



## EMC TEST REPORT For CE

Test Report No. : KES-EM-22T0139-R1  
Date of Issue : Feb. 24, 2023  
Product name : NETWORK CAMERA  
Model/Type No. : XNP-9250  
Variant Model : XNP-8250  
Applicant : Hanwha Vision Co., Ltd  
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,  
Gyeonggi-do, Republic of Korea  
Manufacturer : 1. HANWHA VISION VIETNAM COMPANY LIMITED  
2. D-TECH CO.,LTD.  
Manufacturer Address : 1. Lot O-2, Que Vo Industrial Zone extended area,  
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam  
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do,  
Korea (Suwon Industrial Complex)  
Date of Receipt : Jan. 11, 2022  
Test date : Jan. 18, 2022 ~ Jan. 19, 2022  
Test Results : ☒ In Compliance ☐ Not in Compliance

Tested by

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EMC Test Engineer

Reviewed by

Dong-Hun, Jang  
EMC Technical Manager

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



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### REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jan. 27, 2022	KES-EM-22T0139	Issued
Feb. 24, 2023	KES-EM-22T0139-R1	Change the Applicant and Manufacturer at the request of the customer

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## 1.0 General Product Description

### Main Specifications of EUT are:

Video	
Imaging Device	1/2.8" 8MP CMOS
Effective Pixels	3864(H)x2192(V)
Min. Illumination	Color: 0.1Lux(F1.6, 1/30sec) BW: TBD
Video Out	None
Lens	
Focal Length (Zoom Ratio) TBD	5~150mm(30x) zoom
Max. Aperture Ratio	F1.6(Wide)
Angular Field of View	H: 57.42°(Wide)~2.19°(Tele) / V: 33.54°(Wide)~1.25°(Tele)
Min. Object Distance	Wide: 1.5m(4.92ft), Tele: 3m(9.84ft)
Focus Control	Oneshot AF, Focus save
Lens Type	DC auto iris
Pan / Tilt / Rotate	
Pan Range	360° Endless
Pan Speed	Max. 700°/sec, Manual: 0.024°/sec~250°/sec
Tilt Range	110°(-20°~90°)
Tilt Speed	Max. 500°/sec, Manual: 0.024°/sec~250°/sec
Sequence	Preset(300ea), Swing, Group(6ea), Trace, Tour, Auto Run, Schedule, Preset trace recording
Preset Accuracy	±0.1°
Azimuth	Support
Auto Tracking	Object auto tracking(Person/Vehicle)
Operational	
IR Viewable Length(TBD)	None
Camera Title	Displayed up to 85 characters, Direction Indicator
Day & Night	Auto(ICR)/Color/BW/Schedule
Backlight Compensation	BLC, HLC, WDR
Wide Dynamic Range(TBD)	100 dB
Digital Noise Reduction	SSNRV
Digital Image Stabilization	Support(built-in gyro sensor)
Defog	Support
Motion Detection	8ea, 8point polygonal zones
Privacy Masking	32ea, polygonal Support - Color: Grey/Green/Red/Blue/Black/White - Mosaic
Gain Control	Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC	None
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2~1/12,000sec)
Video Rotation	Flip, Mirror
Analytics	Directional detection, Fog detection, Face detection, Motion detection, Appear/Disappear, Enter/Exit, Loitering, Tampering, Virtual line, Shock detection * Audio detection, Sound classification(with NW I/O Box)
Business Intelligence	None
Serial Interface	None
Alarm I/O	None
Alarm Triggers	Analytics, Network disconnect * Alarm input(with NW I/O Box)
Alarm Events	File upload via FTP and e-mail Notification via e-mail SD/SDHC/SDXC or NAS recording at event triggers PTZ Preset * Alarm output(with NW I/O Box)
Audio In	None
Audio Out	None
Wiper / Waterdrop removal	Vibration dry, Heat film

Network	
Ethernet	RJ-45(10/100BASE-T)
Video Compression	H.265/H.264/MJPEG
Resolution	3840x2160, 2592x1944, 2592x1464, 1920x1080, 1600x1200, 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(Sea area), WiseStreamII
Video Quality Adjustment	H.264/H.265: Target bitrate level control MJPEG: Target bitrate level control
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast (128 user) Multiple streaming(Up to 10 profiles)
Audio Compression	None
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour,LLDP, SRTP
Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access log 802.1X Authentication(EAP-TLS, EAP-LEAP) Device certificate(Hanwha Techwin Root CA)
Edge Storage	Micro SD/SDHC/SDXC 2slot 1TB
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	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	TBD
Environmental	
Operating Temperature / Humidity	-40°C~+60°C (-40°F ~ +140°F) / Less than 95% RH(Non-condensing) Maximum Temperature : +60°C(+140°F), □□□ within 8 hours Absolute maximum(According to NEMA TS2, 2.2.7):+74°C → TBD
Storage Temperature / Humidity	-50°C~+60°C (-58°F~+140°F) / Less than 95% RH(Non-condensing)
Certification(TBD)	IP66, IK10(TBD), NEMA4X
Electrical	
Input Voltage	HPoE(IEEE802.3bt, Class7, Type3)
Power Consumption	TBD
Mechanical	
Color / Material	TBD
RAL Code	None
Product dimensions / weight	Ø180x270.mm(TBD), 2.5Kg(TBD)
Conduit hole	None
Hanging mount(Dome)	None
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.

☒ AC 230 V 50 Hz

## 1.2 Variant Model Differences

Addition of derivative models for place of sale management

## 1.3 Device Modifications

Not applicable

## 1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	XNP-9250	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

## 1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE INJECTOR	PT-PSE109GBRO-AH	-	Dongguan PROCET Network Technology Co.,Ltd	-
LAPTOP	LG15N54	410NZGK015231	LG Electronics	-
LAPTOP ADAPTOR	ADP-90WH B	84ZW19F1663	DELTA ELECTRONICS (JIANGSU) LTD.	-
Micro SD Card	-	-	Transcend	16 GB



## 1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45	PoE INJECTOR	RJ-45 (PoE)	3.0	U
	Micro SD Slot	Micro SD Card	Micro SD Slot	-	-
PoE INJECTOR	RJ-45 (LAN)	LAPTOP	RJ-45	2.5	U

\* Unshielded=U, Shielded=S

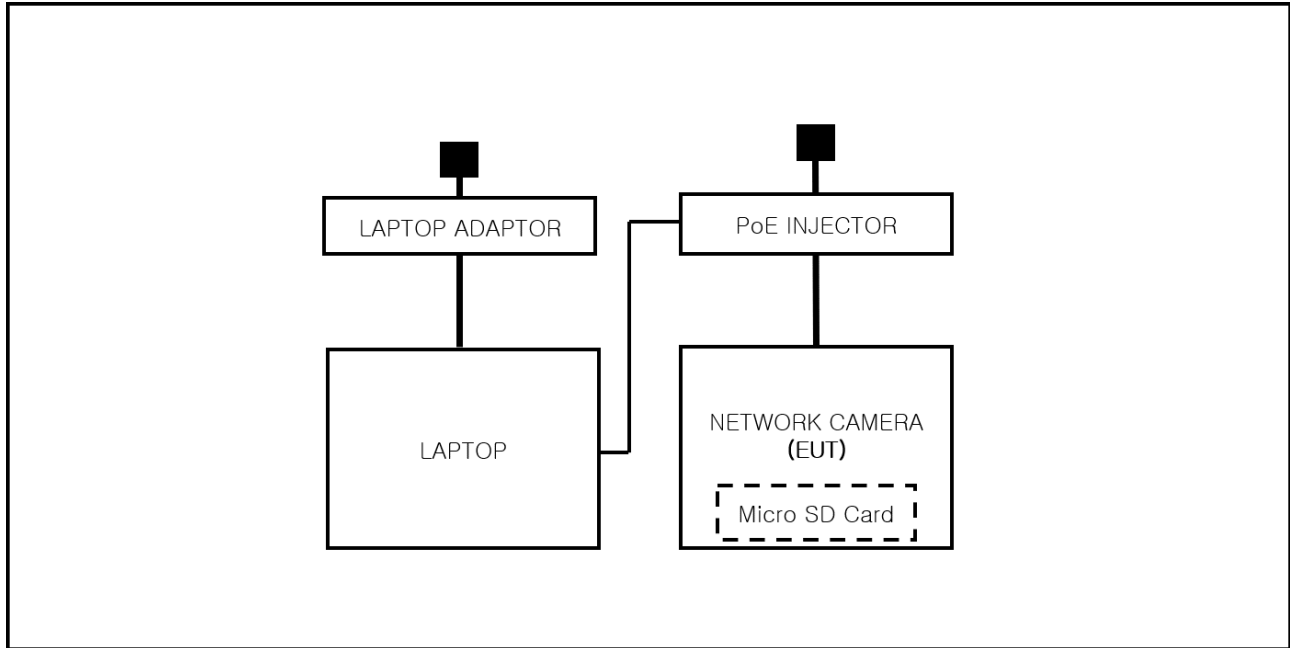
## 1.7 EUT Operating Mode(s)

Test mode	operating
Operation Mode	EUT Monitoring, Ping Test micro sd card : after testing, check if the recording is normally done on the micro sd card

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

## 1.8 Configuration

■ AC Main  
□ DC Main



## 1.9 Remarks when standards applied

In PoE mode, the LAN port is regarded as a wired communication network port and power-related ports are not tested.







## 1.10 Calibration Details of Equipment Used for Measurement

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

## 1.11 Test Facility

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

## 1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Anechoic Chamber Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298
JAPAN	VCCI	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)	 C-20136, T-20137, R-20181, G-20176
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 001633 0004





## 2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **EMC – Directive 2014/30/EU**

☒ EN 55032:2015/A11:2020

☒ Class A

☐ Class B

☒ EN 50130-4:2011

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013

☒ **EMC – Regulations 2016**

☒ EN 55032:2015/A11:2020

☒ Class A

☐ Class B

☒ EN 50130-4:2011

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013



## 2.1 Conducted Emissions at Mains Power Ports

### Test Date

N/A

### Test Location

Electro wave Shieldroom #6

### Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input type="checkbox"/>	EMI Test S/W	EMC32	R & S	9.12.00	-
<input type="checkbox"/>	EMI TEST RECEIVER	ESR3	R & S	101783	12, 28, 2022
<input type="checkbox"/>	LISN	ENV216	R & S	101787	12, 27, 2022
<input type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	12, 27, 2022
<input type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 27, 2022

### Test Conditions

Temperature: (    ±    ) °C

Relative Humidity: (    ±    ) % 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

It is not tested apply because it is powered by PoE

## 2.2 Conducted Emissions at Telecommunication Ports

### Test Date

Jan. 18, 2022

### Test Location

Electro wave Shieldroom #6

### Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EMC32	R & S	9.12.00	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESR3	R & S	101783	12, 28, 2022
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	12, 27, 2022
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	12, 27, 2022
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 27, 2022
<input checked="" type="checkbox"/>	8-WIRE ISN CAT3,5	ENY81	R & S	100174	12, 28, 2022
<input type="checkbox"/>	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	12, 28, 2022

### Test Conditions

Temperature: (22,7 ± 0,2) °C

Relative Humidity: (42,7 ± 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.  
- 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

Jan. 18, 2022

### 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, 01, 2022
<input checked="" type="checkbox"/>	AMPLIFIER	SCU 01	R & S	100603	11, 24, 2022
<input checked="" type="checkbox"/>	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
<input checked="" type="checkbox"/>	ATTENUATOR	8491A	HP	32173	03, 10, 2022

### Test Conditions

Temperature: (22,6 ± 0,2) °C

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

### Frequency Range of Measurement

30 MHz to 1 GHz

### Instrument Settings

IF Band Width: 120 kHz

### Test Results

The requirements are:

☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.



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

### Test Date

Jan. 18, 2022

### 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, 03, 2022
<input checked="" type="checkbox"/>	PREAMPLIFIER	8449B	AGILENT	3008A01967	04, 07, 2022
<input type="checkbox"/>	ATTENUATOR	8491A	HP	35496	03, 10, 2022
<input checked="" type="checkbox"/>	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2022

### Test Conditions

Temperature: (22,4 ± 0,2) °C

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

### Frequency Range of Measurement

1 GHz to 6 GHz

### Instrument Settings

IF Band Width: 1 MHz

### Test Results

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.



## 2.5 Harmonic Current Emissions

### Test Date

N/A

### Test Location

Electro wave Shieldroom

### Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	net.control	EM TEST	2.1.4	-
<input checked="" type="checkbox"/>	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	04, 06, 2022
<input checked="" type="checkbox"/>	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

### Test Conditions

Temperature: (    ±    ) °C

Relative Humidity: (    ±    ) % 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

It is not tested apply because it is powered by PoE



## 2.6 Voltage Fluctuations and Flicker

### Test Date

N/A

### Test Location

Electro wave Shieldroom

### Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	net.control	EM TEST	2.1.4	-
<input checked="" type="checkbox"/>	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	04, 06, 2022
<input checked="" type="checkbox"/>	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

### Test Conditions

Temperature: (    ±    ) °C

Relative Humidity: (    ±    ) % R.H.

### Test Results

The requirements are:

- ☐ PASS  
☐ NOT PASS  
☒ NOT APPLICABLE

### Remarks

It is not tested apply because it is powered by PoE

### 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.



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### **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

Jan. 19, 2022

#### 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	02, 01, 2022
<input checked="" type="checkbox"/>	HCP	-	KES	-	-
<input checked="" type="checkbox"/>	VCP	-	Noise Ken	-	-

#### Test Conditions

Temperature: (22,7 ± 0,0) °C  
Relative Humidity: (42,8 ± 0,0) % R.H.  
Atmospheric Pressure: (100,9 ± 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:	<b>Contact</b> <input type="checkbox"/> 2 kV <input type="checkbox"/> 4 kV <input checked="" type="checkbox"/> 6 kV <input type="checkbox"/> 8 kV <input type="checkbox"/> 15 kV	<b>Air</b> <input checked="" type="checkbox"/> 2 kV <input checked="" type="checkbox"/> 4 kV <input type="checkbox"/> 6 kV <input checked="" type="checkbox"/> 8 kV <input type="checkbox"/> 15 kV	<b>HCP</b> <input type="checkbox"/> 2 kV <input type="checkbox"/> 4 kV <input checked="" type="checkbox"/> 6 kV <input type="checkbox"/> 8 kV <input type="checkbox"/> 15 kV	<b>VCP</b> <input type="checkbox"/> 2 kV <input type="checkbox"/> 4 kV <input checked="" type="checkbox"/> 6 kV <input type="checkbox"/> 8 kV <input type="checkbox"/> 15 kV
--------------------	---	---	---	---

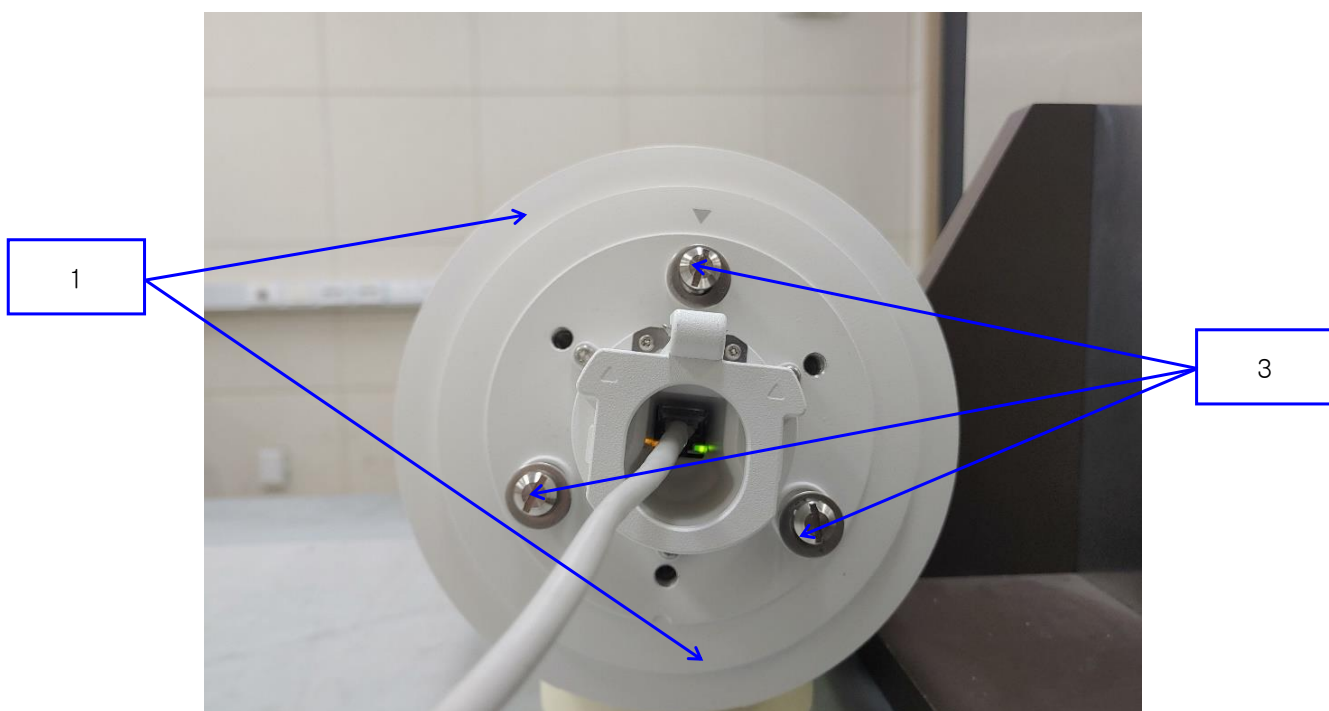
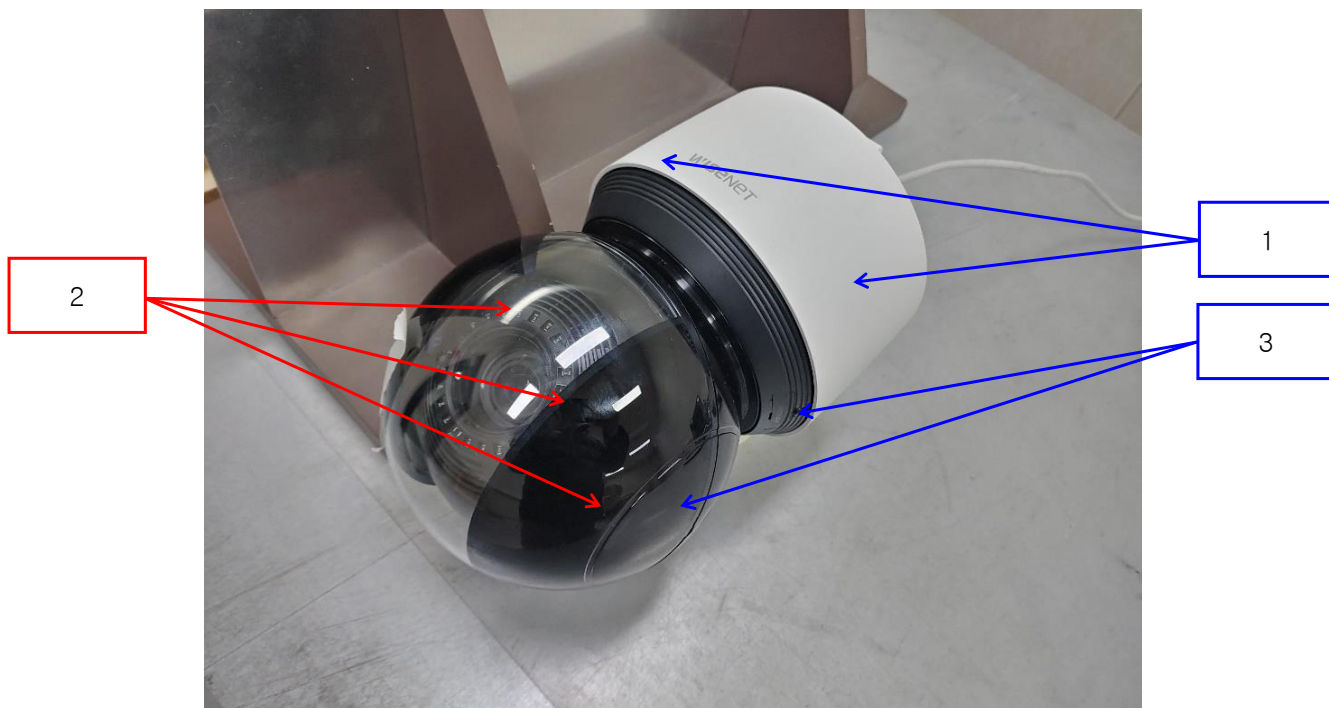
Notes: HCP: Horizontal coupling plane  
VCP: Vertical coupling plane

Required Performance Criteria: ☒ Complied

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**Location of Discharge:**

Air
Contact



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**Test Data**

## Indirect Discharge

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

## Direct Discharge

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

Jan. 19, 2022

### 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	Rohde & Schwarz	108252	08, 03, 2022
<input checked="" type="checkbox"/>	HIGH POWER DUAL AMP	SSA532	SUNGSAN	SSA532-001	-
<input checked="" type="checkbox"/>	POWER METER	E4419B	Agilent	GB40203000	04, 01, 2022
<input checked="" type="checkbox"/>	CW POWER SENSOR	E4412A	Agilent	US38488240	04, 01, 2022
<input checked="" type="checkbox"/>	CW POWER SENSOR	E4412A	Agilent	MY41501662	04, 01, 2022
<input checked="" type="checkbox"/>	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
<input checked="" type="checkbox"/>	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2022

### Test Conditions

Temperature: (22,8 ± 0,4) °C  
Relative Humidity: (43,5 ± 0,2) % R.H.  
Atmospheric Pressure: (100,5 ± 0,0) 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**

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

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

**Test Results**

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

**Remarks**PASS Required Performance Criteria

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### 3.3 Electrical Fast Transients/Bursts

**Reference Standard**

EN 61000-4-4:2012

BS EN 61000-4-4:2012

**Test Date**

Jan. 19, 2022

**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	5.4.8	-
<input checked="" type="checkbox"/>	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	12, 03, 2022
<input checked="" type="checkbox"/>	MOTOR VARIAC	MV2616	EM TEST	P1552169719	04, 01, 2022
<input checked="" type="checkbox"/>	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	12, 03, 2022

**Test Conditions**

Temperature: (22,7 ± 0,0) °C  
Relative Humidity: (42,8 ± 0,2) % R.H.  
Atmospheric Pressure: (100,7 ± 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

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

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

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

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

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45	Complied	Complied

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

BS EN 61000-4-5:2014

**Test Date**

Jan. 19, 2022

**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	5.4.8	-
<input checked="" type="checkbox"/>	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	12, 03, 2022
<input checked="" type="checkbox"/>	MOTOR VARIAC	MV2616	EM TEST	P1552169719	04, 01, 2022
<input checked="" type="checkbox"/>	CDN	CNV 508N1	EM TEST	P1610176296	12, 03, 2022

**Test Conditions**

Temperature: (22,7 ± 0,2) °C  
Relative Humidity: (42,8 ± 0,4) % R.H.  
Atmospheric Pressure: (100,9 ± 0,0) kPa

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**Test Specifications****AC Power Lines**

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

Surge Amplitude :

Common Mode☐ (0,5 / 1,0 / 2,0) kVDifferential 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**☐ 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	CDN	Complied	Complied
	LINE	Complied	Complied

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

**Test Results**

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

**Remarks**N/A

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### 3.5 Conducted Disturbance

**Reference Standard**

EN 61000-4-6:2014

BS EN 61000-4-6:2014

**Test Date**

Jan. 16, 2022

**Test Location**

EMS-CS: Electro wave Shieldroom #3

**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMS Test S/W	icd.control	EM TEST	5.3.7	-
<input checked="" type="checkbox"/>	CONTINUOUS WAVE SIMULATOR	CWS 500N1	EM TEST	V0936105119	08, 03, 2022
<input checked="" type="checkbox"/>	ATTENUATOR	ATT6	EM TEST	1208-34	08, 03, 2022
<input checked="" type="checkbox"/>	CDN	CDN-M2/M3N	EM TEST	0909-06	08, 03, 2022
<input checked="" type="checkbox"/>	CDN	CDN T8RJ45	EM TEST	0909-09	08, 03, 2022
<input type="checkbox"/>	EM INJECTION CLAMP	EM 101	Liithi	35943	08, 03, 2022

**Test Conditions**

Temperature: (24,6 ± 0,2) °C  
Relative Humidity: (42,9 ± 0,2) % R.H.  
Atmospheric Pressure: (100,1 ± 0,0) kPa

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### 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**☐ Input a.c. power ports

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

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45	CDN	Complied

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

Observations:

Complied – No degradation of function

**Test Results**

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

**Remarks**PASS Required Performance Criteria

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### 3.6 Voltage Dips and Short Interruptions

**Reference Standard**

EN 61000-4-11:2004

BS EN 61000-4-11:2004

**Test Date**

N/A

**Test Location**

EMS-Voltage dip: Electro wave Shieldroom

**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input type="checkbox"/>	EMS Test S/W	iec.control	EM TEST	5.4.8	-
<input type="checkbox"/>	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	04, 01, 2022
<input type="checkbox"/>	MOTOR VARIAC	MV2616	EM TEST	P1552169719	04, 01, 2022

**Test Conditions**

Temperature: (    ±    ) °C

Relative Humidity: (    ±    ) % R.H.

Atmospheric Pressure: (    ±    ) kPa

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## Test Specifications & Observations/Remarks

### - Voltage Dips and Short Interruptions

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

### - Voltage variations

<input type="checkbox"/> Unom + 10 %	<input type="checkbox"/> 253.0 V (ac)	_____
<input type="checkbox"/> Unom - 15 %	<input type="checkbox"/> 195.5 V (ac)	_____

#### Observations:

Complied – No degradation of function

Degradation - See "Remarks "

### Test Results

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

### Remarks

It is not tested apply because it is powered by PoE.



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## **APPENDIX A – TEST DATA**

### **Conducted Emissions at Mains Power Ports**

**[HOT]**

N/A

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**[NEUTRAL]**

N/A

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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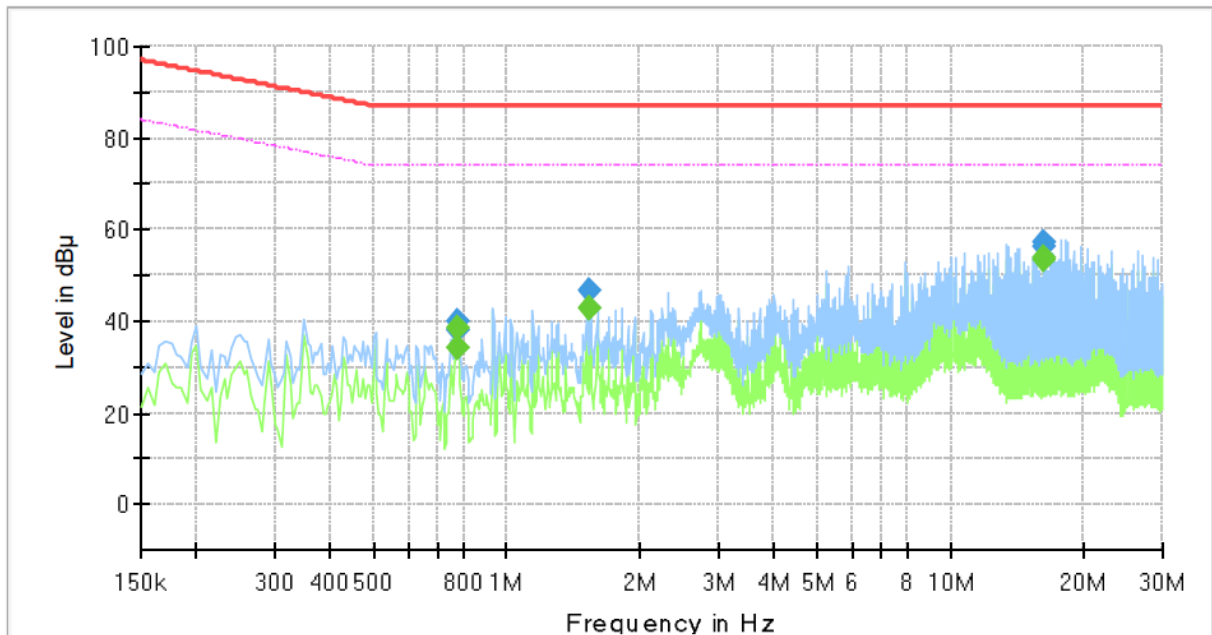
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## Conducted Emissions at Telecommunication Ports

[100 Mbps]

### Common Information

Test Description:	Telecommunication Emission
Model No.:	XNP-9250
Mode :	
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)
0.770000	---	38.29	74.00	35.71	1000.0	9.000	Single Line	20.0
0.770000	39.85	---	87.00	47.15	1000.0	9.000	Single Line	20.0
0.775000	---	34.07	74.00	39.93	1000.0	9.000	Single Line	20.0
0.775000	38.24	---	87.00	48.76	1000.0	9.000	Single Line	20.0
1.540000	---	43.04	74.00	30.96	1000.0	9.000	Single Line	20.1
1.540000	46.61	---	87.00	40.39	1000.0	9.000	Single Line	20.1
16.165000	---	53.19	74.00	20.81	1000.0	9.000	Single Line	19.7
16.165000	56.28	---	87.00	30.72	1000.0	9.000	Single Line	19.7
16.230000	---	53.91	74.00	20.09	1000.0	9.000	Single Line	19.7
16.230000	57.14	---	87.00	29.86	1000.0	9.000	Single Line	19.7

#### ◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

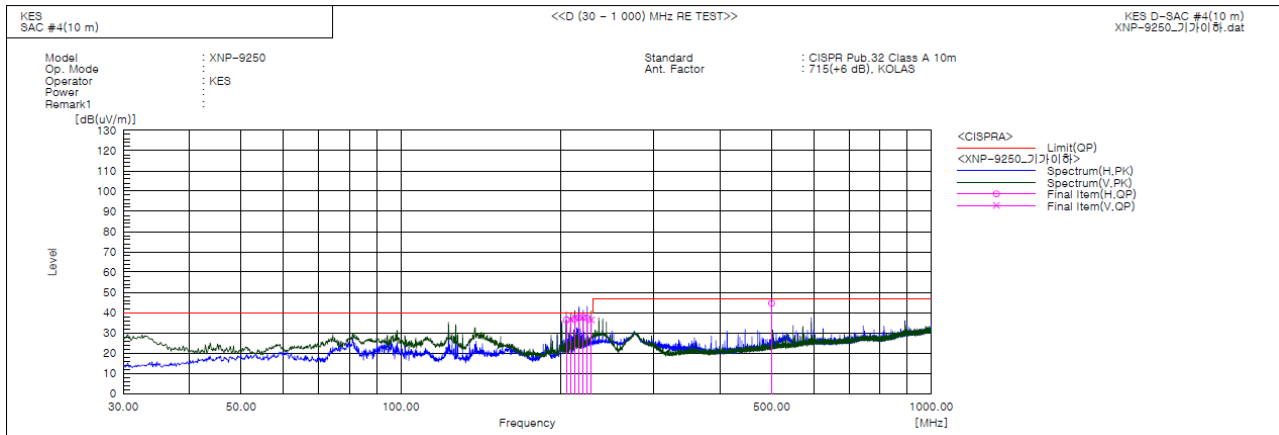
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## Radiated Electric Field Emissions(Below 1 GHz)



### Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	205.085	H	57.0	-20.7	36.3	40.0	3.7	392.0	174.0	
2	208.965	V	57.2	-20.6	36.6	40.0	3.4	118.0	341.0	
3	212.845	H	57.4	-20.5	36.9	40.0	3.1	271.0	227.0	
4	212.845	V	58.1	-20.5	37.6	40.0	2.4	125.0	54.0	
5	216.725	H	57.9	-20.4	37.5	40.0	2.5	383.0	289.0	
6	220.726	H	57.9	-20.2	37.7	40.0	2.3	312.0	136.0	
7	224.606	H	57.4	-20.1	37.3	40.0	2.7	299.0	91.0	
8	228.486	V	56.3	-19.9	36.4	40.0	3.6	108.0	104.0	
9	499.965	H	55.9	-11.3	44.6	47.0	2.4	196.0	231.0	

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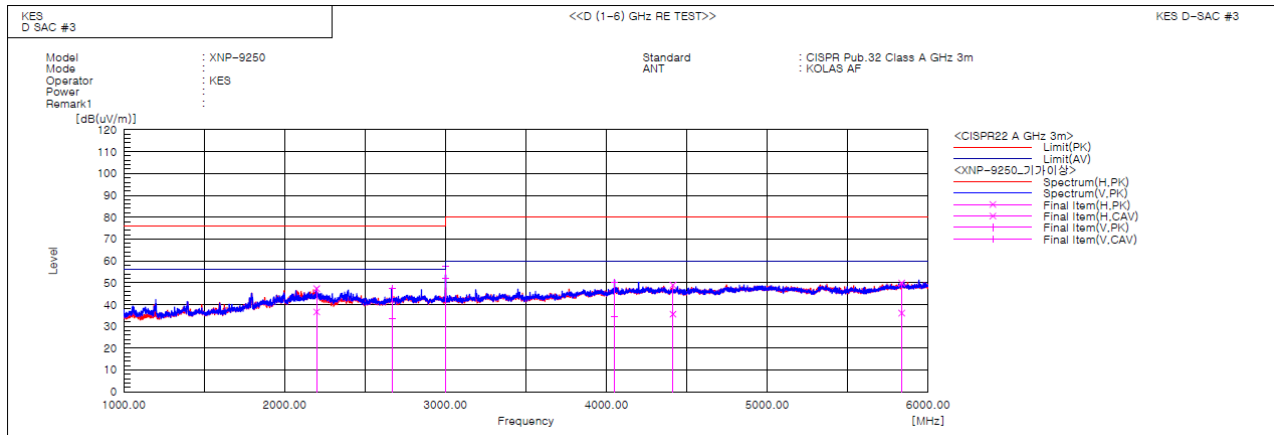
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### Radiated Electric Field Emissions(Above 1 GHz)



#### ◆ 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)]

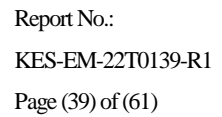
Reading(PK/CAV) : Reading value, Result(PK/CAV) : Reading value + Factor value

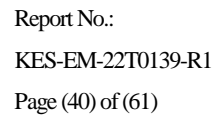
Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

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Test Data - Voltage Fluctuations

**Maximum Flicker results**

Flicker Measurements					
	Plt	Max Pst	Max Dc	Max Dmax	Max Tmax
Line 1:	N/A				
Limits:					
Results:					

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## **Test Setup Photos and Configuration**

### **Conducted Emissions at Mains Power Ports**

N/A

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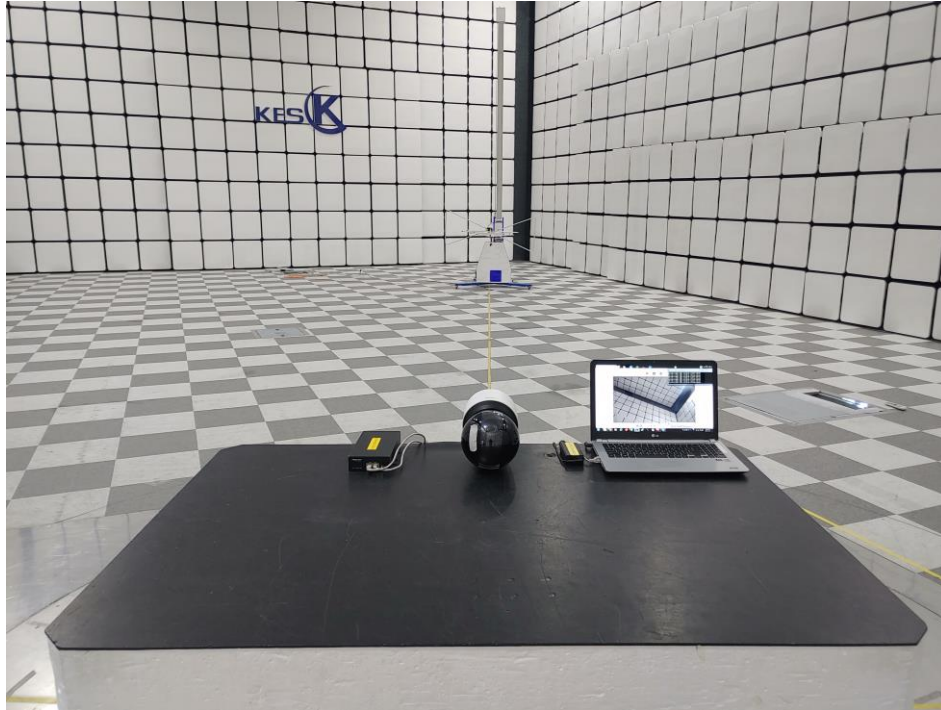
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## Conducted Emissions at Telecommunication Ports



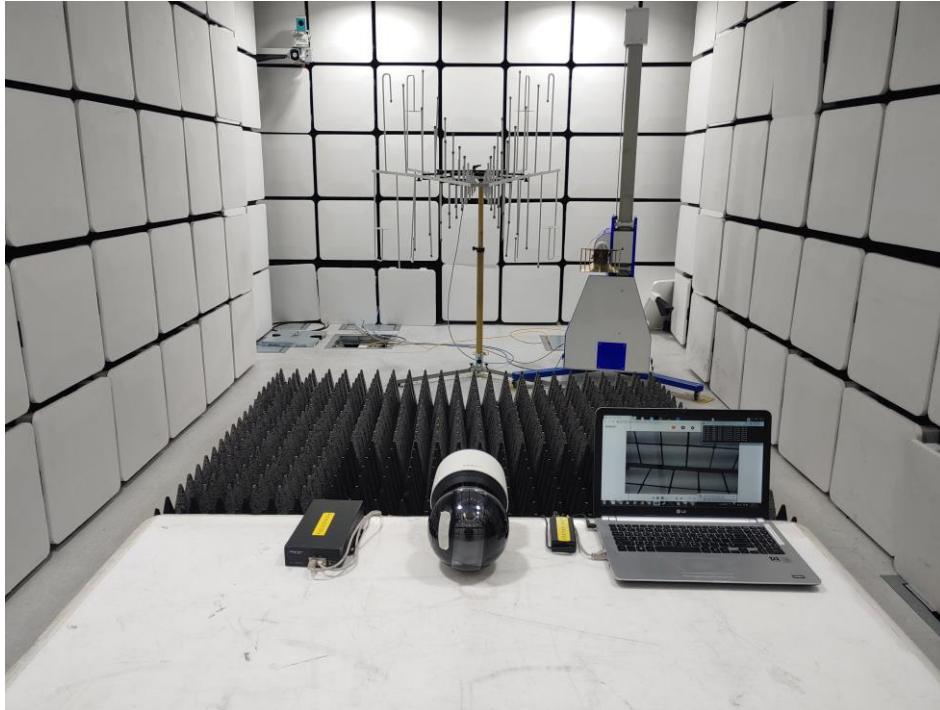
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## Radiated Electric Field Emissions(Below 1 GHz)



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## Radiated Electric Field Emissions(Above 1 GHz)



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## **Harmonic Current Emissions and Voltage Fluctuations and Flicker**

N/A

---

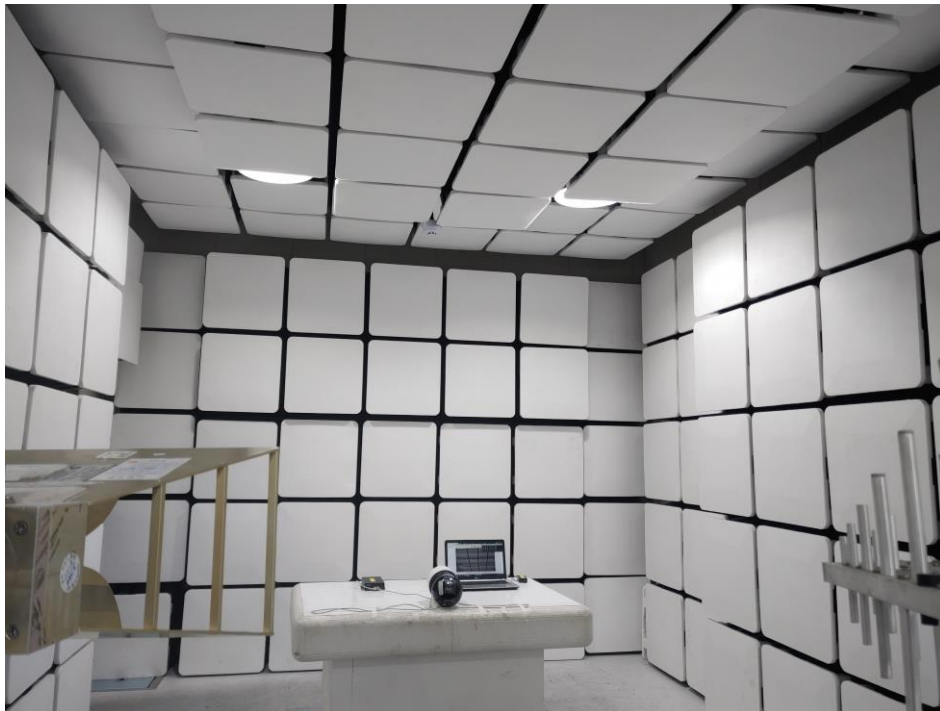
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## Electrostatic Discharge



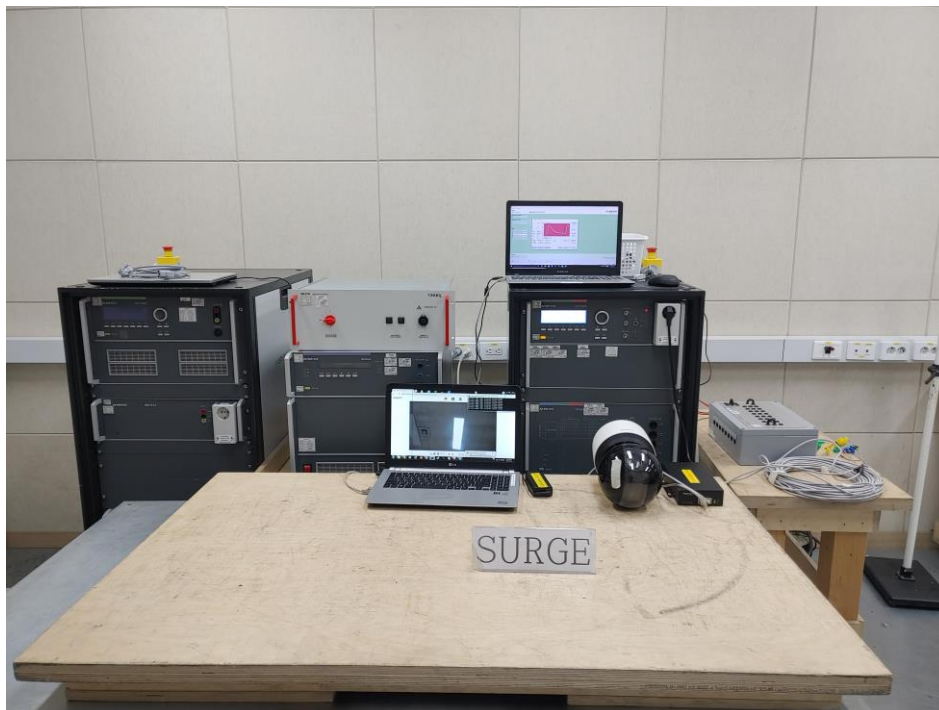
## Radiated Electric Field Immunity



## Electrical Fast Transients/Bursts



## Surge Transients



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## Conducted Disturbance



## Voltage Dips and Short Interruptions

N/A

## EUT External Photographs

(Top)



(Bottom)



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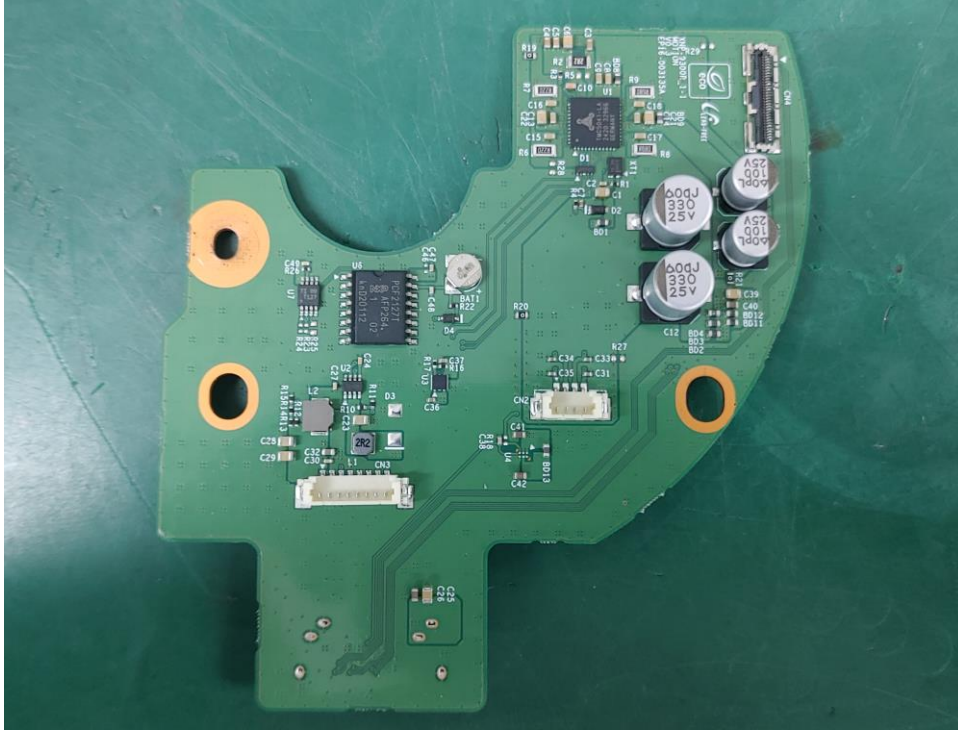
## EUT Internal Photographs

(Internal View)

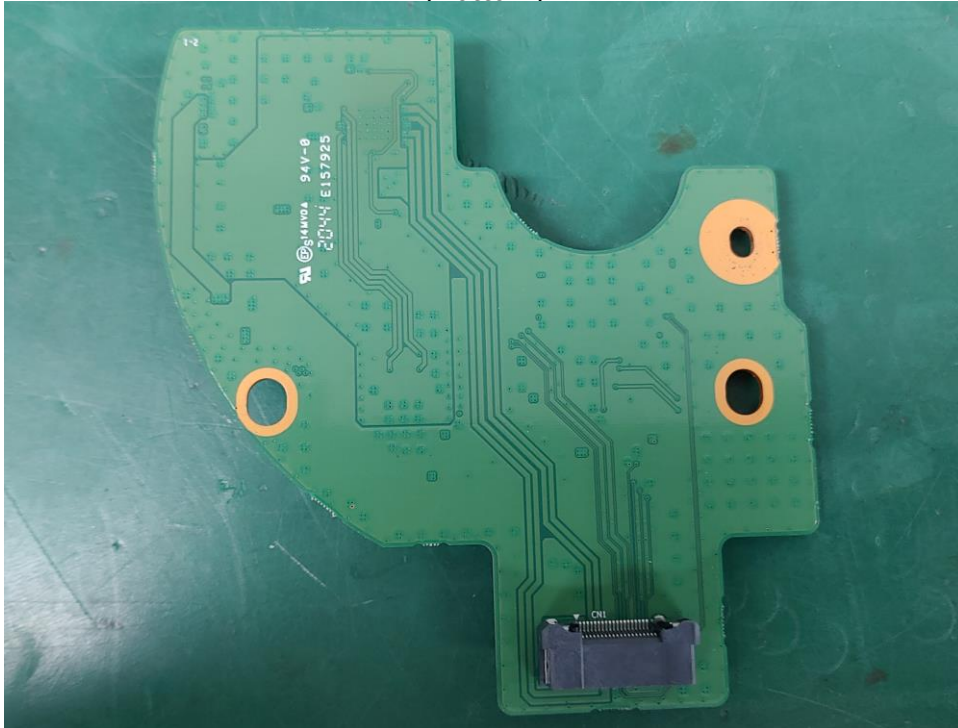


## EUT Internal View – Board 1

(Top)



(Bottom)

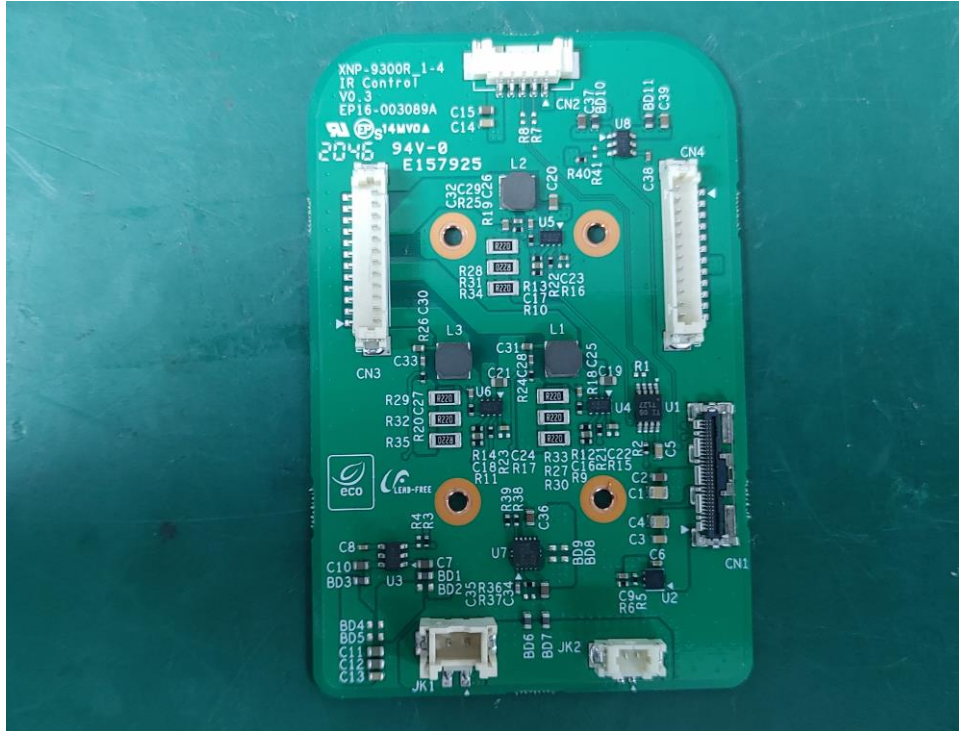


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## EUT Internal View – Board 2

(Top)



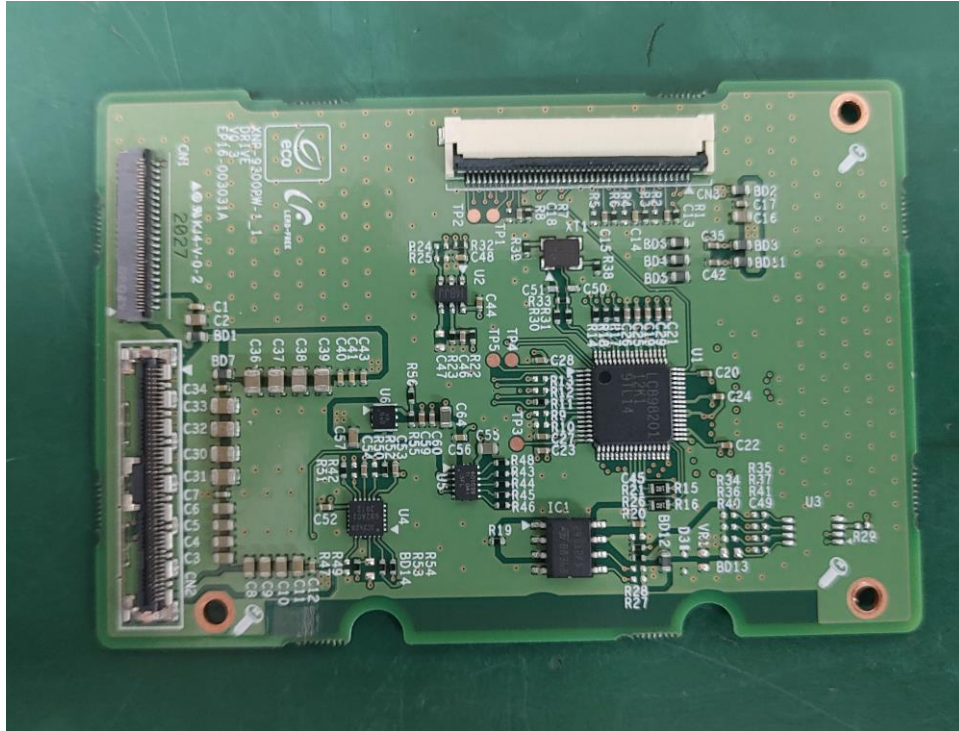
(Bottom)



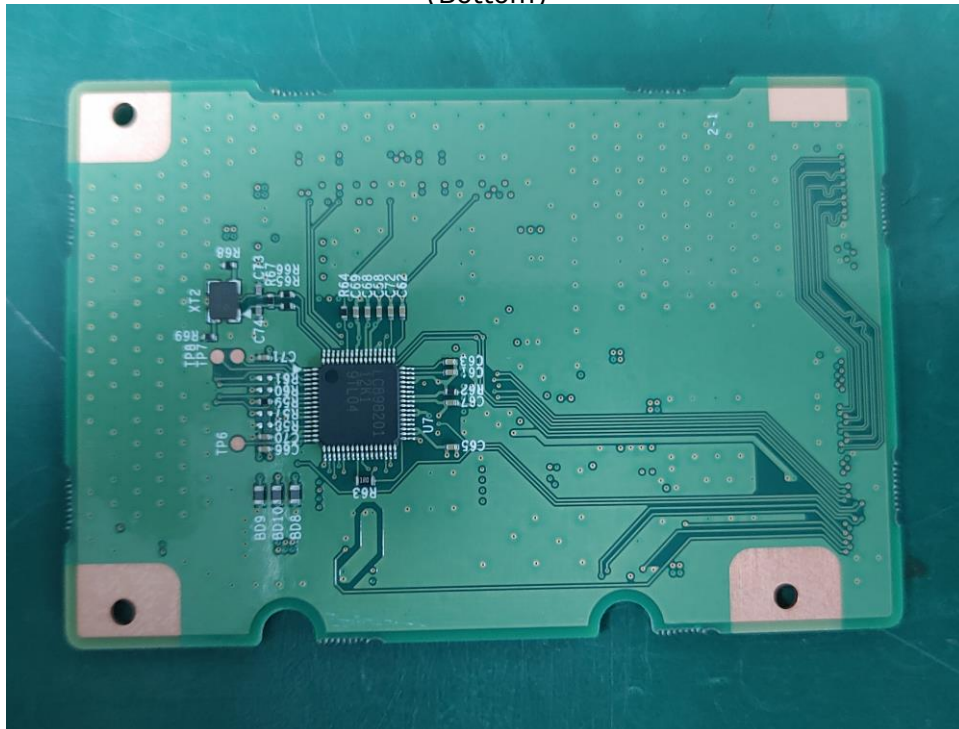
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## EUT Internal View – Board 3

(Top)



(Bottom)

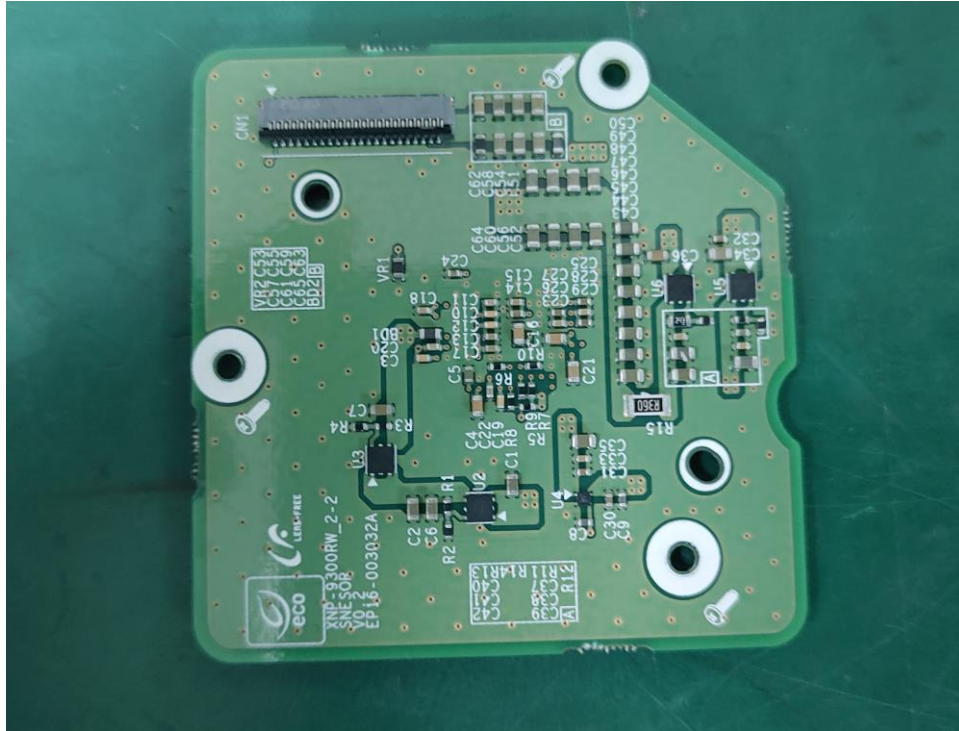


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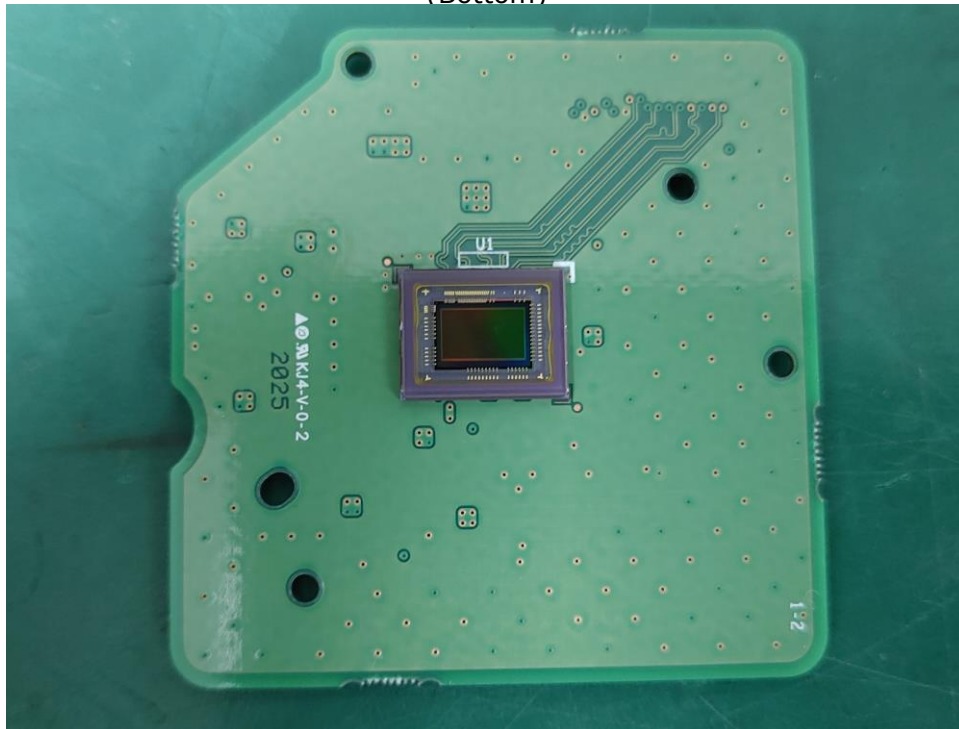


## EUT Internal View – Board 4

(Top)



(Bottom)



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## EUT Internal View – Board 5

(Top)



(Bottom)



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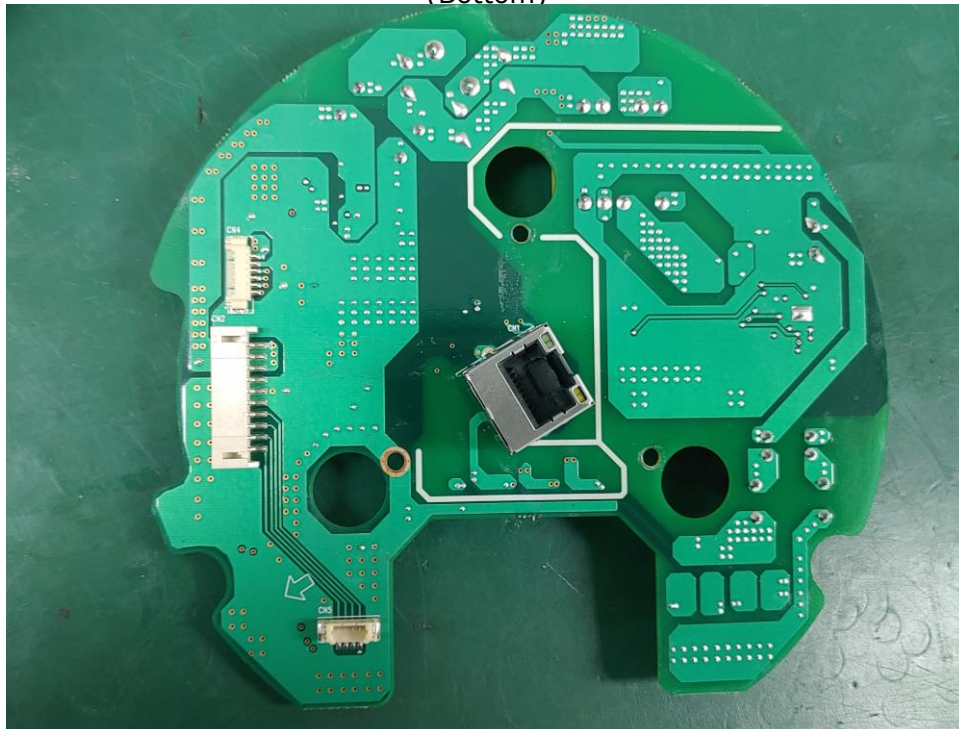


## EUT Internal View – Board 6

(Top)



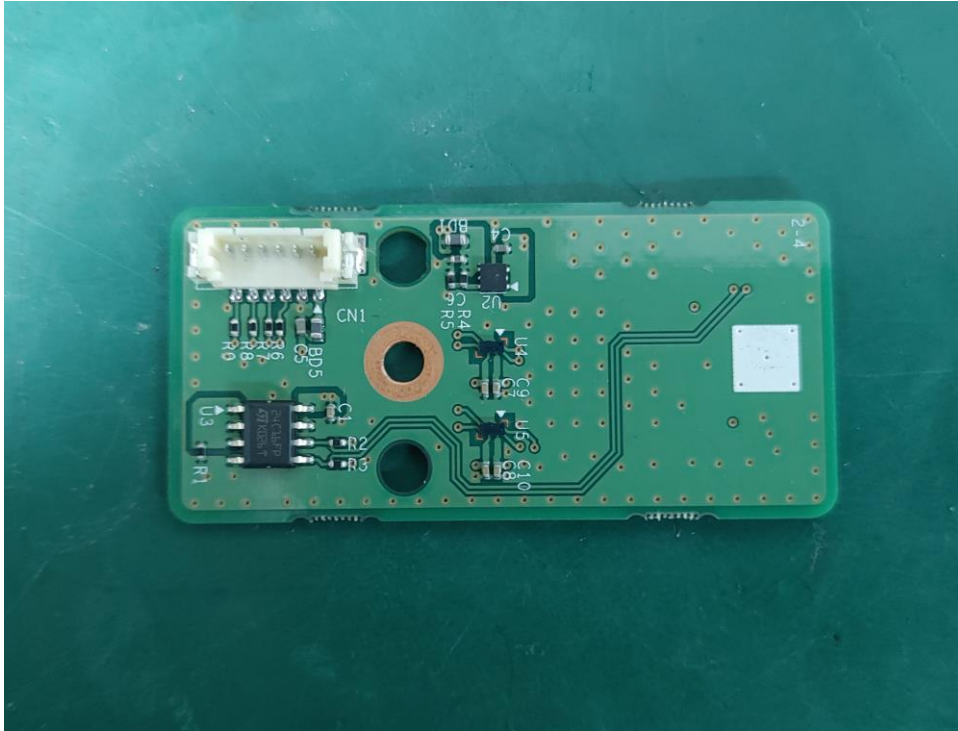
(Bottom)



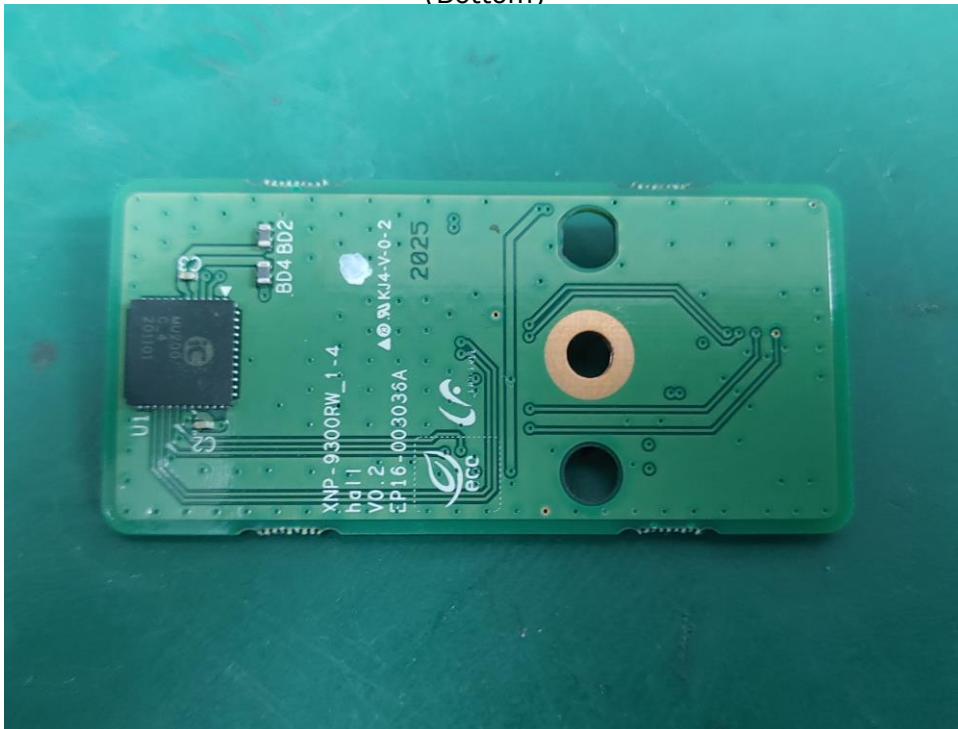
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## EUT Internal View – Board 7

(Top)



(Bottom)

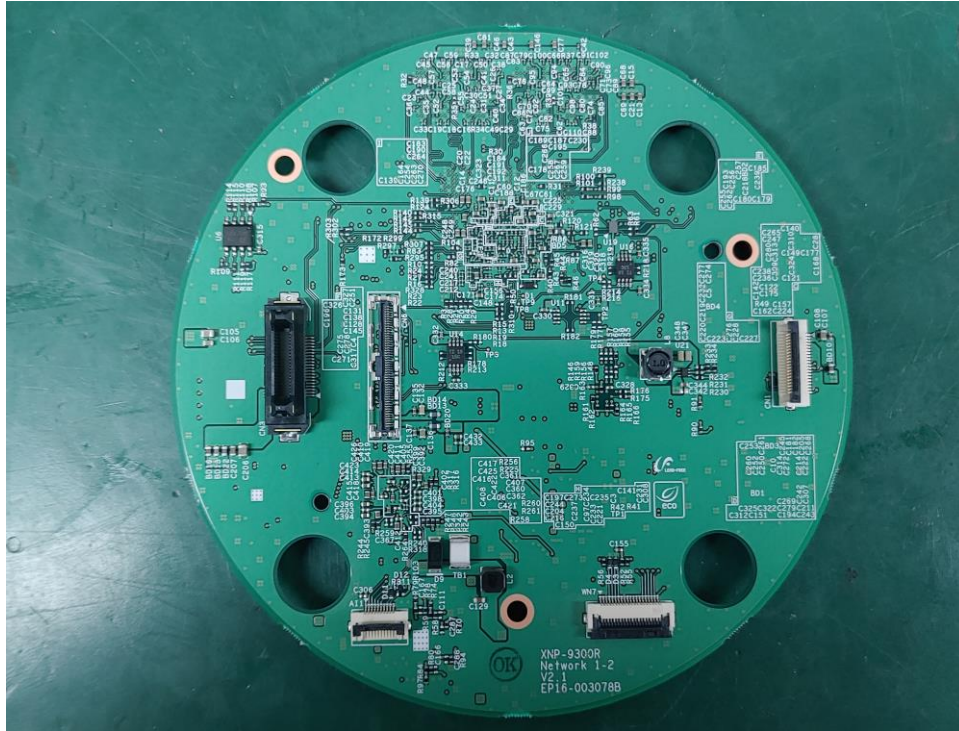


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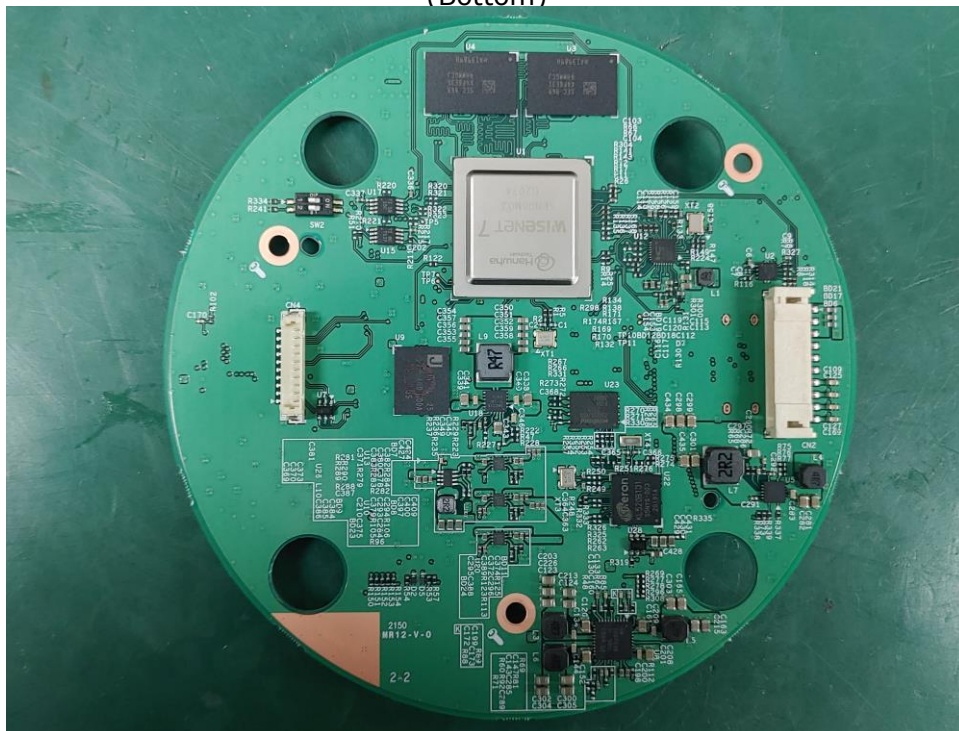


## EUT Internal View – Board 8

(Top)



(Bottom)



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## EUT Internal View – Board 9

(Top)

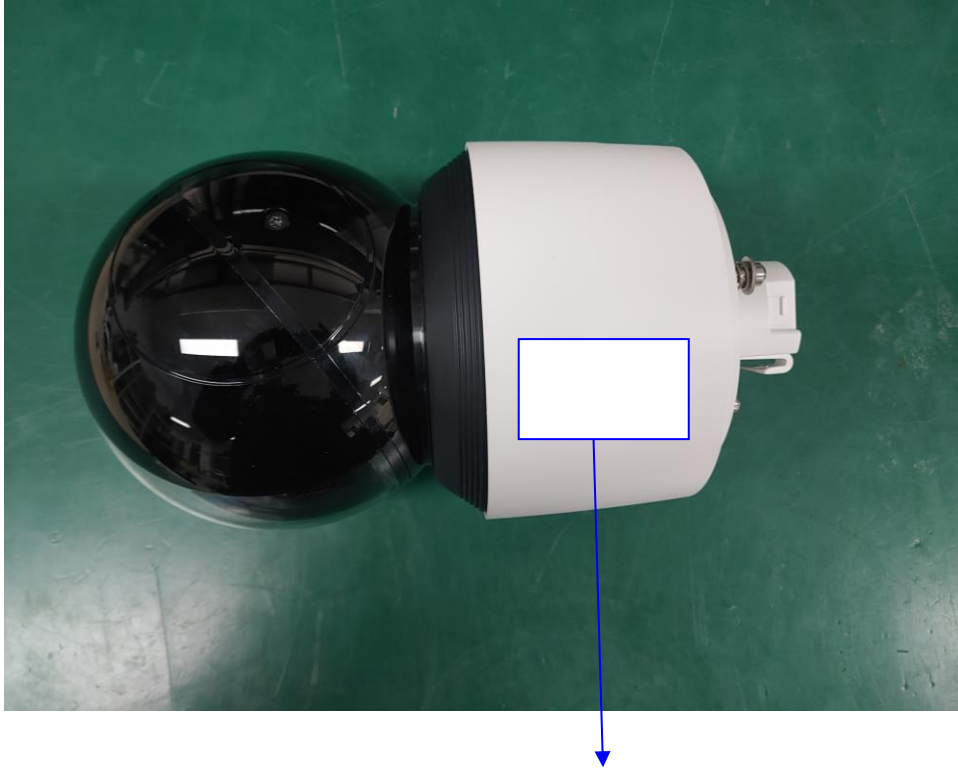


(Bottom)



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## Label and Location



**NETWORK CAMERA**

Model No : XNP-9250

Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED

Made in Vietnam

