

TEST REPORT



Report No. : KES-EM-23T0914

Page 1 / 73

KES Co., Ltd.

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1. Client

Applicant : Hanwha Vision Co., Ltd

Applicant Address : 6, Pangyo-ro 319beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do,
Republic of Korea

2. Sample Description

Product name : NETWORK CAMERA

Model/Type No. : XNP-C9310R

Variant Model : -

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

3. Date of Receipt : Oct. 13, 2023

4. Test date : Oct. 23, 2023 ~ Oct. 25, 2023

5. Date of Issue : Oct. 26, 2023

6. Test Results : In Compliance

Tested by

김동인

Dong In, Kim
EMC Test Engineer

Reviewed by

이동일

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EMC Technical Manager

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

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Oct. 26, 2023	KES-EM-23T0914	Issued

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TABLE OF CONTENTS

1.0	General Product Description.....	4
1.1	Test Voltage & Frequency.....	8
1.2	Variant Model Differences.....	8
1.3	Device Modifications.....	8
1.4	Equipment Under Test.....	8
1.5	Support Equipments.....	8
1.6	External I/O Cabling.....	9
1.7	EUT Operating Mode(s).....	9
1.8	Configuration.....	10
1.9	Remarks when standards applied.....	11
1.10	Calibration Details of Equipment Used for Measurement.....	11
1.11	Test Facility.....	11
1.12	Laboratory Accreditations and Listings.....	11
2.0	Test Regulations.....	12
2.1	Conducted Emissions at Mains Power Ports.....	13
2.2	Conducted Emissions at Telecommunication Ports.....	14
2.3	Radiated Electric Field Emissions(Below 1 GHz).....	15
2.4	Radiated Electric Field Emissions(Above 1 GHz).....	16
2.5	Harmonic Current Emissions.....	17
2.6	Voltage Fluctuations and Flicker.....	18
3.0	Criteria for compliance.....	19
3.1	Electrostatic Discharge.....	21
3.2	Radiated Electric Field Immunity.....	25
3.3	Electrical Fast Transients/Bursts.....	28
3.4	Surge Transients.....	30
3.5	Conducted Disturbance.....	33
3.6	Voltage Dips and Short Interruptions.....	36
	APPENDIX A – TEST DATA.....	38
	Conducted Emissions at Mains Power Ports.....	38
	Conducted Emissions at Telecommunication Ports.....	40
	Radiated Electric Field Emissions(Below 1 GHz).....	41
	Radiated Electric Field Emissions(Above 1 GHz).....	42
	Harmonic Current Emissions and Voltage Fluctuations and Flicker.....	43
	Test Setup Photos and Configuration.....	46
	Conducted Emissions at Mains Power Ports.....	46
	Conducted Emissions at Telecommunication Ports.....	47
	Radiated Electric Field Emissions(Below 1 GHz).....	48
	Radiated Electric Field Emissions(Above 1 GHz).....	49
	Harmonic Current Emissions and Voltage Fluctuations and Flicker.....	50
	Electrostatic Discharge.....	51
	Radiated Electric Field Immunity.....	51
	Electrical Fast Transients/Bursts.....	52
	Surge Transients.....	52
	Conducted Disturbance.....	53
	Voltage Dips and Short Interruptions.....	53
	EUT External Photographs.....	54
	EUT Internal Photographs.....	55

1.0 General Product Description

Main Specifications of EUT are:

Video	
Imaging Device	1/1.8" CMOS
Resolution	3840x2160, 2592x1944, 2592x1464, 1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	H.265/H.264: Max. 30fps/25fps(60Hz/50Hz) MJPEG: Max. 30fps(@4K Max. 5fps)
NETD	None
Pixel Size	None
Min. Illumination	Color: 0.06 Lux(F1.36, 1/30sec, 30 IRE) BW: 0.006 Lux(F1.36, IR LED Off), 0Lux (IR LED On)
Video Out	None
Video Transmission Distance	None
Lens	
Focal Length (Zoom Ratio)	6.91 ~ 214.7mm(31x) zoom (digital 32x, total 992x zoom)
Max. Aperture Ratio	F1.36(Wide)~F4.6(Tele)
Angular Field of View	H : 60.6°(Wide)~2.59°(Tele) V : 35.1°(Wide)~1.45°(Tele) D : 68.8°(Wide)~2.97°(Tele)
Min. Object Distance	3m(9.84ft)
Focus Control	Oneshot AF, Focus save, Focus scan, Wise auto focus
Lens Type	P-iris(IR corrected)
Mount Type	None
Optional Lens	None
Pan / Tilt / Rotate	
Pan / Tilt / Rotate Range	None
Pan Range	360° Endless
Pan Speed	Preset: 550°/sec, Manual: 0.024°/sec~200°/sec
Tilt Range	110° (90° ~ -20°)
Tilt Speed	Preset: 550°/sec, Manual: 0.024°/sec~200°/sec
Rotate Range	None
Sequence	Preset(300ea), Swing, Group(6ea), Trace, Tour, Auto Run, Schedule
Preset Accuracy	±0.07° (±20°C by temperature at preset setting)

Report No. : KES-EM-23T0914

Operational	
Camera Title	Displayed up to 85 characters
Direction Indicator	Support
Day & Night	Auto(ICR)
Backlight Compensation	BLC, HLC, WDR, SDR
Wide Dynamic Range	120dB
Digital Noise Reduction	WiseNR II (Based on AI engine), SSNR V
Digital Image Stabilization	Support (built-in gyro sensor)
Defog	Support
Motion Detection	8ea, 8point polygonal zones
Privacy Masking	32ea, 4point quadrangle zones - Color: Gray/Green/Red/Blue/Black/White - Mosaic
Gain Control	Off / Max gain / Manual
White Balance	ATW / NarrowATW / AWC / Manual / Indoor / Outdoor / Mercury / Sodium
LDC	None
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2~1/12,000sec) Prefer shutter control (Based on AI engine)
Digital PTZ	None
Video Rotation	Flip&Mirror
Analytics	Classified object type : Person/Face/Vehicle/License plate Attributes : Vehicle(Type:car/bus/truck/motorcycle/bicycle) Support DetectionShot Analytics events based on AI engine - Object detection, Virtual line(Crossing/Direction), Virtual area(Loitering/Intrusion/Enter/Exit) Analytics events - Motion detection, Tampering, Fog detection, Shock detection, Virtual area(Appear/Disappear) * Audio detection, Sound classification (Via optional I/O box SPM-4210)
Business Intelligence	None
Serial Interface	None
Alarm I/O	None
Alarm Triggers	Analytics, Network disconnect * Alarm input (Via optional I/O box SPM-4210)
Alarm Events	When alarm trigger occurred - File upload (image) : e-mail/FTP - Notification : e-mail - Recording : SD/SDHC/SDXC or NAS recording at event triggers - Handover: PTZ preset, send message by HTTP/HTTPS/TCP - MQTT: publication * Alarm output / Audio clip playback (Via optional I/O box SPM-4210)
Audio Streaming	None
Audio In	None
Audio Out	None
Light Type	IR LED (850nm)
Light Viewable Length	None
IR Viewable Length	Wise IR 250m(820ft)
IR Illuminator (Optional)	None
IR Radiation angle	None
IR LED	None
IR Wavelength	None
IR Operation	None
Water Removal	Support (Spin dry)
Auto Tracking	Support Object auto tracking (Person/Vehicle) Target lock tracking
Coaxial Protocol	None
Color Palettes	None
Radiometry	
Temperature Detect Range	None
Temperature Accuracy	None
Temperature Detection	None
Additional	None

Report No. : KES-EM-23T0914

Network	
Ethernet	Metal shielded RJ-45(10/100BASE-T)
Video Compression	H.265/H.264: Main/Baseline/High, MJPEG
Audio Compression	None
Smart Codec	Manual(Sea area), WiseStreamII, WiseStreamIII(Based on AI engine)
Video Quality Adjustment	H.264/H.265: Target bitrate level control MJPEG: Target bitrate level control
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 10 profiles)
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP, CDP, SRTP(TCP, UDP Unicast), NTCIP 1205,
SIP support (VoIP, Peer-to-peer)	None
Security	None
Application Programming Interface	ONVIF Profile S/G/T/M SUNAPI(HTTP API) Wisenet open platform
Security	
OS / Firmware Protect	Secure boot, Signed firmware, Firmware encryption
User authentication	Digest Authentication, Prevent brute-force attack
Network authentication	802.1X Authentication(EAP-TLS, EAP-LEAP, EAP-PEAP MSCHAPv2)
Secure Communication	HTTPS, SRTP, WSS(Websocket secure)
Access Control	Access control based on IP address
Data Protect	Authentication information encryption, ZIP compression encryption
Audit	User Access/System/Event log management
Device ID	Device Certificate(Hanwha Private Root CA)
Secure Storage	TPM(Trusted platform module), HTPM(Hanwha trusted platform module), SDcard partition encrypt
Security Certificate	TPM with FIPS 140-2 level 2
General	
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Web Viewer	None
Edge Storage	Micro SD/SDHC/SDXC 2slot 1TB (512MBx2)
Memory	4GB RAM, 512MB Flash
Environmental & Electrical	
Operating Temperature / Humidity	Normal : -50°C~+55°C(-58°F ~ +131°F)/ +74°C(165°F)(Max) based on NEMA TS-2(2.2.7) * Start up should be done at above -30°C Less than 95%RH(Non-condensing)
Storage Temperature / Humidity	-50°C~+60°C(-58°F~+140°F) / 0~90% RH
Certification	IP66/IP67, IK10, NEMA4X Safety(UL, KC-SDOC), EMC(FCC, CE, VCCI, RCM, KC) NEMA-TS 2(2.2.7, 2.2.8, 2.2.9)
Input Voltage	HPoE(IEEE802.3bt type4, Class8, Injector included)
Power Consumption	HPoE: Max 62W, typical 23W
Mechanical	
Color / Material	White / Aluminum
RAL Code	RAL9003
Product Dimensions / Weight	ø188x264.9mm(ø7.40x10.47") / 4400g (9.70lb)
Compatible Conduit hole / Gang	None
Hanging Mount (Dome)	SBP-156HMMW
Skin Cover	None
Skin Cover (Dome)	None
Weather Cap (Dome)	None
Power Module	None
Backbox	None
Ceiling Mount (Assy)	SBP-156CMW, SBP-300CMTS, SBP-300CMW1/900CMW, SBP-150CMI/300CMI
Wall Mount	SBP-156WMW, SBP-390WMW2
Pole Mount	SBP-300PMW2
In-ceiling Mount	None
Parapet Mount	SBP-156LMW, SBP-300LMW
Corner Mount	SBP-156KMW, SBP-300KMW1
Tilt Mount	None
Housing (Box)	None
Cabinet	SBP-300NBW
Gang Plate	None
Conduit Adaptor	None
Other Compatible Models	None

KES-QP16-F01(00-23-01-01)

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Certifications & Standards	
Network	None
EMC	FCC 47 CFR 15 Subpart B Class A ICES-3(A)/NMB-3(A) CE/UKCA - EN 55032 Class A, EN 50130-4, EN 61000-3-2, EN 61000-3-3 VCCI CISPR 32 Class A RCM AS/NZS CISPR 32 Class A KS C 9832 Class A , KS C 9835
Safety	UL 62368-1, CAN/CSA C22.2 NO. 62368-1 IEC/EN 62471
Environment	IEC/EN 63000 IEC/EN 60529 IP66/IP67, IEC/EN 62262 IK10 NEMA TS 2-2013 (2.2.7, 2.2.8, 2.2.9) NEMA 250 type 4X
Video	None
DORI (EN62676-4 standard)	
Detect (25PPM/ 8PPF)	Wide: 131.4m(431.19ft) / Tele: 3397.3m(11146.16ft)
Observe (63PPM/ 19PPF)	Wide: 52.6m(172.48ft) / Tele: 1358.9m(4458.46ft)
Recognize (125PPM/ 38PPF)	Wide: 26.3m(86.24ft) / Tele: 679.5m(2229.23ft)
Identify (250PPM/ 76PPF)	Wide: 13.1m(43.12ft) / Tele: 339.7m(1114.62ft)
LPR/ANPR/MMCR	
Speed Description	None
Speed limit	None
Min. Forward Distance	None
Max. Forward Distance	None
Max. Horizontal Angle	None
Max. Vertical Angle	None
Horizontal Offset	None
Camera Height	None
Lane Coverage	None
Vehicle Recognition	None
Available Countries	None
Wisenet Road AI LPR/ANPR/M	
Solution	None
Speed Description	None
Lane Coverage	None
Speed limit	None
Min. Forward Distance	None
Max. Forward Distance	None
Max. Horizontal Angle	None
Max. Vertical Angle	None
Horizontal Offset	None
Camera Height	None
Vehicle Recognition	None
Available Countries	None
Ver	
Ver	2311

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

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	XNP-C9310R	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT
PoE Adapter	PT-PSE109GBRO-AH-S	PT2332221941	Dongguan PROCET Network Technology Co.,Ltd	R-R-LJ9- PSE109G BRO-A02

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook 1	LG15N54	507NZET040180	LG	-
Notebook 1 Adapter	PA-1900-14	OF4A263348701J2 47	LITE-ON TECHNOLOGY COPORATION	-
Notebook 2	LG15N54	509NZSJ043910	LG	-
Notebook 2 Adapter	PA-1650-43(65W)	OF8DS63849302K 347(1.2)	LITE-ON TECHNOLOGY (CHANGZHOU) CO.,LTD.	-
Optical Converter	SOL-SFC2000SFP(A)	S200150803588	Soltech Company	-
Optical Converter Adapter	FJ-SW1260502000DK	-	SHENZHEN FUJAI APPLIANCE CO., LTD.	-
Optical Module 1	TXC432-CU1M	-	-	-
Optical Module 2	TXC432-CU1M	-	-	-
Micro SD Card 1	-	-	Transcend	8GB
Micro SD Card 2	-	-	Snadisk	32GB

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)	PoE Adapter (EUT)	RJ-45 (PoE)	2.0	U
	Micro SD Card Slot	Micro SD Card 1	Micro SD Card Slot	-	-
	Micro SD Card Slot	Micro SD Card 2	Micro SD Card Slot	-	-
Notebook 1 Adapter	DC Jack	Notebook 1	DC Jack	1.5	U
PoE Adapter (EUT)	RJ-45 (LAN)		RJ-45 (LAN)	3.1	U
	SFP		SFP	-	-
	Ground	Enclosure Ground	Ground	2.0	-
Optical Converter	SFP	Optical Module 2	SFP	-	-
	DC Jack	Optical Converter Adapter	DC Jack	1.4	U
	RJ-45 (LAN)	Notebook 2	RJ-45 (LAN)	2.0	U
Notebook 2 Adapter	DC Jack		DC Jack	1.5	U

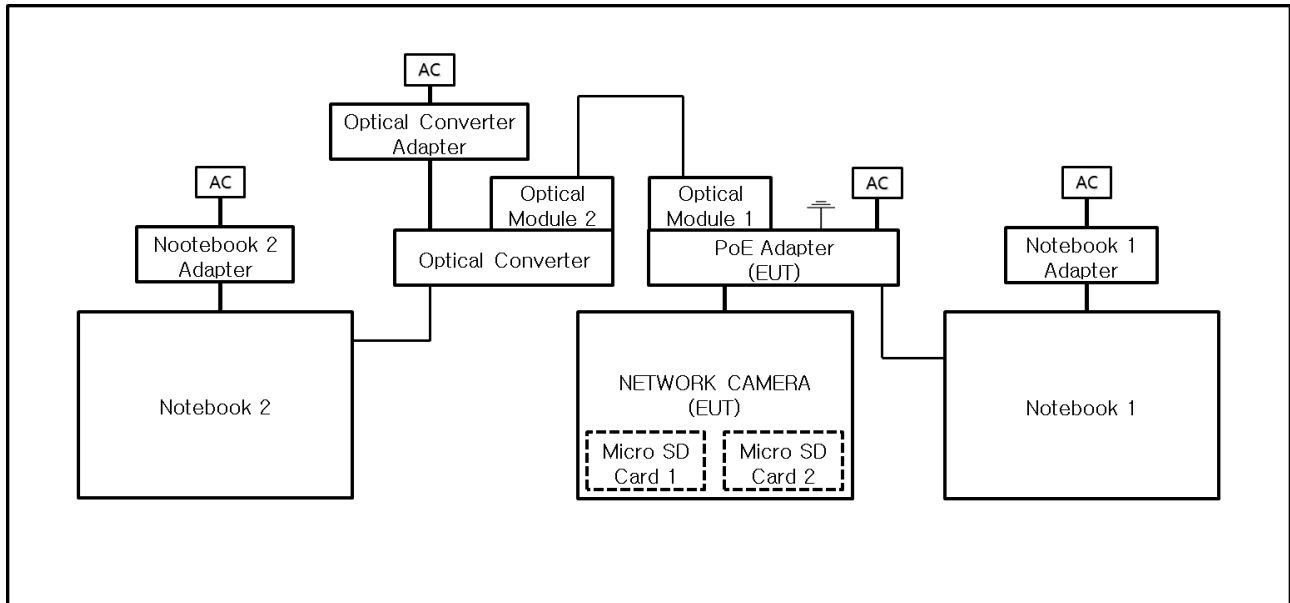
* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

Test mode	operating
Operating	1. Run the Web Viewer on your Notebook and check the camera video output 2. PingTest from your Notebook to check the network status 3. After the test, the Micro SD Card storage file was checked.

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

1.8 Configuration



1.9 Remarks when standards applied

The mains power ports were excluded tested, because the EUT operated by PoE powered.

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/A1:2014

☒ 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/A1:2014

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013

2.1 Conducted Emissions at Mains Power Ports

Test Date

Oct. 23, 2023

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test SW	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	11, 11, 2023
☒	LISN	ENV216	R & S	101787	11, 10, 2023
☒	LISN	ESH2-Z5	R & S	100450	11, 10, 2023
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 10, 2023

Test Conditions

Temperature: (22,8 ± 0,0) °C

Relative Humidity: (46,8 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Oct. 23, 2023

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	11, 11, 2023
☒	LISN	ENV216	R & S	101787	11, 10, 2023
☒	LISN	ESH2-Z5	R & S	100450	11, 10, 2023
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 10, 2023
☐	8-WIRE ISN CAT3,5	ENY81	R & S	100174	11, 22, 2023
☒	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	11, 22, 2023

Test Conditions

Temperature: (22,8 ± 0,0) °C

Relative Humidity: (46,8 ± 0,0) % 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

Oct. 23, 2023

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

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	03, 21, 2024
☒	AMPLIFIER	SCU 01	R & S	100603	11, 10, 2023
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 17, 2024
☒	ATTENUATOR	8491A	HP	32173	03, 03, 2024

Test Conditions

Temperature: (22,5 ± 0,0) °C

Relative Humidity: (46,9 ± 0,2) % R.H.

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.

2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Oct. 24, 2023

Test Location

SEMI ANECHOIC CHAMBER #5

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test SW	ES10/RE	TOYO Corporation	2022.01.000	-
☒	EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	03, 21, 2024
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	11, 08, 2023
☒	PREAMPLIFIER	8449B	HP	3008A00538	05, 31, 2024
☒	ATTENUATOR	8491B	HP	23094	03, 21, 2024

Test Conditions

Temperature: (24,0 ± 0,0) °C

Relative Humidity: (45,7 ± 0,1) % R.H.

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.

2.5 Harmonic Current Emissions

Test Date

Oct. 24, 2023

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test SW	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	03, 27, 2024
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (23,2 ± 0,0) °C

Relative Humidity: (45,3 ± 0,0) % R.H.

Classification of Equipment for Harmonic Current Emissions

- ☒ Class A
☐ Class B
☐ Class C(Below 25 W)
☐ Class C(Above 25 W)
☐ Class D

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.

2.6 Voltage Fluctuations and Flicker

Test Date

Oct. 24, 2023

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test SW	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	03, 27, 2024
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (23,2 ± 0,1) °C

Relative Humidity: (45,3 ± 0,3) % R.H.

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee 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

Oct. 25, 2023

Test Location

EMS-ESD: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS01Z0454	01, 31, 2024
☒	HCP	-	KES	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions

Temperature: (22,1 ± 0,0) °C
 Relative Humidity: (46,0 ± 0,1) % R.H.
 Atmospheric Pressure: (99,8 ± 0,0) kPa

Test Specifications

Discharge Factor: ≥ 1 s

Discharge Impedance: 330 ohm / 150 pF

Kind of Discharge: Air, Contact (direct and indirect)

Polarity: Positive and Negative

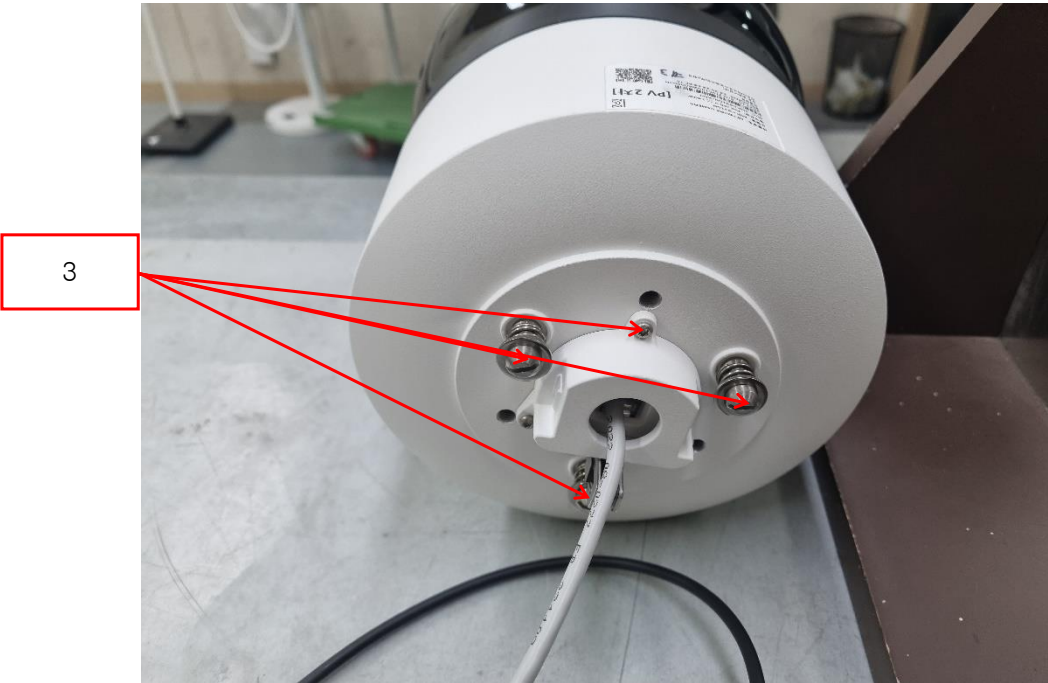
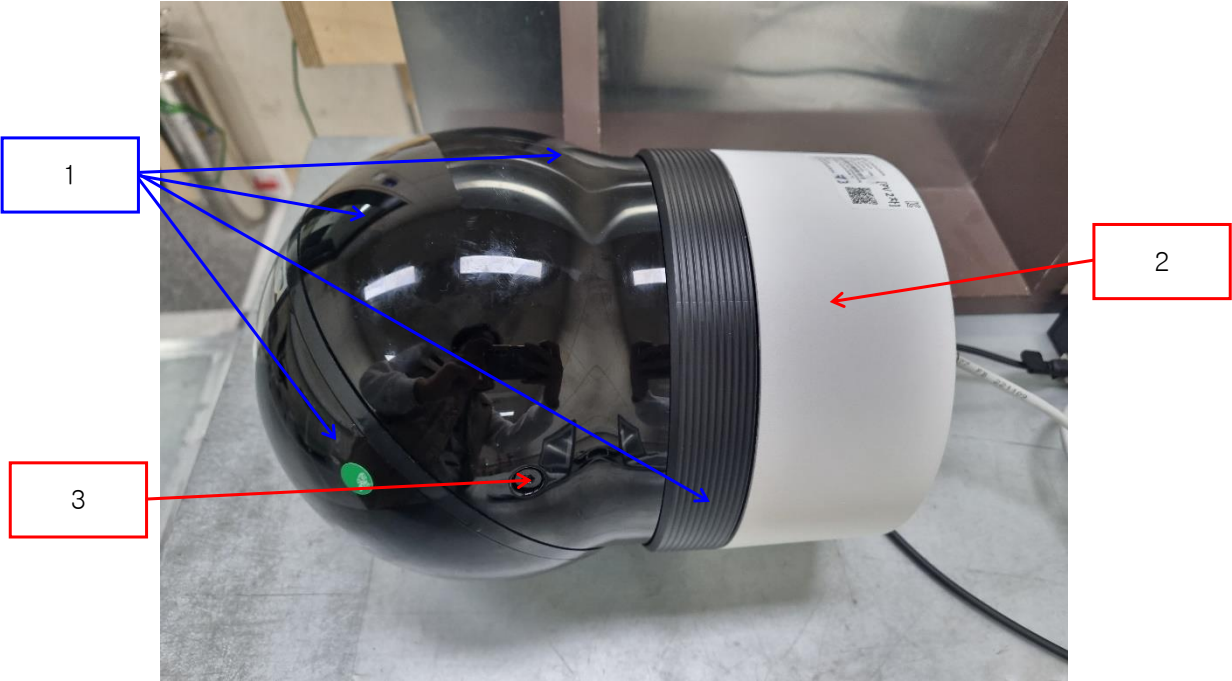
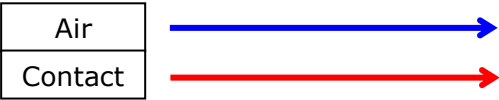
Number of Discharge: 10 at all locations for Air discharge
 10 at all locations for Contact discharge

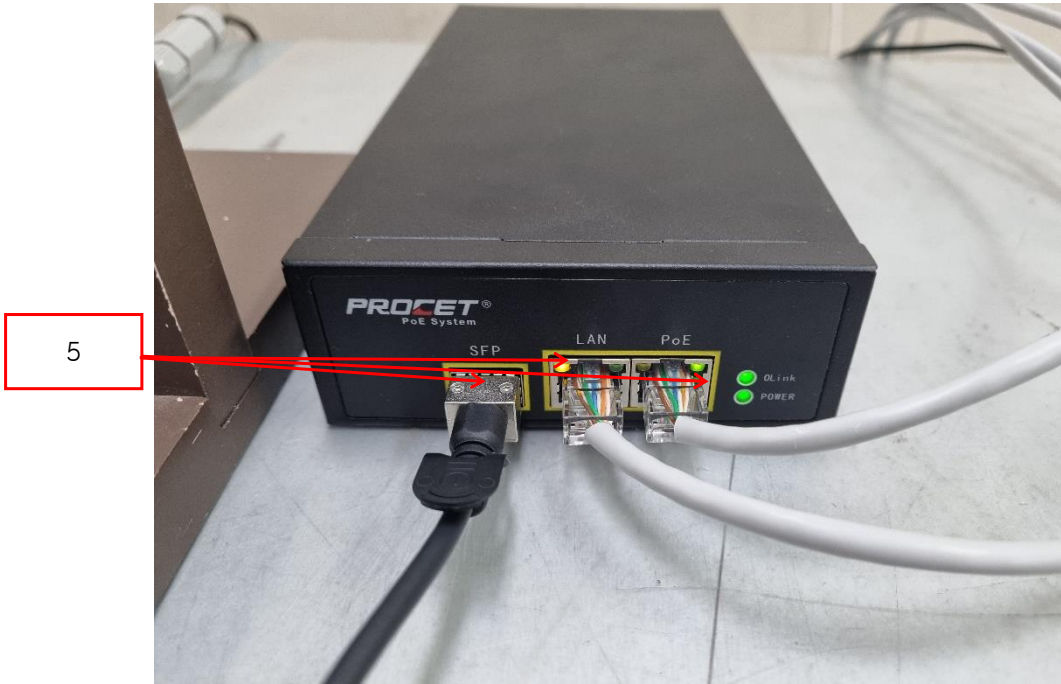
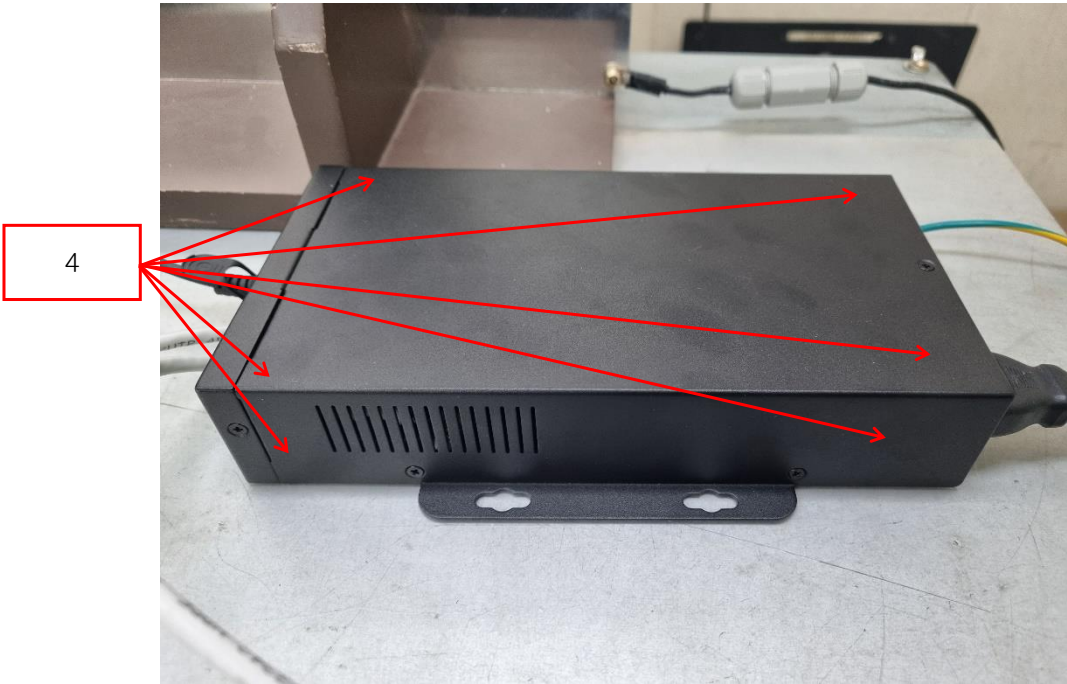
Discharge Voltage:	Contact ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV	Air ☒ 2 kV ☒ 4 kV ☐ 6 kV ☒ 8 kV ☐ 15 kV	HCP ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV	VCP ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV
--------------------	---	---	---	---

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

Required Performance Criteria: ☒ Complied

Location of Discharge:





Test Data

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

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

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

Remarks

PASS Required Performance Criteria

3.2 Radiated Electric Field Immunity

Reference Standard

EN IEC 61000-4-3:2020

Test Date

Oct. 25, 2023

Test LocationEMS-RS: ☐ SEMI ANECHOIC CHAMBER #2☒ SEMI ANECHOIC CHAMBER #3**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	EMC32	R & S	10.10.02	-
☒	SIGNAL GENERATOR	SMB 100A	Rohde & Schwarz	108252	07, 31, 2024
☒	HIGH POWER DUAL AMP	SSA532	SUNGSAN	SSA532-001	-
☒	POWER METER	E4419B	Agilent	GB40203000	03, 21, 2024
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY52170007	03, 21, 2024
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY41498669	03, 21, 2024
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 06, 2024

Test Conditions

Temperature: (22,1 ± 0,1) °C
Relative Humidity: (45,8 ± 0,3) % R.H.
Atmospheric Pressure: (99,8 ± 0,0) kPa

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

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

3.3 Electrical Fast Transients/Bursts

Reference Standard

EN 61000-4-4:2012

Test Date

Oct. 25, 2023

Test Location

EMS-EFT: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 28, 2023
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 29, 2023
☒	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	11, 28, 2023

Test Conditions

Temperature: (22,1 ± 0,1) °C
 Relative Humidity: (46,0 ± 0,1) % R.H.
 Atmospheric Pressure: (99,8 ± 0,0) kPa

Test Specifications

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

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

Burst Period: ☒ 300 ms ☐ 2 s

Repetition Rate: ☐ 5 kHz ☒ 100 kHz

Duration of Test Voltage: ☒ ≥ 1 min

Required Performance Criteria: ☒ Complied

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

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

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

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

☒ Signal ports and telecommunication ports – Coupling Clamp used

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

3.4 Surge Transients

Reference Standard

EN 61000-4-5:2014/A1:2017

Test Date

Oct. 25, 2023

Test Location

EMS-Surge: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 28, 2023
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 29, 2023
☒	CDN	CNV 508N1	EM TEST	P1610176296	11, 29, 2023

Test Conditions

Temperature: (22,1 ± 0,0) °C
Relative Humidity: (46,0 ± 0,2) % R.H.
Atmospheric Pressure: (99,8 ± 0,0) kPa

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) kVNumber of Surges: ☒ 5 surges per angleAngle: ☒ 0°, 90°, 180°, 270° (input a.c. power port)Polarity: ☒ Positive & NegativeRepetition 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) kVNumber of Surges: ☒ 5 SurgesPolarity: ☒ Positive & NegativeRepetition Rate: ☒ 1 surge per min ☐ 1 surge per 30 sec.Required Performance Criteria: ☒ Complied

Test Data☒ Line to Line – Differential Mode

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

☒ Line to Earth – Common Mode

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

Signal Lines☒ Line to Earth – Common Mode

Mode of Application	Coupling Method	Observations	
		(+) Surge (kV)	(-) Surge (kV)
RJ-45 (LAN)	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**Remarks**PASS Required Performance Criteria

3.5 Conducted Disturbance

Reference Standard

EN 61000-4-6:2014

Test Date

Oct. 25, 2023

Test Location

EMS-CS: Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test SW	icd.control	EM TEST	5.3.12	-
☒	CONTINUOUS WAVE SIMULATOR	CWS 500N1.4	EM TEST	P1602169880	11, 10, 2023
☒	ATTENUATOR	ATT 6/80	EM TEST	P1614178148	11, 10, 2023
☒	CDN	CDN M016	TESEQ	43694	11, 10, 2023
☒	CDN	CDN M016	TESEQ	43697	11, 10, 2023
☒	CDN	CDN T8RJ45	EM TEST	0909-09	07, 31, 2024
☐	EM CLAMP	KEMZ 801A	TESEQ	44099	11, 14, 2023

Test Conditions

Temperature: (22,5 ± 0,1) °C
Relative Humidity: (46,2 ± 0,2) % R.H.
Atmospheric Pressure: (99,8 ± 0,0) 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

Test Data☒ Input a.c. power ports

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

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45 (LAN)	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

3.6 Voltage Dips and Short Interruptions

Reference Standard

EN IEC 61000-4-11:2020

Test Date

Oct. 25, 2023

Test Location

EMS-Voltage dip: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 29, 2023
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 29, 2023

Test Conditions

Temperature: (22,1 ± 0,0) °C
Relative Humidity: (46,0 ± 0,0) % R.H.
Atmospheric Pressure: (99,8 ± 0,0) kPa

Test Specifications & Observations/Remarks**- Voltage Dips and Short Interruptions**

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

- Voltage variations

☒ Unom + 10 %	☒ 253.0 V (ac)	<u>Complied</u>
☒ Unom - 15 %	☒ 195.5 V (ac)	<u>Complied</u>

Observations:

Complied – No degradation of function

Degradation - See "Remarks "

Test Results

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

Remarks

During the test, EUT was turned off but after the test, it was recovered without operator's intervention.

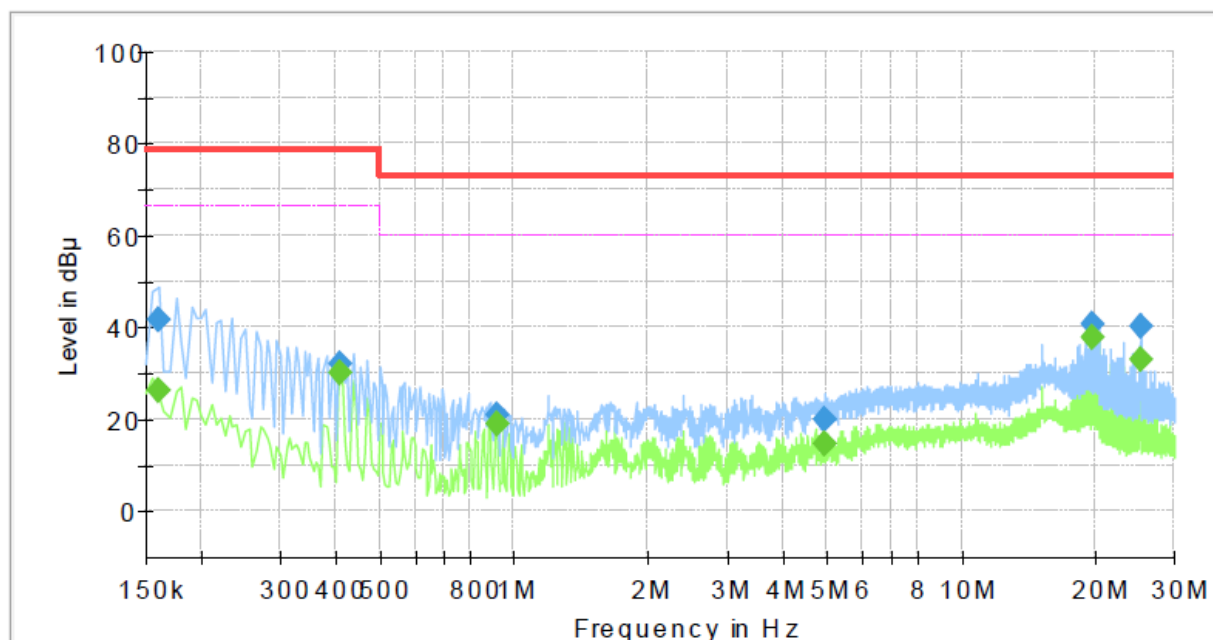
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

Common Information

Test Description: Conducted Emission
 Model No.: XNP-C9310R
 Phase: L1
 Mode:
 Operator Name: KES



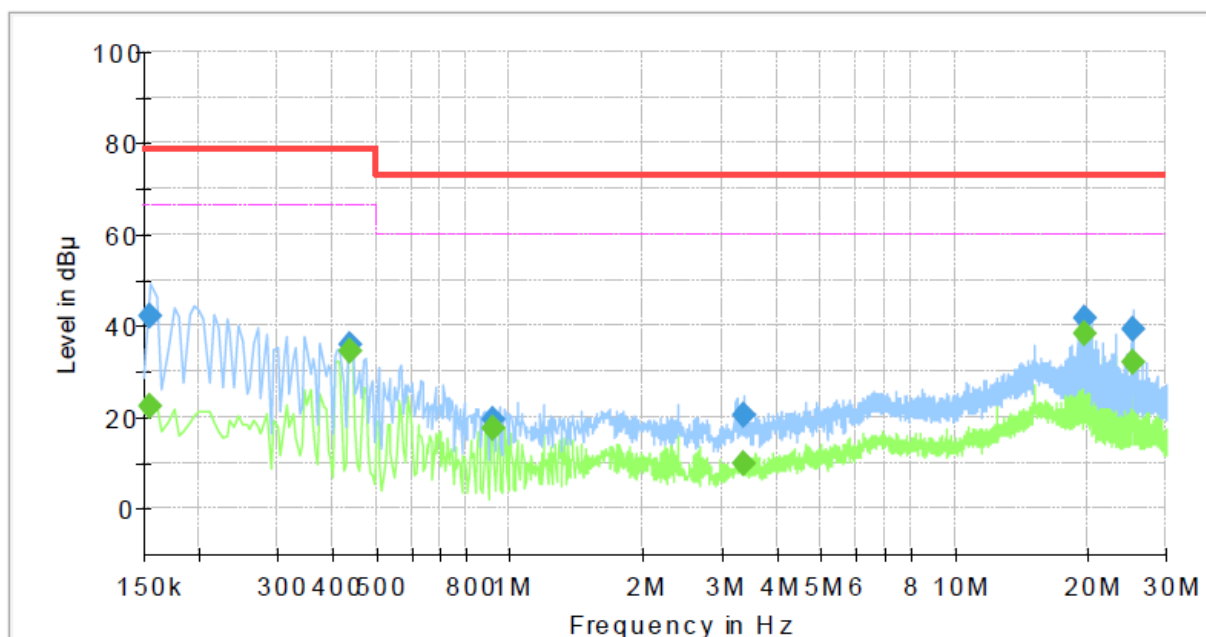
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	26.41	66.00	39.59	1000.0	9.000	L1	19.4
0.160000	41.57	---	79.00	37.43	1000.0	9.000	L1	19.4
0.410000	---	30.03	66.00	35.97	1000.0	9.000	L1	19.4
0.410000	31.83	---	79.00	47.17	1000.0	9.000	L1	19.4
0.915000	---	19.16	60.00	40.84	1000.0	9.000	L1	19.5
0.915000	20.98	---	73.00	52.02	1000.0	9.000	L1	19.5
4.955000	---	14.52	60.00	45.48	1000.0	9.000	L1	19.7
4.955000	19.87	---	73.00	53.13	1000.0	9.000	L1	19.7
19.710000	---	37.55	60.00	22.45	1000.0	9.000	L1	20.2
19.710000	40.89	---	73.00	32.11	1000.0	9.000	L1	20.2
25.195000	---	33.14	60.00	26.86	1000.0	9.000	L1	20.3
25.195000	40.12	---	73.00	32.88	1000.0	9.000	L1	20.3

[NEUTRAL]

Common Information

Test Description: Conducted Emission
 Model No.: XNP-C9310R
 Phase: N
 Mode:
 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	---	22.48	66.00	43.52	1000.0	9.000	N	19.4
0.155000	42.22	---	79.00	36.78	1000.0	9.000	N	19.4
0.440000	---	34.62	66.00	31.38	1000.0	9.000	N	19.4
0.440000	35.79	---	79.00	43.21	1000.0	9.000	N	19.4
0.915000	---	17.34	60.00	42.66	1000.0	9.000	N	19.5
0.915000	19.38	---	73.00	53.62	1000.0	9.000	N	19.5
3.370000	---	9.84	60.00	50.16	1000.0	9.000	N	19.6
3.370000	20.26	---	73.00	52.74	1000.0	9.000	N	19.6
19.710000	---	38.23	60.00	21.77	1000.0	9.000	N	20.2
19.710000	41.53	---	73.00	31.47	1000.0	9.000	N	20.2
25.205000	---	31.98	60.00	28.02	1000.0	9.000	N	20.3
25.205000	39.25	---	73.00	33.75	1000.0	9.000	N	20.3

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

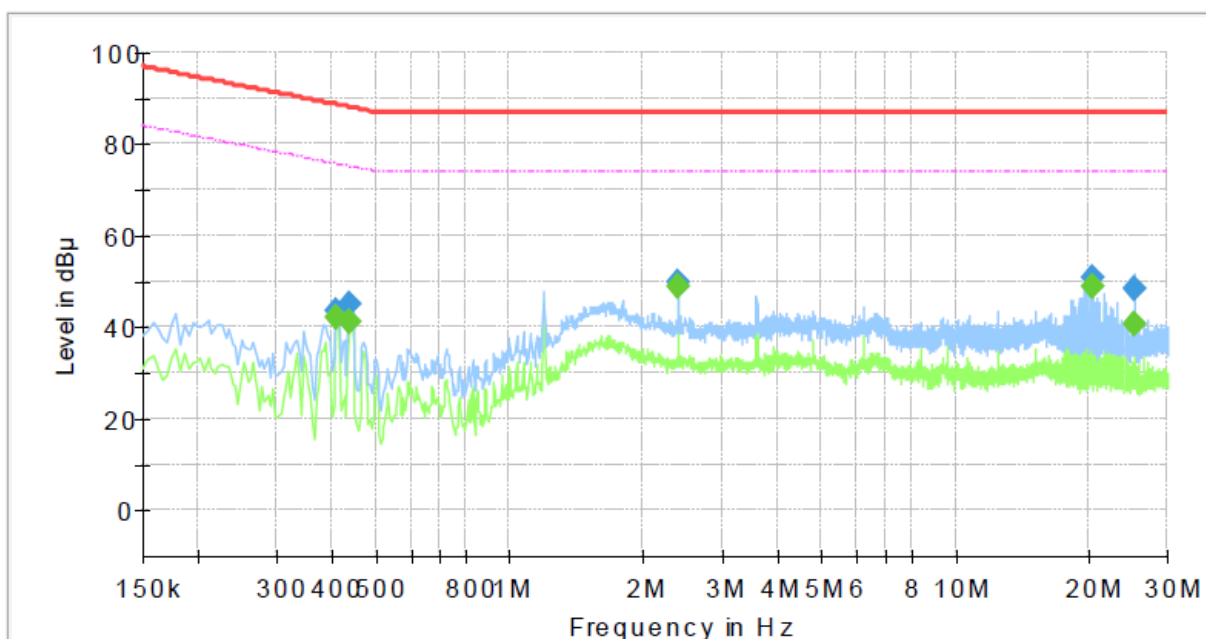
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

Conducted Emissions at Telecommunication Ports

[1 000 Mbps]

Common Information

Test Description: Telecommunication Emission
 Model No.: XNP-C9310R
 Mode :
 Speed : 1 000 Mbps
 Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.410000	---	42.23	75.65	33.42	1000.0	9.000	Single Line	19.1
0.410000	43.34	---	88.65	45.31	1000.0	9.000	Single Line	19.1
0.438000	---	40.91	75.10	34.19	1000.0	9.000	Single Line	19.1
0.438000	45.02	---	88.10	43.08	1000.0	9.000	Single Line	19.1
2.386000	---	48.79	74.00	25.21	1000.0	9.000	Single Line	19.3
2.386000	49.97	---	87.00	37.03	1000.0	9.000	Single Line	19.3
20.258000	---	48.91	74.00	25.09	1000.0	9.000	Single Line	20.1
20.258000	50.74	---	87.00	36.26	1000.0	9.000	Single Line	20.1
25.226000	---	40.64	74.00	33.36	1000.0	9.000	Single Line	20.3
25.226000	48.24	---	87.00	38.76	1000.0	9.000	Single Line	20.3

♦ Calculation

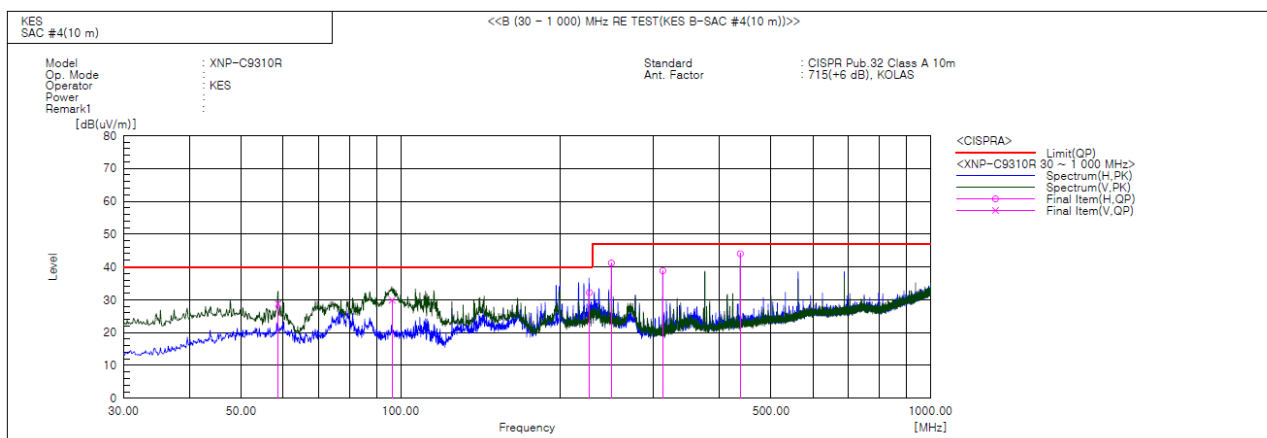
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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	58.729	V	50.1	-21.3	28.8	40.0	11.2	105.0	262.0	
2	96.321	V	52.2	-22.3	29.9	40.0	10.1	111.0	82.0	
3	227.011	H	51.5	-19.3	32.2	40.0	7.8	390.0	199.0	
4	250.014	H	60.0	-18.8	41.2	47.0	5.8	383.0	214.0	
5	312.524	H	55.6	-16.8	38.8	47.0	8.2	388.0	243.0	
6	437.532	H	56.7	-12.7	44.0	47.0	3.0	384.0	329.0	

◆ Calculation

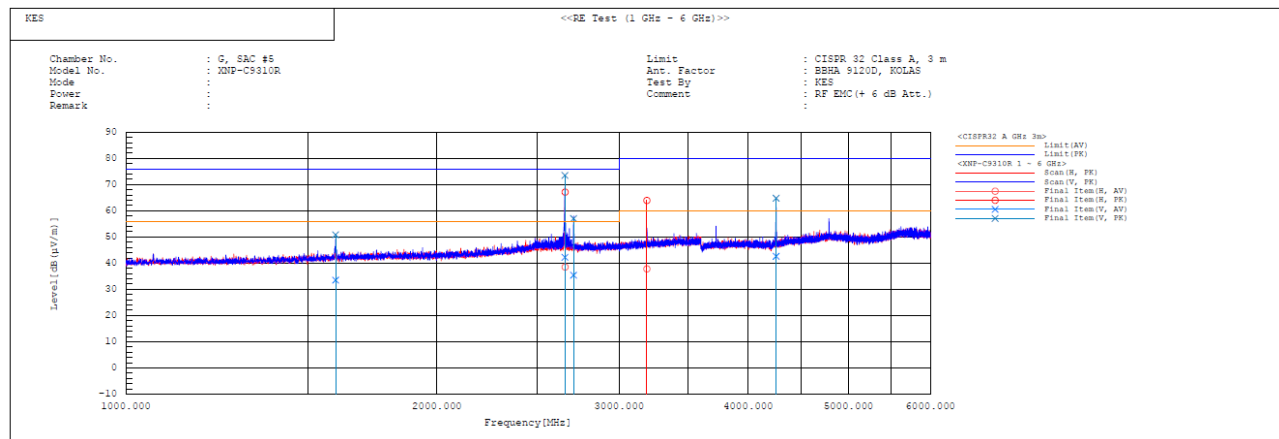
Result(QP) [dB(μ V/m)] = (Reading(QP)[dB(μ V)] + c.f[dB(1/m)])

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

Radiated Electric Field Emissions(Above 1 GHz)



Final Result

No.	Frequency [MHz]	Pol	Reading AV [dB(μV)]	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result AV [dB(μV/m)]	Result PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	1595.967	V	32.4	49.7	1.1	33.5	50.8	56.0	76.0	22.5	25.2	100.0	165.3	
2	2659.485	V	37.0	68.3	5.2	42.2	73.5	56.0	76.0	13.8	2.5	100.0	110.2	
3	2659.991	H	33.3	61.9	5.2	38.5	67.1	56.0	76.0	17.5	8.9	100.0	348.4	
4	2711.429	V	30.0	51.6	5.4	35.4	57.0	56.0	76.0	20.6	19.0	100.0	107.7	
5	3191.987	H	31.3	57.4	6.5	37.8	63.9	60.0	80.0	22.2	16.1	100.0	112.2	
6	4256.007	V	33.4	55.6	9.2	42.6	64.8	60.0	80.0	17.4	15.2	100.0	101.6	

◆ 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

Harmonic Current Emissions and Voltage Fluctuations and Flicker

Average harmonic current results				
Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.104			
2	0.004	0.354	1.080	n/a
3	0.095	4.133	2.300	PASS
4	0.005	1.232	0.430	PASS
5	0.092	8.044	1.140	PASS
6	0.004	1.436	0.300	n/a
7	0.087	11.251	0.770	PASS
8	0.005	2.042	0.230	n/a
9	0.080	19.949	0.400	PASS
10	0.005	2.564	0.184	n/a
11	0.073	22.069	0.330	PASS
12	0.004	2.343	0.153	n/a
13	0.065	30.873	0.210	PASS
14	0.003	2.484	0.131	n/a
15	0.056	37.318	0.150	PASS
16	0.003	2.350	0.115	n/a
17	0.047	35.572	0.132	PASS
18	0.002	2.216	0.102	n/a
19	0.038	32.046	0.118	PASS
20	0.002	1.949	0.092	n/a
21	0.030	18.429	0.161	PASS
22	0.001	1.548	0.084	n/a
23	0.022	15.262	0.147	PASS
24	0.001	1.488	0.077	n/a
25	0.016	11.516	0.135	PASS
26	0.001	1.315	0.071	n/a
27	0.010	7.930	0.125	PASS
28	0.001	1.461	0.066	n/a
29	0.006	4.845	0.116	PASS
30	0.001	1.325	0.061	n/a
31	0.003	2.328	0.109	n/a
32	0.001	1.233	0.058	n/a
33	0.002	2.365	0.102	n/a
34	0.001	1.332	0.054	n/a
35	0.004	3.739	0.096	n/a
36	0.001	1.257	0.051	n/a
37	0.004	4.607	0.091	n/a
38	0.001	1.482	0.048	n/a
39	0.004	4.847	0.087	n/a
40	0.001	1.359	0.046	n/a

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

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

Test Data - Harmonics (continued)

Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.104			
2	0.004	0.273	1.620	n/a
3	0.096	2.775	3.450	PASS
4	0.006	0.912	0.645	PASS
5	0.092	5.399	1.710	PASS
6	0.005	1.105	0.450	n/a
7	0.087	7.549	1.155	PASS
8	0.005	1.531	0.345	PASS
9	0.080	13.390	0.600	PASS
10	0.005	1.888	0.276	PASS
11	0.073	14.809	0.495	PASS
12	0.004	1.759	0.230	n/a
13	0.065	20.735	0.315	PASS
14	0.004	1.851	0.197	n/a
15	0.056	25.071	0.225	PASS
16	0.003	1.773	0.173	n/a
17	0.047	23.886	0.199	PASS
18	0.003	1.684	0.153	n/a
19	0.038	21.554	0.178	PASS
20	0.002	1.441	0.138	n/a
21	0.030	18.531	0.161	PASS
22	0.001	1.159	0.125	n/a
23	0.023	15.388	0.147	PASS
24	0.001	1.142	0.115	n/a
25	0.016	11.625	0.135	PASS
26	0.001	0.989	0.106	n/a
27	0.010	8.120	0.125	PASS
28	0.001	1.055	0.099	n/a
29	0.006	5.082	0.116	PASS
30	0.001	1.012	0.092	n/a
31	0.003	2.528	0.109	n/a
32	0.001	0.941	0.086	n/a
33	0.003	2.480	0.102	n/a
34	0.001	0.976	0.081	n/a
35	0.004	3.863	0.096	n/a
36	0.001	0.949	0.077	n/a
37	0.004	4.705	0.091	n/a
38	0.001	1.150	0.073	n/a
39	0.004	4.980	0.087	n/a
40	0.001	1.001	0.069	n/a

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

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

Test Data - Voltage Fluctuations

Maximum Flicker results

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

Test Setup Photos and Configuration

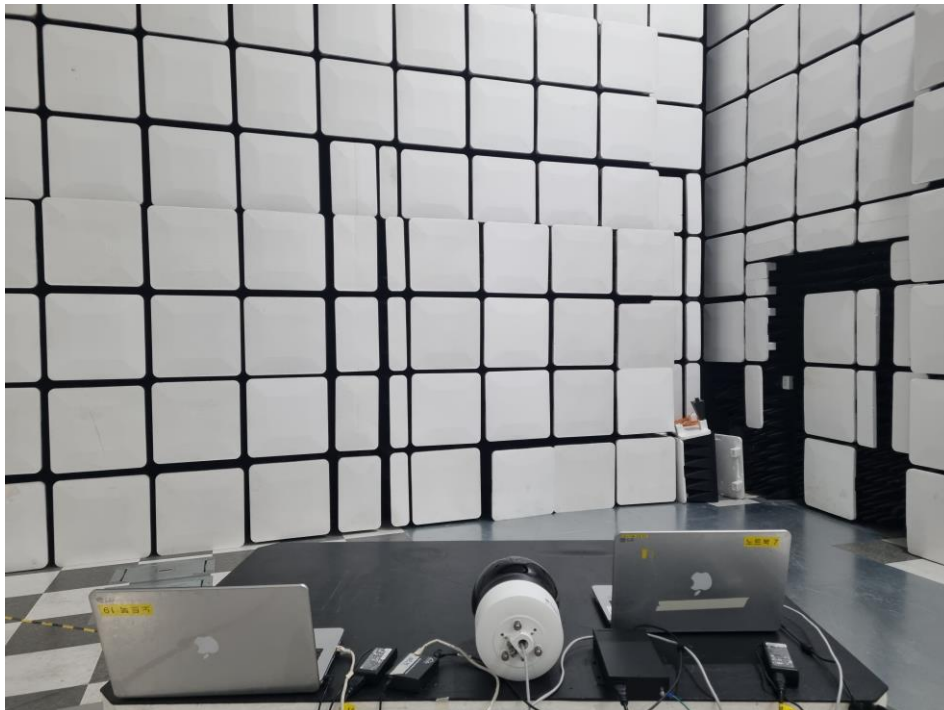
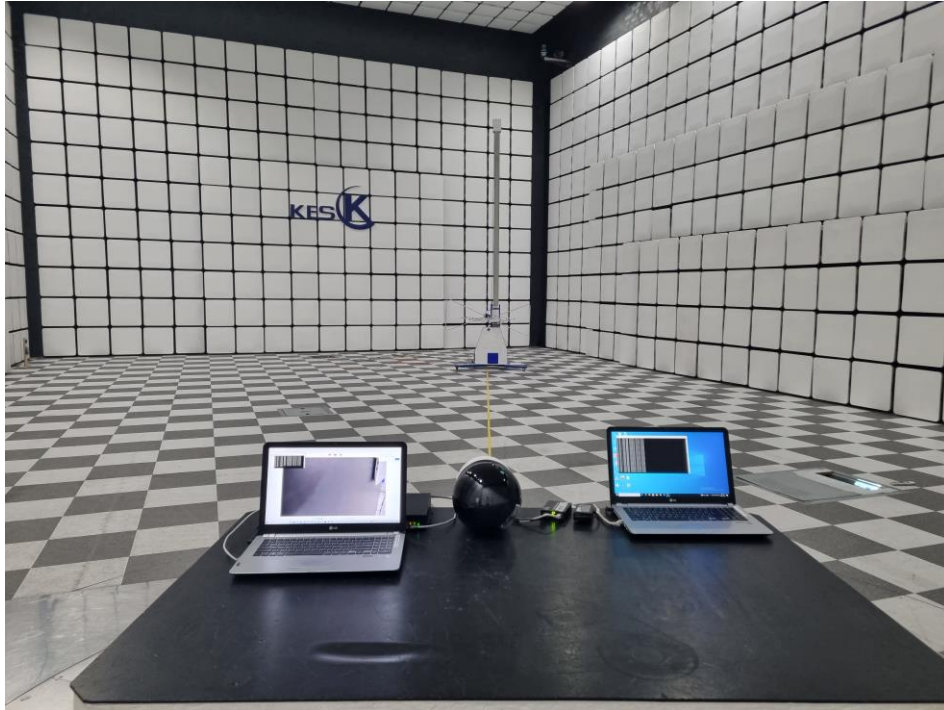
Conducted Emissions at Mains Power Ports



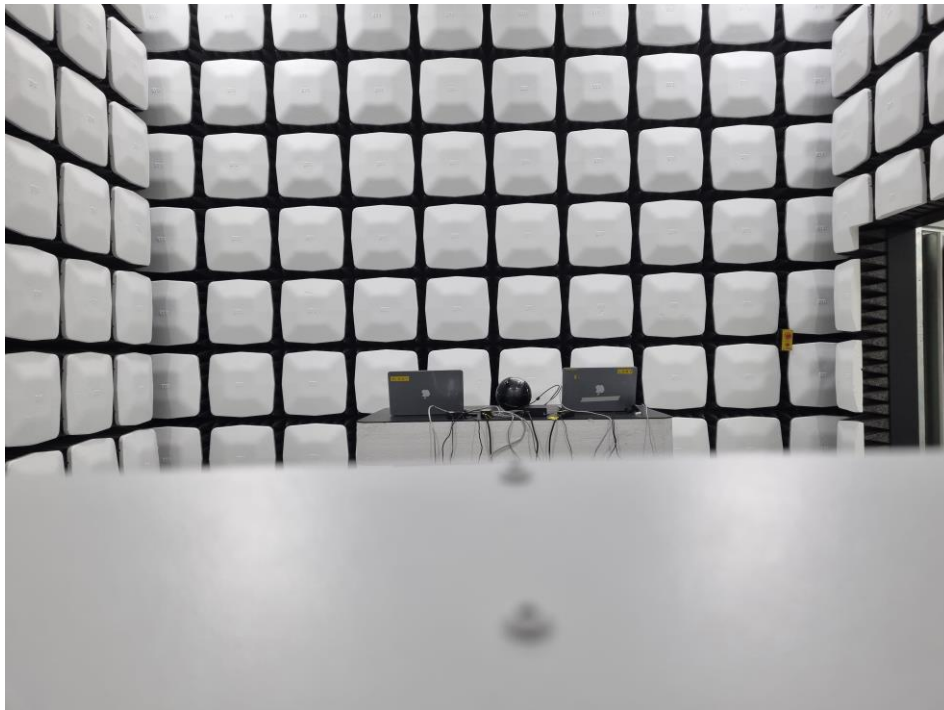
Conducted Emissions at Telecommunication Ports



Radiated Electric Field Emissions(Below 1 GHz)



Radiated Electric Field Emissions(Above 1 GHz)



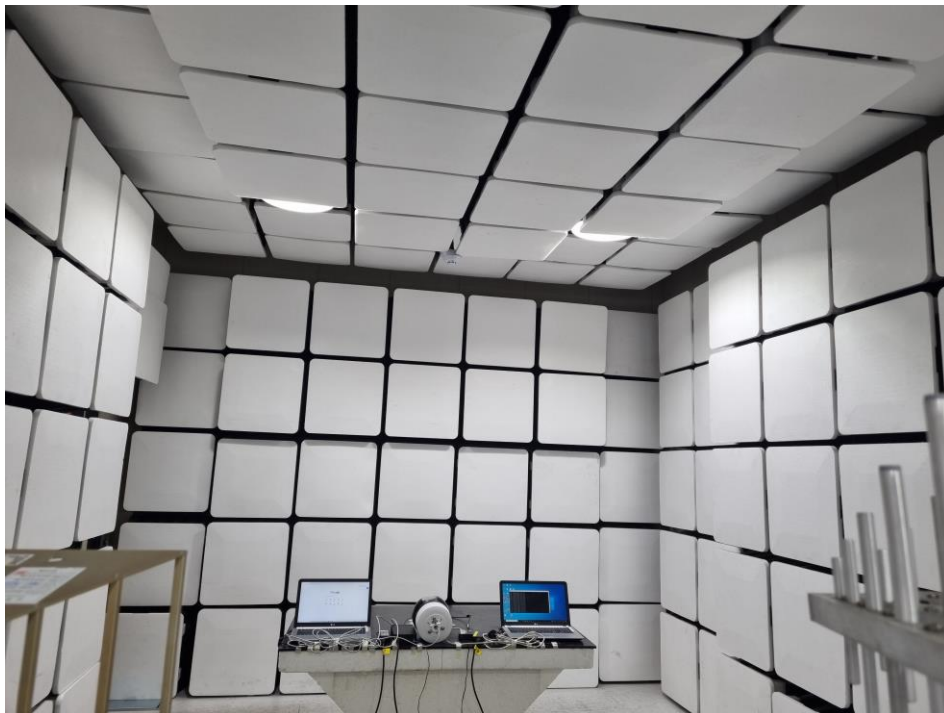
Harmonic Current Emissions and Voltage Fluctuations and Flicker



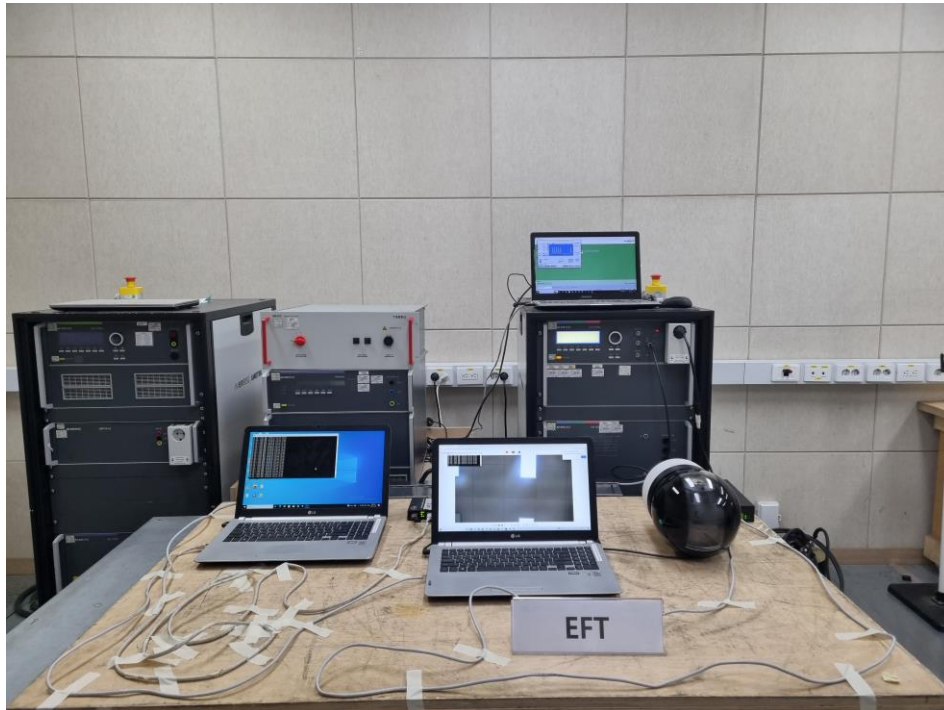
Electrostatic Discharge



Radiated Electric Field Immunity



Electrical Fast Transients/Bursts



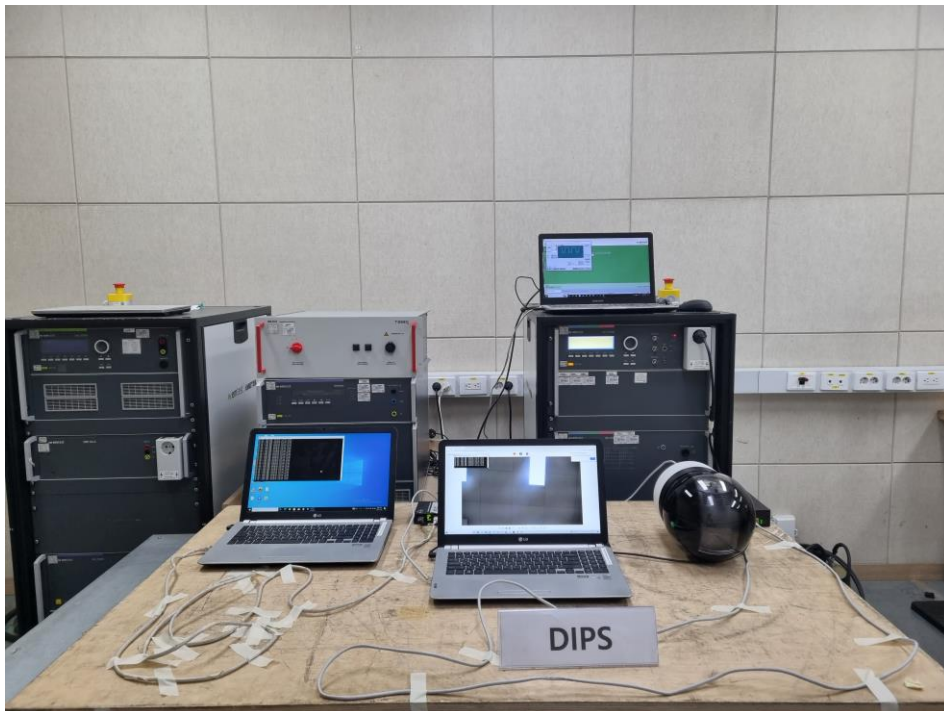
Surge Transients



Conducted Disturbance



Voltage Dips and Short Interruptions



EUT External Photographs

(Top)



(Bottom)



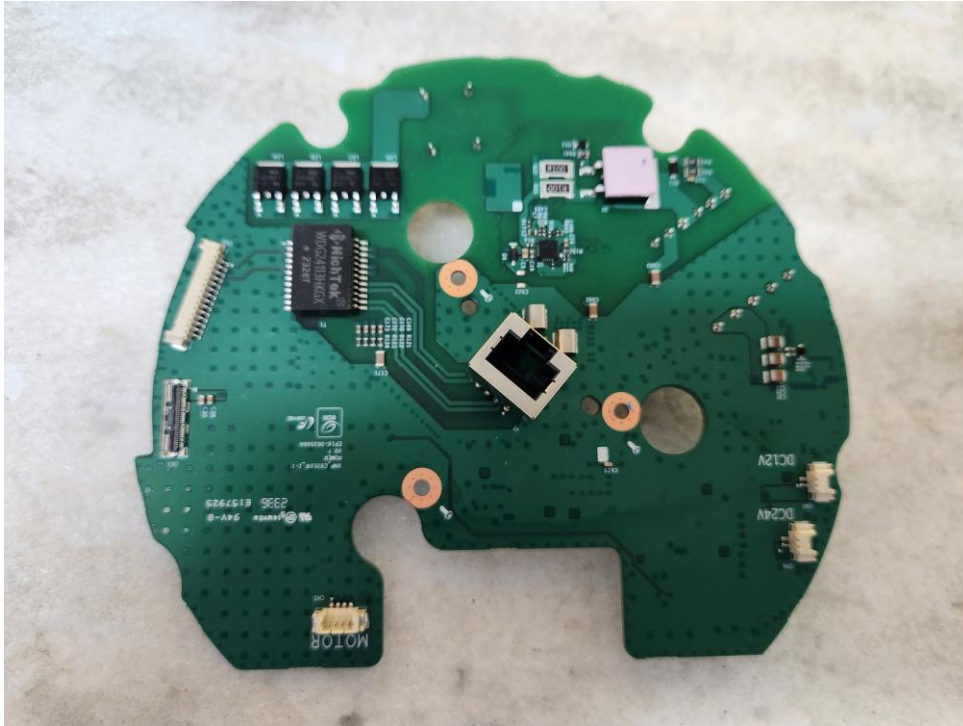
EUT Internal Photographs

(Internal View)

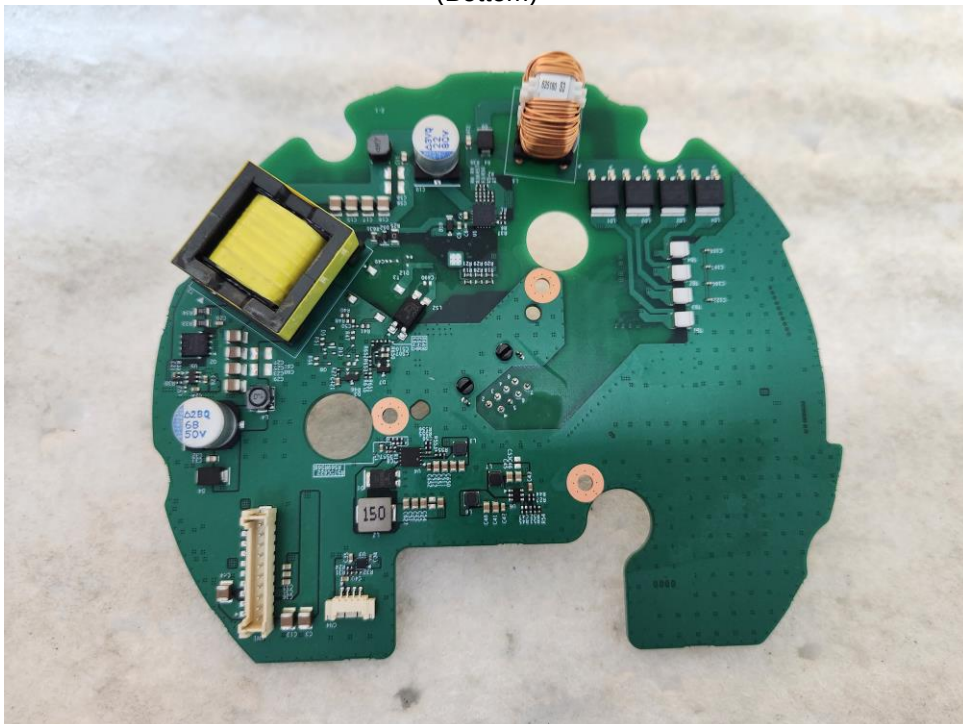


EUT Internal View – Main Board

(Top)

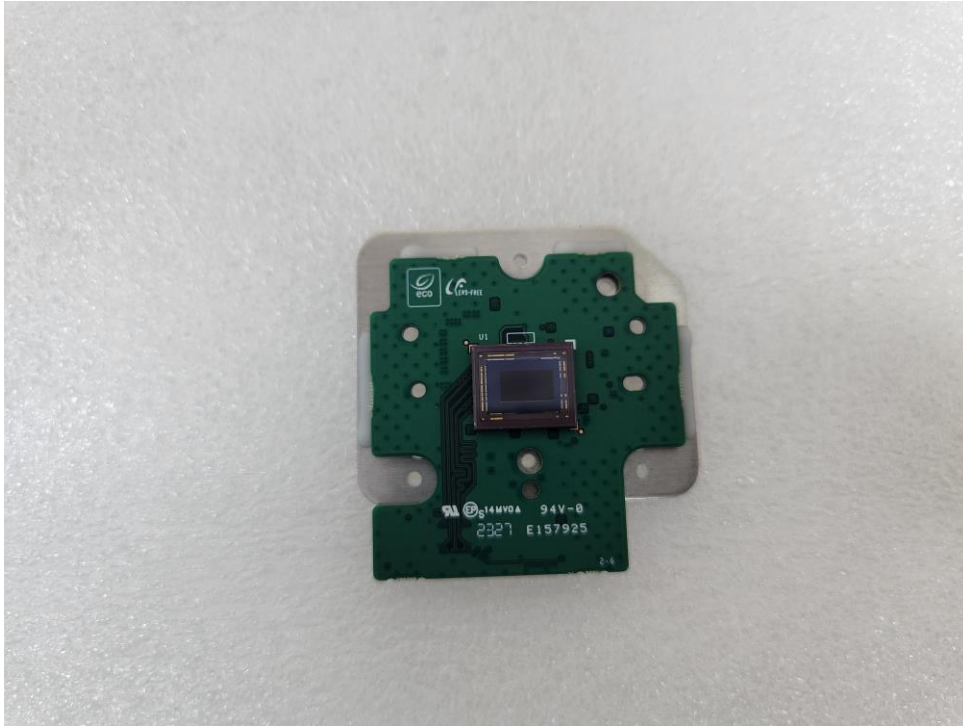


(Bottom)

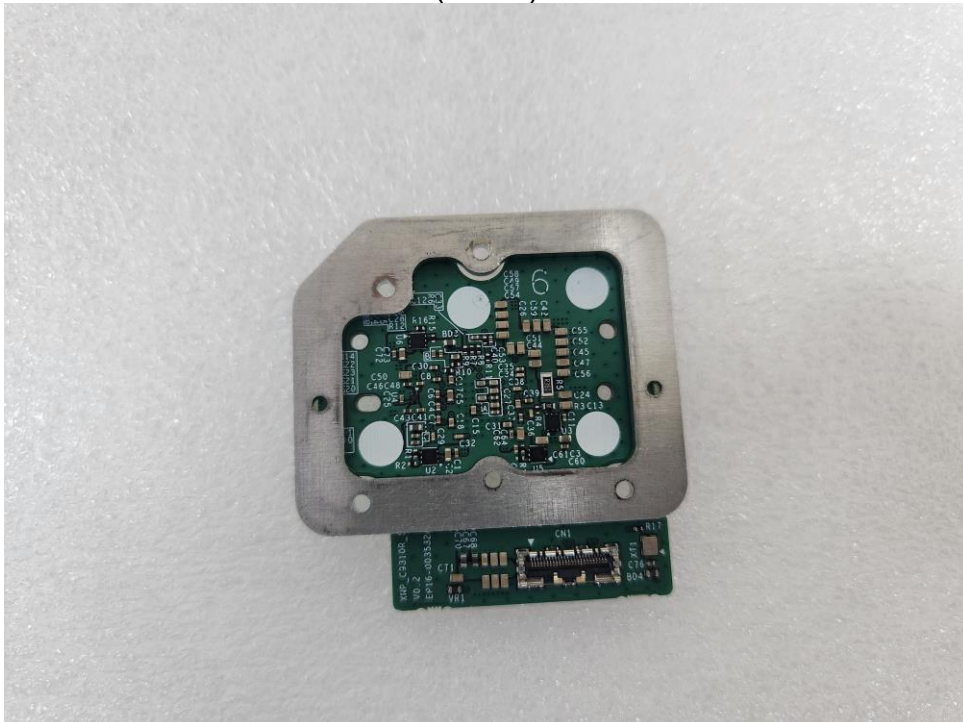


EUT Internal View – Lens Board

(Top)

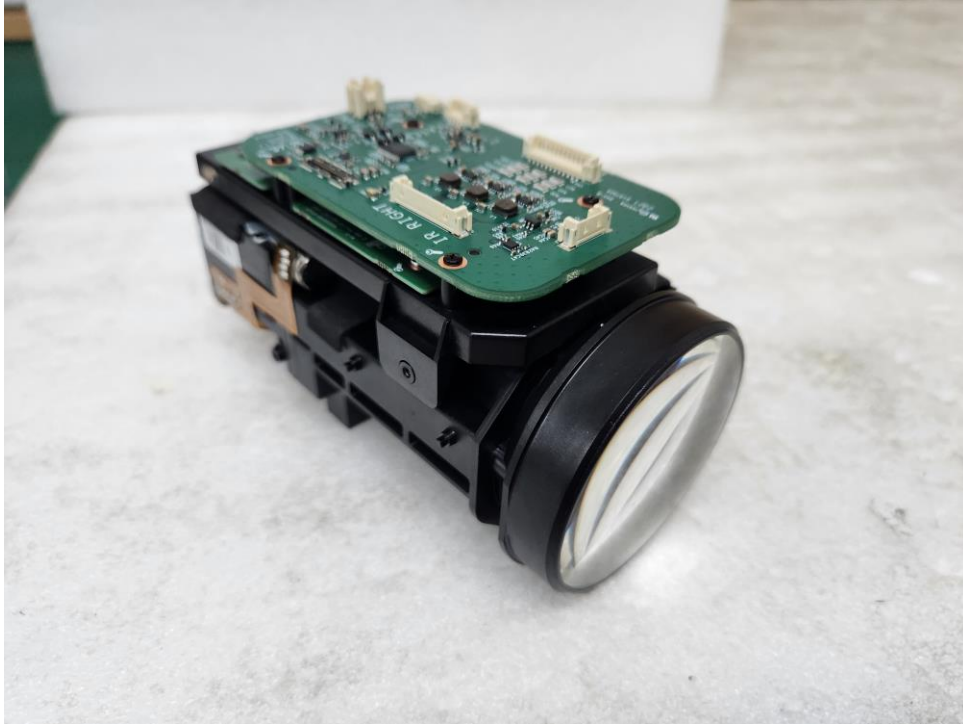


(Bottom)

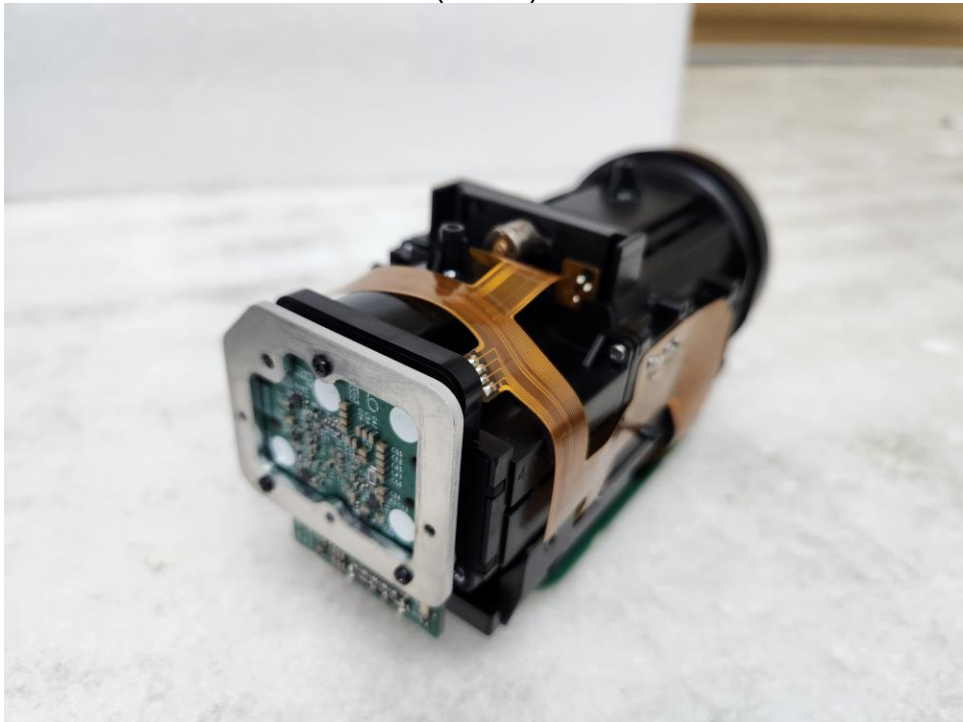


EUT Internal View – Lens

(Top)



(Bottom)

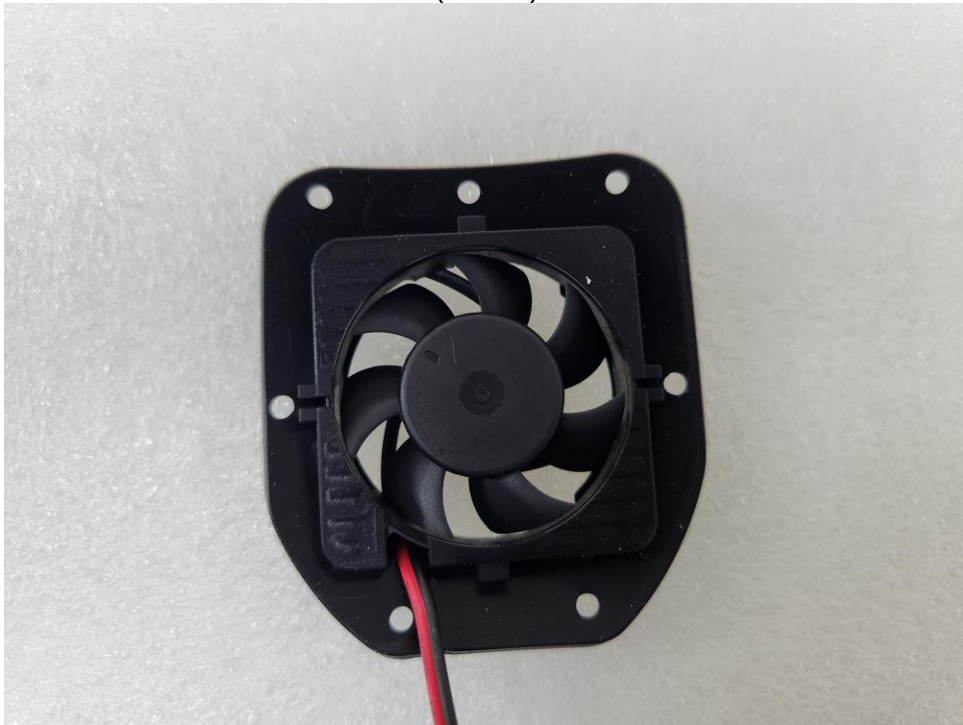


EUT Internal View – FAN 1

(Top)



(Bottom)

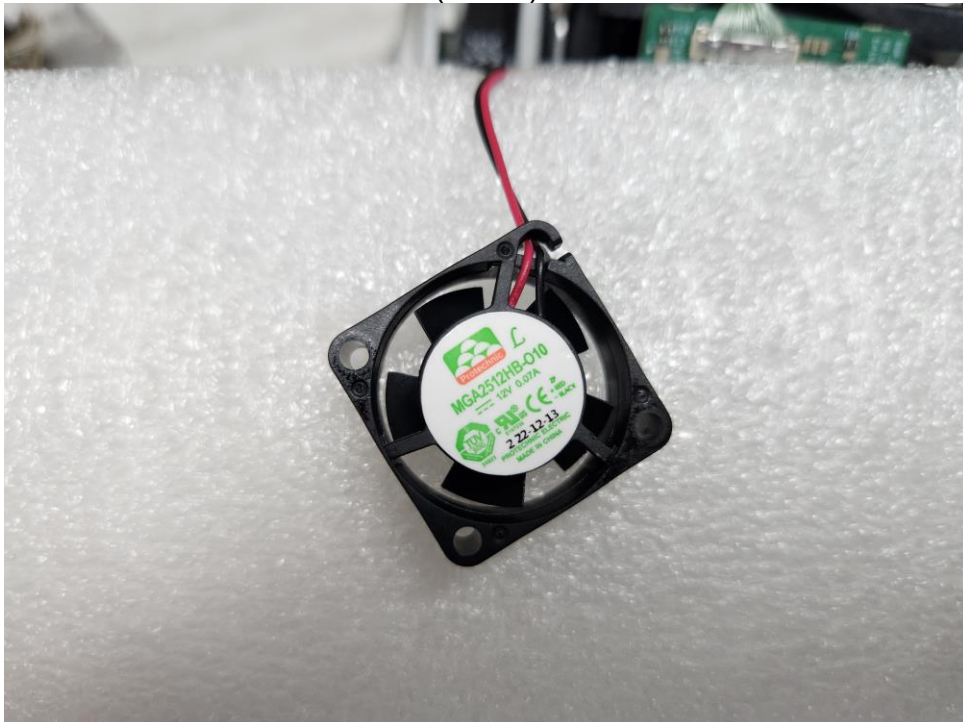


EUT Internal View – FAN 2

(Top)

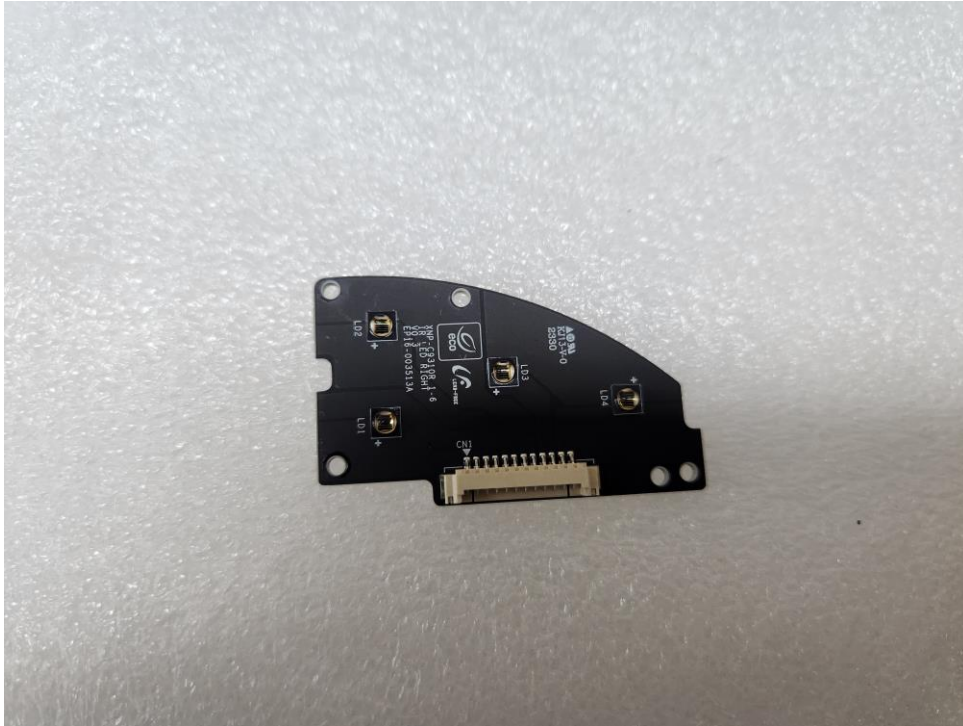


(Bottom)



EUT Internal View – IR Board 1

(Top)

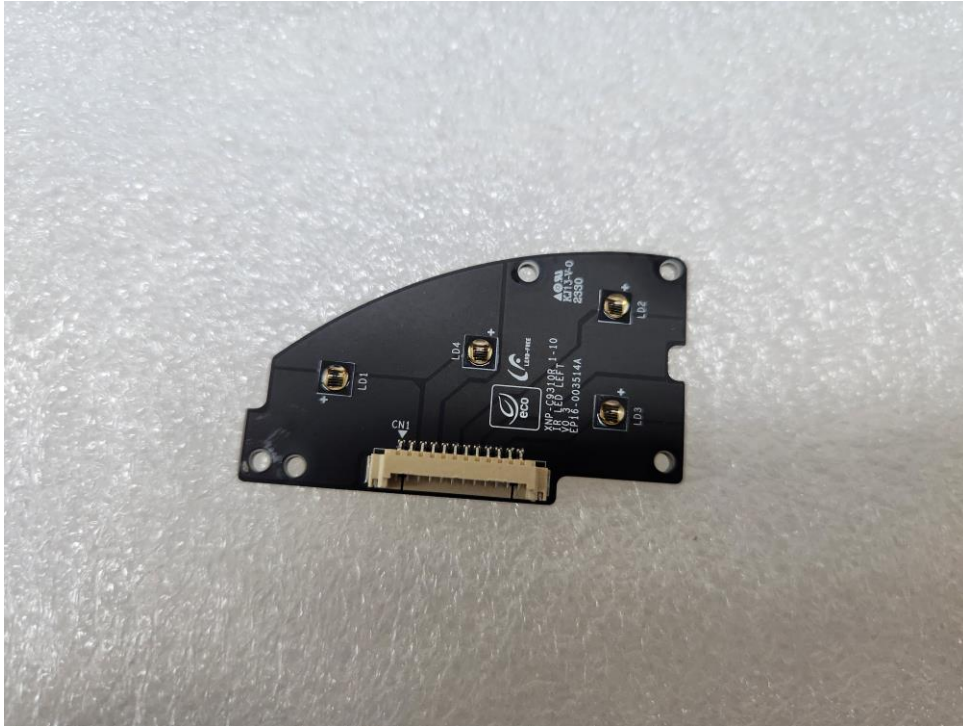


(Bottom)



EUT Internal View – IR Board 2

(Top)

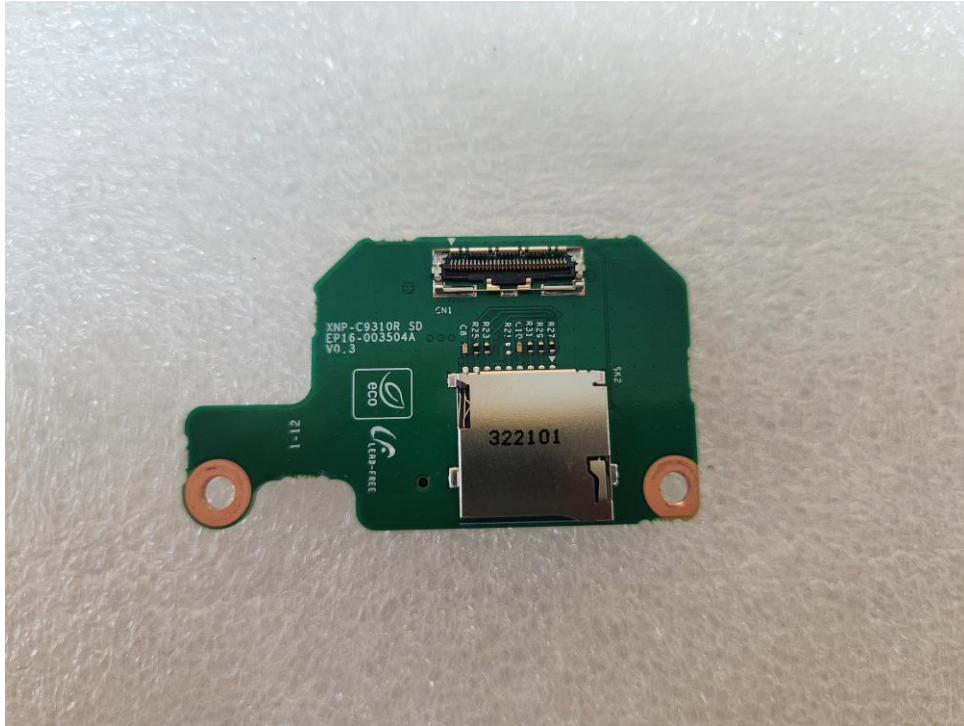


(Bottom)

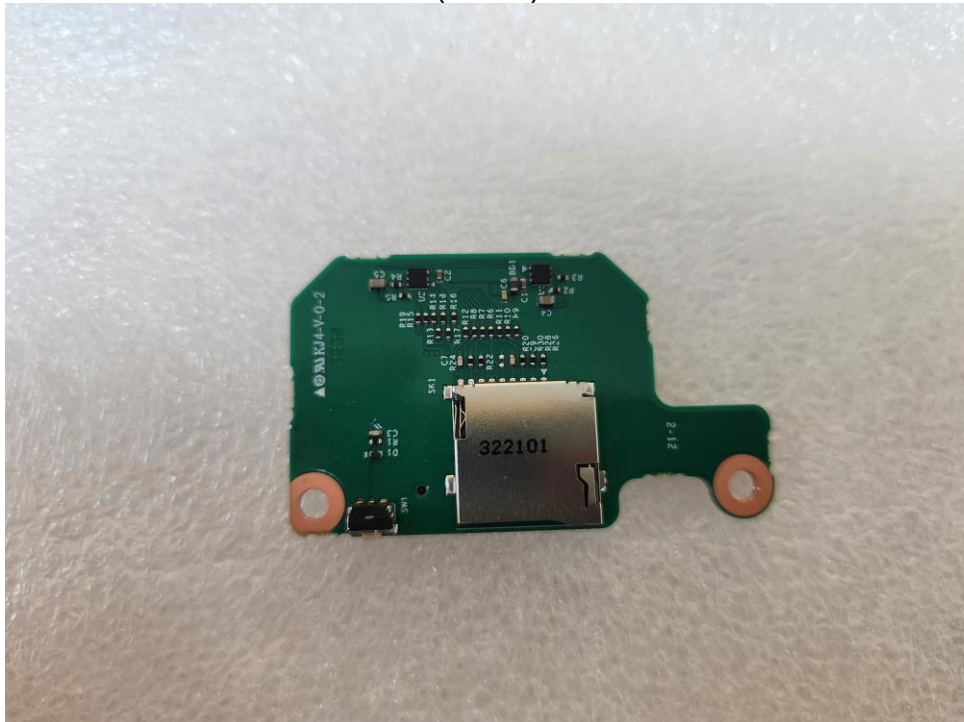


EUT Internal View – SD Card Board

(Top)

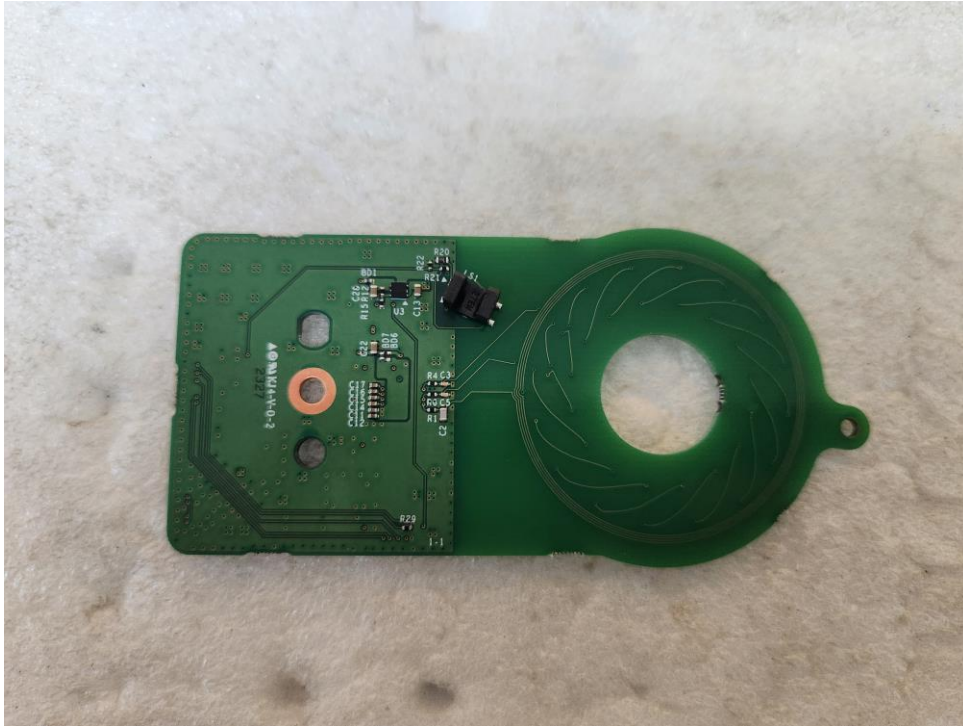


(Bottom)

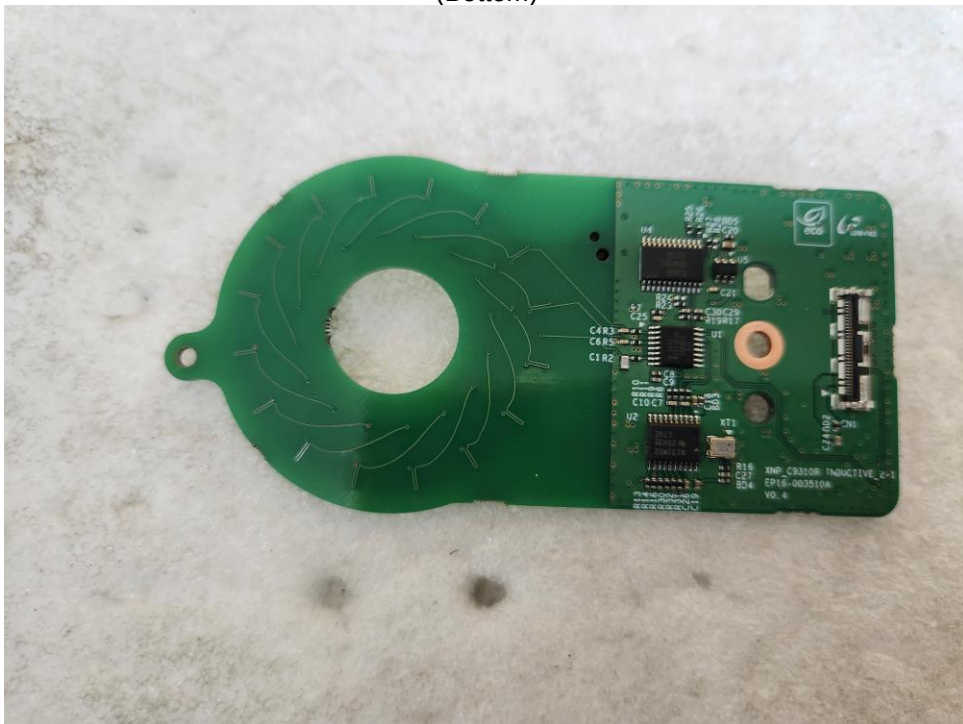


EUT Internal View – SUB Board 1

(Top)

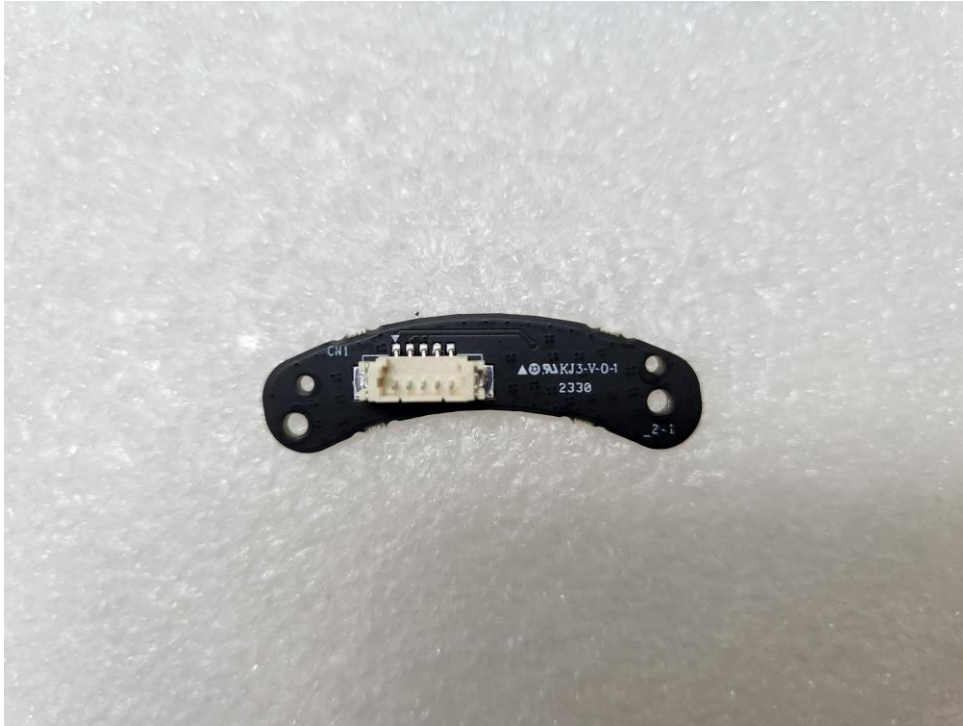


(Bottom)



EUT Internal View – SUB Board 2

(Top)

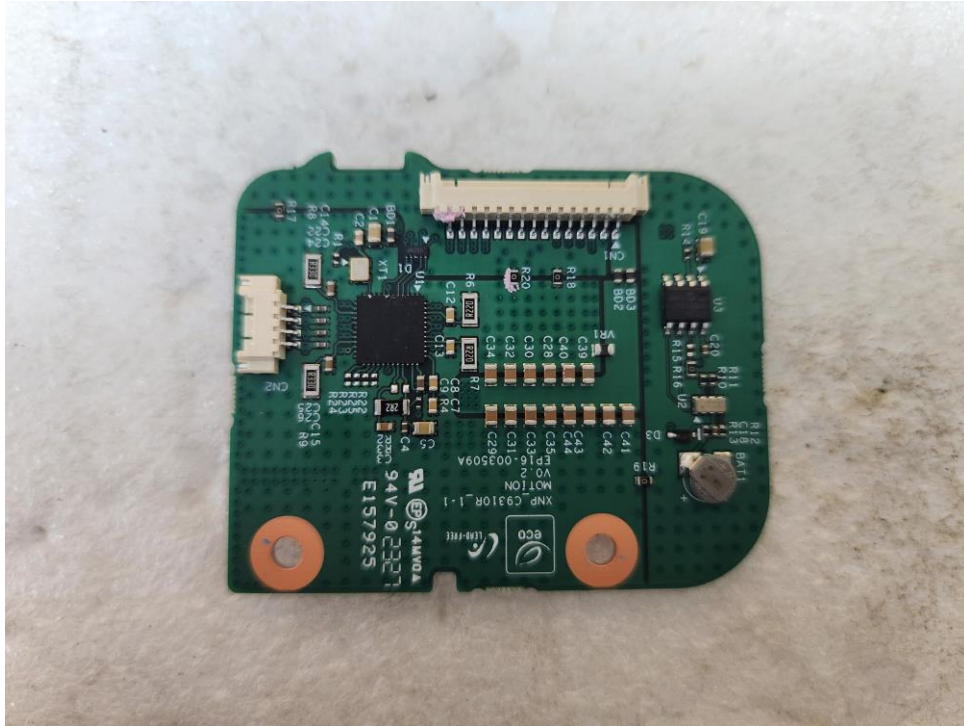


(Bottom)

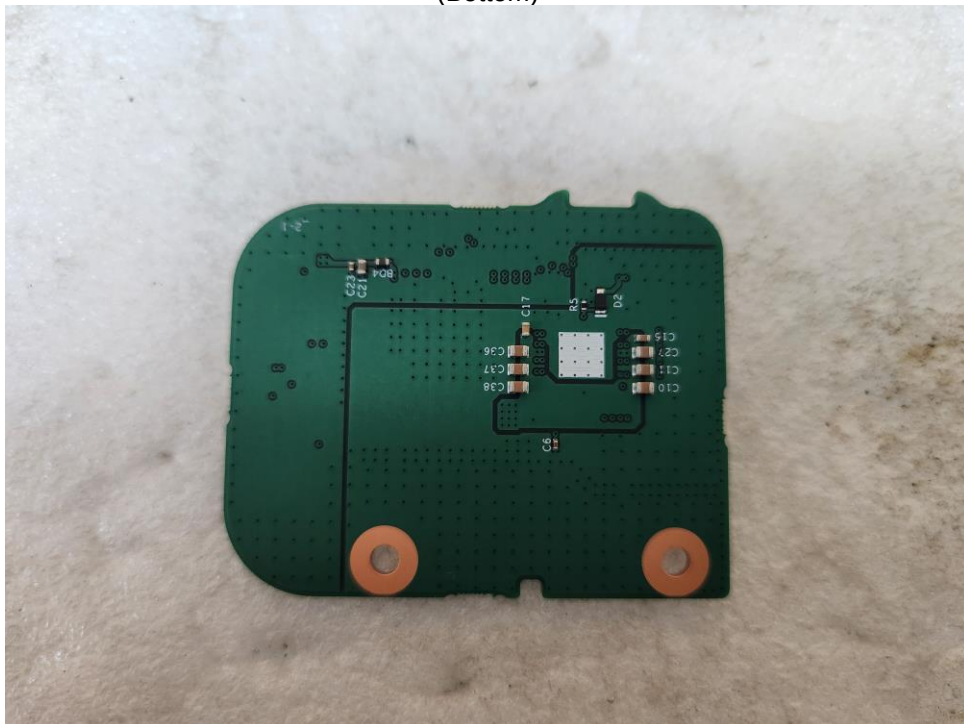


EUT Internal View – SUB Board 3

(Top)



(Bottom)



EUT Internal View – SUB Board 4

(Top)

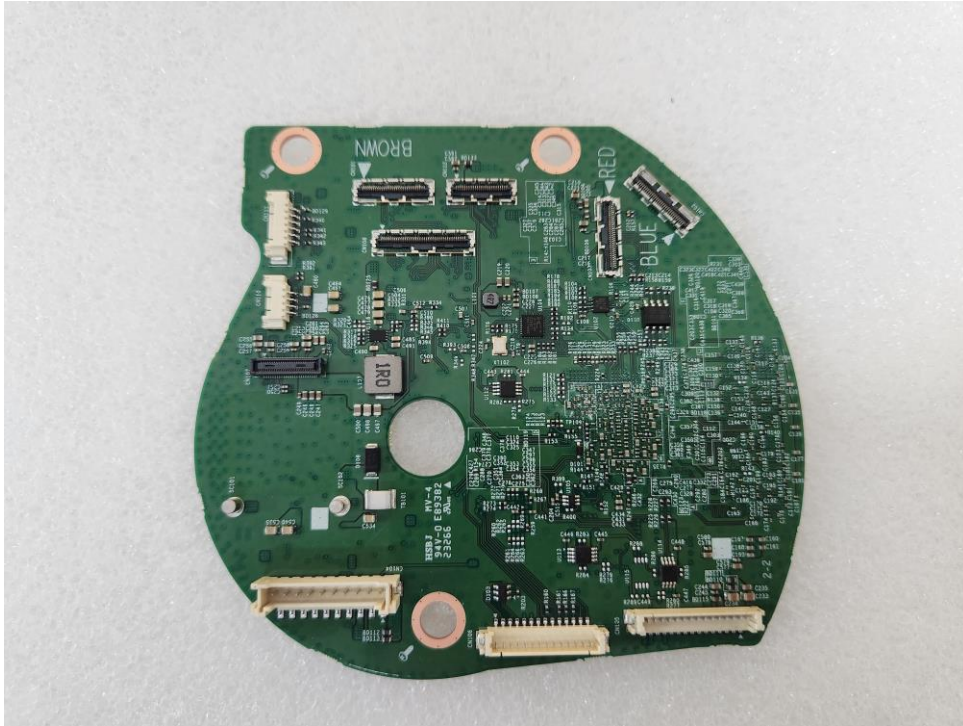


(Bottom)

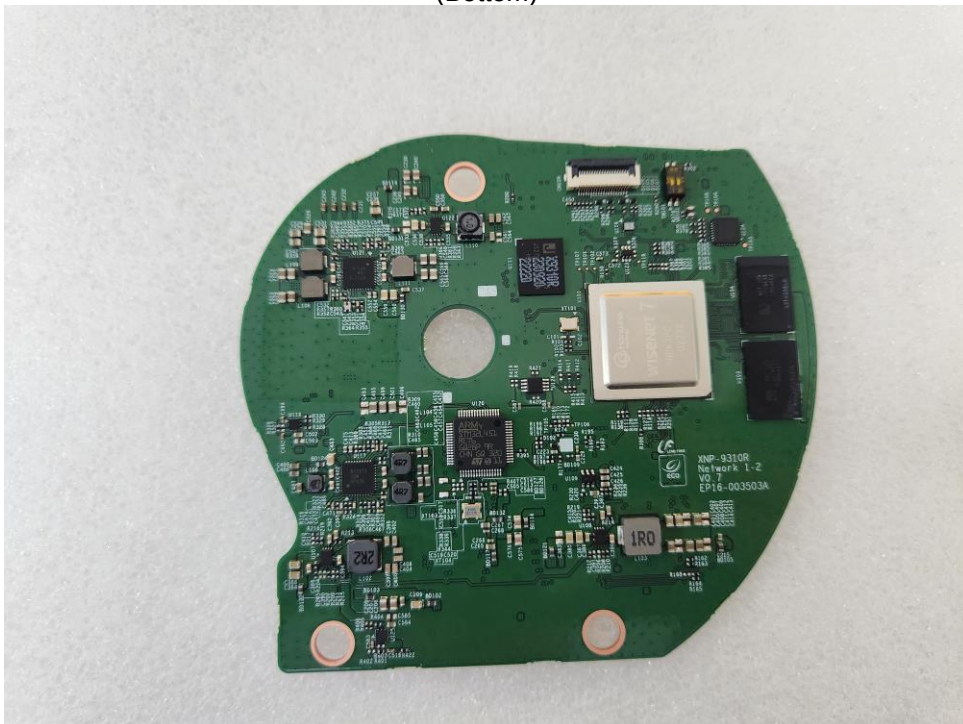


EUT Internal View – SUB Board 5

(Top)

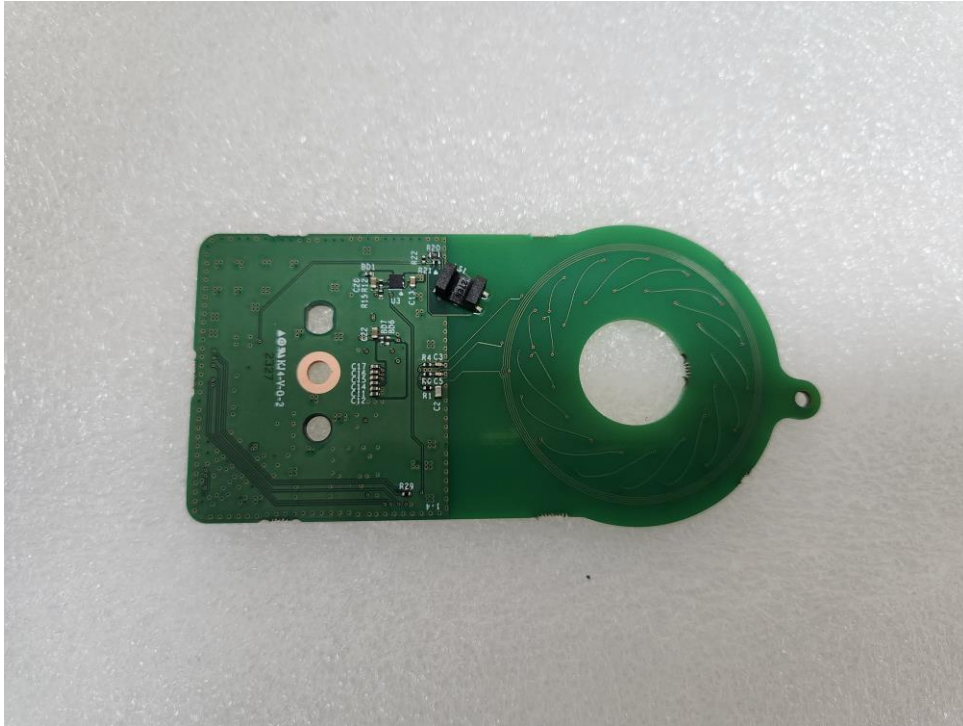


(Bottom)

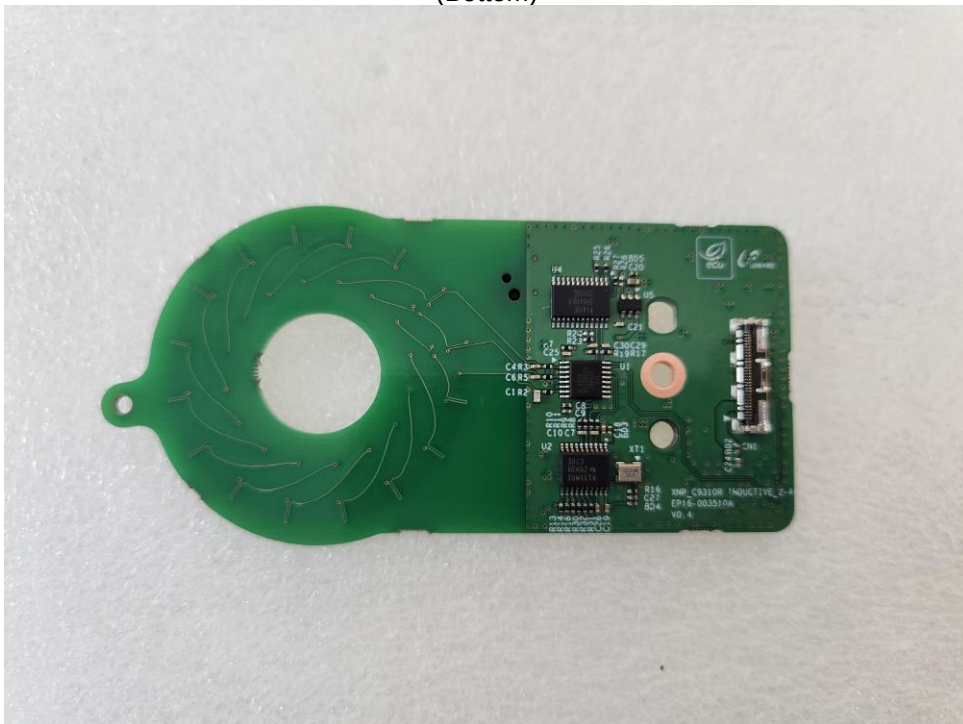


EUT Internal View – SUB Board 6

(Top)

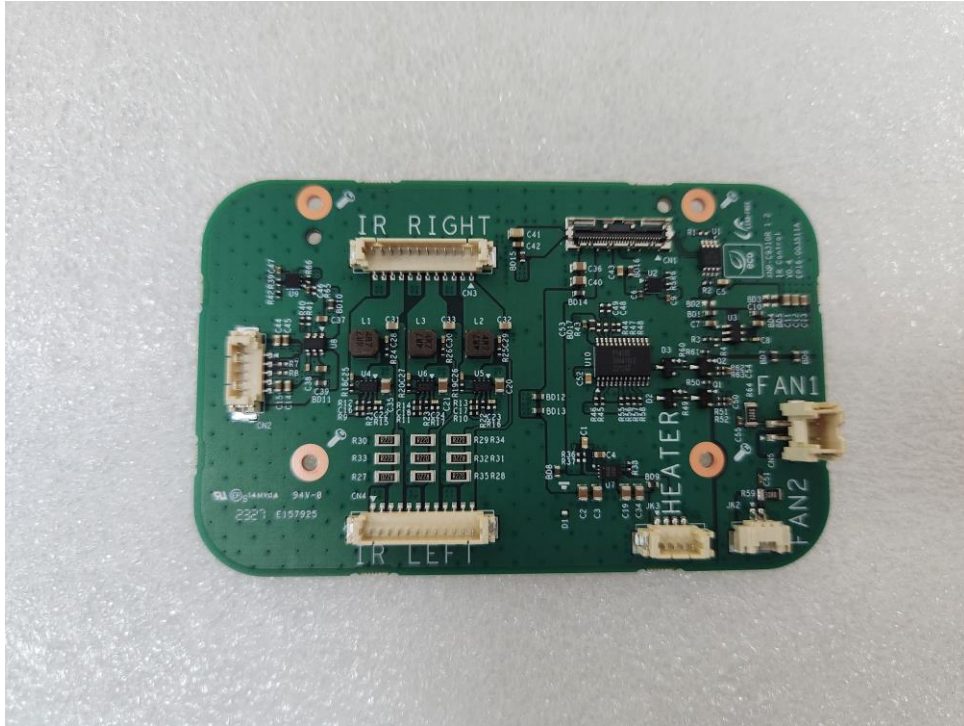


(Bottom)

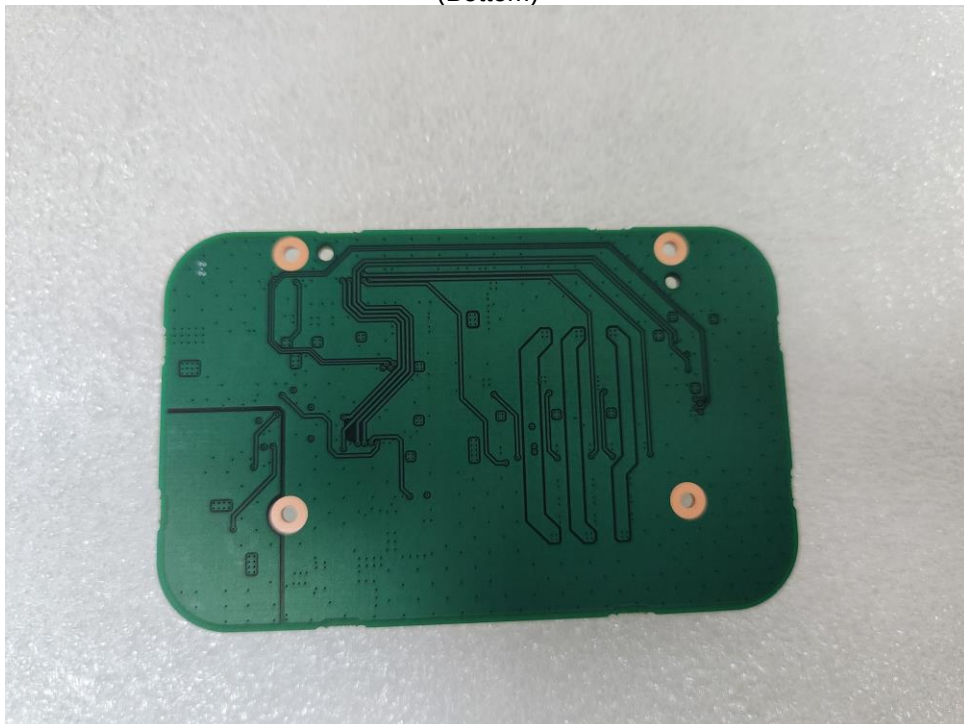


EUT Internal View – SUB Board 7

(Top)

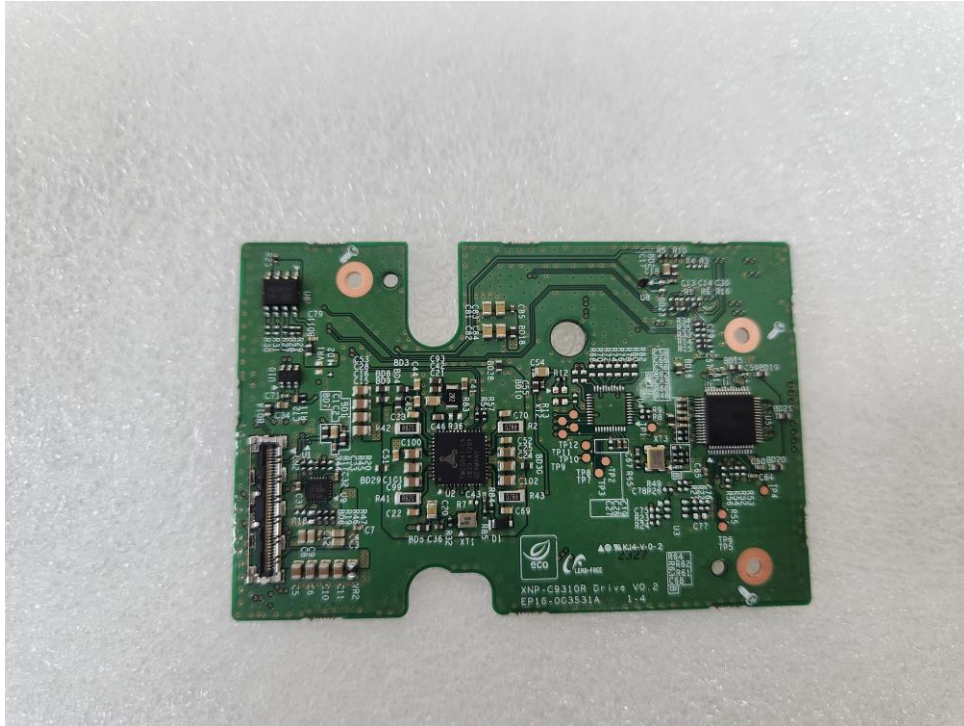


(Bottom)

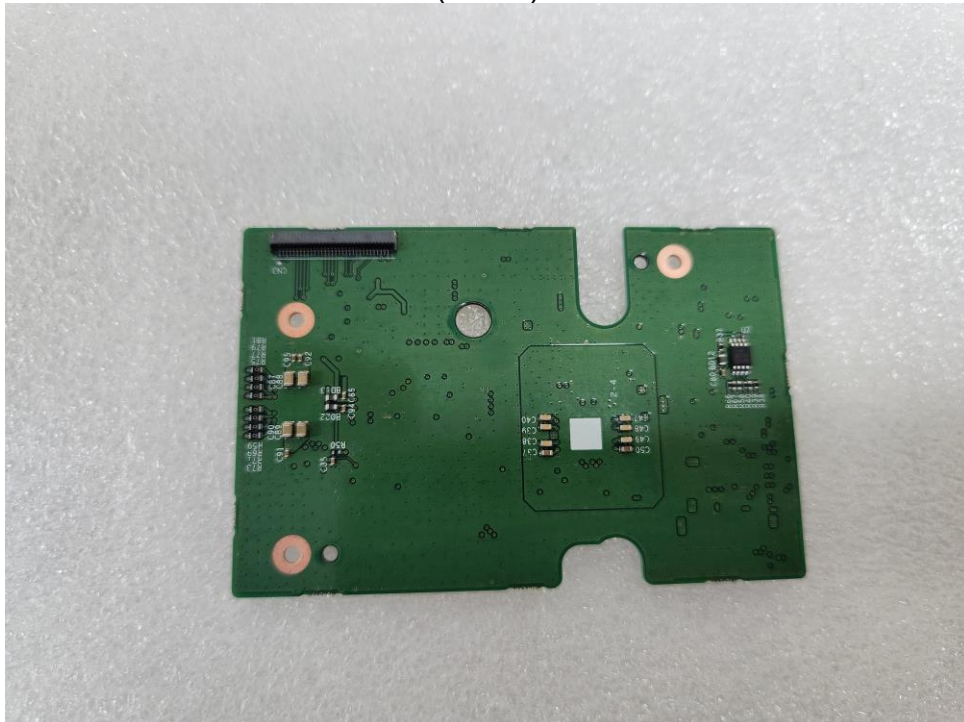


EUT Internal View – SUB Board 8

(Top)

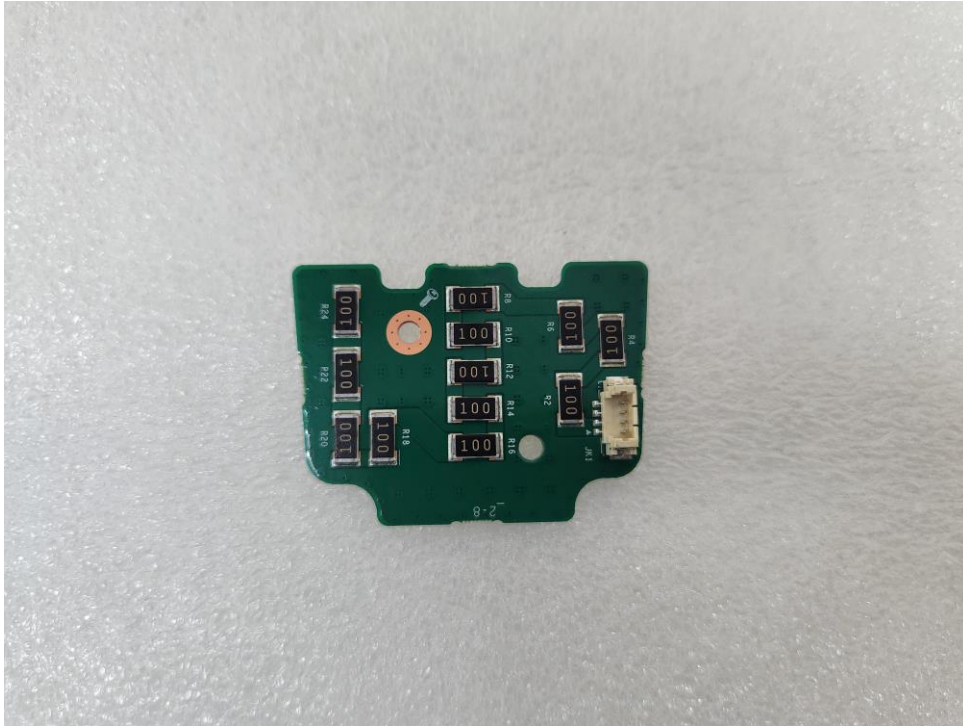


(Bottom)

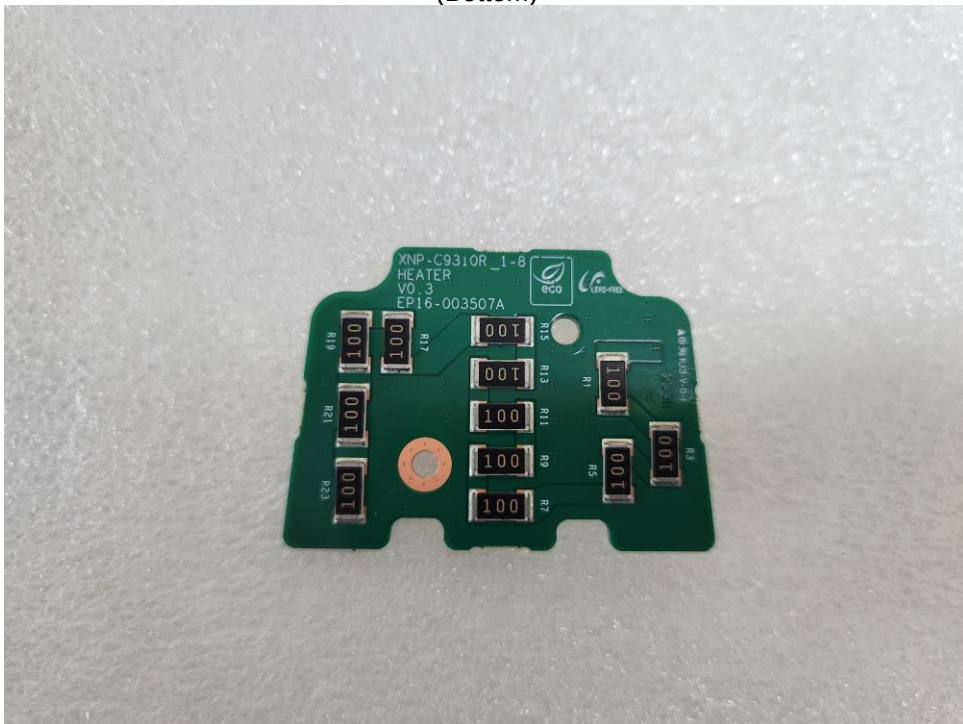


EUT Internal View – SUB Board 9

(Top)



(Bottom)



Label and Location



<u>NETWORK CAMERA</u> Model No : XNP-C9310R Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED Made in Vietnam	UK CA CE
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