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**■ PoE**☒ 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	Observations	
	(+) Surge (kV)	(-) Surge (kV)
Alarm (2 Pin)	Complied	Complied
Button Alarm OUT (2 Pin)	Complied	Complied
Controller (2 Pin)	Complied	Complied
RJ-45 (DATA)	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



### 3.5 Conducted Disturbance

#### Reference Standard

EN 61000-4-6:2014

#### Test Date

Mar. 03, 2019

#### Test Location

EMS-CS: Electro wave Shieldroom #6

#### Test Equipment

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

#### Test Conditions

Temperature: 21,4 °C  
Relative Humidity: 42,5 % R.H.  
Atmospheric Pressure: 101,0 kPa

#### Test Specifications

Frequency range: ☒ 150 kHz to 100 MHz ☐ 150 kHz to 80 MHz  
Voltage Level: ☐ 1 Vrms ☐ 3 Vrms  
☒ 10 Vrms  
Modulation: ☒ AM, 80 %, 1 kHz sine wave  
☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)  
Frequency step: ☒ 1 % step  
Dwell Time: ☒ 1 s ☐ 3 s  
Required Performance Criteria: ☒ Complied

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**Test Data**

## ■ AC 24 V

☒ Input a.c. power ports

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

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45	CDN	Complied
Alarm (2 Pin)	Clamp	Complied
Button Alarm OUT (2 Pin)	Clamp	Complied
Controller (2 Pin)	Clamp	Complied

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**■ PoE**☒ 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 (DATA)	CDN	Complied
Alarm (2 Pin)	Clamp	Complied
Button Alarm OUT (2 Pin)	Clamp	Complied
Controller (2 Pin)	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



### 3.6 Voltage Dips and Short Interruptions

#### Reference Standard

EN 61000-4-11:2004

#### Test Date

Mar. 03, 2019

#### 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, 2019
<input checked="" type="checkbox"/>	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2019

#### Test Conditions

Temperature: 21,7 °C  
Relative Humidity: 42,6 % R.H.  
Atmospheric Pressure: 101,1 kPa



## Test Specifications & Observations/Remarks

### ■ AC 24 V

(Test Voltage : 230 V)

<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>Complied</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>

### ■ PoE

(Test Voltage : 230 V)

<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>Complied</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

### Test Results

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

### Remarks

PASS Required Performance Criteria



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Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea  
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## APPENDIX A – TEST DATA

### Conducted Emissions at Mains Power Ports

■ AC 24 V  
[HOT]

#### Common Information

Test Description:

Model No.:

Mode

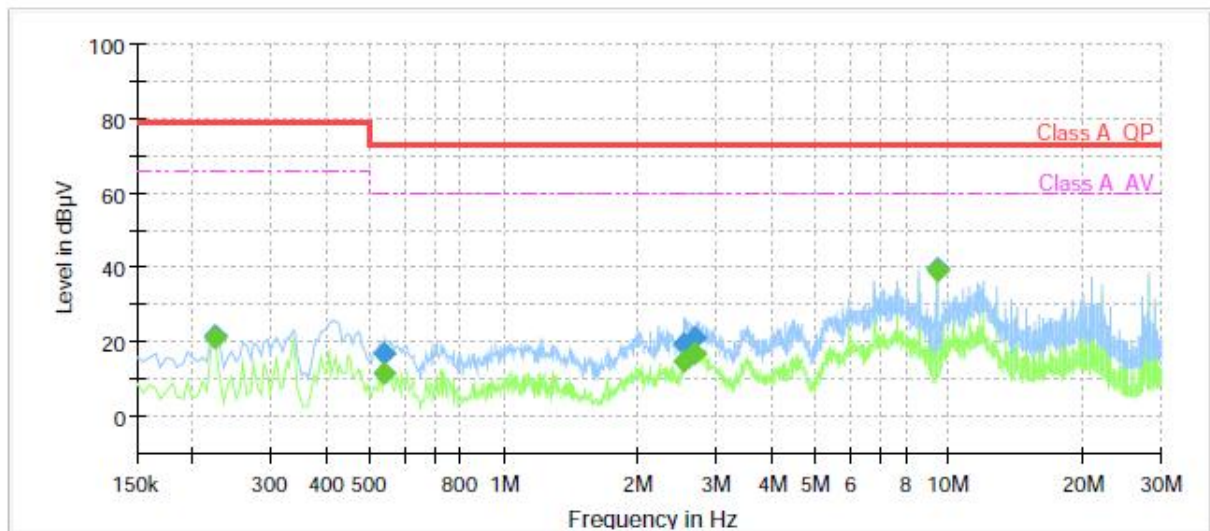
Operator Name:

Conducted Emission

XNP-6320RH

AC 24 V\_H

KES



#### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.225000	---	21.01	66.00	44.99	1000.0	9.000	L1	19.6
0.225000	21.75	---	79.00	57.25	1000.0	9.000	L1	19.6
0.540000	---	11.63	60.00	48.37	1000.0	9.000	L1	19.6
0.540000	16.82	---	73.00	56.18	1000.0	9.000	L1	19.6
2.545000	---	14.79	60.00	45.21	1000.0	9.000	L1	19.7
2.545000	19.79	---	73.00	53.21	1000.0	9.000	L1	19.7
2.695000	---	16.89	60.00	43.11	1000.0	9.000	L1	19.7
2.695000	21.16	---	73.00	51.84	1000.0	9.000	L1	19.7
9.380000	---	39.06	60.00	20.94	1000.0	9.000	L1	19.9
9.380000	39.58	---	73.00	33.42	1000.0	9.000	L1	19.9

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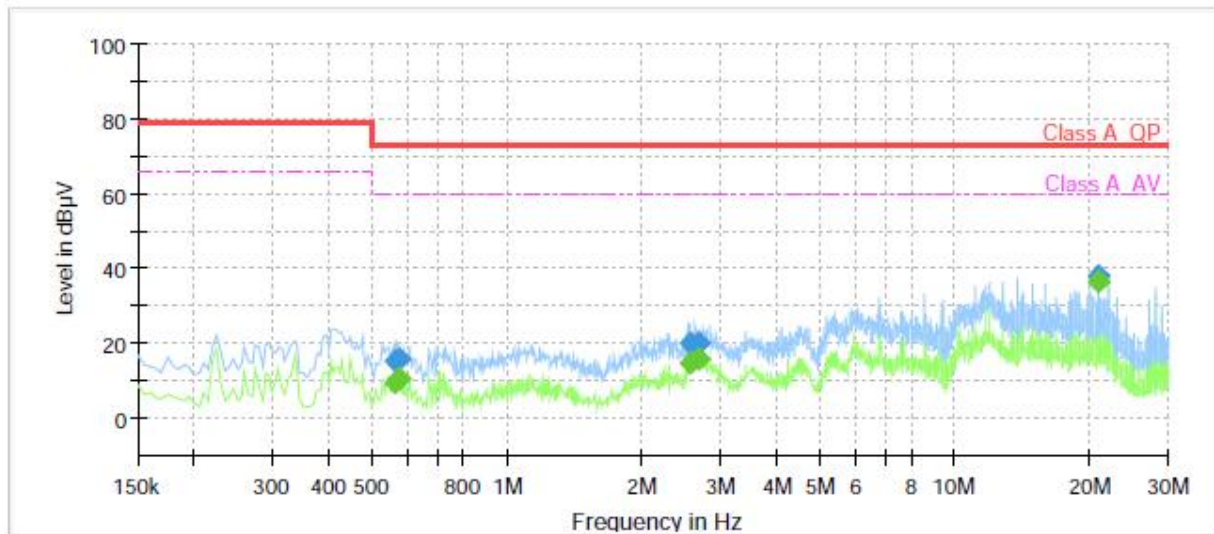
3701, 40, Simin-daero 365beon-gil,  
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### [ NEUTRAL ]

## Common Information

Test Description: Conducted Emission  
Model No.: XNP-6320RH  
Mode: AC 24 V\_N  
Operator Name: KES



## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.560000	---	9.59	60.00	50.41	1000.0	9.000	N	19.6
0.560000	15.61	---	73.00	57.39	1000.0	9.000	N	19.6
0.575000	---	10.44	60.00	49.56	1000.0	9.000	N	19.6
0.575000	16.16	---	73.00	56.84	1000.0	9.000	N	19.6
2.560000	---	14.84	60.00	45.16	1000.0	9.000	N	19.7
2.560000	19.96	---	73.00	53.04	1000.0	9.000	N	19.7
2.695000	---	15.76	60.00	44.24	1000.0	9.000	N	19.7
2.695000	20.09	---	73.00	52.91	1000.0	9.000	N	19.7
20.990000	---	36.41	60.00	23.59	1000.0	9.000	N	20.2
20.990000	38.32	---	73.00	34.68	1000.0	9.000	N	20.2

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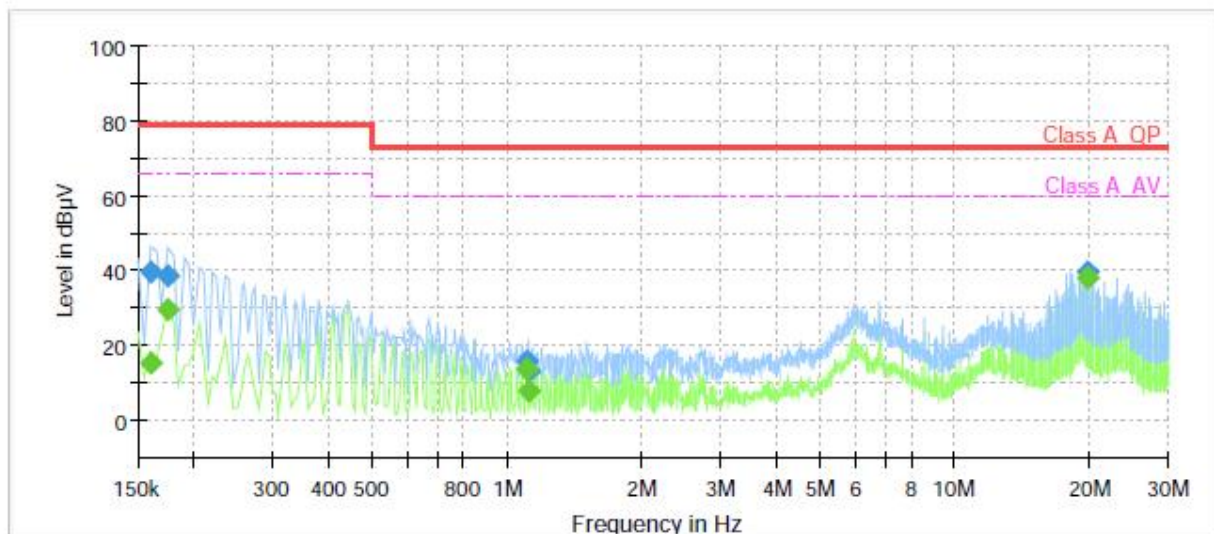
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### ■ PoE [HOT]

## Common Information

Test Description:  
Model No.:  
Mode  
Operator Name:

Conducted Emission  
XNP-6320RH  
PoE\_H  
KES



## Final Result

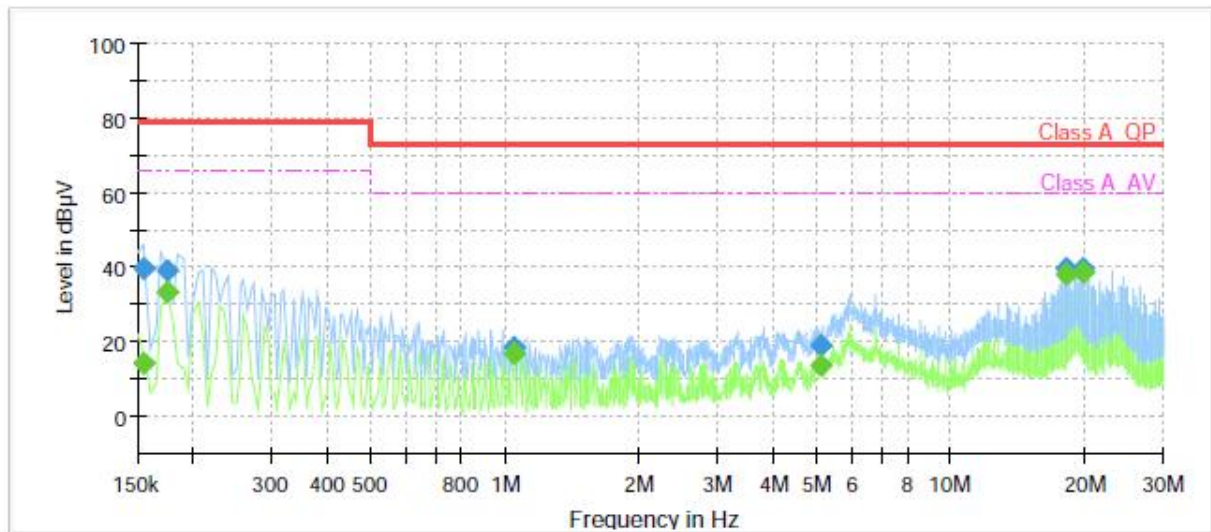
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	15.27	66.00	50.73	1000.0	9.000	L1	19.5
0.160000	39.46	---	79.00	39.54	1000.0	9.000	L1	19.5
0.175000	---	29.84	66.00	36.16	1000.0	9.000	L1	19.5
0.175000	38.41	---	79.00	40.59	1000.0	9.000	L1	19.5
1.110000	---	14.00	60.00	46.00	1000.0	9.000	L1	19.7
1.110000	16.17	---	73.00	56.83	1000.0	9.000	L1	19.7
1.115000	---	7.73	60.00	52.27	1000.0	9.000	L1	19.7
1.115000	13.48	---	73.00	59.52	1000.0	9.000	L1	19.7
19.710000	---	38.31	60.00	21.69	1000.0	9.000	L1	20.1
19.710000	39.51	---	73.00	33.49	1000.0	9.000	L1	20.1

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## [ NEUTRAL ]

### Common Information

Test Description: Conducted Emission  
Model No.: XNP-6320RH  
Mode: PoE\_N  
Operator Name: KES



### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	14.19	66.00	51.81	1000.0	9.000	N	19.6
0.155000	39.70	---	79.00	39.30	1000.0	9.000	N	19.6
0.175000	---	33.12	66.00	32.88	1000.0	9.000	N	19.5
0.175000	39.28	---	79.00	39.72	1000.0	9.000	N	19.5
1.050000	---	16.95	60.00	43.05	1000.0	9.000	N	19.7
1.050000	18.76	---	73.00	54.24	1000.0	9.000	N	19.7
5.100000	---	13.84	60.00	46.16	1000.0	9.000	N	19.8
5.100000	19.27	---	73.00	53.73	1000.0	9.000	N	19.8
18.245000	---	38.18	60.00	21.82	1000.0	9.000	N	20.2
18.245000	39.85	---	73.00	33.15	1000.0	9.000	N	20.2
19.710000	---	38.44	60.00	21.56	1000.0	9.000	N	20.2
19.710000	39.76	---	73.00	33.24	1000.0	9.000	N	20.2

#### ◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

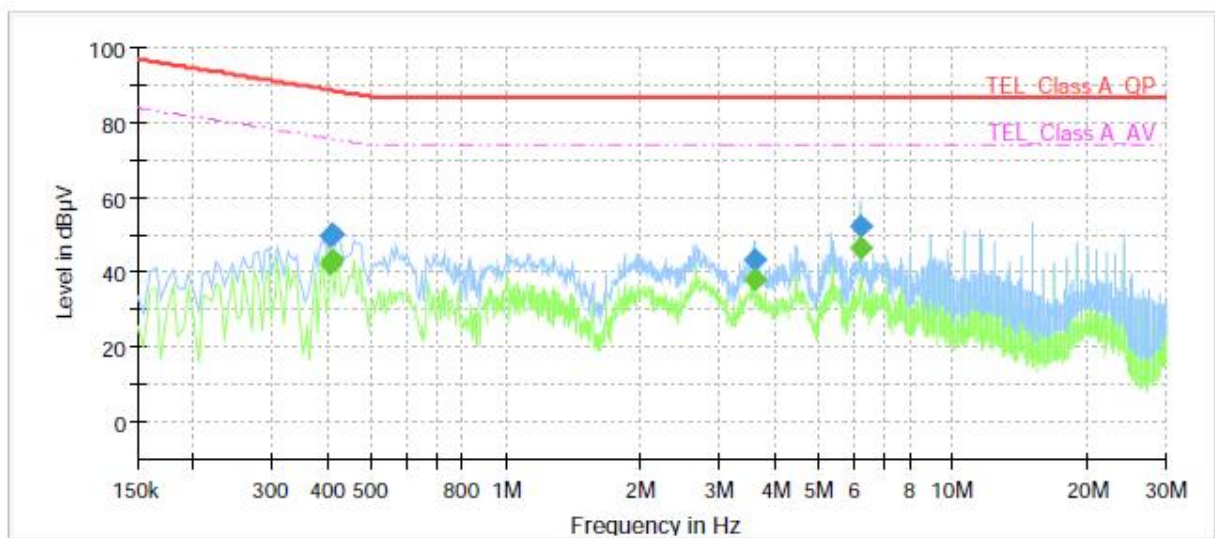
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

## Conducted Emissions at Telecommunication Ports

■ AC 24 V  
 [10 Mbps]

### Common Information

Test Description:	Telecommunication Emission
Model No.:	XNP-6320RH
Mode	AC 24 V_10 Mbps
Operator Name:	KES



### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.405000	---	42.37	75.75	33.38	1000.0	9.000	Single Line	19.8
0.405000	49.79	---	88.75	38.96	1000.0	9.000	Single Line	19.8
0.410000	---	43.64	75.65	32.01	1000.0	9.000	Single Line	19.8
0.410000	50.36	---	88.65	38.29	1000.0	9.000	Single Line	19.8
3.585000	---	38.28	74.00	35.72	1000.0	9.000	Single Line	19.7
3.585000	43.52	---	87.00	43.48	1000.0	9.000	Single Line	19.7
6.250000	---	46.72	74.00	27.28	1000.0	9.000	Single Line	19.8
6.250000	52.39	---	87.00	34.61	1000.0	9.000	Single Line	19.8



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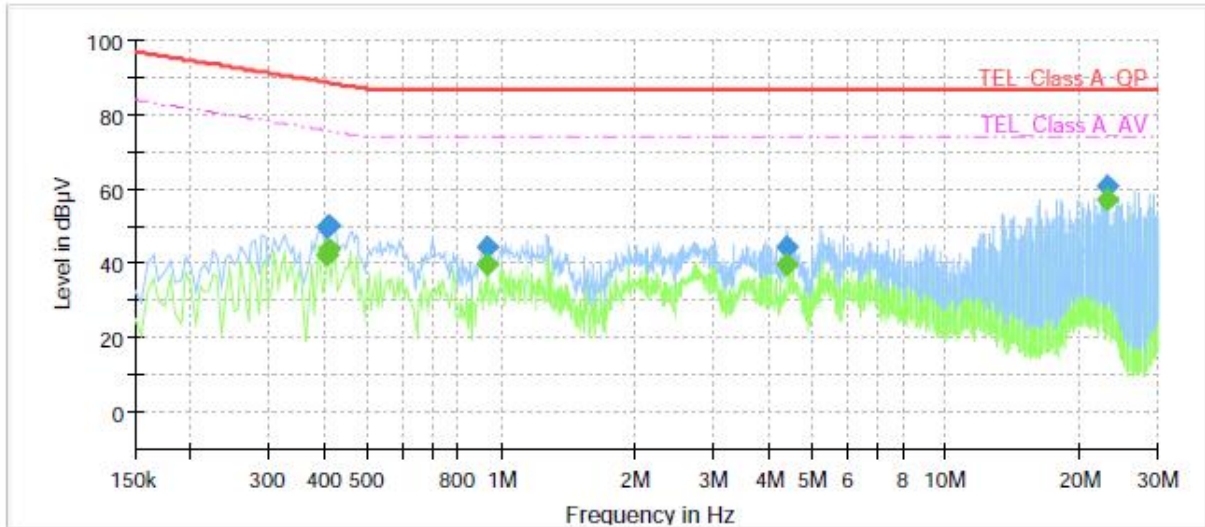
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### [100 Mbps]

## Common Information

Test Description: Telecommunication Emission  
Model No.: XNP-6320RH  
Mode: AC 24 V\_100 Mbps  
Operator Name: KES



## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.405000	---	42.30	75.75	33.45	1000.0	9.000	Single Line	19.7
0.405000	49.67	---	88.75	39.08	1000.0	9.000	Single Line	19.7
0.410000	---	43.89	75.65	31.76	1000.0	9.000	Single Line	19.7
0.410000	50.42	---	88.65	38.23	1000.0	9.000	Single Line	19.7
0.930000	---	39.89	74.00	34.11	1000.0	9.000	Single Line	19.6
0.930000	44.54	---	87.00	42.46	1000.0	9.000	Single Line	19.6
4.410000	---	39.93	74.00	34.07	1000.0	9.000	Single Line	19.6
4.410000	44.48	---	87.00	42.52	1000.0	9.000	Single Line	19.6
23.130000	---	57.31	74.00	16.69	1000.0	9.000	Single Line	20.3
23.130000	60.77	---	87.00	26.23	1000.0	9.000	Single Line	20.3

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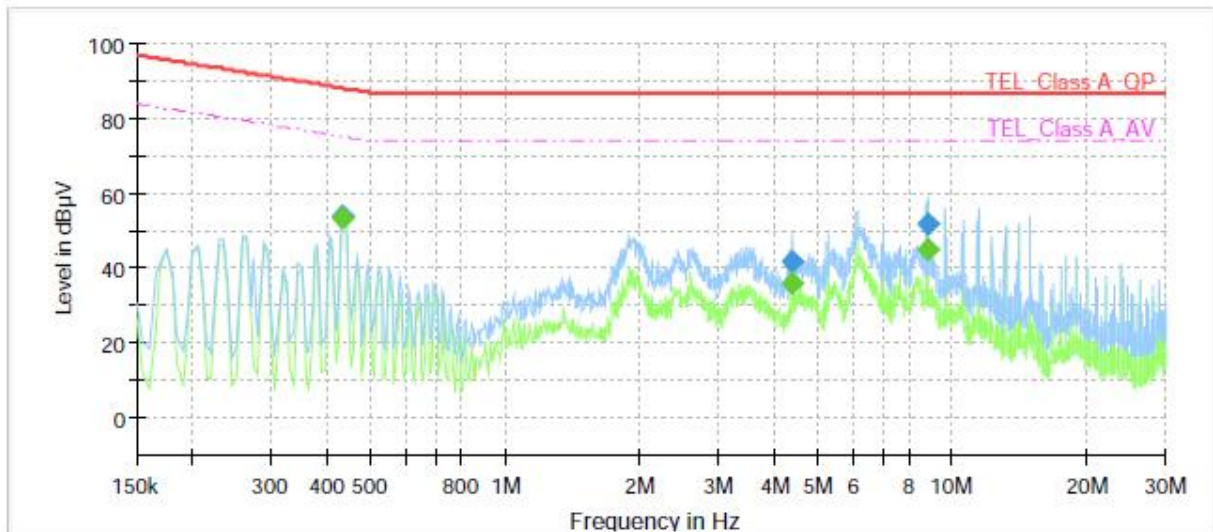
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### ■ PoE [10 Mbps]

## Common Information

Test Description:  
Model No.:  
Mode  
Operator Name:

Telecommunication Emission  
XNP-6320RH  
PoE\_10 Mbps  
KES



## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.435000	---	53.30	75.16	21.86	1000.0	9.000	Single Line	19.8
0.435000	53.79	---	88.16	34.37	1000.0	9.000	Single Line	19.8
4.400000	---	35.77	74.00	38.23	1000.0	9.000	Single Line	19.7
4.400000	41.85	---	87.00	45.15	1000.0	9.000	Single Line	19.7
8.805000	---	44.77	74.00	29.23	1000.0	9.000	Single Line	19.8
8.805000	51.99	---	87.00	35.01	1000.0	9.000	Single Line	19.8

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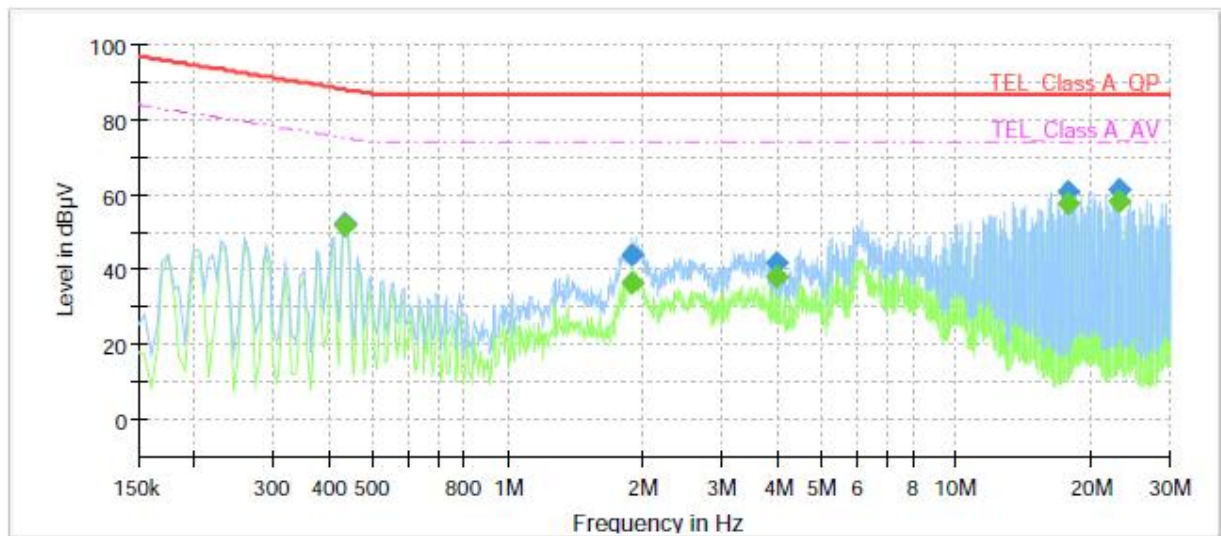
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[100 Mbps]

### Common Information

Test Description: Telecommunication Emission  
Model No.: XNP-6320RH  
Mode: PoE\_100 Mbps  
Operator Name: KES



### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.435000	---	52.12	75.16	23.04	1000.0	9.000	Single Line	19.7
0.435000	52.32	---	88.16	35.84	1000.0	9.000	Single Line	19.7
1.890000	---	36.29	74.00	37.71	1000.0	9.000	Single Line	19.6
1.890000	43.88	---	87.00	43.12	1000.0	9.000	Single Line	19.6
3.955000	---	38.28	74.00	35.72	1000.0	9.000	Single Line	19.6
3.955000	42.01	---	87.00	44.99	1000.0	9.000	Single Line	19.6
17.695000	---	57.80	74.00	16.20	1000.0	9.000	Single Line	20.0
17.695000	60.95	---	87.00	26.05	1000.0	9.000	Single Line	20.0
23.130000	---	58.36	74.00	15.64	1000.0	9.000	Single Line	20.3
23.130000	61.59	---	87.00	25.41	1000.0	9.000	Single Line	20.3

#### ◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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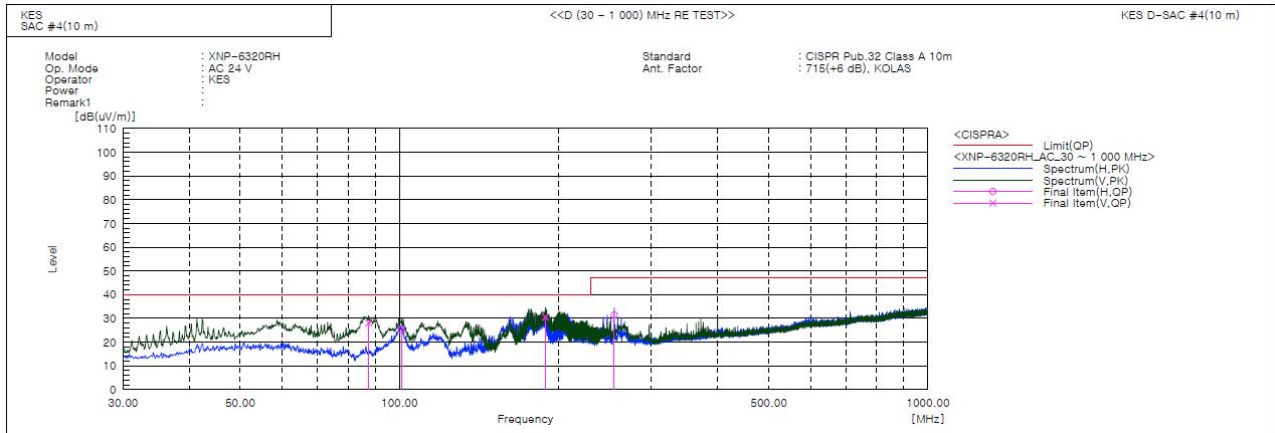
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### Radiated Electric Field Emissions(Below 1 GHz)

#### ■ AC 24 V



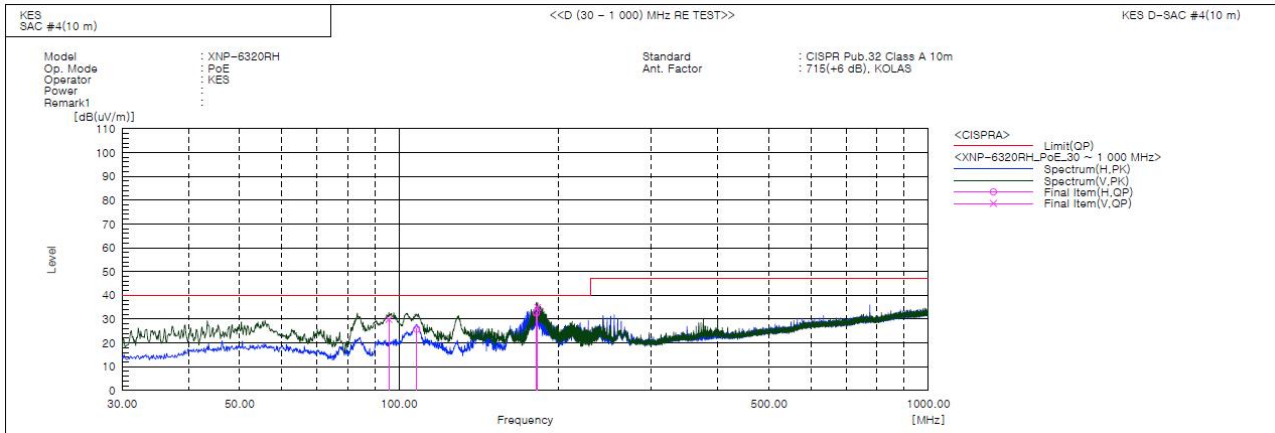
#### Final Result

No.	Frequency	(P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		QP		QP	QP	QP			
			[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[cm]	[deg]	
1	87.542	V	53.8	-25.6	28.2	40.0	11.8	138.0	234.0	
2	100.810	H	47.9	-22.6	25.3	40.0	14.7	400.0	206.0	
3	188.959	V	53.6	-23.0	30.6	40.0	9.4	100.0	169.0	
4	255.040	H	51.5	-20.0	31.5	47.0	15.5	380.0	75.0	

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■ PoE



Final Result

No.	Frequency (P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]	QP [dB(uV)]	[dB(1/m)]	QP [dB(uV/m)]	QP [dB(uV/m)]	QP [dB]	[cm]	[deg]	
1	95.718	V 53.2	-23.3	29.9	40.0	10.1	124.0	258.0	
2	107.964	H 48.4	-22.6	25.8	40.0	14.2	400.0	92.0	
3	181.684	H 56.5	-23.8	32.7	40.0	7.3	367.0	88.0	
4	182.775	V 58.7	-23.7	35.0	40.0	5.0	100.0	188.0	

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

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

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

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

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



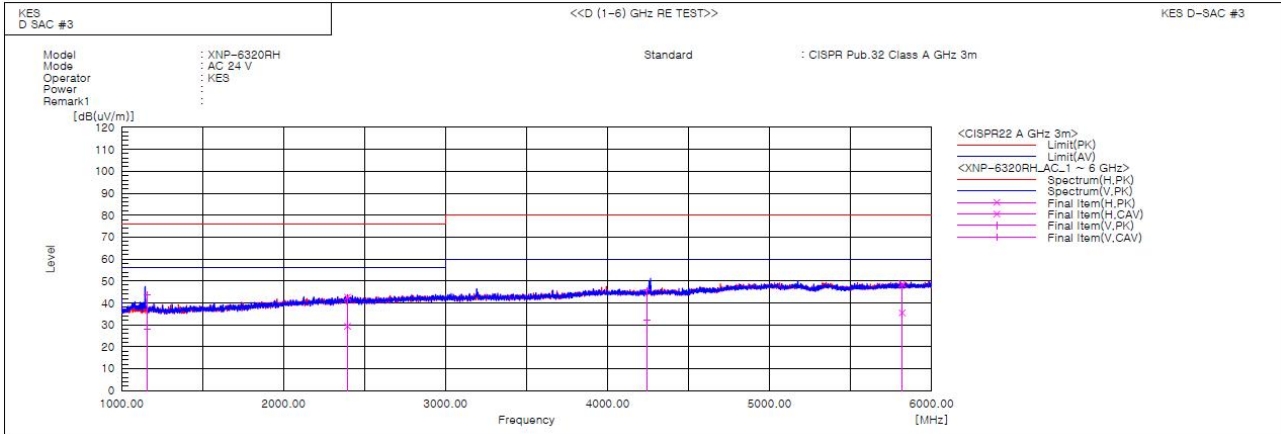
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### Radiated Electric Field Emissions(Above 1 GHz)

#### ■ AC 24 V



#### Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1155.158	V	50.8	35.5	-7.3	43.5	28.2	76.0	56.0	32.5	27.8	100.0	271.7	
2	2393.810	H	42.9	29.7	-0.3	42.6	29.4	76.0	56.0	33.4	26.6	100.0	354.3	
3	4245.184	V	41.0	27.5	4.8	45.8	32.3	80.0	60.0	34.2	27.7	100.0	182.4	
4	5818.148	H	39.6	26.4	9.1	48.7	35.5	80.0	60.0	31.3	24.5	100.0	75.9	

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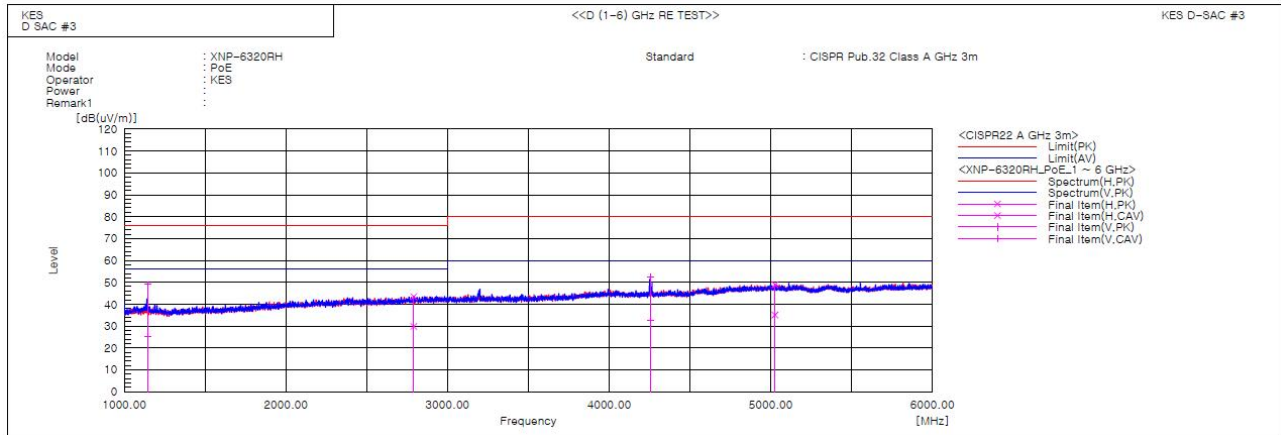


## KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,  
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea  
Tel: +82-31-425-6200 / Fax: +82-31-424-0450  
www.kes.co.kr

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### ■ PoE



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	1144.789	V	56.4	32.8	-7.4	49.0	25.4	76.0	56.0	27.0	30.6	100.0	6.9	
2	2789.921	H	42.4	28.9	1.0	43.4	29.9	76.0	56.0	32.6	26.1	100.0	80.6	
3	4257.659	V	47.7	27.5	4.9	52.6	32.4	80.0	60.0	27.4	27.6	100.0	213.3	
4	5025.482	H	40.4	26.4	8.6	49.0	35.0	80.0	60.0	31.0	25.0	100.0	103.5	

### ◆ Calculation

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

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

Reading(PK/CAV) : Reading value, Result(PK/CAV) : Reading value + Factor value

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

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## Harmonic Current Emissions and Voltage Fluctuations and Flicker

### ■ AC 24 V

#### Average harmonic current results

Hn	I <sub>eff</sub> [A]	% of Limit	Limit [A]	Result
1	77.754E-3			
2	3.148E-3			PASS
3	67.502E-3	2.935	2.30	PASS
4	4.303E-3			PASS
5	65.206E-3	5.720	1.14	PASS
6	3.736E-3			PASS
7	62.229E-3	8.082	770.00E-3	PASS
8	2.857E-3			PASS
9	58.317E-3	14.579	400.00E-3	PASS
10	3.960E-3			PASS
11	53.740E-3	16.285	330.00E-3	PASS
12	3.495E-3			PASS
13	48.656E-3	23.170	210.00E-3	PASS
14	2.266E-3			PASS
15	43.166E-3	28.777	150.00E-3	PASS
16	1.810E-3			PASS
17	37.562E-3	28.381	132.35E-3	PASS
18	1.853E-3			PASS
19	31.787E-3	26.842	118.42E-3	PASS
20	1.573E-3			PASS
21	25.725E-3	16.007	160.71E-3	PASS
22	1.041E-3			PASS
23	20.576E-3	14.022	146.74E-3	PASS
24	881.825E-6			PASS
25	15.826E-3	11.723	135.00E-3	PASS
26	773.211E-6			PASS
27	11.236E-3	8.989	124.99E-3	PASS
28	723.206E-6			PASS
29	7.617E-3	6.545	116.39E-3	PASS
30	708.125E-6			PASS
31	4.662E-3			PASS
32	676.448E-6			PASS
33	2.364E-3			PASS
34	719.732E-6			PASS
35	1.927E-3			PASS
36	637.324E-6			PASS
37	2.685E-3			PASS
38	664.155E-6			PASS
39	3.078E-3			PASS
40	643.241E-6			PASS

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



Test Data - Harmonics (continued)

**Maximum harmonic current results**

Hn	I <sub>eff</sub> [A]	% of Limit	Limit [A]	Result
1	78.535E-3			
2	4.629E-3			PASS
3	67.681E-3	1.962	3.45	PASS
4	5.162E-3	0.800	645.00E-3	PASS
5	65.457E-3	3.828	1.71	PASS
6	4.412E-3			PASS
7	62.393E-3	5.402	1.15	PASS
8	4.080E-3			PASS
9	58.487E-3	9.748	600.00E-3	PASS
10	4.740E-3			PASS
11	54.195E-3	10.949	495.00E-3	PASS
12	4.146E-3			PASS
13	48.902E-3	15.524	315.00E-3	PASS
14	2.873E-3			PASS
15	43.428E-3	19.301	225.00E-3	PASS
16	2.551E-3			PASS
17	37.857E-3	19.069	198.52E-3	PASS
18	2.201E-3			PASS
19	32.058E-3	18.048	177.63E-3	PASS
20	1.866E-3			PASS
21	25.942E-3	16.142	160.71E-3	PASS
22	1.517E-3			PASS
23	20.795E-3	14.171	146.74E-3	PASS
24	1.158E-3			PASS
25	16.068E-3	11.902	135.00E-3	PASS
26	957.679E-6			PASS
27	11.361E-3	9.089	124.99E-3	PASS
28	944.067E-6			PASS
29	7.716E-3	6.630	116.39E-3	PASS
30	800.554E-6			PASS
31	4.852E-3			PASS
32	736.632E-6			PASS
33	2.538E-3			PASS
34	826.940E-6			PASS
35	2.150E-3			PASS
36	755.417E-6			PASS
37	3.132E-3			PASS
38	799.942E-6			PASS
39	3.451E-3			PASS
40	744.191E-6			PASS

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



■ PoE

**Average harmonic current results**

Hn	I <sub>eff</sub> [A]	% of Limit	Limit [A]	Result
1	78.230E-3			
2	3.263E-3			PASS
3	67.794E-3	2.948	2.30	PASS
4	4.169E-3			PASS
5	65.525E-3	5.748	1.14	PASS
6	3.764E-3			PASS
7	62.469E-3	8.113	770.00E-3	PASS
8	2.938E-3			PASS
9	58.542E-3	14.636	400.00E-3	PASS
10	3.896E-3			PASS
11	54.026E-3	16.372	330.00E-3	PASS
12	3.412E-3			PASS
13	48.850E-3	23.262	210.00E-3	PASS
14	2.377E-3			PASS
15	43.120E-3	28.746	150.00E-3	PASS
16	1.931E-3			PASS
17	37.480E-3	28.319	132.35E-3	PASS
18	1.890E-3			PASS
19	31.848E-3	26.894	118.42E-3	PASS
20	1.555E-3			PASS
21	25.733E-3	16.012	160.71E-3	PASS
22	1.079E-3			PASS
23	20.586E-3	14.028	146.74E-3	PASS
24	954.843E-6			PASS
25	15.790E-3	11.697	135.00E-3	PASS
26	797.268E-6			PASS
27	11.093E-3	8.875	124.99E-3	PASS
28	777.955E-6			PASS
29	7.504E-3	6.447	116.39E-3	PASS
30	663.315E-6			PASS
31	4.508E-3			PASS
32	657.333E-6			PASS
33	2.195E-3			PASS
34	736.795E-6			PASS
35	1.998E-3			PASS
36	645.559E-6			PASS
37	2.793E-3			PASS
38	649.908E-6			PASS
39	3.164E-3			PASS
40	650.744E-6			PASS

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



Test Data - Harmonics (continued)

**Maximum harmonic current results**

Hn	I <sub>eff</sub> [A]	% of Limit	Limit [A]	Result
1	79.022E-3			
2	4.717E-3			PASS
3	68.190E-3	1.977	3.45	PASS
4	4.850E-3			PASS
5	65.917E-3	3.855	1.71	PASS
6	4.581E-3			PASS
7	62.803E-3	5.438	1.15	PASS
8	4.424E-3			PASS
9	58.900E-3	9.817	600.00E-3	PASS
10	4.772E-3			PASS
11	54.552E-3	11.021	495.00E-3	PASS
12	4.118E-3			PASS
13	49.109E-3	15.590	315.00E-3	PASS
14	3.144E-3			PASS
15	43.752E-3	19.446	225.00E-3	PASS
16	2.696E-3			PASS
17	37.983E-3	19.133	198.52E-3	PASS
18	2.239E-3			PASS
19	32.098E-3	18.070	177.63E-3	PASS
20	1.829E-3			PASS
21	26.083E-3	16.230	160.71E-3	PASS
22	1.600E-3			PASS
23	20.951E-3	14.277	146.74E-3	PASS
24	1.215E-3			PASS
25	16.097E-3	11.924	135.00E-3	PASS
26	1.001E-3			PASS
27	11.337E-3	9.070	124.99E-3	PASS
28	1.011E-3			PASS
29	7.849E-3	6.744	116.39E-3	PASS
30	747.576E-6			PASS
31	4.870E-3			PASS
32	740.359E-6			PASS
33	2.528E-3			PASS
34	882.776E-6			PASS
35	2.191E-3			PASS
36	764.517E-6			PASS
37	3.120E-3			PASS
38	809.986E-6			PASS
39	3.515E-3			PASS
40	734.121E-6			PASS

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

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,  
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea  
Tel: +82-31-425-6200 / Fax: +82-31-424-0450  
www.kes.co.kr

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**Test Data - Voltage Fluctuations****Maximum Flicker results****■ AC 24 V**

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

**■ PoE**

	<b>EUT values</b>	<b>Limit</b>	<b>Result</b>
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.123	4.00	PASS
Tmax [s]	0.000	0.50	PASS

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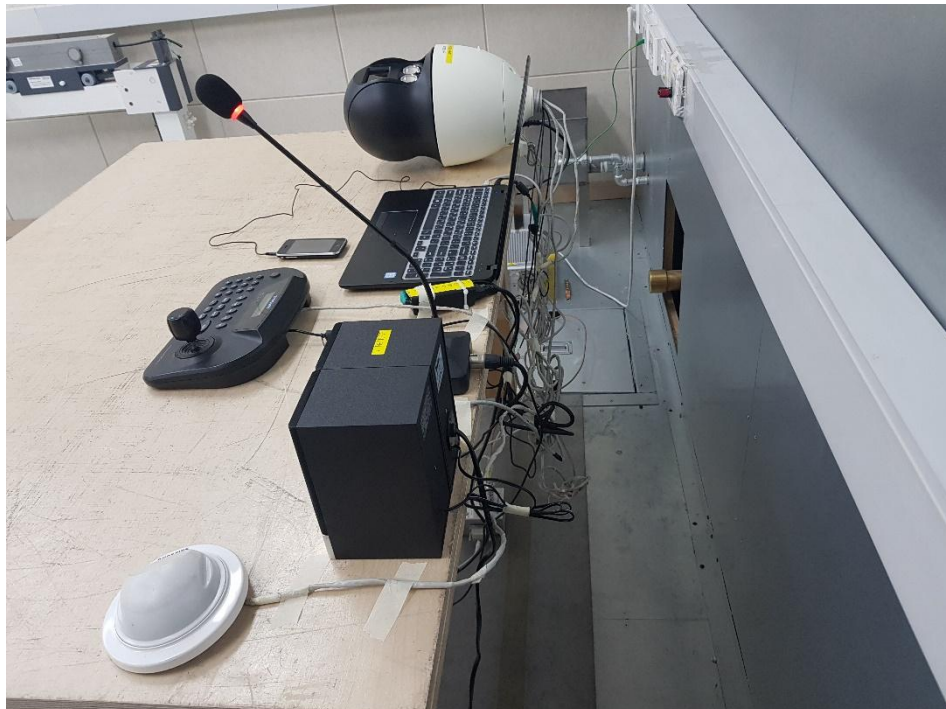
## Test Setup Photos and Configuration

### Conducted Voltage Emissions



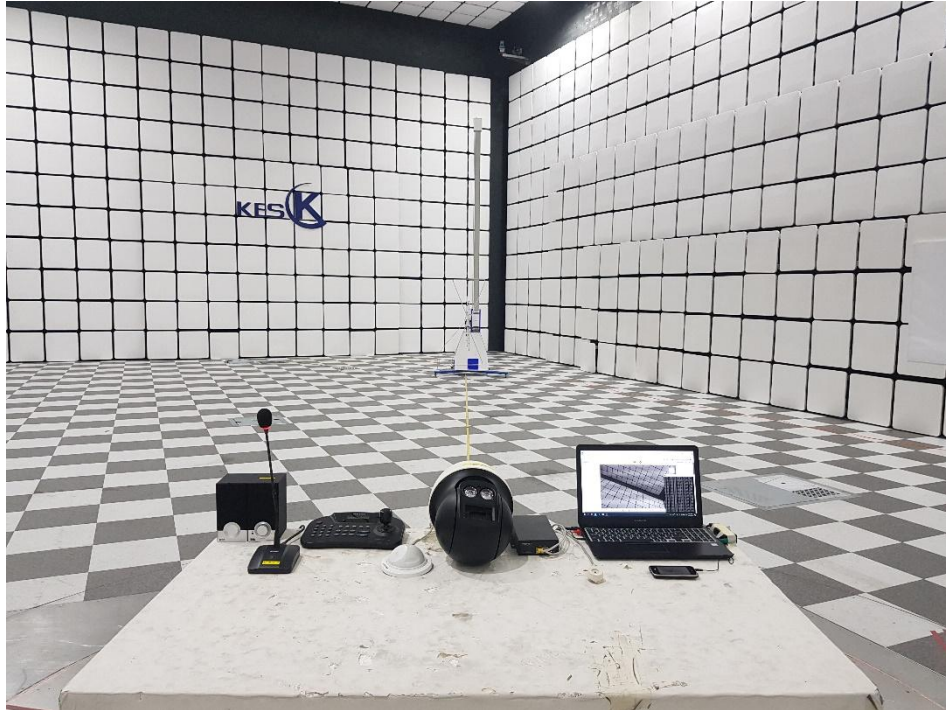
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## Conducted Telecommunication Emissions



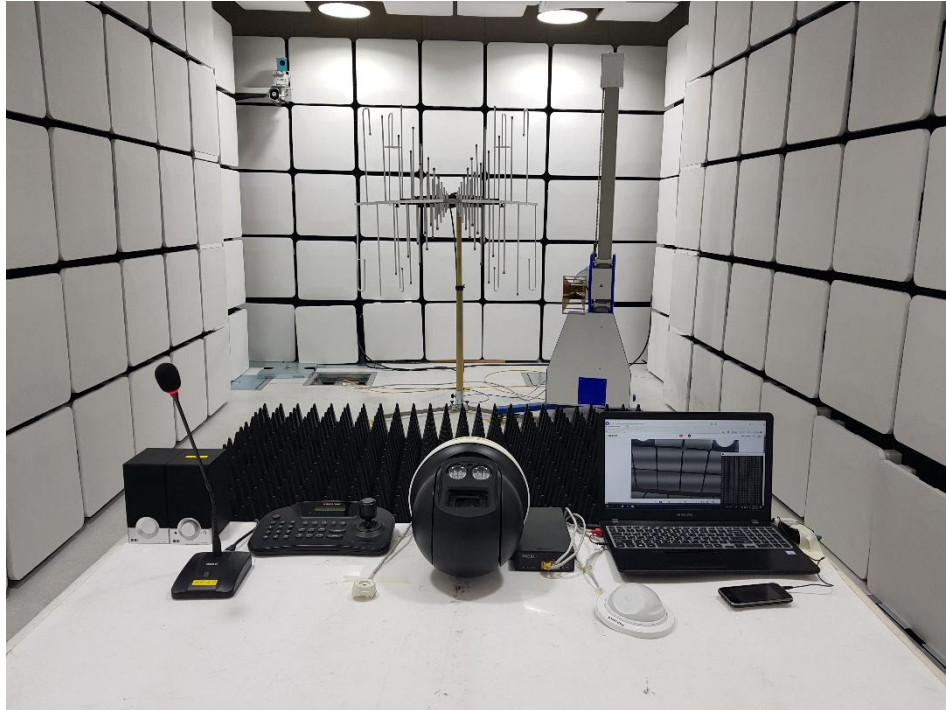
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## Radiated Electric Field Emissions(Below 1 GHz)



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## Radiated Electric Field Emissions(Above 1 GHz)



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## Harmonic Current Emissions and Voltage Fluctuations and Flicker



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## Electrostatic Discharge

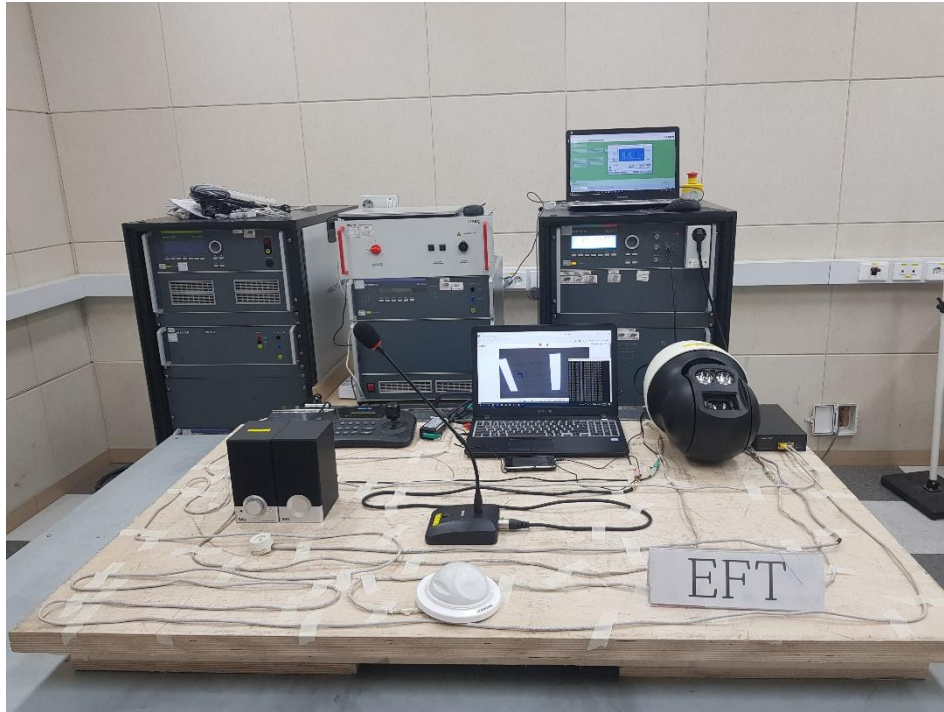


## Radiated Electric Field Immunity

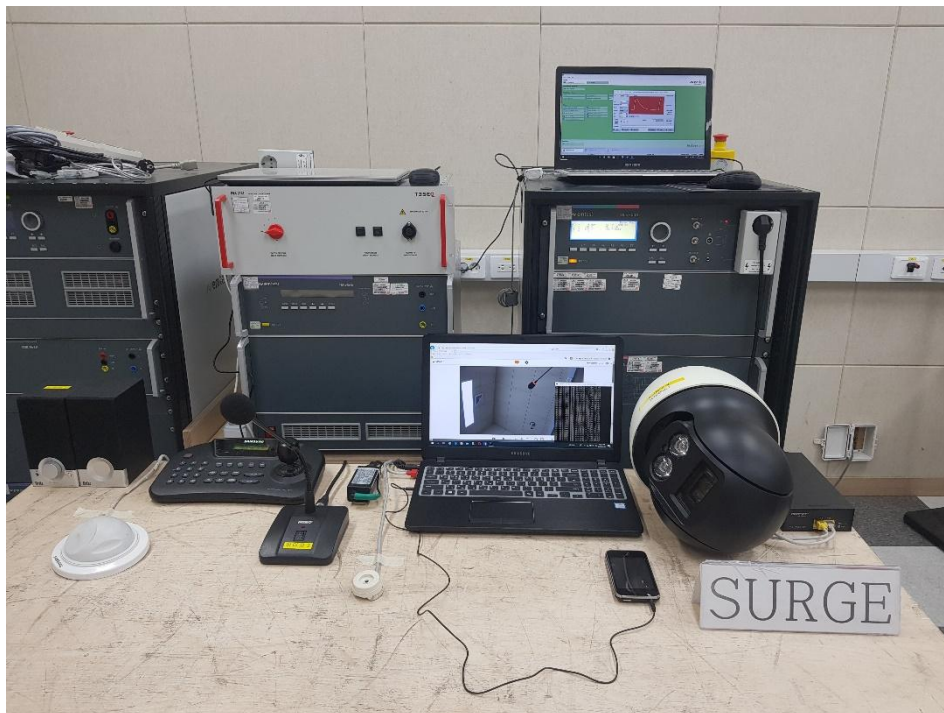


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## Electrical Fast Transients/Bursts

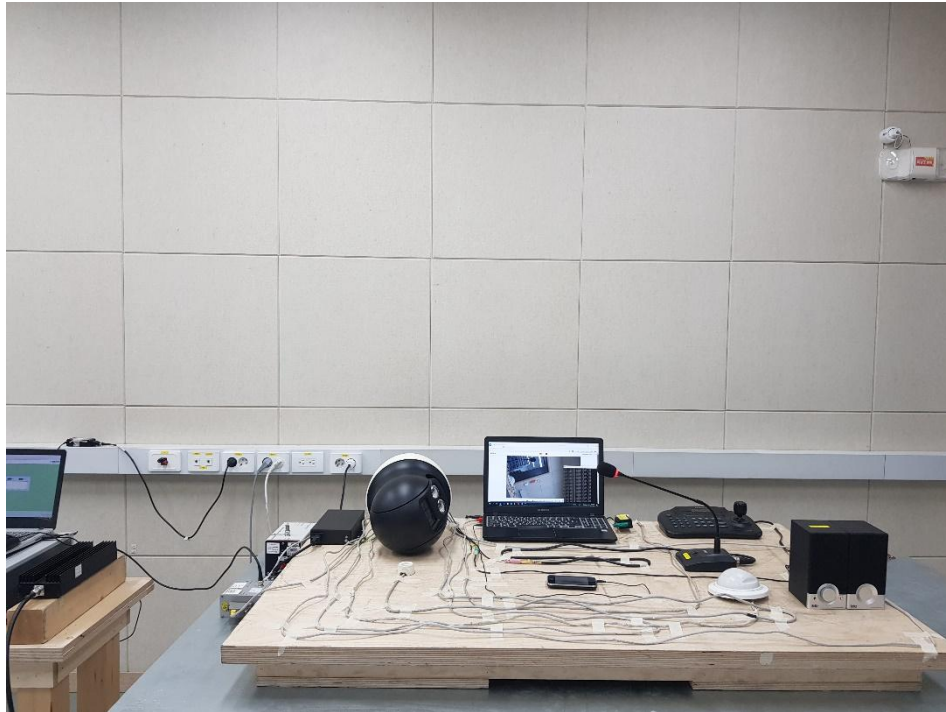


## Surge Transients

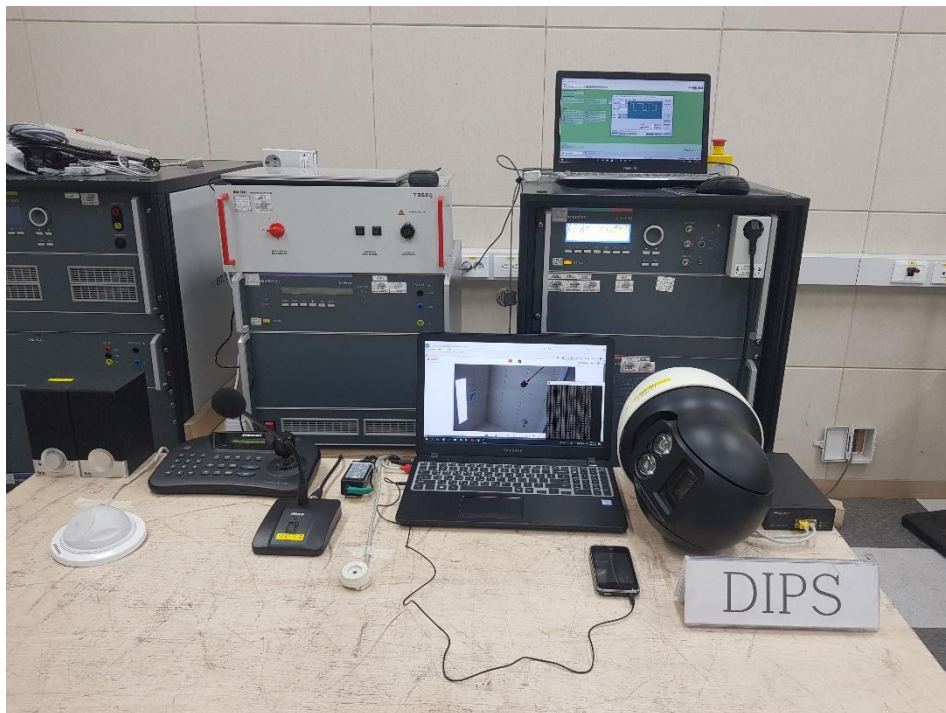


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## Conducted Disturbance



## Voltage Dips and Short Interruptions



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## EUT External Photographs

(Top)



(Bottom)



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## EUT Internal Photographs

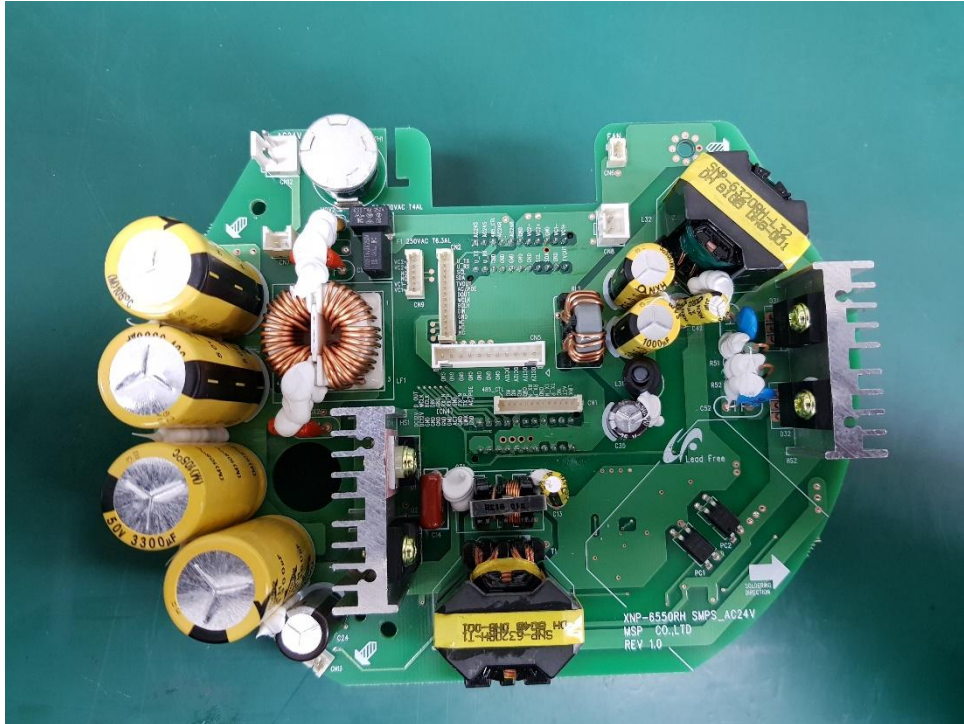
(Internal View)



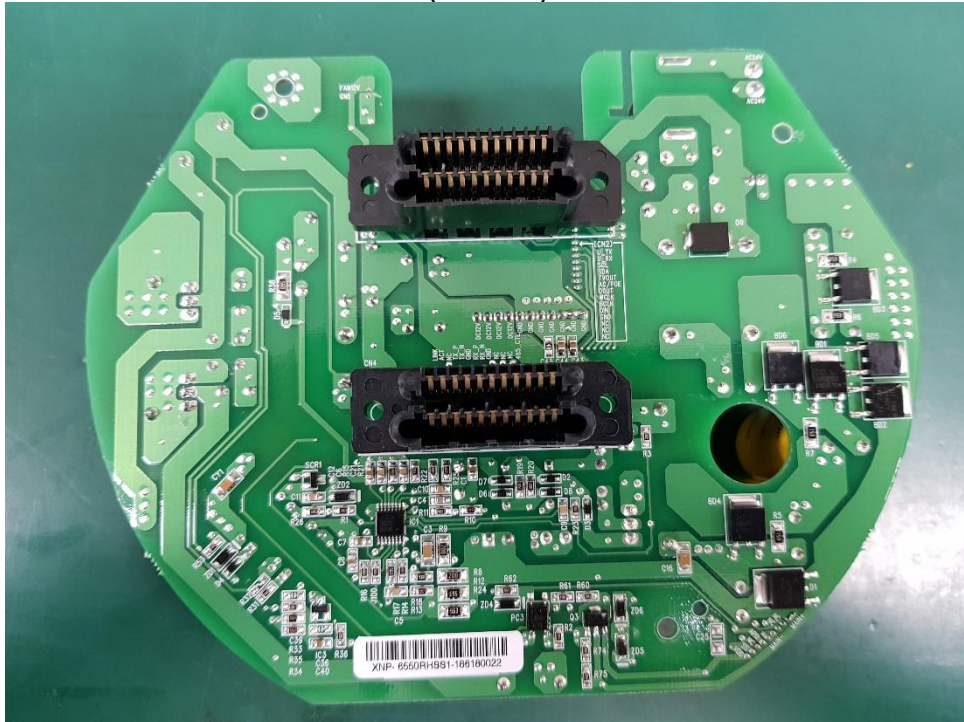
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## EUT Internal View – AC Power Board

(Top)



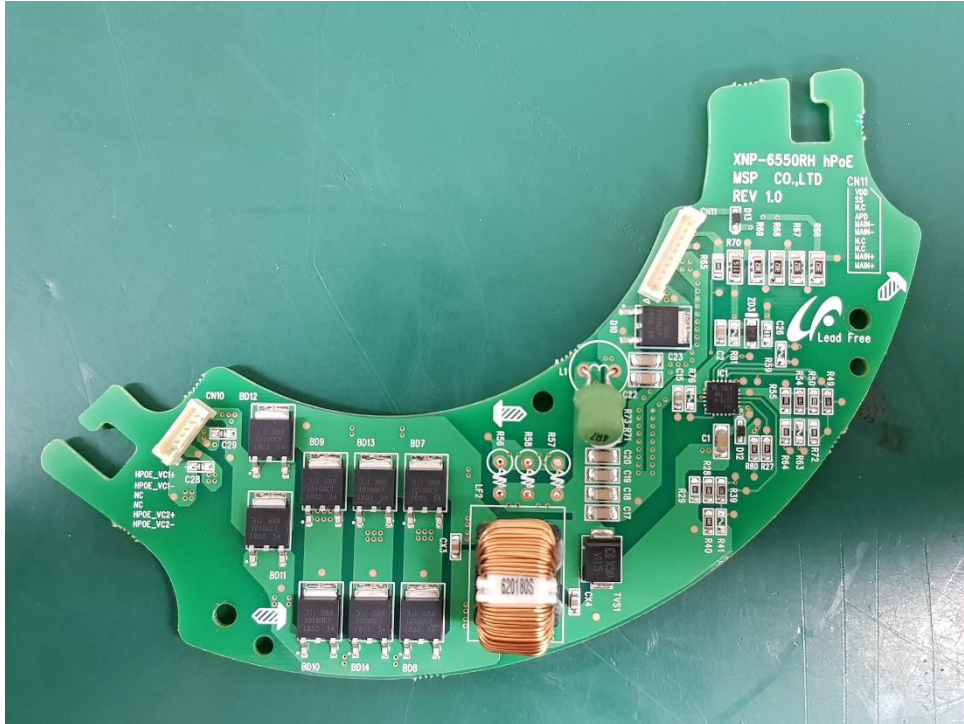
(Bottom)



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## EUT Internal View – PoE Power Board

(Top)



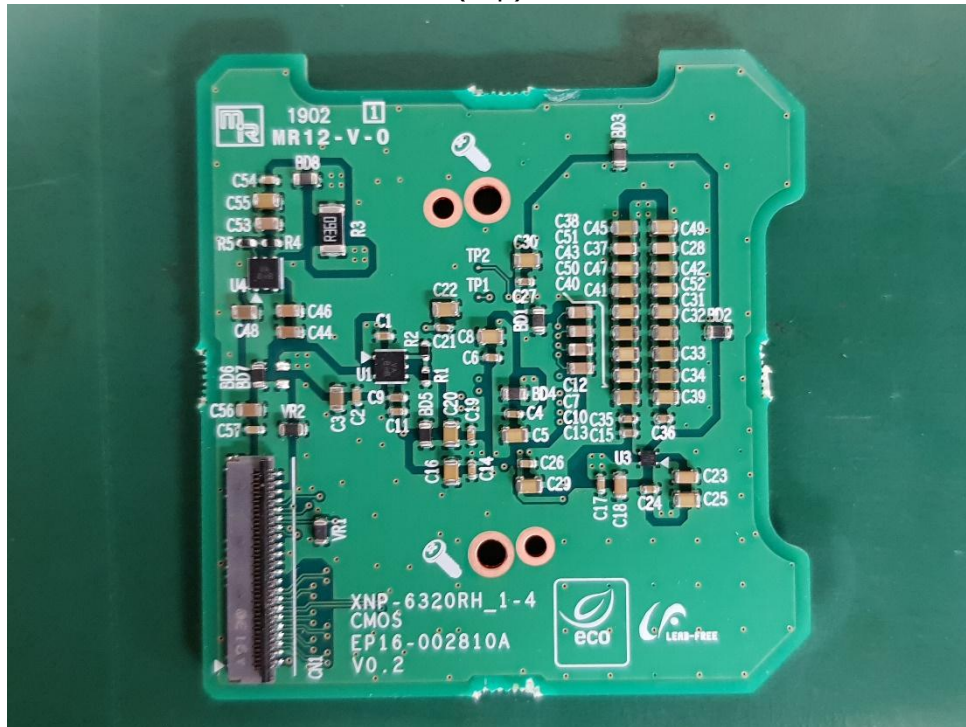
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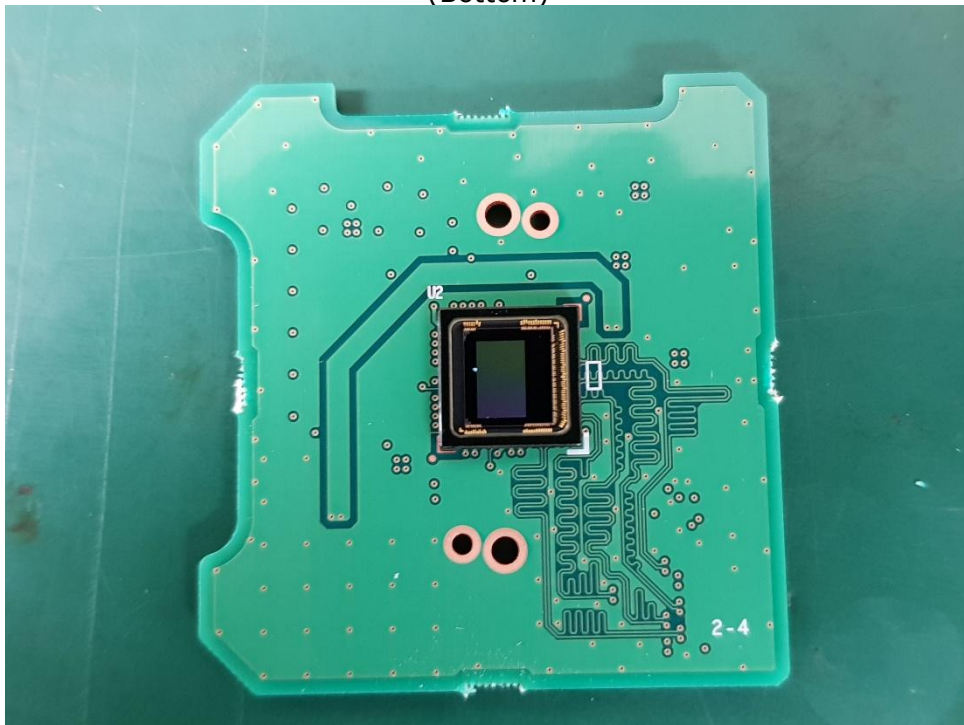
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## EUT Internal View – CMOS Board

[\(Top\)](#)



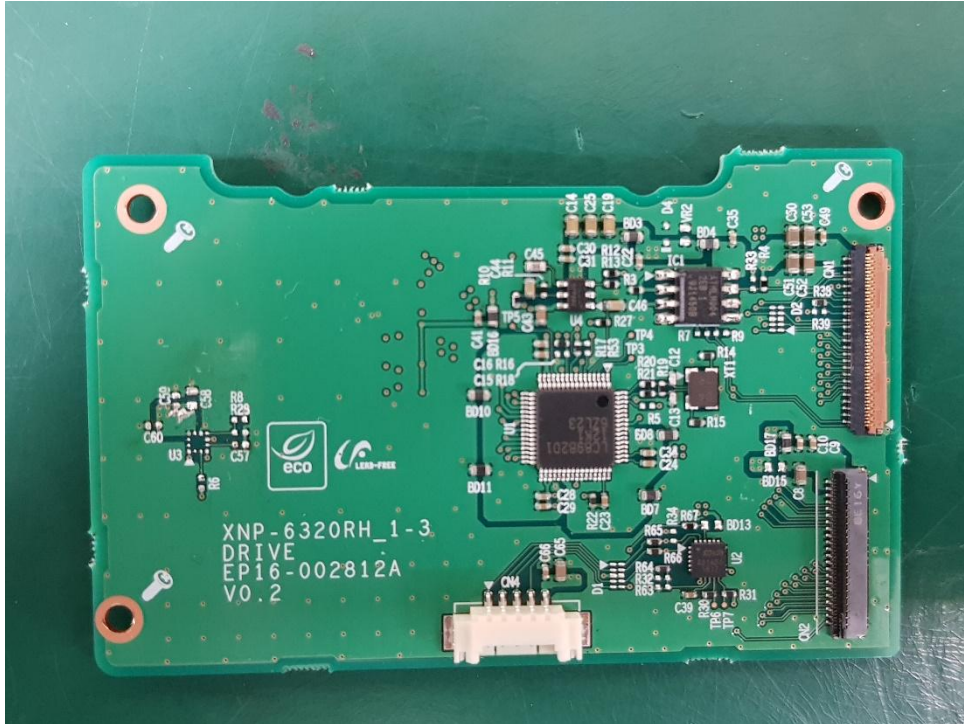
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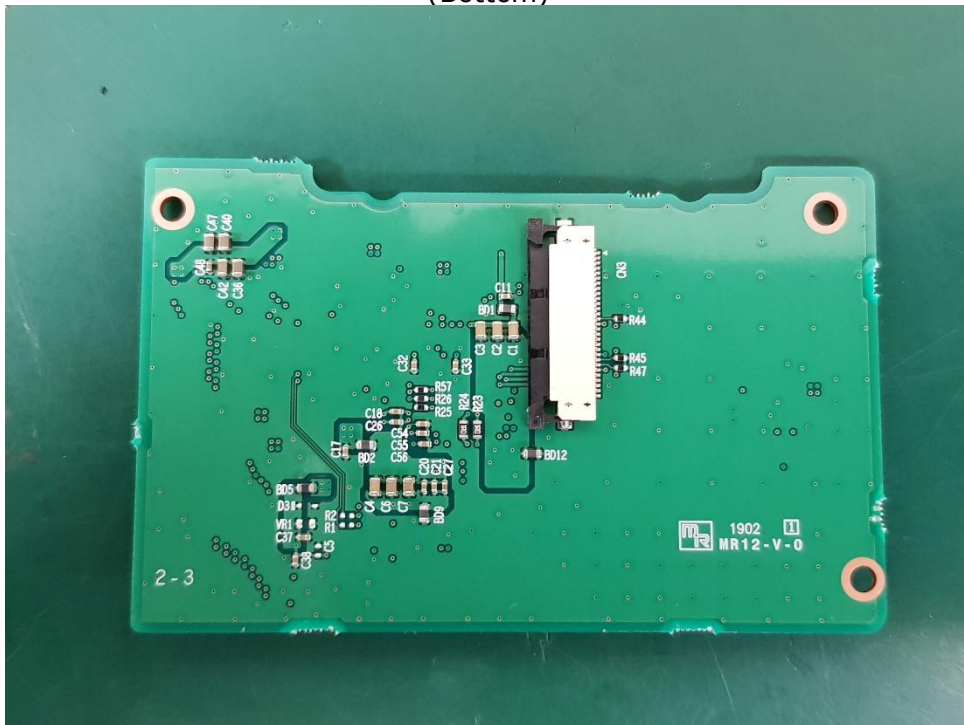
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## EUT Internal View – Drive Board

(Top)



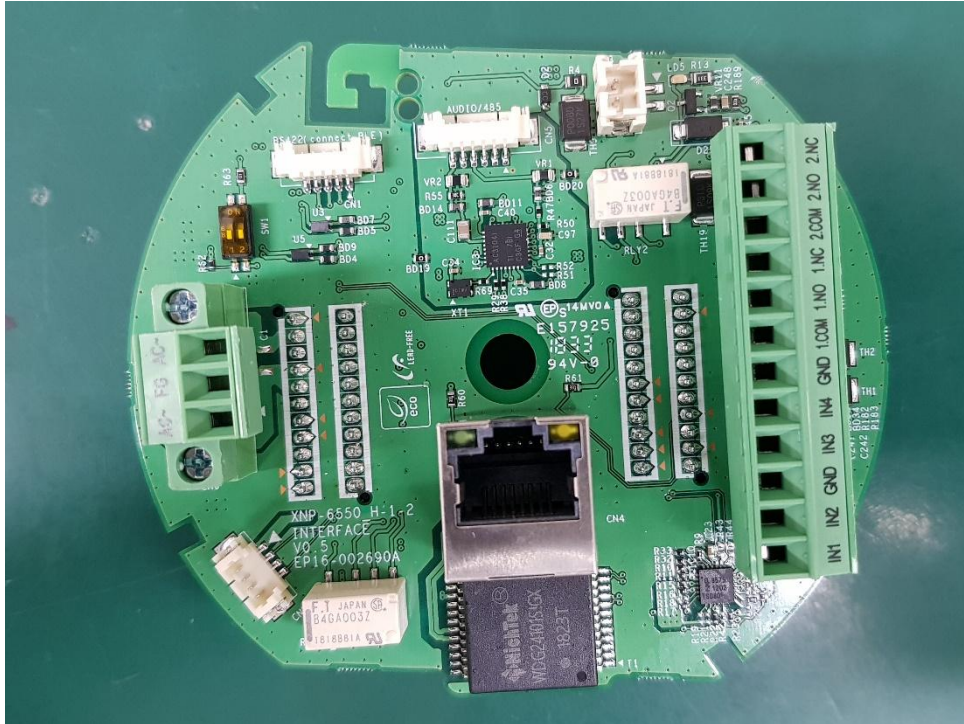
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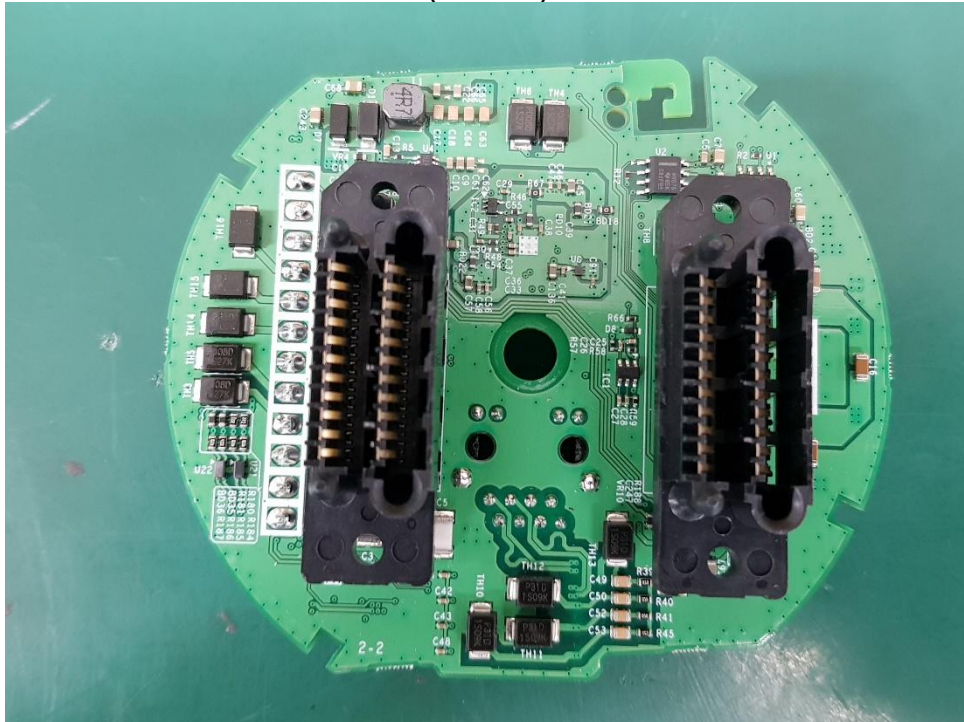
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## EUT Internal View – Interface Board

(Top)



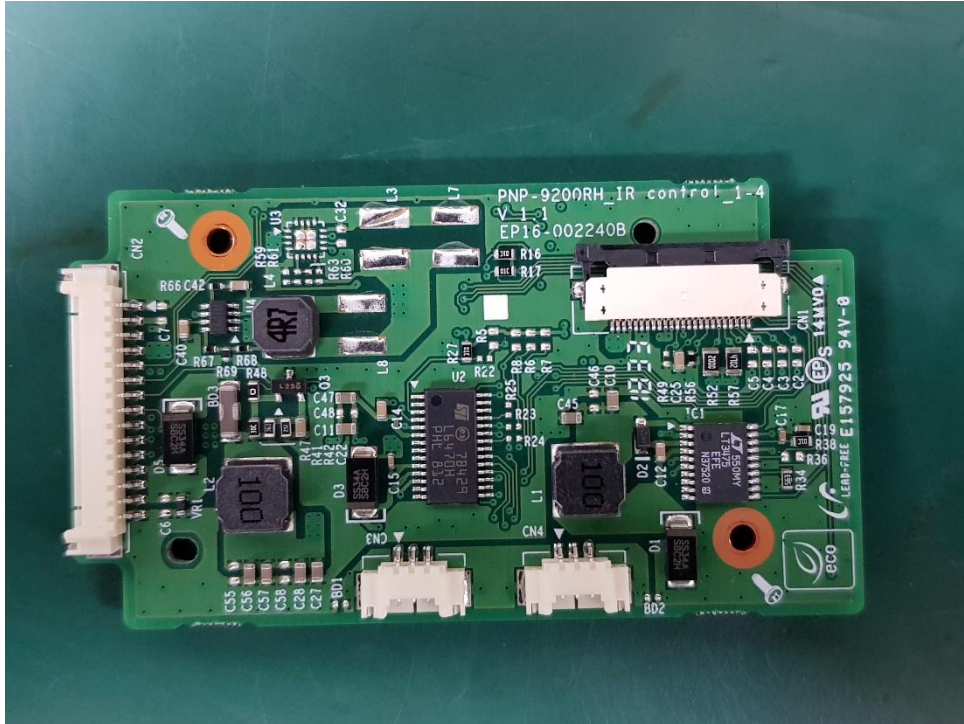
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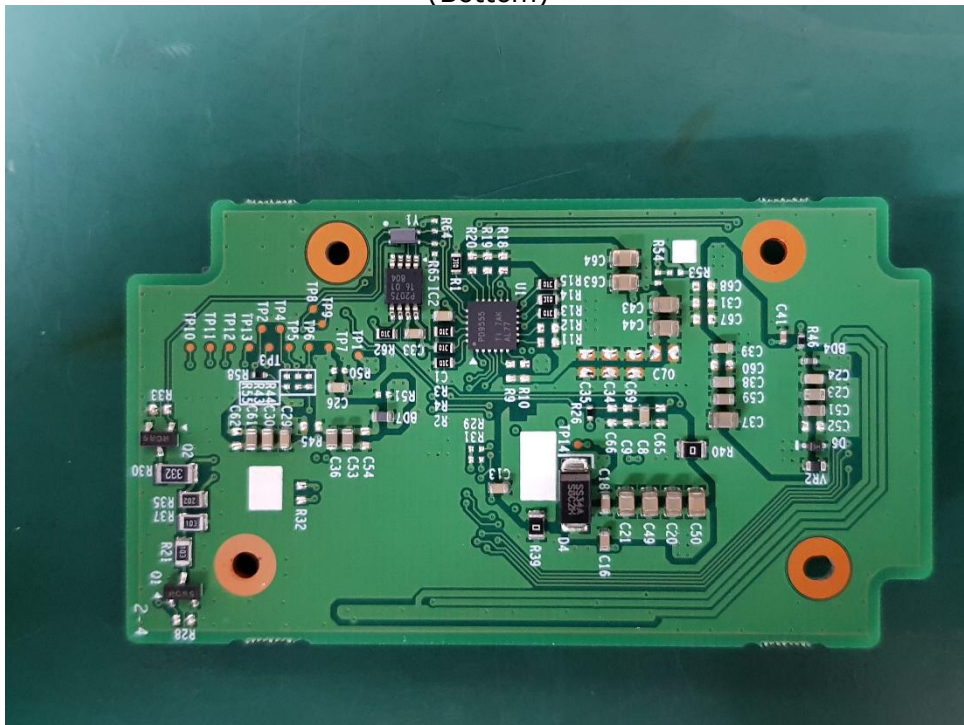
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## EUT Internal View – IR Control Board

(Top)



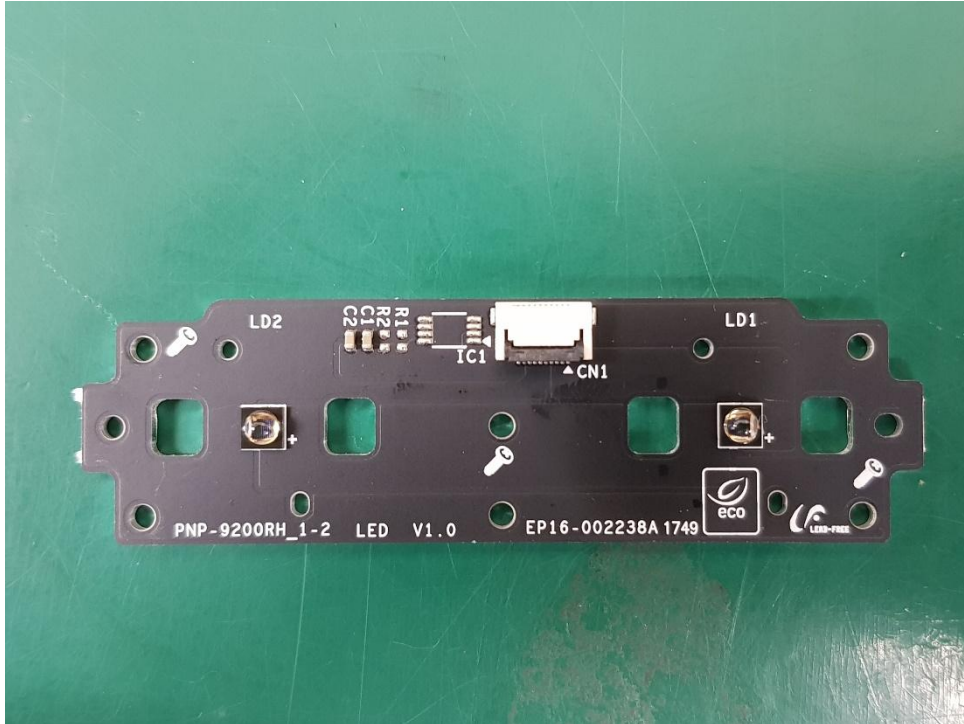
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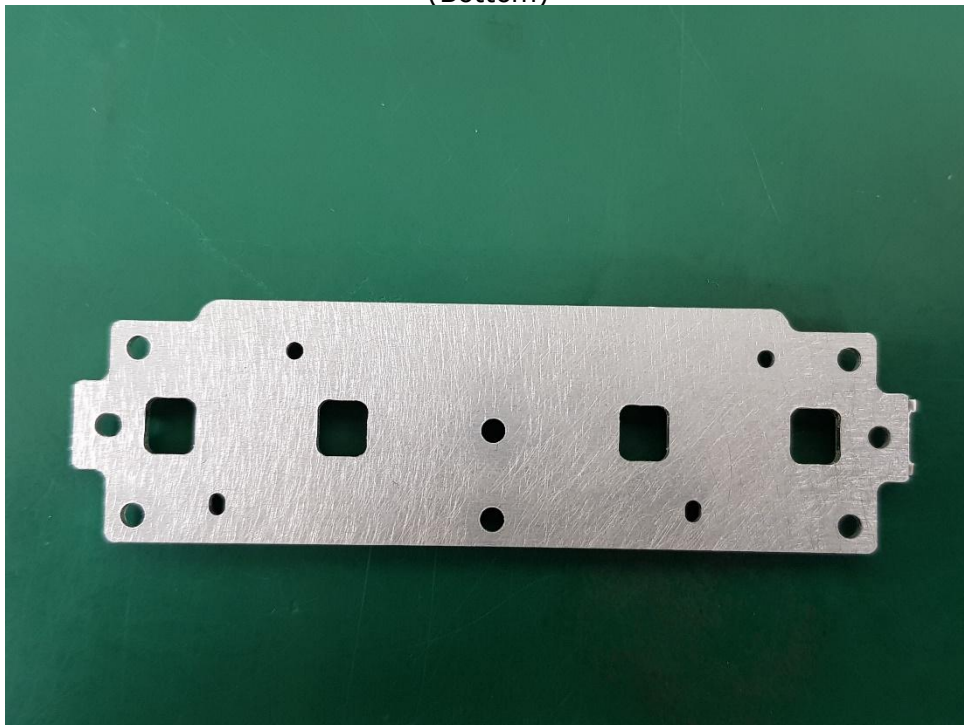
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## EUT Internal View – LED Board

(Top)



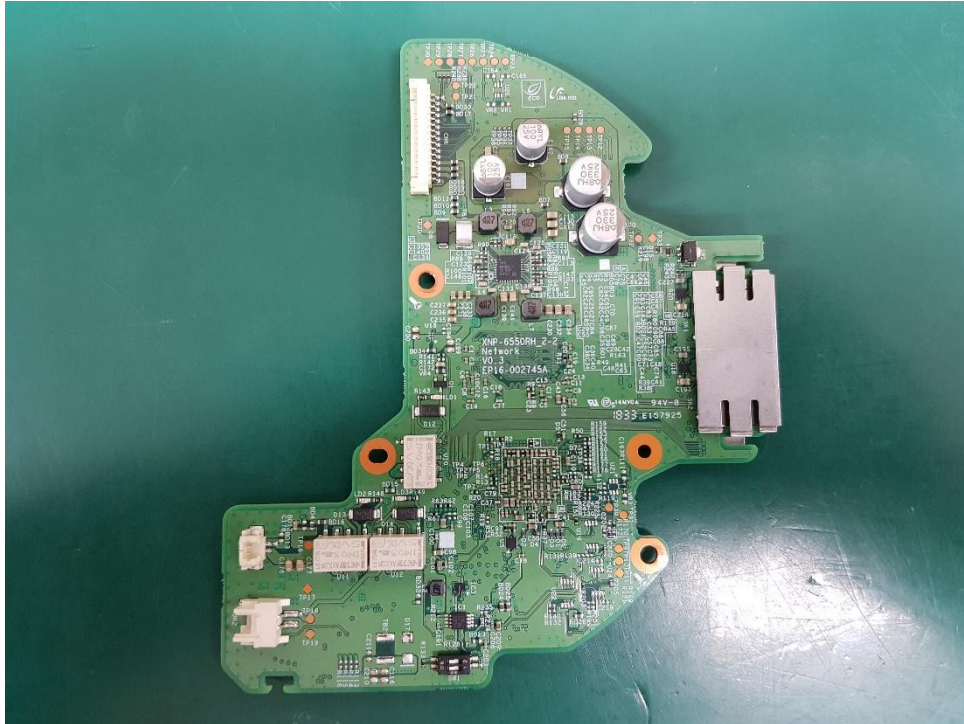
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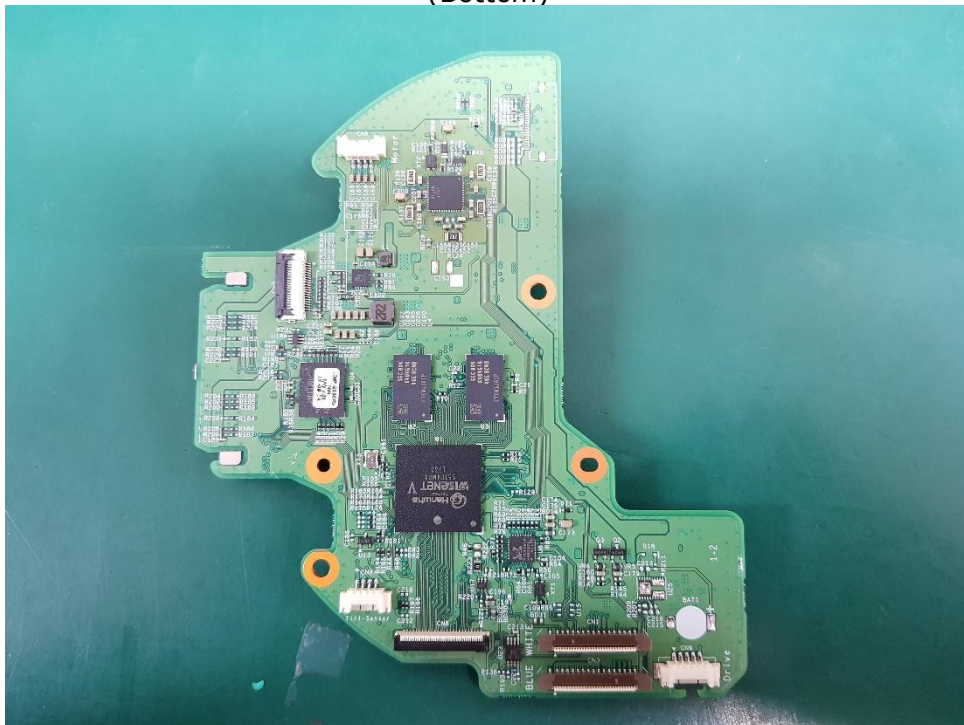
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## EUT Internal View – Network Board

(Top)



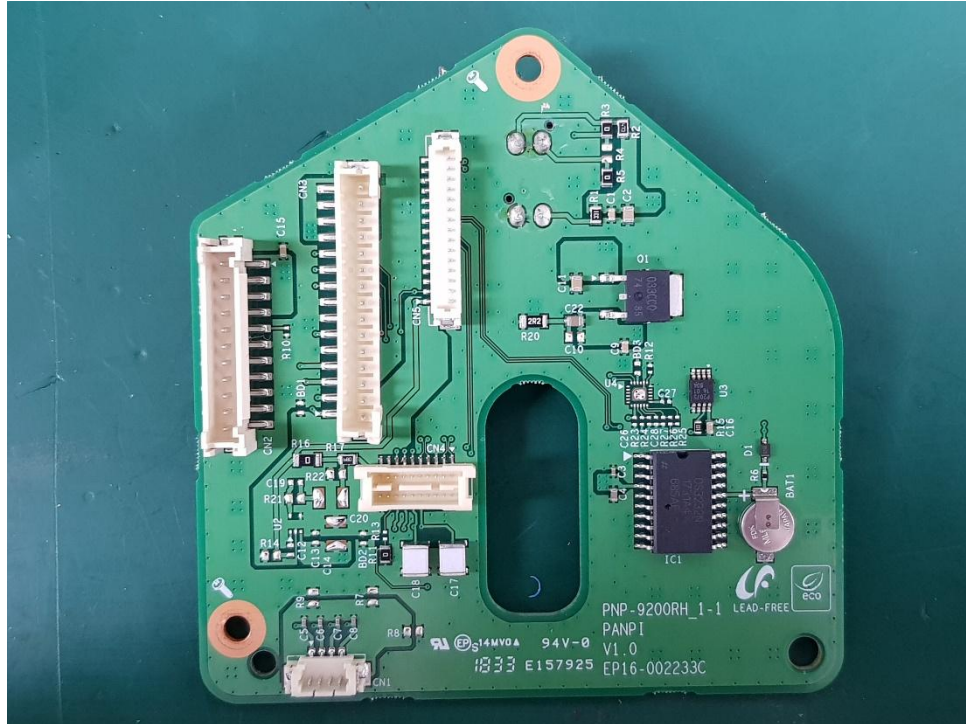
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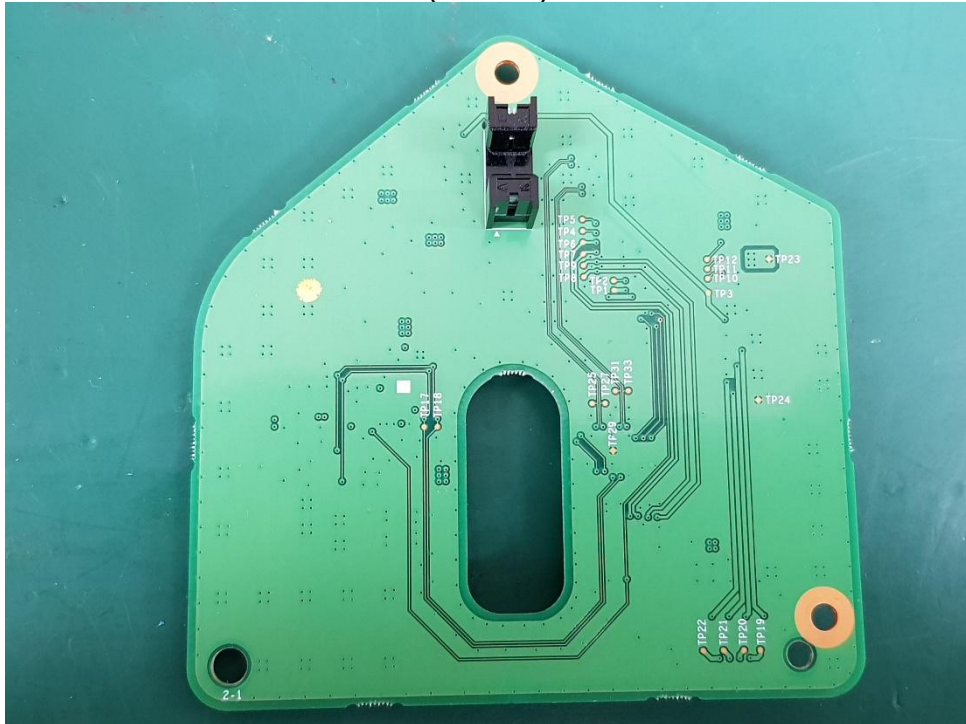
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## EUT Internal View – PANPI Board

(Top)



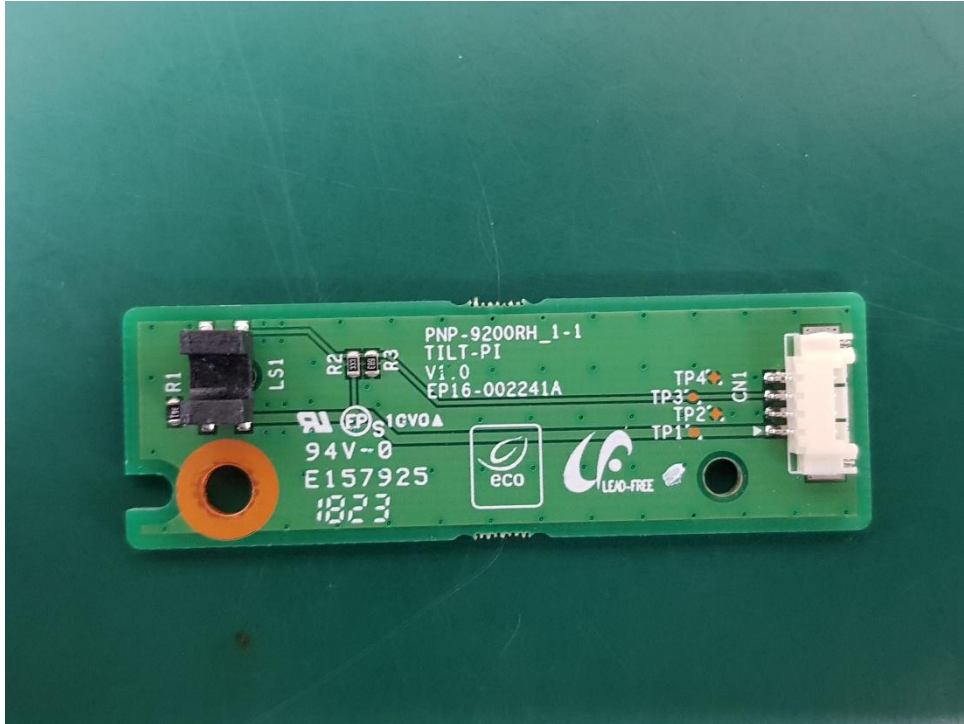
(Bottom)



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

## EUT Internal View – TILT Board

(Top)



(Bottom)



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## EUT Internal View – Lens

(Top)

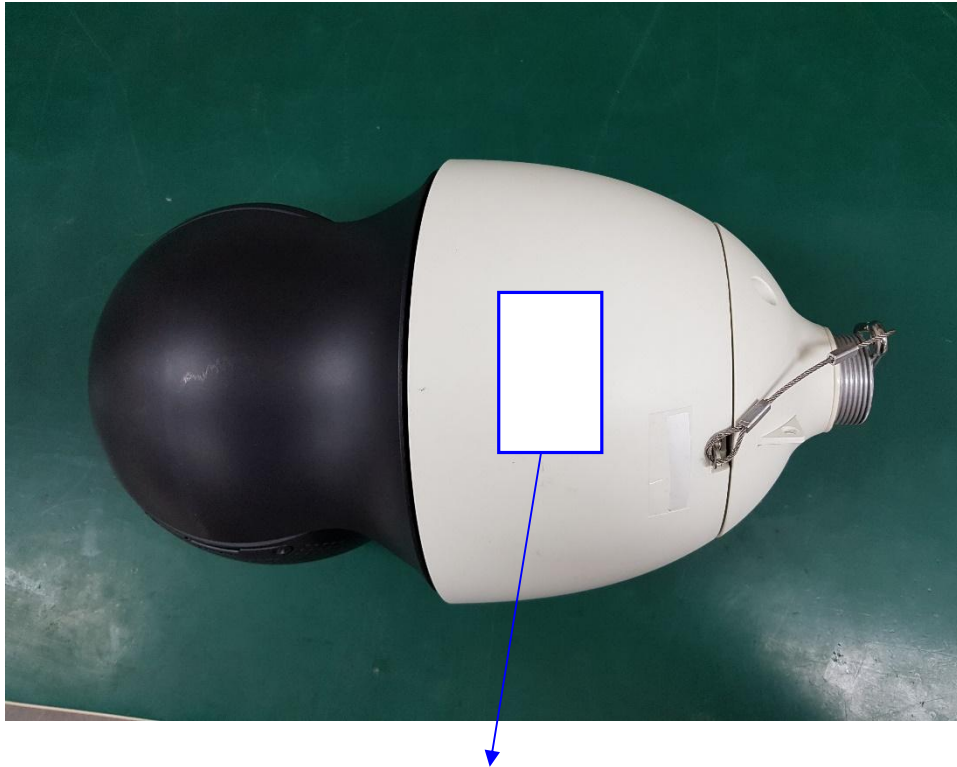


(Bottom)



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## Label and Location



### **Network Camera**

Model No : XNP-6320RH

Manufacturer : HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.

Made in Vietnam

