

TEST REPORT



Report No. : KES-EM-23T0910

Page 1 / 66

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-C7310R

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. 16, 2023 ~ Oct. 17, 2023

5. Date of Issue : Oct. 26, 2023

6. Test Results : In Compliance

Tested by

Jun Soo, Jung
EMC Test Engineer

Reviewed by

Hyo Jin, Kim
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-23T0910	Issued

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TABLE OF CONTENTS

1.0	General Product Description.....	4
1.1	Test Voltage & Frequency.....	5
1.2	Variant Model Differences.....	5
1.3	Device Modifications.....	5
1.4	Equipment Under Test	5
1.5	Support Equipments	5
1.6	External I/O Cabling.....	6
1.7	EUT Operating Mode(s).....	6
1.8	Configuration.....	7
1.9	Remarks when standards applied	8
1.10	Calibration Details of Equipment Used for Measurement.....	8
1.11	Test Facility	8
1.12	Laboratory Accreditations and Listings.....	8
2.0	Test Regulations	9
2.1	Conducted Emissions at Mains Power Ports.....	10
2.2	Conducted Emissions at Telecommunication Ports.....	11
2.3	Radiated Electric Field Emissions(Below 1 GHz).....	12
2.4	Radiated Electric Field Emissions(Above 1 GHz)	13
2.5	Harmonic Current Emissions	14
2.6	Voltage Fluctuations and Flicker.....	15
3.0	Criteria for compliance	16
3.1	Electrostatic Discharge	18
3.2	Radiated Electric Field Immunity	22
3.3	Electrical Fast Transients/Bursts	25
3.4	Surge Transients.....	27
3.5	Conducted Disturbance	30
3.6	Voltage Dips and Short Interruptions	33
	APPENDIX A – TEST DATA	35
	Conducted Emissions at Mains Power Ports	35
	Conducted Emissions at Telecommunication Ports	37
	Radiated Electric Field Emissions(Below 1 GHz)	38
	Radiated Electric Field Emissions(Above 1 GHz).....	39
	Harmonic Current Emissions and Voltage Fluctuations and Flicker	40
	Test Setup Photos and Configuration	43
	Conducted Emissions at Mains Power Ports	43
	Conducted Emissions at Telecommunication Ports	44
	Radiated Electric Field Emissions(Below 1 GHz)	45
	Radiated Electric Field Emissions(Above 1 GHz).....	46
	Harmonic Current Emissions and Voltage Fluctuations and Flicker	47
	Electrostatic Discharge.....	48
	Radiated Electric Field Immunity.....	48
	Electrical Fast Transients/Bursts	49
	Surge Transients	49
	Conducted Disturbance	50
	Voltage Dips and Short Interruptions.....	50
	EUT External Photographs.....	51
	EUT Internal Photographs	52

1.0 General Product Description

Main Specifications of EUT are:

Video		Radiometry		
Imaging Device	1/1.8" CMOS	Temperature Detect Range	None	
Resolution	2592x1520, 2560x1440, 1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240	Temperature Accuracy	None	
		Temperature Detection	None	
		Additional	None	
		Network		
Max. Framerate	H.265/H.264: Max. 60fps/50fps(60Hz/50Hz)(WDR off) H.265/H.264: Max. 30fps/25fps(60Hz/50Hz)(WDR on) MJPEG: Max. 30fps@4MP Max. 5fps	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)	
NETD	None	H.264/H.265: Target bitrate level control	MJPEG: Target bitrate level control	
Pixel Size	None	Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR	
Min. Illumination	Color: 0.04 Lux(F1.36, 1/30sec, 30 IRE) BW: 0.004 Lux(F1.36, IR LED Off), 0Lux (IR LED On)	Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 10 profiles)	
Video Out	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, UPnP, Bonjour, LLDP, CDP, SRTP(TCP, UDP Unicast), NTPCIP 1205, MQTT	
Video Transmission Distance	None			
Lens				
Focal Length (Zoom Ratio)	6.91 ~ 214.7mm(31x) zoom (digital 32x, total 992x zoom)		SIP support (VoIP, Peer-to-peer)	None
Max. Aperture Ratio	F1.36(Wide)~F4.6(Tele)	Security	None ONVIF Profile S/G/T/M SUNAPI(HTTP API) Wisenet open platform	
Angular Field of View	H : 59.4°(Wide)~2.54°(Tele) V : 35.8°(Wide)~1.49°(Tele) D : 68.2°(Wide)~2.95°(Tele)	Application Programming Inter		
		Security		
		OS / Firmware Protect		
		Secure boot, Signed firmware, Firmware encryption		
Min. Object Distance	3m(9.84ft)	User authentication	Digest Authentication, Prevent brute-force attack	
Focus Control	Oneshot AF, Focus save, Focus scan, Wise auto focus	Network authentication	802.1X Authentication(EAP-TLS, EAP-LEAP, EAP-PEAP MSCHAPv2)	
Lens Type	P-iris(IR corrected)	Secure Communication	HTTPS, SRTP, WSS(Websocket secure)	
Mount Type	None	Access Control	Access control based on IP address	
Optional Lens	None	Data Protect	Authentication information encryption, ZIP compression encryption	
Pan / Tilt / Rotate		Audit	User Access/System/Event log management	
Pan / Tilt / Rotate Range	None	Device ID	Device Certificate(Hanwha Private Root CA)	
Pan Range	360° Endless	Secure Storage	TPM(Trusted platform module), HTPM(Hanwha trusted platform module), SDcard partition encrypt	
Pan Speed	Preset: 550°/sec, Manual: 0.024°/sec~200°/sec	Security Certificate	TPM with FIPS 140-2 level 2	
Tilt Range	110° (90° ~ -20°)	General		
Tilt Speed	Preset: 550°/sec, Manual: 0.024°/sec~200°/sec	Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek	
Rotate Range	None	Web Viewer	None	
Sequence	Preset(300ea), Swing, Group(6ea), Trace, Tour, Auto Run, Schedule	Edge Storage	Micro SD/SDHC/SDXC 2slot 1TB (512MBx2)	
Preset Accuracy	±0.07° (±20°C by temperature at preset setting)	Memory	4GB RAM, 512MB Flash	
Operational		Environmental & Electrical		
Camera Title	Displayed up to 85 characters	Operating Temperature / Humidity	Normal : -50°C~+55°(-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)	
Direction Indicator	Support			
Day & Night	Auto(ICR)			
Backlight Compensation	BLC, HLC, WDR, SSDR		Storage Temperature / Humidity	-50°C~-60°C(-58°F~+140°F) / 0~90% RH
Wide Dynamic Range	120dB	Certification	IP66/IP67, IK10, NEMA4X Safety(UL, KC-SDCK), EMC(FCC, CE, VCCI, RCM, KC) NEMA-TS 2(2.2.7, 2.2.8, 2.2.9)	
Digital Noise Reduction	WiseNRII(Based on AI engine), SSNRV	Input Voltage	HPoE(IEEE802.3bt type4, Class8, injector included)	
Digital Image Stabilization	Support(built-in gyro sensor)	Power Consumption	HPoE: Max 62W, typical 23W	
Defog	Support	Mechanical		
Motion Detection	8ea, 8point polygonal zones	Color / Material	White / Aluminum	
Privacy Masking	32ea, 4point quadrangle zones - Color: Gray/Green/Red/Blue/Black/White - Mosaic	RAL Code	RAL9003	
		Product Dimensions / Weight	ø188x264.9mm(ø7.40x10.47") / 4400g (9.70lb)	
		Compatible Conduit hole / Gasket	None	
		Hanging Mount (Dome)	SBP-156HMMW	
Gain Control	Off / Max gain / Manual	Skin Cover	None	
White Balance	ATW / NarrowATW / AWC / Manual / Indoor / Outdoor / Mercury / Sodium	Skin Cover (Dome)	None	
LDC	None	Weather Cap (Dome)	None	
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2~1/12,000sec) Prefer shutter control(Based on AI engine)	Power Module	None	
Digital PTZ	None	Backbox	None	
Video Rotation	Flip&Mirror	Ceiling Mount (Assy)	SBP-156CMW, SBP-300CM1S, SBP-300CMW1/900CMW, SBP-150CM1/300CM1	
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)	Wall Mount	SBP-156WMMW, SBP-390WMMW2	
		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	
		Business Intelligence		Conduit Adaptor
Other Compatible Models				None
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 C1SPR 32 Class A RCM AS/NZS C1SPR 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)
Video				None
DOH (EN62676-4 standard)				
Alarm Triggers		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)	Detect (25PPM/ 8PPF)	Wide: 90.9m(298.18ft) / Tele: 238.4m(767.18ft)
	Observe (63PPM/ 19PPF)		Wide: 36.4m(119.27ft) / Tele: 935.3m(3068.72ft)	
	Recognize (125PPM/ 38PPF)		Wide: 18.2m(59.64ft) / Tele: 467.7m(1534.36ft)	
	Identify (250PPM/ 76PPF)		Wide: 9.1m(29.82ft) / Tele: 233.8m(767.18ft)	
	LPR/ANPR/MMCR			
	Speed Description		None	
	Speed limit		None	
	Min. Forward Distance		None	
	Max. Forward Distance		None	
	Max. Horizontal Angle		None	
Audio Streaming	None	Max. Vertical Angle	None	
Audio In	None	Horizontal Offset	None	
Audio Out	None	Camera Height	None	
Light Type	IR LED (850nm)	Lane Coverage	None	
Light Viewable Length	None	Vehicle Recognition	None	
IR Viewable Length	Wise IR 300m(984ft)	Available Countries	None	
IR Illuminator (Optional)	None	Wisenet Road AI LPR/ANPR/MMCR		
IR Radiation angle	None	Solution	None	
IR LED	None	Speed Description	None	
IR Wavelength	None	Lane Coverage	None	
IR Operation	None	Speed limit	None	
Water Removal	Support(Spin dry)	Min. Forward Distance	None	
Auto Tracking	Support Object auto tracking(Person/Vehicle) Target lock tracking	Max. Forward Distance	None	
		Max. Horizontal Angle	None	
		Max. Vertical Angle	None	
		Horizontal Offset	None	
Coaxial Protocol	None	Camera Height	None	
Color Palettes	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-C7310R	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Fiber PoE Injector	PT-PSE109GBRO-AH-S	PT2332221966	Dongguan PROCET Network Technology Co.,Ltd	-
Fiber PoE Injector	PT-PSE109GBRO-AH-S	PT2023220052	Dongguan PROCET Network Technology Co.,Ltd	-
Notebook 1	P95G001	8KM8HT2	DELL INC.	-
Notebook 1 Adapter	LA90PM130	-	ITE-ON TECHNOLOGY CHANGZHOU CO.,LTD	-
Notebook 2	Latitude 5300	8C47BE45C060	DELL INC.	-
Notebook 2 Adapter	LA90PM130	-	LITE-ON TECHNOLOGY CHANGZHOU CO.,LTD	-
Optical module 1	AFBR-57G5MZ-ELX	AD2008G0210	AVAGO	-
Optical module 2	NEXT-SFP10G-SR	-	NEXT	-
Micro SD Card 1	-	-	SanDisk	16 GB
Micro SD Card 2	-	-	SanDisk	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	Fiber PoE Injector (EUT)	RJ-45 (PoE)	2.0	U
	Micro SD Slot	Micro SD Card 1	Micro SD Slot	-	-
	Micro SD Slot	Micro SD Card 2	Micro SD Slot	-	-
Notebook 1 Adapter	Line	Notebook 1	DC Jack	1.5	U
Fiber PoE Injector (EUT)	RJ-45 (LAN)		RJ-45	4.0	U
	Ground	Enclosure ground	Ground	2.0	U
	SFP	Optical module 1	SFP	-	-
Optical module 2	Optical		Optical	5.0	U
	SFP	Fiber PoE Injector	SFP	-	-
Notebook 2	RJ-45		RJ-45 (LAN)	2.0	U
	DC Jack	Notebook 2 Adapter	Line	1.5	U

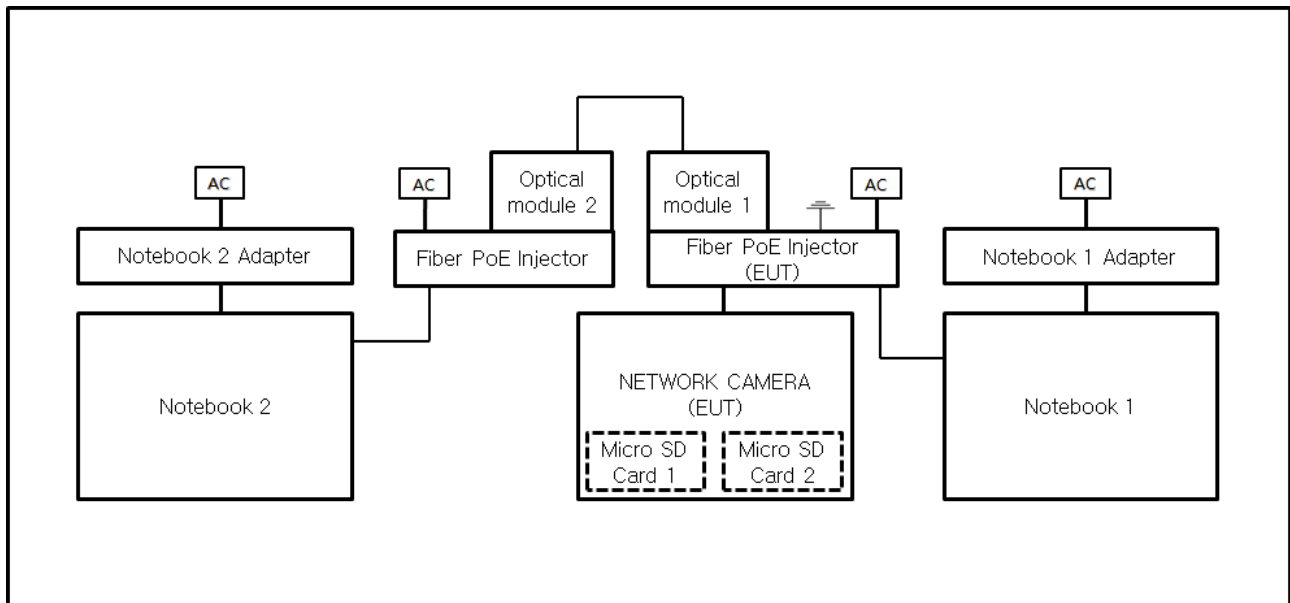
* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

Test mode	Normal operating	Test Voltages
Operating	1. Check if the EUT image is output to the Notebook normally. 2. Check if the network is operating normally through a ping test. 3. After testing, I checked the files stored on Micro SD card.	AC 230 V, 50 Hz

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

1.8 Configuration



1.9 Remarks when standards applied

N/A

1.10 Calibration Details of Equipment Used for Measurement

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

1.11 Test Facility

The measurement facility is located at 473-21, Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea, 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. 17, 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

Test Conditions

Temperature: (23,1 ± 0,1) °C

Relative Humidity: (46,5 ± 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. 17, 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: (23,1 ± 0,1) °C

Relative Humidity: (46,5 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

- See Appendix A for test data.

- For Ethernet interfaces, measurements are required at the highest data rate supported by the interface.

2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Oct. 16, 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: (23,4 ± 0,1) °C

Relative Humidity: (46,8 ± 0,1) % 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. 16, 2023

Test Location

SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESR7	R & S	101190	07, 31, 2024
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	03, 06, 2023
☒	ATTENUATOR	8491A	HP	35496	03, 03, 2024
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 06, 2024

Test Conditions

Temperature: (23,2 ± 0,1) °C

Relative Humidity: (45,0 ± 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

Remarks

See Appendix A for test data.

2.5 Harmonic Current Emissions

Test Date

Oct. 17, 2023

Test Location

Electro wave Shieldroom #3

Test Equipment

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

Test Conditions

Temperature: (23,6 ± 0,1) °C

Relative Humidity: (46,3 ± 0,1) % 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. 17, 2023

Test Location

Electro wave Shieldroom #3

Test Equipment

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

Test Conditions

Temperature: (23,6 ± 0,1) °C

Relative Humidity: (46,3 ± 0,1) % 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. 18, 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: (23,2 ± 0,1) °C

Relative Humidity: (46,2 ± 0,1) % R.H.

Atmospheric Pressure: (99,7 ± 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
--------------------	---	---	---	---

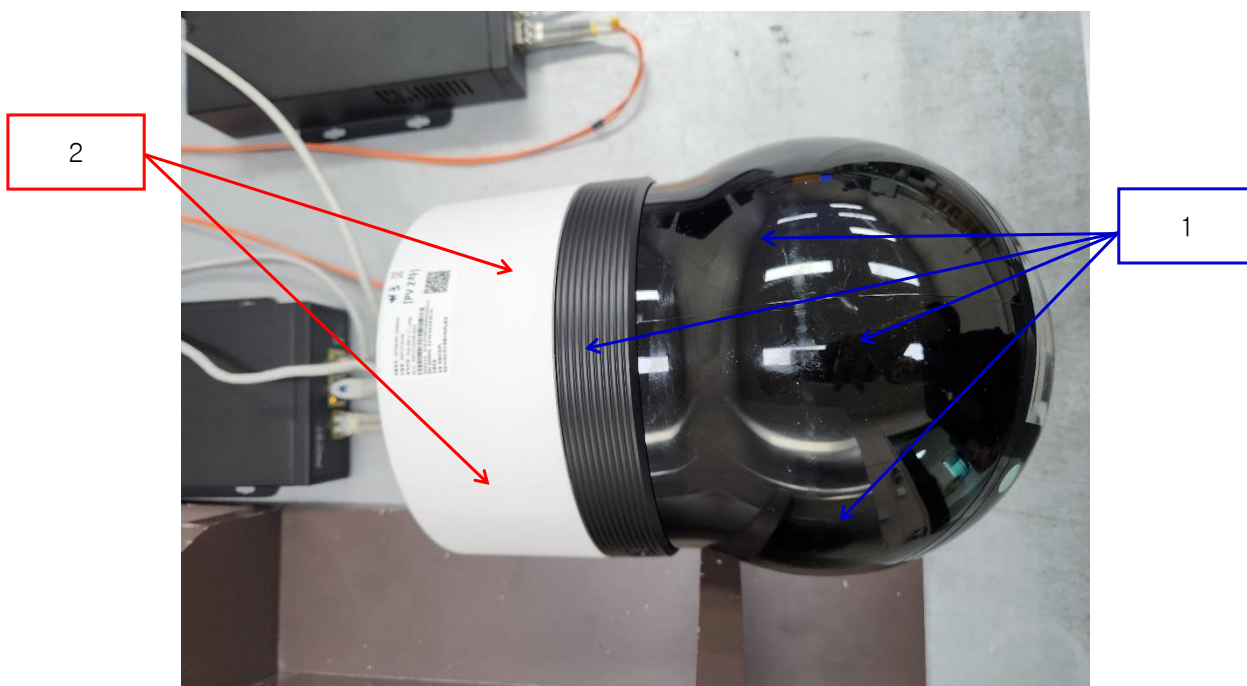
Notes: HCP: Horizontal coupling plane

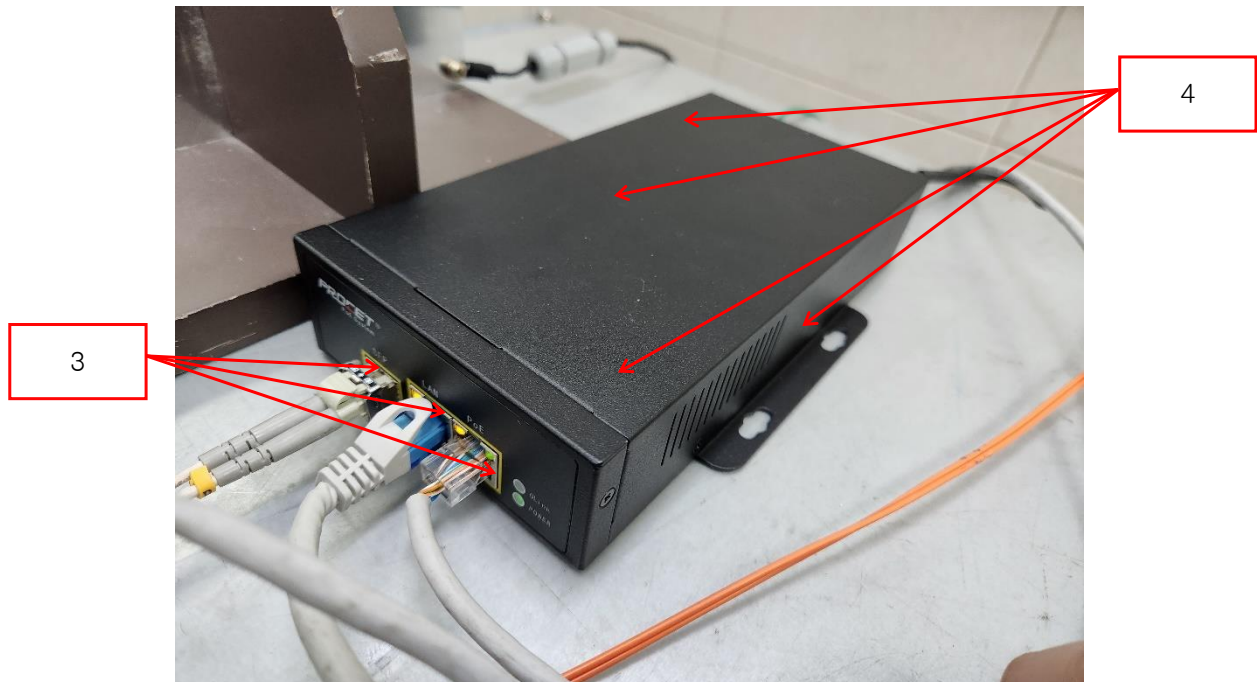
VCP: Vertical coupling plane

Required Performance Criteria: ☒ Complied

Location of Discharge:

Air
Contact





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 1	Air Discharge	Complied	-
2	Enclosure 2	Contact Discharge	Complied	-
3	Adapter the port	Contact Discharge	Complied	-
4	Fiber PoE Injector Enclosure	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. 17, 2023

Test Location

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

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	EMC32	R & S	10.10.02	-
☒	SIGNAL GENERATOR	SMB 100A	Rohde & Schwarz	108252	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: (22,7 ± 0,1) °C

Relative Humidity: (44,7 ± 0,1) % R.H.

Atmospheric Pressure: (100,0 ± 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. 18, 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: (23,2 ± 0,1) °C
 Relative Humidity: (46,2 ± 0,1) % R.H.
 Atmospheric Pressure: (99,7 ± 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	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. 18, 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: (23,2 ± 0,1) °C
Relative Humidity: (46,2 ± 0,1) % R.H.
Atmospheric Pressure: (99,7 ± 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) 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

Test Data☒ Line to Line – Differential Mode

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

☐ Line to Earth – Common Mode

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

Signal Lines☒ Line to Earth – Common Mode

Mode of Application	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. 18, 2023

Test Location

EMS-CS: Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	icd.control	EM TEST	5.3.12	-
☒	CONTINUOUS WAVE SIMULATOR	CWS 500N1.4	EM TEST	P1602169880	11, 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 T800	TESEQ	42800	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: (22,8 ± 0,1) °C
 Relative Humidity: (46,8 ± 0,1) % R.H.
 Atmospheric Pressure: (99,7 ± 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. 18, 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: (23,2 ± 0,1) °C
Relative Humidity: (46,2 ± 0,1) % R.H.
Atmospheric Pressure: (99,7 ± 0,0) kPa

Test Specifications & Observations/Remarks

■ DC Mode

- Voltage Dips and Short Interruptions

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

- Voltage variations

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

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.

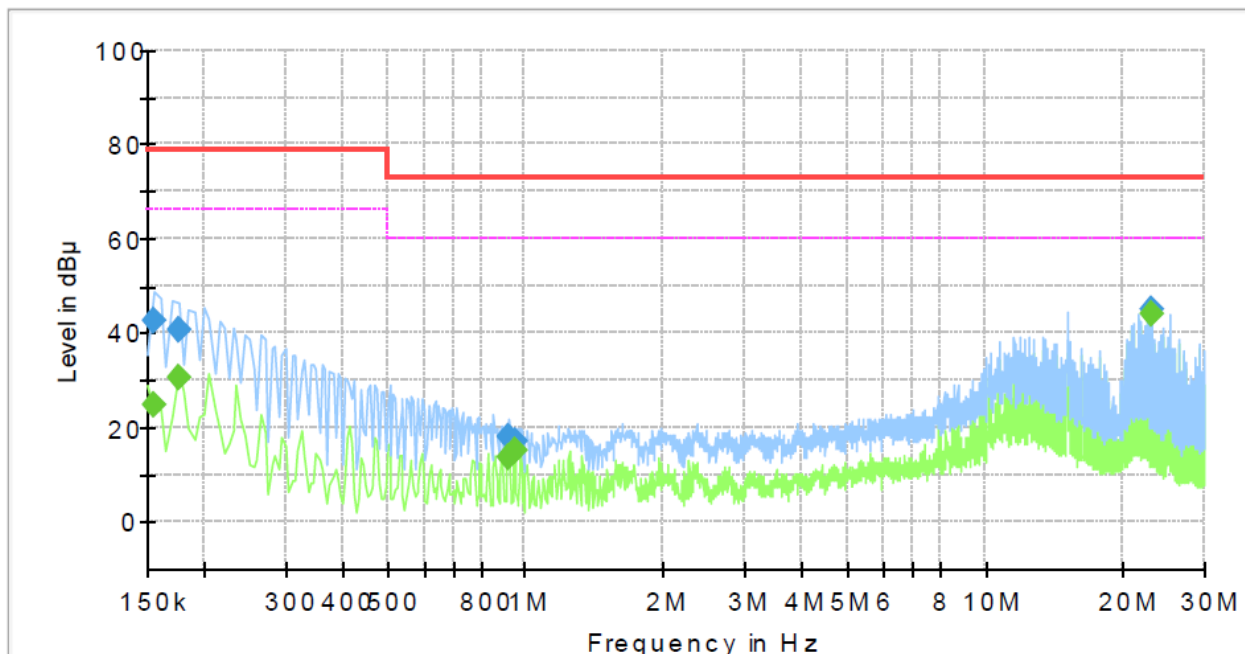
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

Common Information

Test Description: Conducted Emission
 Model No.: XNP-C7310R
 Phase: L1
 Mode:
 Operator Name: KES



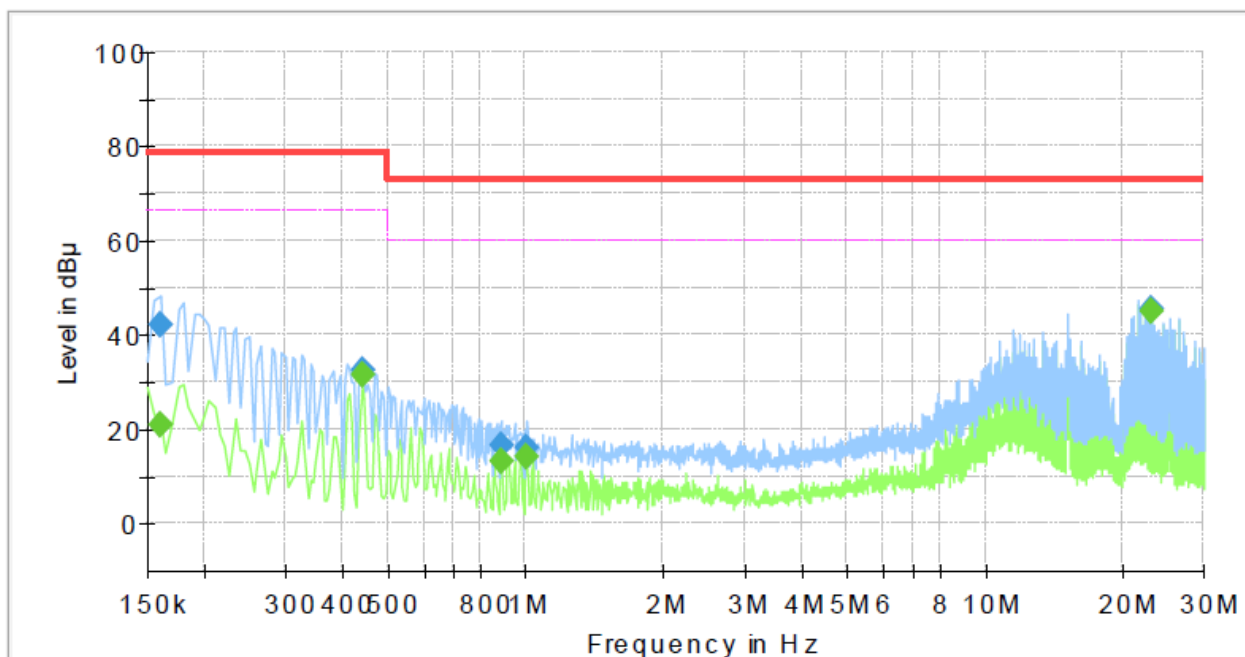
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	24.69	66.00	41.31	1000.0	9.000	L1	19.4
0.155000	42.45	---	79.00	36.55	1000.0	9.000	L1	19.4
0.175000	---	30.38	66.00	35.62	1000.0	9.000	L1	19.4
0.175000	40.83	---	79.00	38.17	1000.0	9.000	L1	19.4
0.920000	---	13.45	60.00	46.55	1000.0	9.000	L1	19.5
0.920000	17.85	---	73.00	55.15	1000.0	9.000	L1	19.5
0.945000	---	15.11	60.00	44.89	1000.0	9.000	L1	19.5
0.945000	17.12	---	73.00	55.88	1000.0	9.000	L1	19.5
23.130000	---	44.08	60.00	15.92	1000.0	9.000	L1	20.3
23.130000	44.87	---	73.00	28.13	1000.0	9.000	L1	20.3

[NEUTRAL]

Common Information

Test Description: Conducted Emission
 Model No.: XNP-C7310R
 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)
0.160000	---	20.83	66.00	45.17	1000.0	9.000	N	19.4
0.160000	42.02	---	79.00	36.98	1000.0	9.000	N	19.4
0.445000	---	31.37	66.00	34.63	1000.0	9.000	N	19.4
0.445000	32.51	---	79.00	46.49	1000.0	9.000	N	19.4
0.885000	---	13.35	60.00	46.65	1000.0	9.000	N	19.5
0.885000	16.39	---	73.00	56.61	1000.0	9.000	N	19.5
1.005000	---	14.06	60.00	45.94	1000.0	9.000	N	19.5
1.005000	16.01	---	73.00	56.99	1000.0	9.000	N	19.5
23.130000	---	44.82	60.00	15.18	1000.0	9.000	N	20.3
23.130000	45.62	---	73.00	27.38	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.

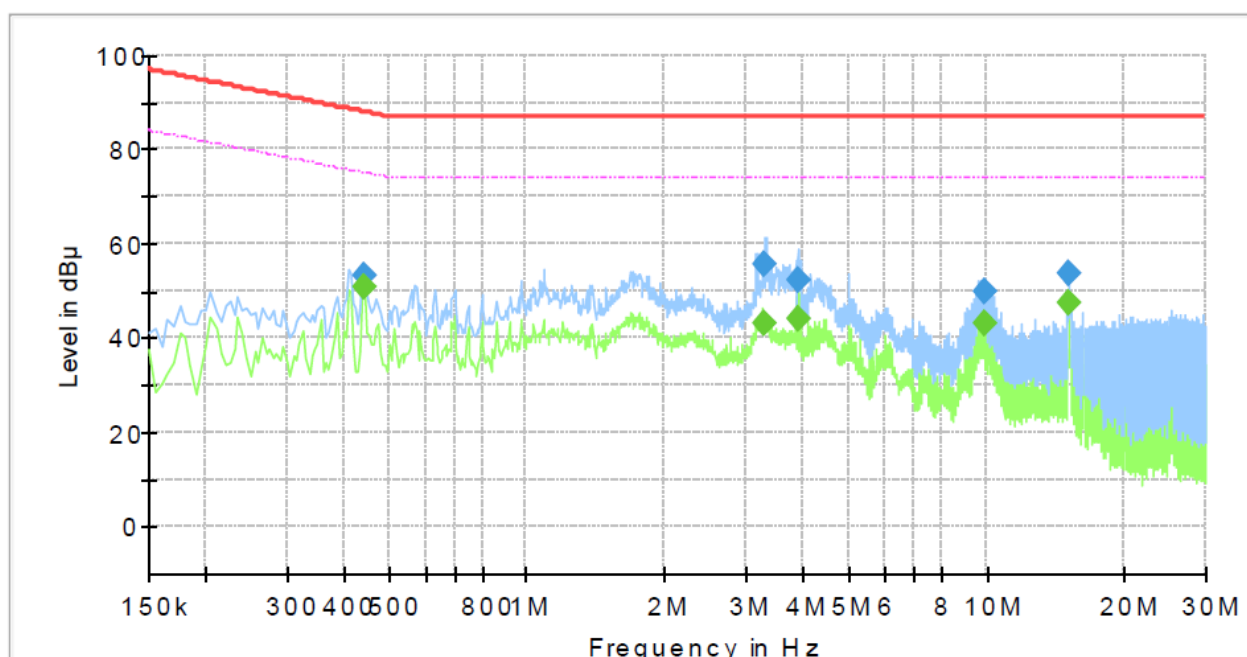
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

Conducted Emissions at Telecommunication Ports

[1 000 Mbps]

Common Information

Test Description: Telecommunication Emission
 Model No.: XNP-C7310R
 Mode :
 Speed : 1 000 Mbps
 Operator Name: KES



Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.445000	---	50.66	74.97	24.31	1000.0	9.000	Single Line	19.4
0.445000	53.03	---	87.97	34.94	1000.0	9.000	Single Line	19.4
3.305000	---	43.07	74.00	30.93	1000.0	9.000	Single Line	19.4
3.305000	55.56	---	87.00	31.44	1000.0	9.000	Single Line	19.4
3.885000	---	44.22	74.00	29.78	1000.0	9.000	Single Line	19.4
3.885000	52.18	---	87.00	34.82	1000.0	9.000	Single Line	19.4
9.990000	---	42.91	74.00	31.09	1000.0	9.000	Single Line	19.6
9.990000	49.90	---	87.00	37.10	1000.0	9.000	Single Line	19.6
15.160000	---	47.47	74.00	26.53	1000.0	9.000	Single Line	19.8
15.160000	53.86	---	87.00	33.14	1000.0	9.000	Single Line	19.8

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

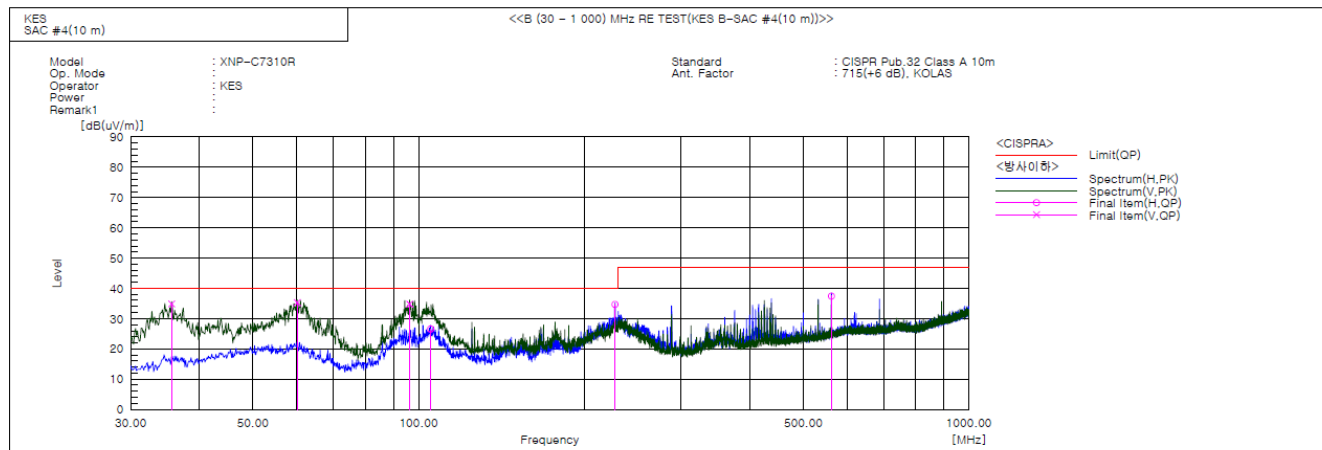
Corr. : Correction values (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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

KES Co., Ltd.

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

Radiated Electric Field Emissions(Below 1 GHz)



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	35.578	V	58.8	-23.9	34.9	40.0	5.1	107.0	96.0	
2	60.191	V	56.9	-21.6	35.3	40.0	4.7	122.0	220.0	
3	96.324	V	57.1	-22.3	34.8	40.0	5.2	109.0	59.0	
4	105.175	H	48.8	-22.2	26.6	40.0	13.4	387.0	233.0	
5	227.516	H	54.0	-19.3	34.7	40.0	5.3	361.0	86.0	
6	562.530	H	46.4	-9.0	37.4	47.0	9.6	395.0	29.0	

◆ Calculation

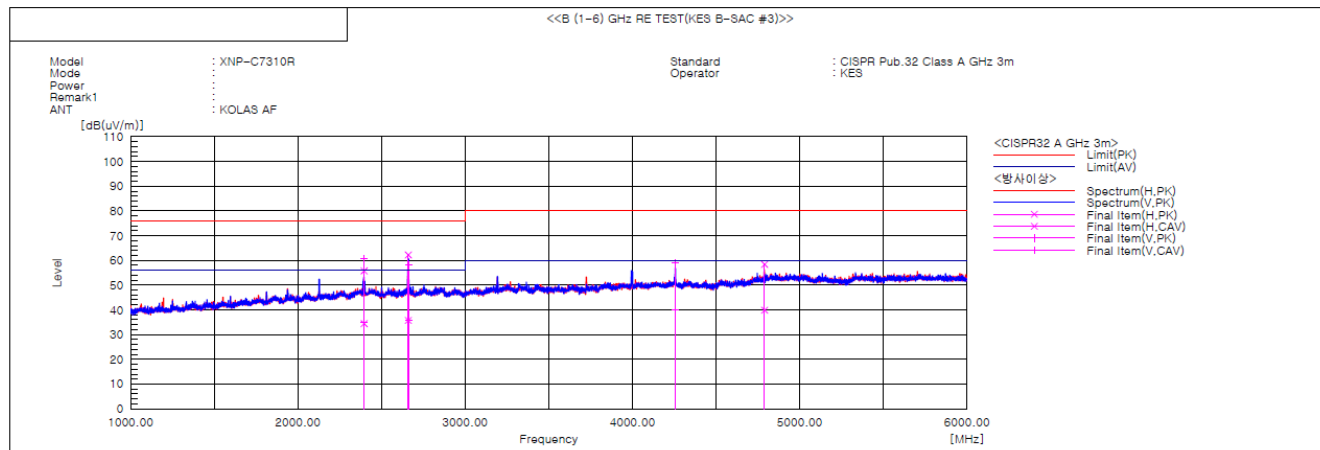
Result(QP) [dB(μV/m)] = (Reading(QP)[dB(μV)] + c.f[dB(1/m)])

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

Radiated Electric Field Emissions(Above 1 GHz)



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB(1/m)]	Result PK [dB(μV/m)]	Result CAV [dB(μV/m)]	Limit PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	2394.221	V	54.5	28.8	6.3	60.8	35.1	76.0	56.0	15.2	20.9	100.0	283.4	
2	2394.843	H	49.5	28.2	6.3	55.8	34.5	76.0	56.0	20.2	21.5	100.0	201.8	
3	2659.621	H	55.4	29.0	6.8	62.2	35.8	76.0	56.0	13.8	20.2	100.0	222.8	
4	2661.427	V	51.1	28.7	6.9	58.0	35.6	76.0	56.0	18.0	20.4	100.0	329.7	
5	4256.069	V	47.2	27.8	12.0	59.2	39.8	80.0	60.0	20.8	20.2	100.0	275.4	
6	4789.272	H	44.1	25.6	14.3	58.4	39.9	80.0	60.0	21.6	20.1	100.0	235.9	

◆ 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	0.100			
2	0.003	0.254	1.080	n/a
3	0.092	3.989	2.300	PASS
4	0.004	0.987	0.430	n/a
5	0.088	7.756	1.140	PASS
6	0.003	1.059	0.300	n/a
7	0.084	10.866	0.770	PASS
8	0.003	1.520	0.230	n/a
9	0.077	19.255	0.400	PASS
10	0.004	2.160	0.184	n/a
11	0.070	21.249	0.330	PASS
12	0.003	1.878	0.153	n/a
13	0.062	29.752	0.210	PASS
14	0.002	1.853	0.131	n/a
15	0.054	36.029	0.150	PASS
16	0.002	1.717	0.115	n/a
17	0.045	34.320	0.132	PASS
18	0.002	1.719	0.102	n/a
19	0.037	30.896	0.118	PASS
20	0.001	1.478	0.092	n/a
21	0.028	17.722	0.161	PASS
22	0.001	1.130	0.084	n/a
23	0.021	14.613	0.147	PASS
24	0.001	1.165	0.077	n/a
25	0.015	11.036	0.135	PASS
26	0.001	1.049	0.071	n/a
27	0.009	7.531	0.125	PASS
28	0.001	1.381	0.066	n/a
29	0.005	4.487	0.116	PASS
30	0.001	1.275	0.061	n/a
31	0.002	2.097	0.109	n/a
32	0.001	1.186	0.058	n/a
33	0.002	2.145	0.102	n/a
34	0.001	1.277	0.054	n/a
35	0.003	3.578	0.096	n/a
36	0.001	1.184	0.051	n/a
37	0.004	4.427	0.091	n/a
38	0.001	1.430	0.048	n/a
39	0.004	4.641	0.087	n/a
40	0.001	1.330	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	0.101			
2	0.003	0.198	1.620	n/a
3	0.092	2.662	3.450	PASS
4	0.005	0.755	0.645	n/a
5	0.089	5.176	1.710	PASS
6	0.004	0.787	0.450	n/a
7	0.084	7.255	1.155	PASS
8	0.004	1.157	0.345	n/a
9	0.077	12.886	0.600	PASS
10	0.005	1.659	0.276	n/a
11	0.070	14.189	0.495	PASS
12	0.003	1.428	0.230	n/a
13	0.063	19.887	0.315	PASS
14	0.003	1.403	0.197	n/a
15	0.054	24.102	0.225	PASS
16	0.002	1.312	0.173	n/a
17	0.046	22.946	0.199	PASS
18	0.002	1.331	0.153	n/a
19	0.037	20.751	0.178	PASS
20	0.002	1.177	0.138	n/a
21	0.029	17.852	0.161	PASS
22	0.001	0.884	0.125	n/a
23	0.022	14.761	0.147	PASS
24	0.001	0.916	0.115	n/a
25	0.015	11.165	0.135	PASS
26	0.001	0.790	0.106	n/a
27	0.010	7.616	0.125	PASS
28	0.001	1.060	0.099	n/a
29	0.005	4.607	0.116	PASS
30	0.001	0.951	0.092	n/a
31	0.002	2.190	0.109	n/a
32	0.001	0.870	0.086	n/a
33	0.002	2.244	0.102	n/a
34	0.001	0.939	0.081	n/a
35	0.004	3.682	0.096	n/a
36	0.001	0.864	0.077	n/a
37	0.004	4.658	0.091	n/a
38	0.001	1.079	0.073	n/a
39	0.004	4.851	0.087	n/a
40	0.001	0.997	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

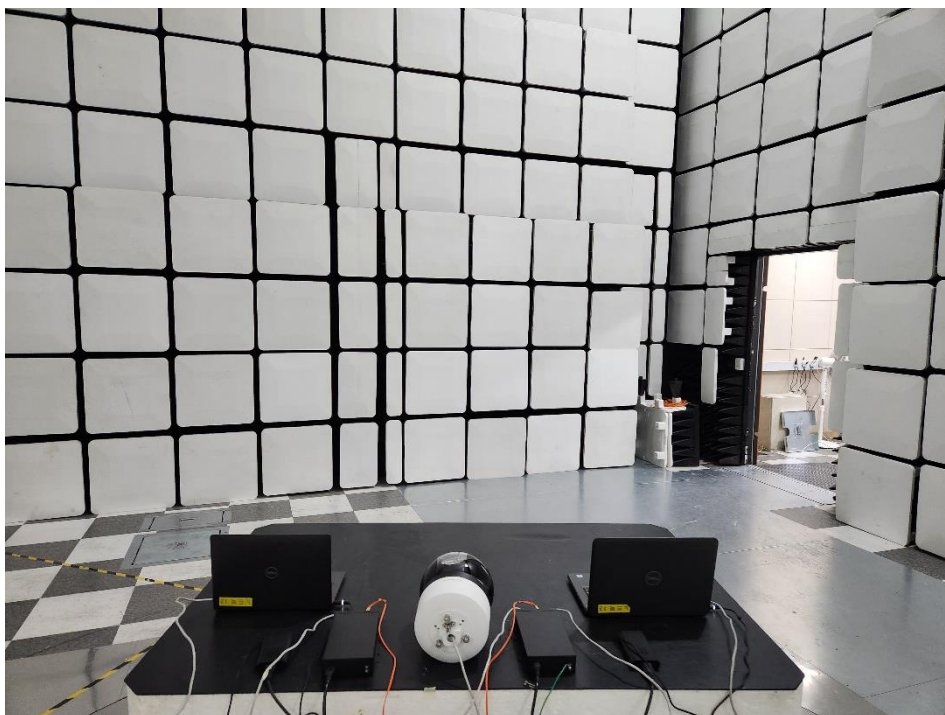
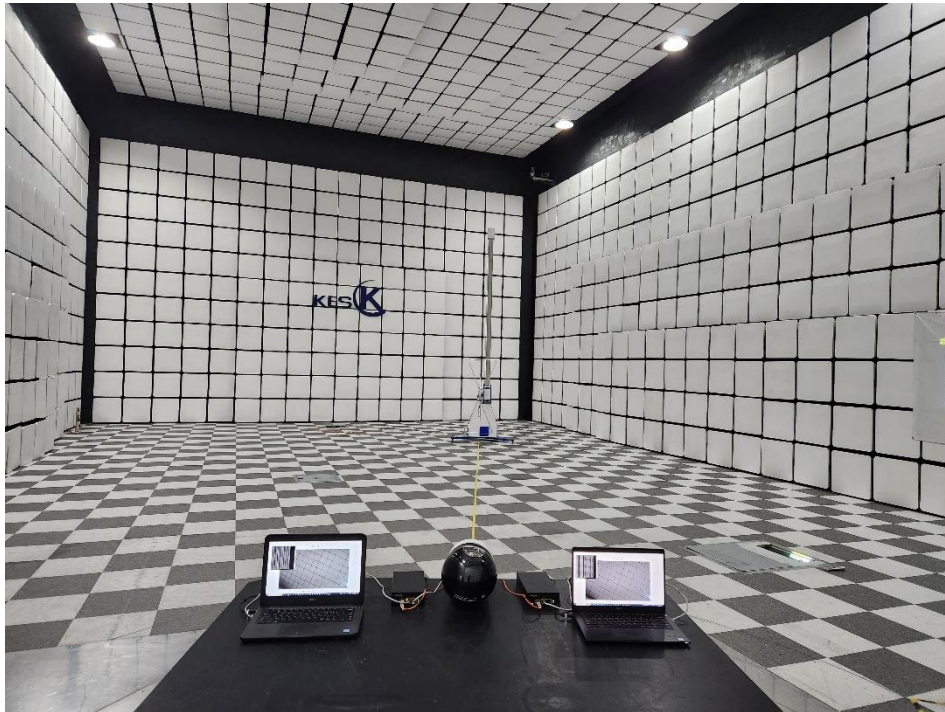
Conducted Emissions at Mains Power Ports



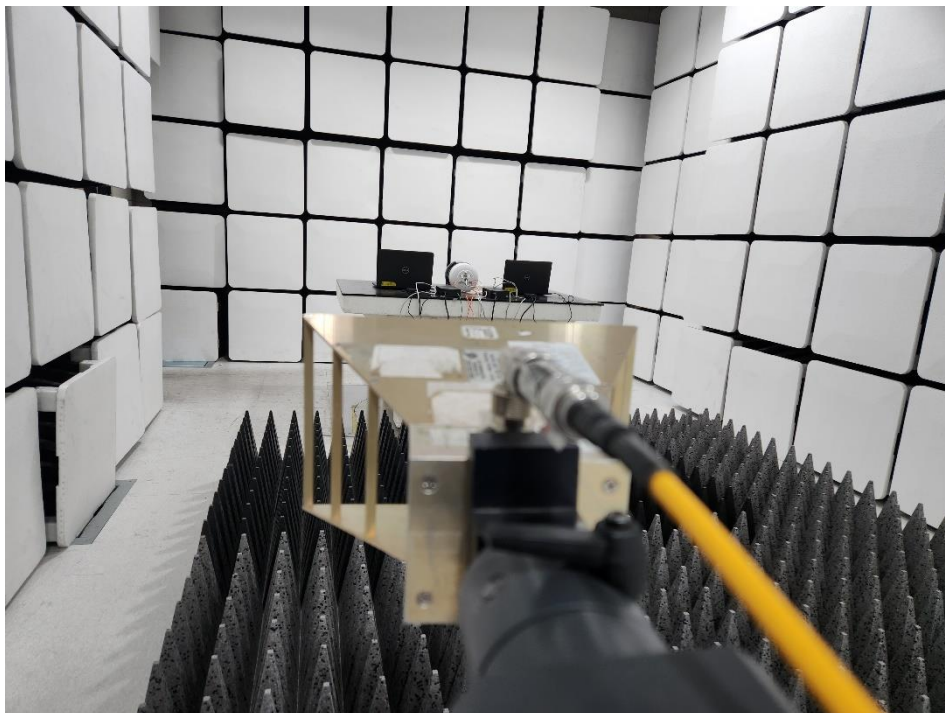
Conducted Emissions at Telecommunication Ports



Radiated Electric Field Emissions(Below 1 GHz)



Radiated Electric Field Emissions(Above 1 GHz)



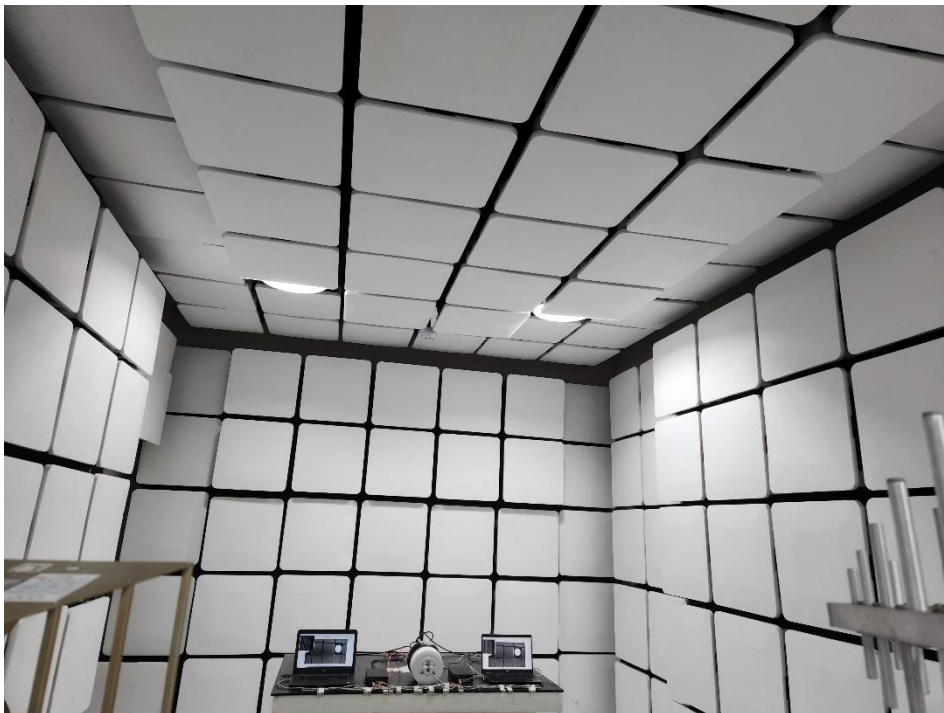
Harmonic Current Emissions and Voltage Fluctuations and Flicker



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 – Board 1

(Top)

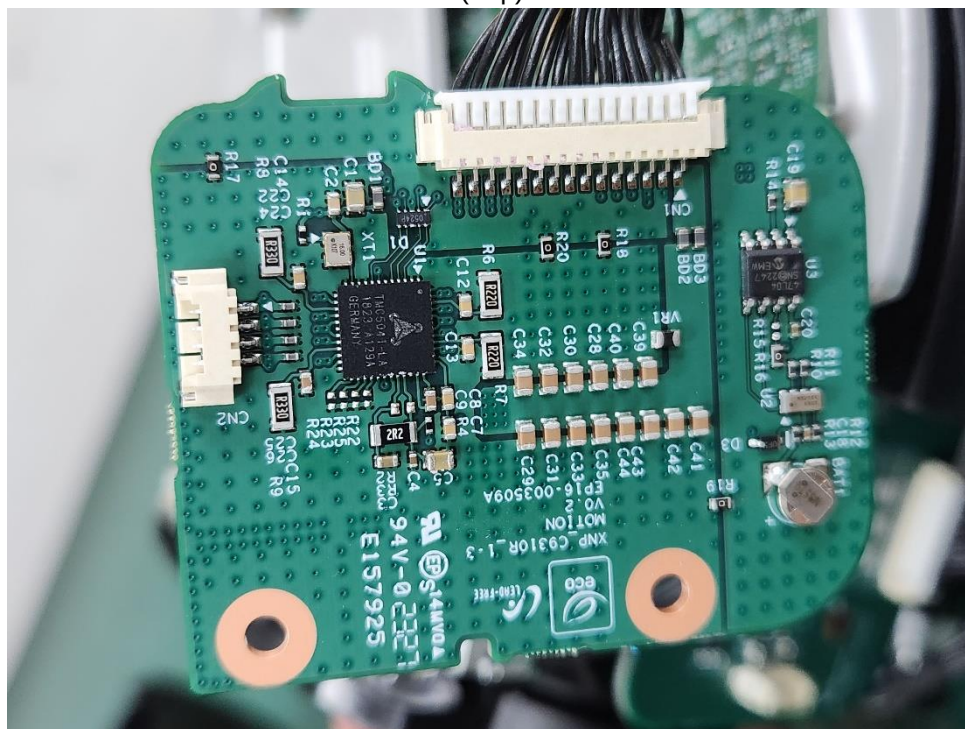


(Bottom)

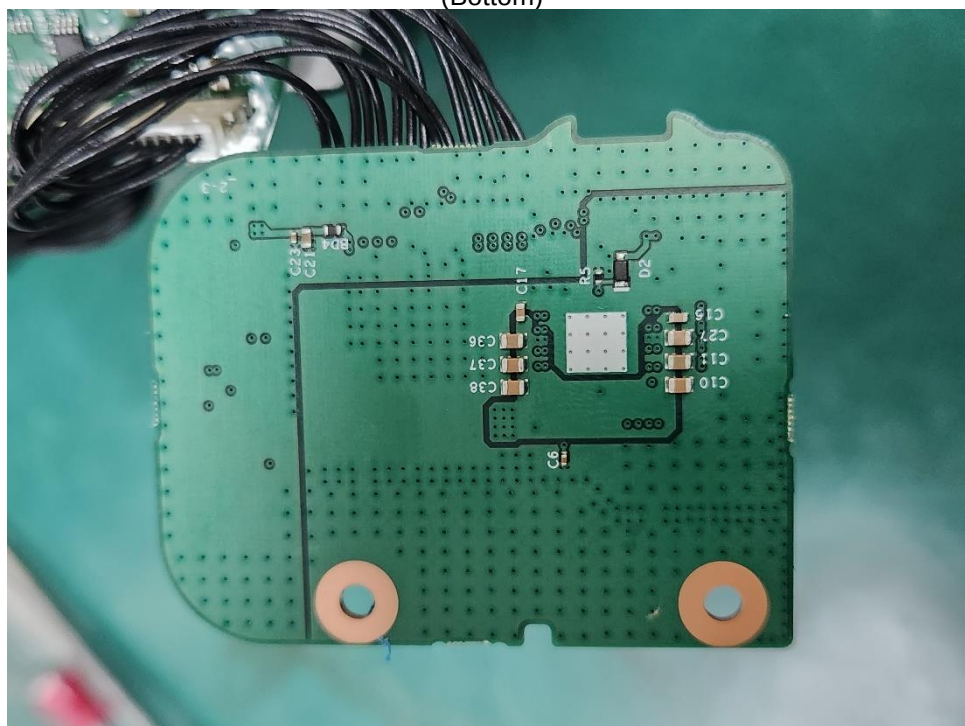


EUT Internal View – Board 2

(Top)



(Bottom)

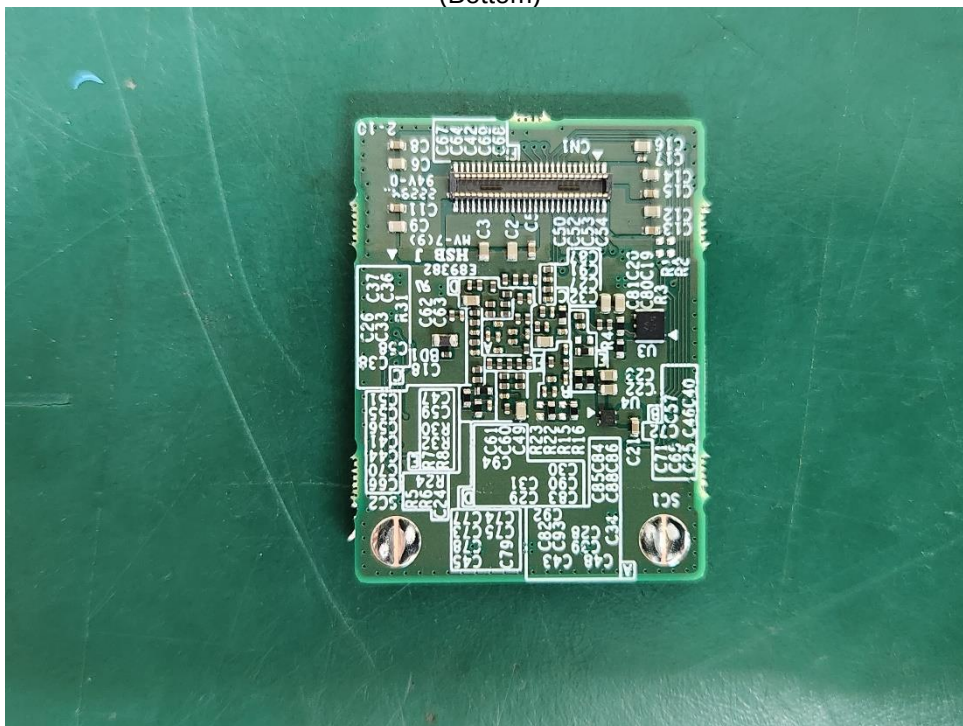


EUT Internal View – Board 3

(Top)

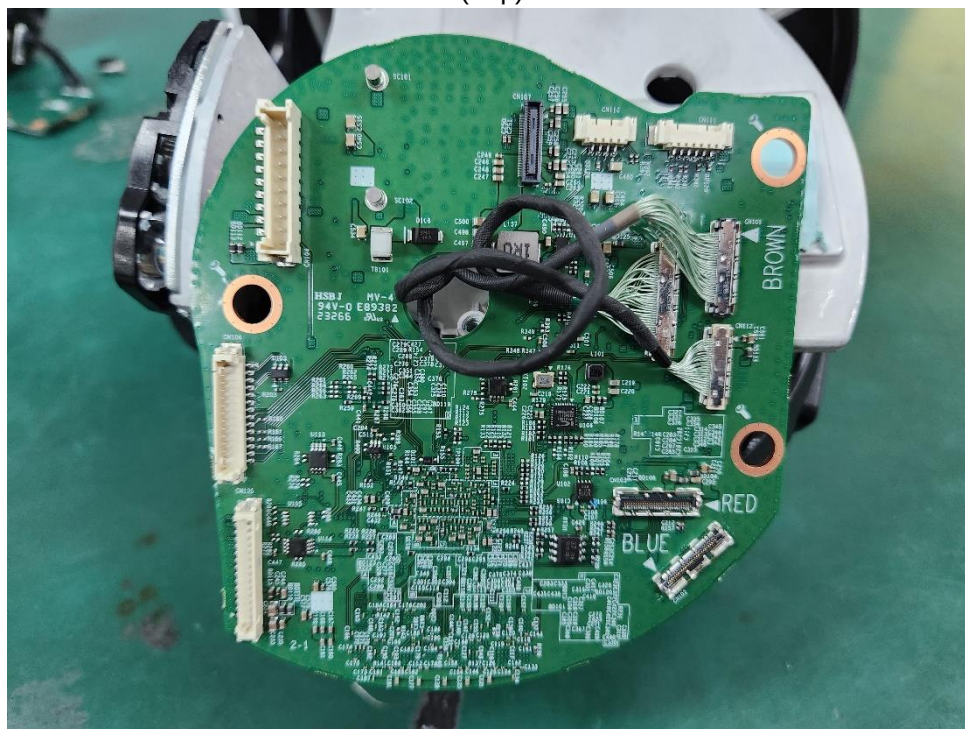


(Bottom)

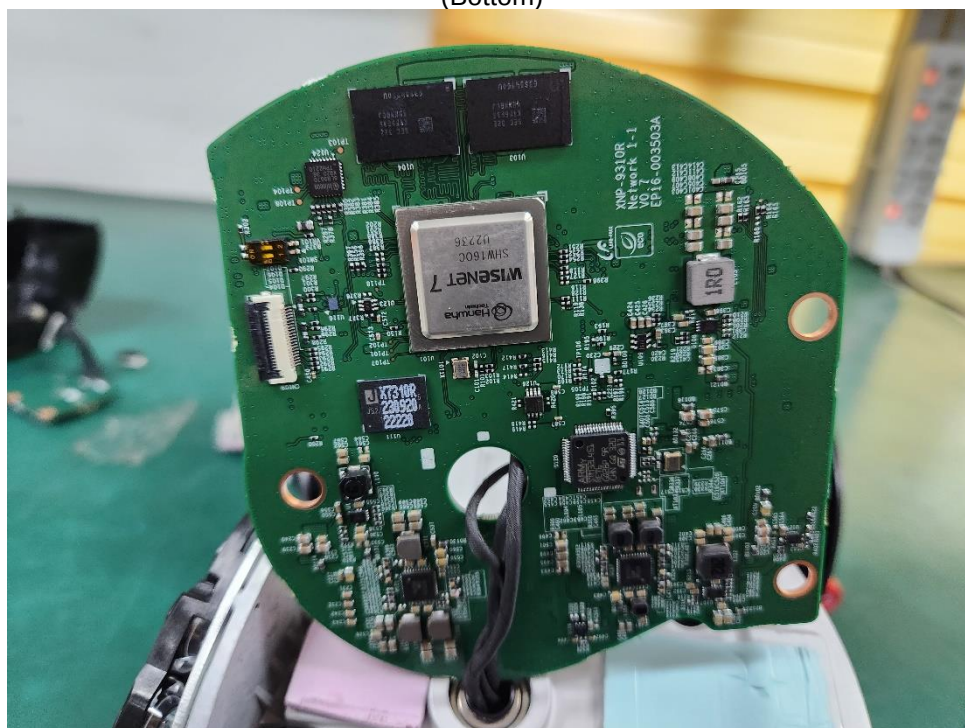


EUT Internal View – Board 4

(Top)

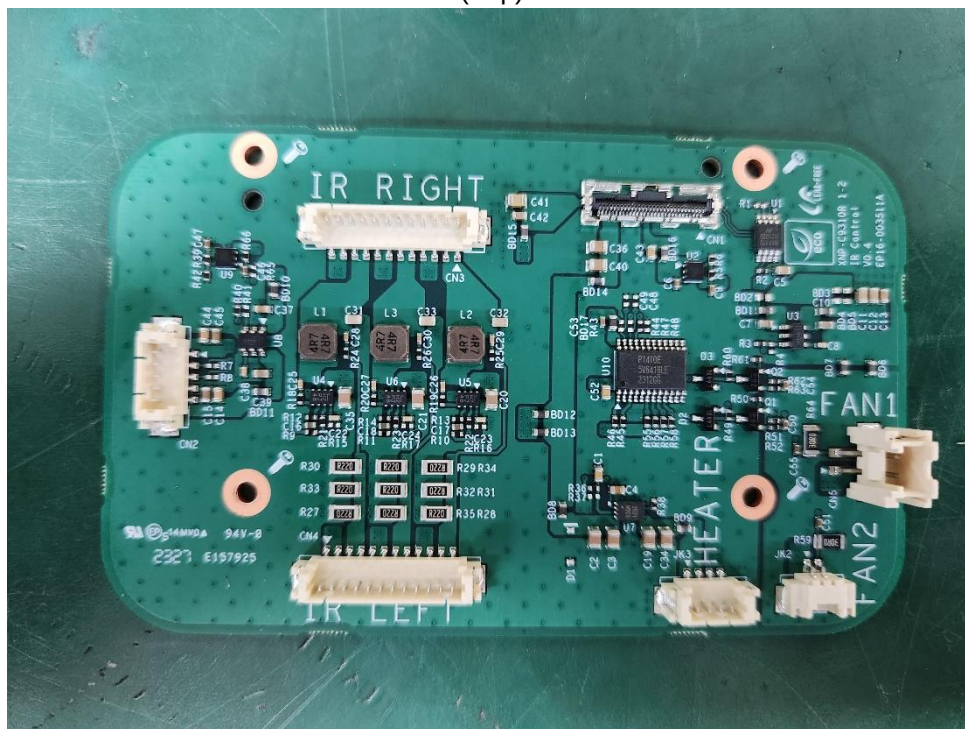


(Bottom)

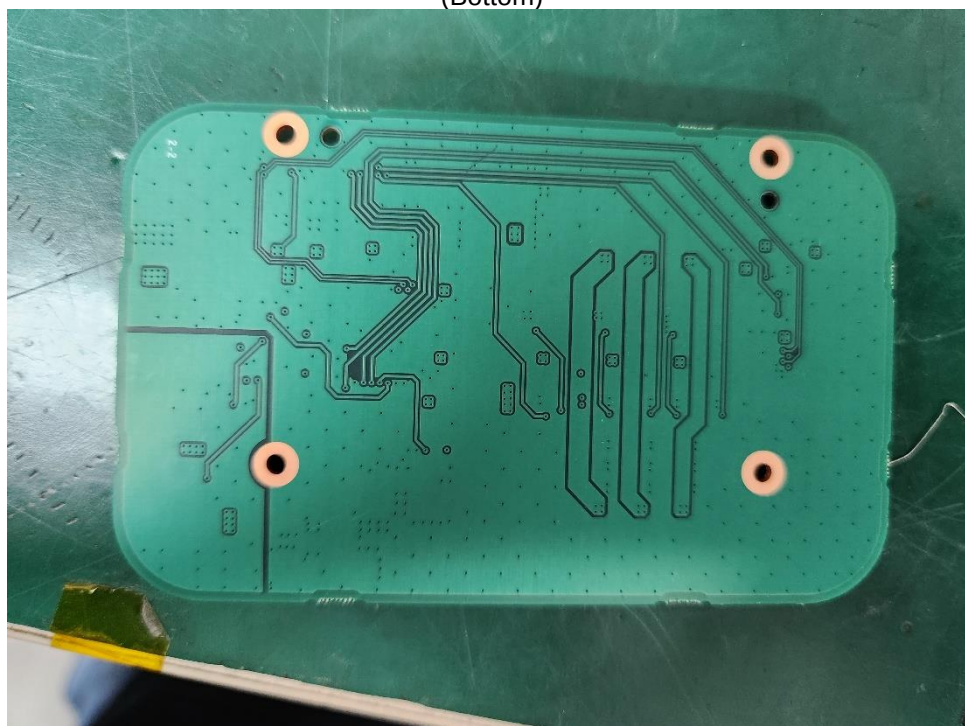


EUT Internal View – Board 5

(Top)

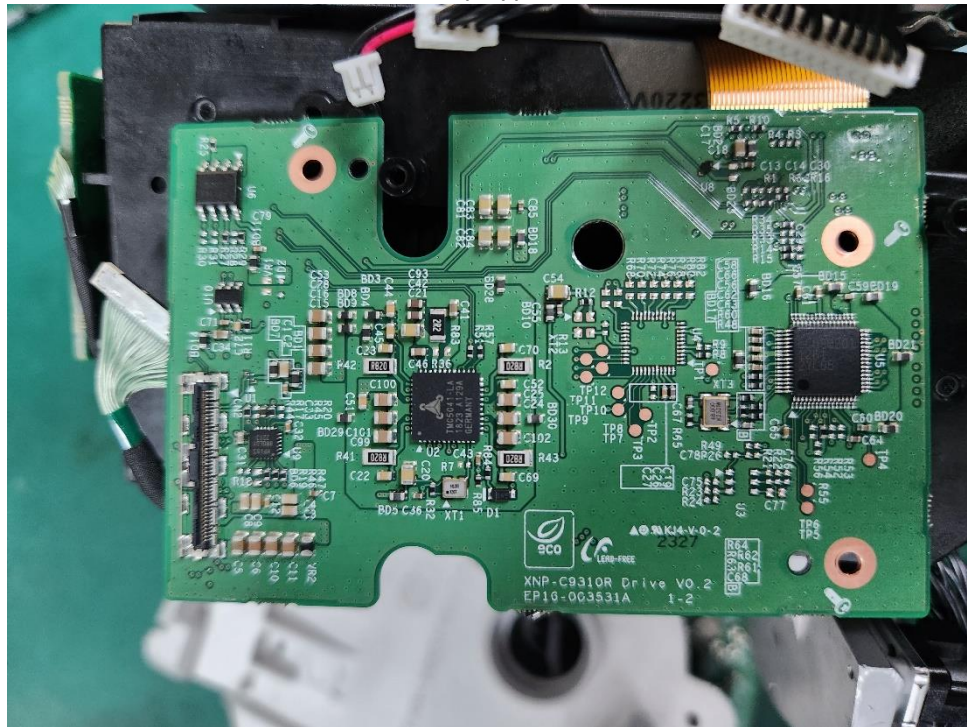


(Bottom)

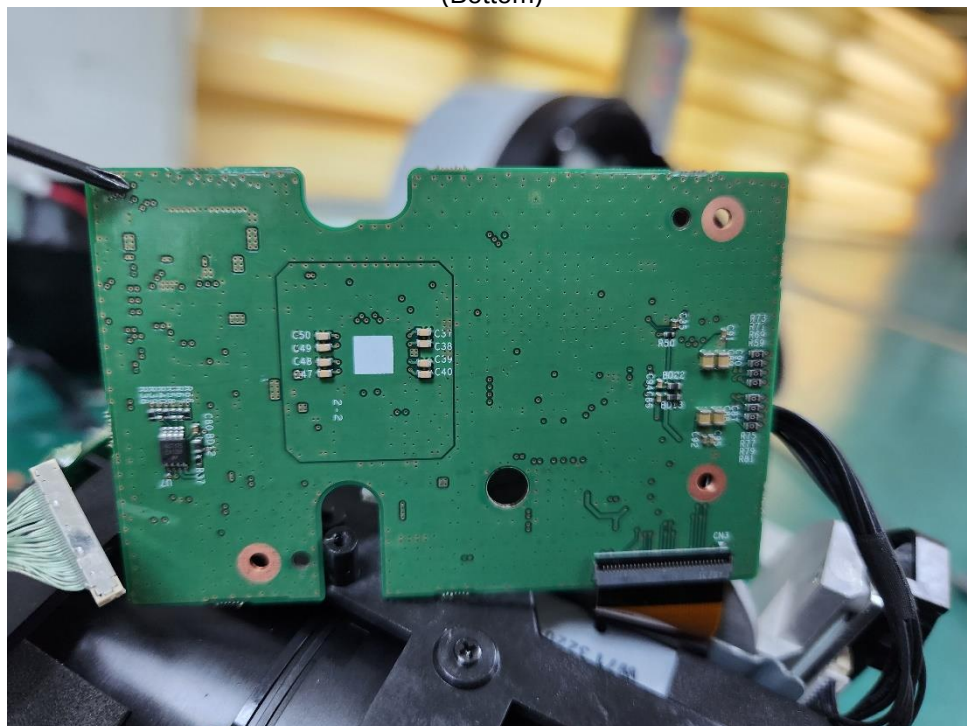


EUT Internal View – Board 6

(Top)

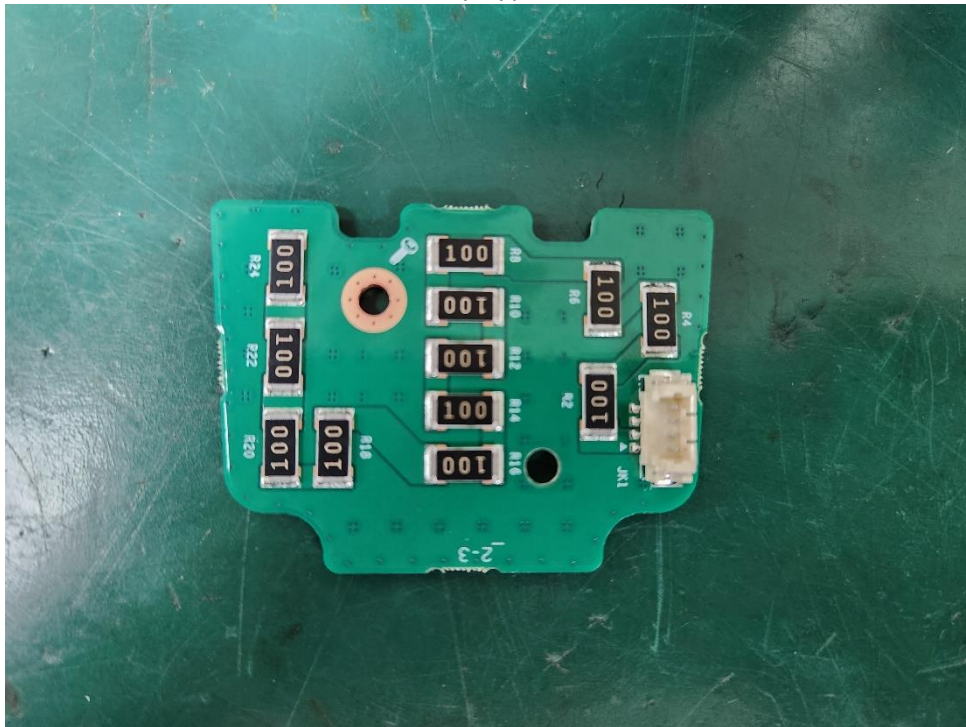


(Bottom)

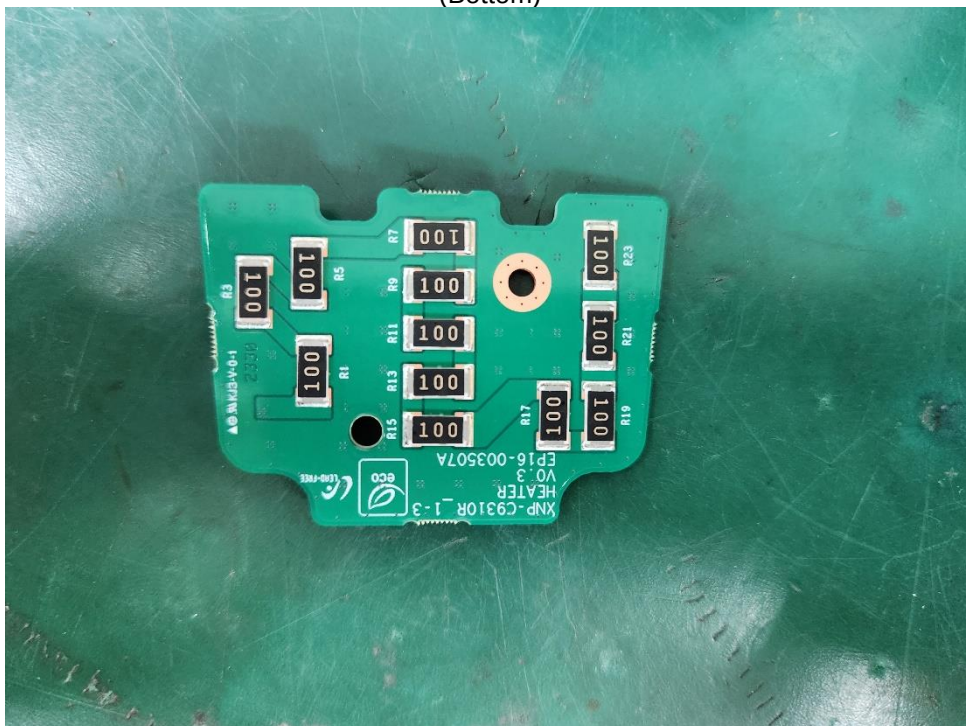


EUT Internal View – Board 7

(Top)

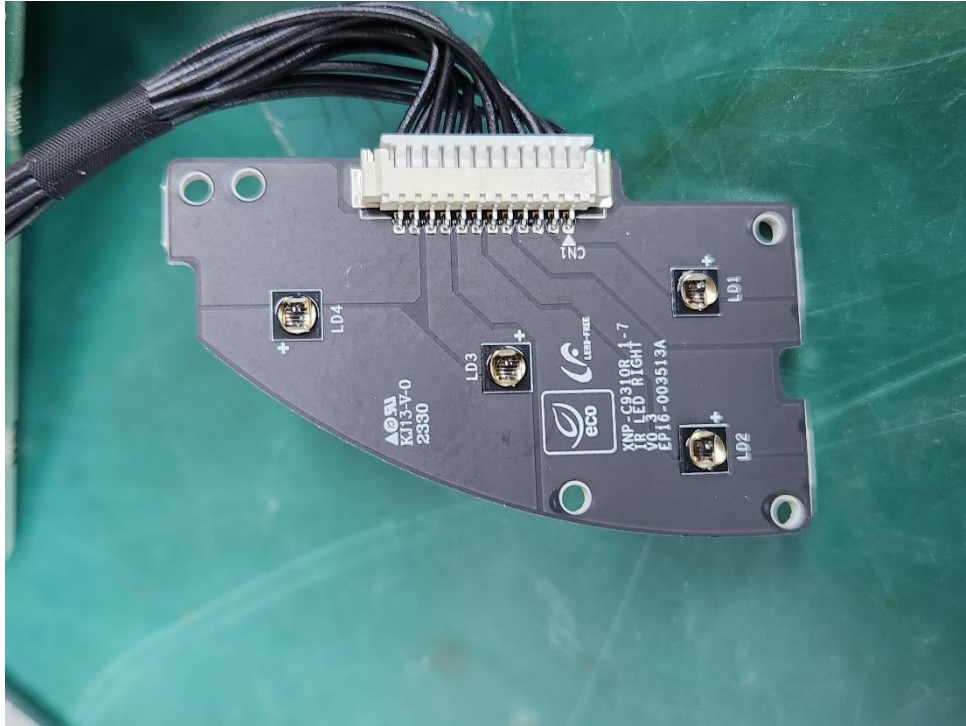


(Bottom)



EUT Internal View – Board 8

(Top)

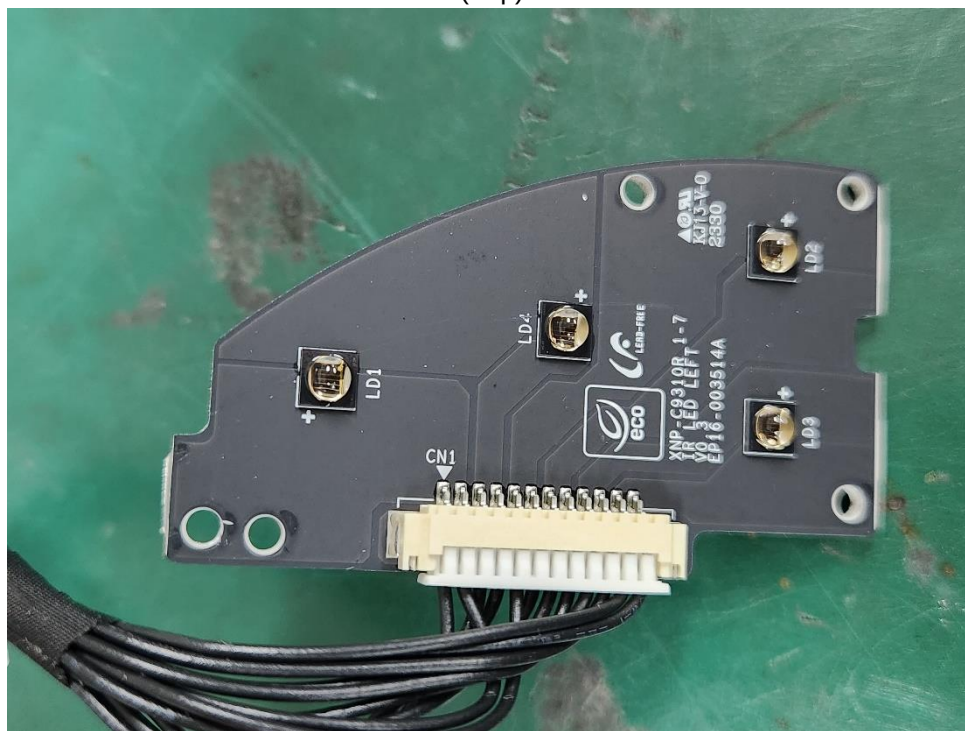


(Bottom)

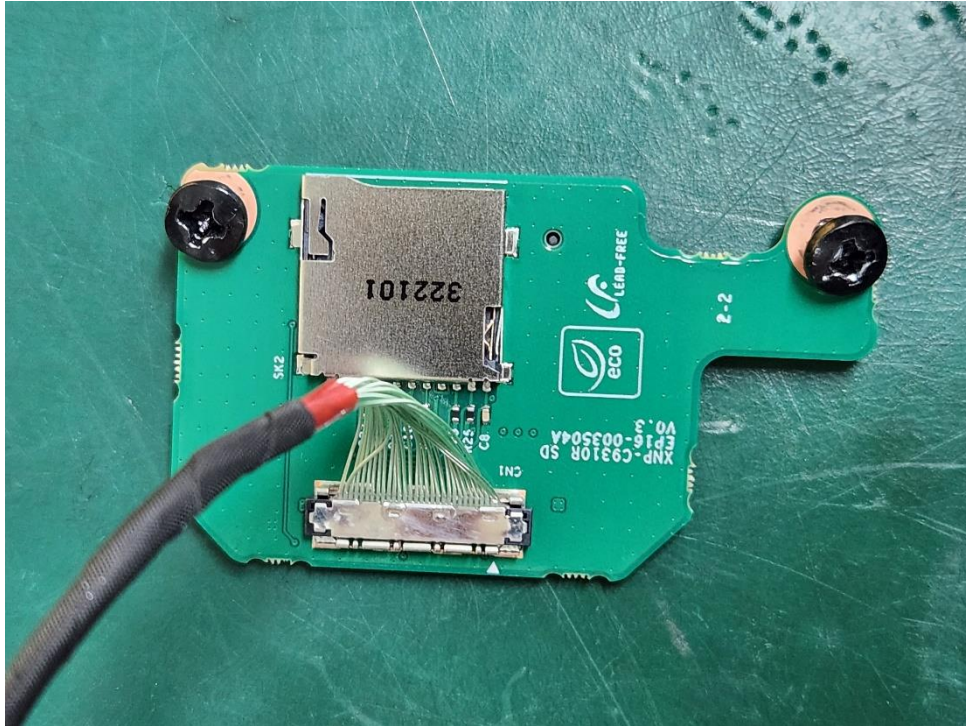


EUT Internal View – Board 9

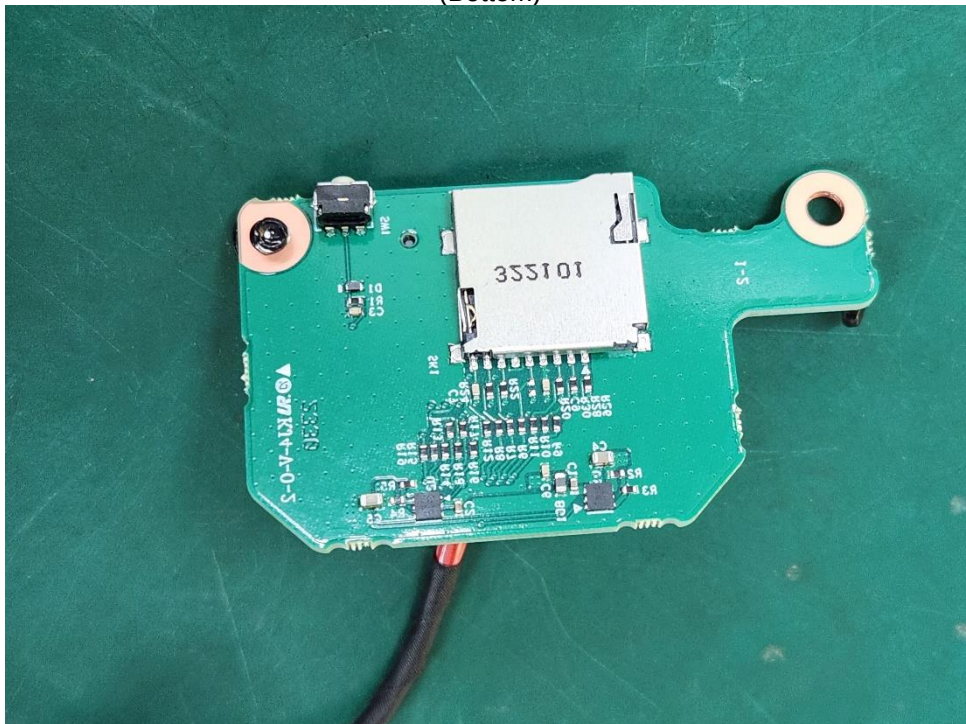
(Top)



(Top)

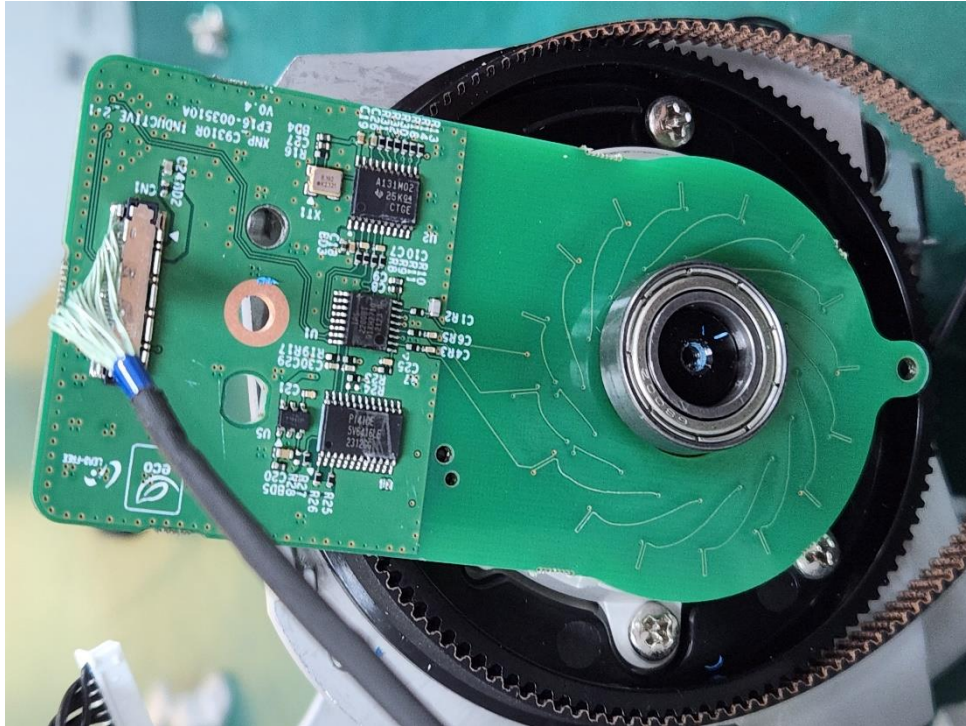


(Bottom)

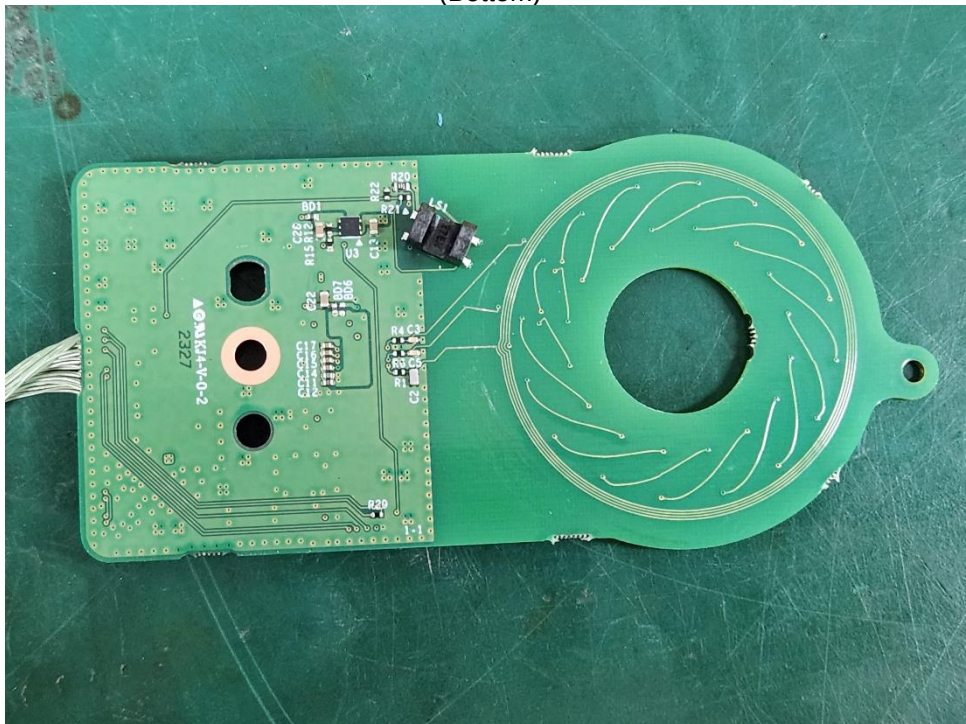


EUT Internal View – Board 11

(Top)

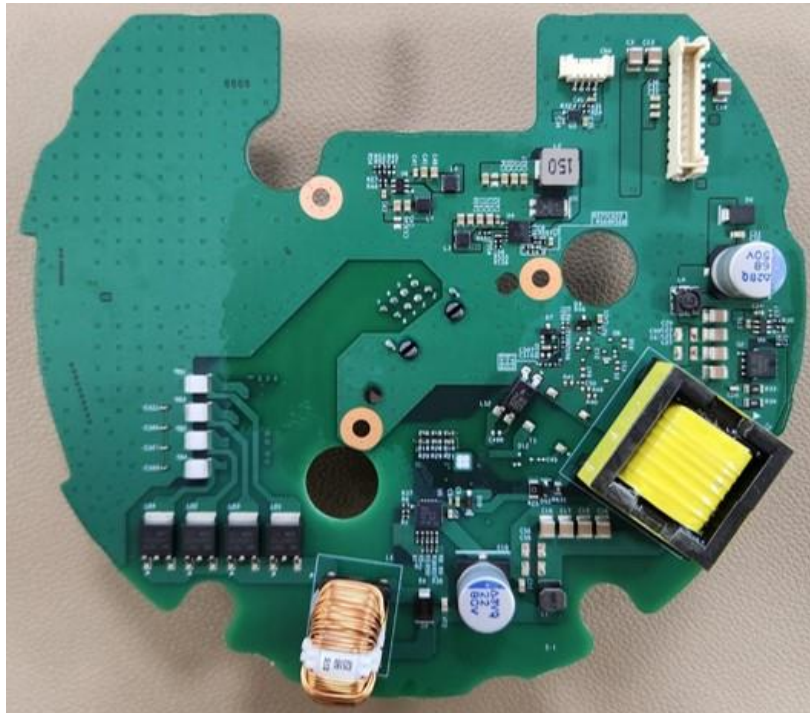


(Bottom)



EUT Internal View – Board 12

(Top)

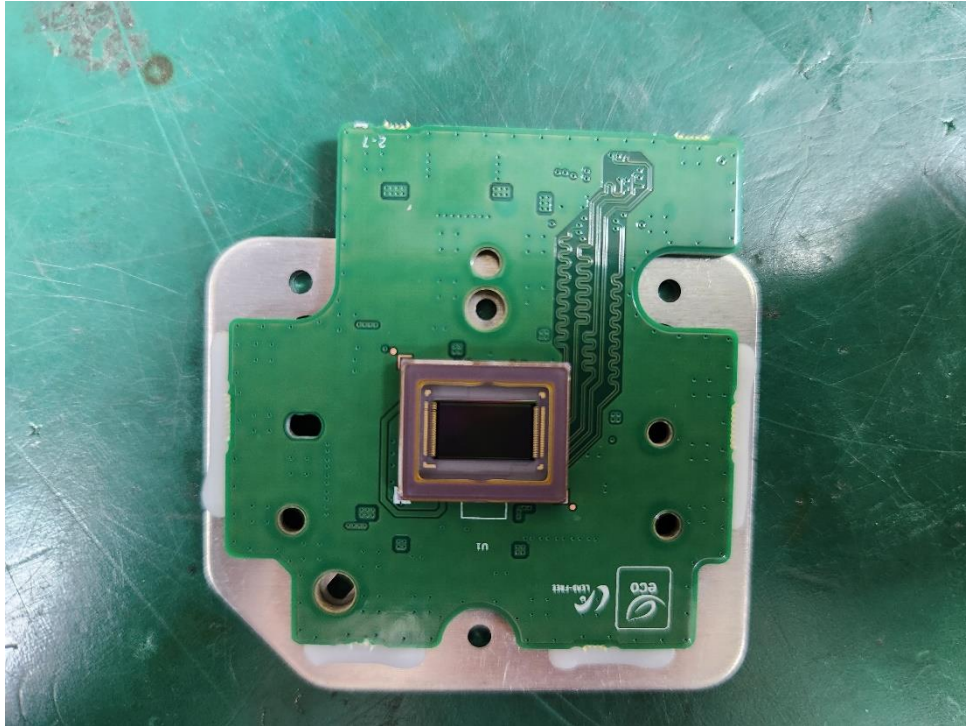


(Bottom)

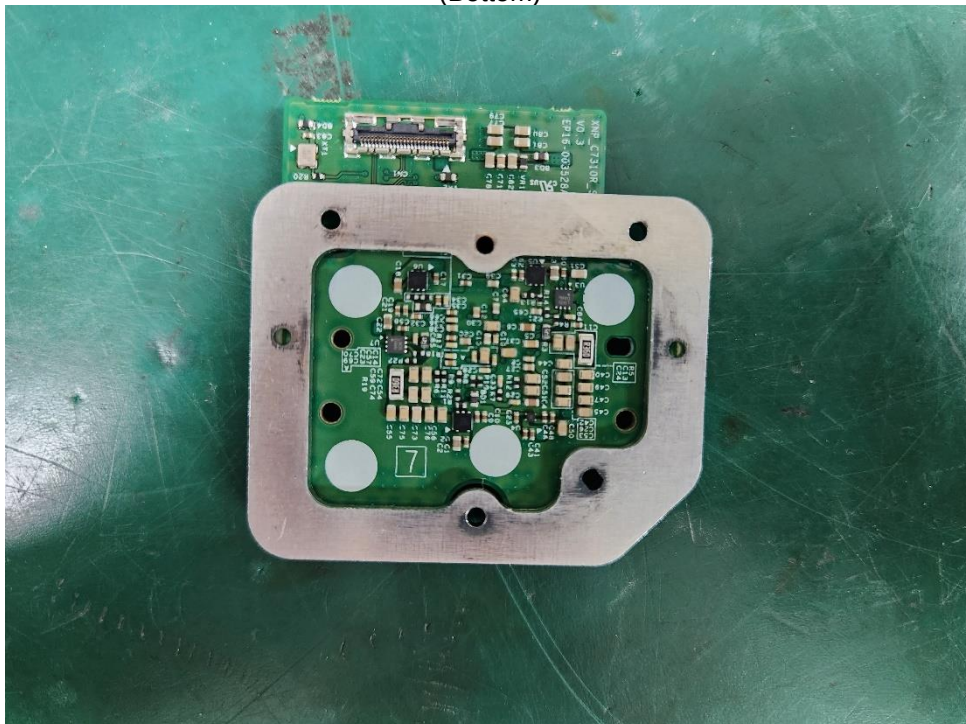


EUT Internal View – CAMERA Board

(Top)



(Bottom)



Label and Location



<u>NETWORK CAMERA</u> Model No : XNP-C7310R Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED Made in Vietnam	UK CA CE
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