



TEST REPORT



Report No. : KES-EM251773

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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. : PNO-A9082R

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 Ward, Bac Ninh Province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do, Korea (Suwon Industrial Complex)

3. Date of Receipt : May. 15, 2025

4. Test date : May. 18, 2025 ~ May. 24, 2025

5. Date of Issue : Jun. 17, 2025

6. Test Results : In Compliance

Tested by

Reviewed by

Se Heon, Kim
EMC Test Engineer

Seong Min, Choi
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
Jun. 17, 2025	KES-EM251773	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Division	Specificity
Internal highest clock frequency	1 600 Mhz

PNO-A9082R	
Video	
Imaging Device	1/1.2" CMOS
Resolution	3840x2160, 3328x1872, 3072x1728, 2592x1944, 2592x1520, 2560x1440, 1920x1080, 1600x1200, 1280x960, 1280x720, 1024x768, 800x600, 640x480, 640x360, 320x240, 320x180
Max. Framerate	H.265/H.264: Max. 30fps/25fps(60Hz/50Hz) MJPEG: Max. 30fps(@8MP Max. 5fps)
NETD	None
Pixel Size	None
Video Out	USB: Micro USB Type C for installation
Video Transmission Distance	None
Lens	
Focal Length (Zoom Ratio)	5.9~13.3mm(2.25x) motorized varifocal
Optical Zoom	None
Max. Aperture Ratio	F1.5(Wide)~F2.9(Tele)
Angular Field of View	H: 109°(Wide)~49°(Tele) V: 59°(Wide)~27°(Tele) D: 128°(Wide)~56°(Tele)
Focus Control	Simple focus
Lens Type	P-iris(IR corrected)
Mount Type	None
Optional Lens	None
Pan / Tilt / Rotate	
Pan / Tilt / Rotate Range	0°~360° / 0°~90° / 0°~180°
Pan Range	None
Pan Speed	None
Tilt Range	None
Tilt Speed	None
Rotate Range	None
Sequence	None
Preset Accuracy	None
Operational	
Camera Title	Displayed up to 85 characters
Direction Indicator	None
Day & Night	Auto(ICR)
Backlight Compensation	BLC, HLC, WDR, SDR
Wide Dynamic Range	120dB
Digital Noise Reduction	SSNR V, WiseNR II (Based on AI engine)
Digital Image Stabilization	Support
Defog	Support
Motion Detection	8ea, 8point polygonal zones
Privacy Masking	32ea, 8point polygonal zones - Color: gray/green/red/blue/black/white/purple/yellow - Mosaic Dynamic Privacy Mask (Based on AI engine) - Color: gray/green/red/blue/black/white/purple/yellow - Mosaic
Gain Control	Off / Max Gain / Manual
White Balance	ATW / NarrowATW / AWC / Manual / Indoor / Outdoor
LDC	Support(Fill/Stretch mode)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker(2~1/30,000sec) Prefer shutter control (Based on AI engine)
Digital PTZ	None
Video Rotation	Flip, mirror, hallway view(90°/270°)
Analytics	Classified object type: Person/Face/Vehicle(Type: car/bus/truck/motorcycle/bicycle)/License plate Attributes: Person(Gender, Clothing top/bottom color, Bag), Face(Age, Gender, Mask, Glasses), Vehicle(Type: car/bus/truck/motorcycle/bicycle, Color) Support BestShot Support Re-ID(Person) Analytics events based on AI engine - Motion detection, Object detection, Virtual line(Crossing/Direction), Virtual area(Loitering/Intrusion/Enter/Exit/Appear/Disappear), Slip & fall detection, Face mask detection, Social distancing detection, Sound classification(To be released) Analytics events - Defocus detection, Tampering, Shock detection, Audio detection



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Business Intelligence	Based on AI engine: People/Vehicle/Crowd counting, Queue management, Heatmap
Serial Interface	None
Alarm I/O	2 configurable I/O ports, DC 12V output(Max. 50mA)
Alarm Triggers	Analytics, Network disconnection, Alarm input, Time schedule, MQTT subscription, Day/Night, Storage disruption, Case tampering
Alarm Events	When alarm trigger occurred - File upload(image): e-mail/FTP/SFTP - File upload(video clip): FTP/SFTP - Notification: e-mail - Recording: SD/SDHC/SDXC or NAS recording at event triggers - Alarm output - Handover: PTZ preset, send message by HTTP/HTTPS/TCP - Audio clip playback(WAV, MP3) - MQTT: publication
Audio Streaming	None
Audio In	Selectable(mic in/line in)
Audio Out	Line out
Light Type	IR LED
IR Viewable Length	None
IR Illuminator (Optional)	None
IR Radiation angle	None
IR LED	None
IR Wavelength	850nm
IR Operation	None
Water Removal	None
Auto Tracking	None
Coaxial Protocol	None
Color Palettes	None
Radiometry	
Temperature Detect Range	None
Temperature Accuracy	None
Temperature Detection	None
Additional	None
Network	
Ethernet	Metal shielded RJ-45(10/100/1000BASE-T)
Video Compression	H.265/H.264: Main/Baseline/High MJPEG
Audio Compression	G.711(PCM): 8kHz(64Kbps) G.726(ADPCM): 8kHz(16/24/32/40Kbps) AAC-LC: 16kHz(48Kbps) OPUS: 48kHz(64Kbps)
Smart Codec	WiseStream(Based on AI engine)
Video Quality Adjustment	None
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 5 profiles, 3 virtual channel support)
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP/SFTP, SMTP(StartTLS), ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP, SRTP(TCP, UDP Unicast), CDP, MQTT, Syslog
SIP support (VoIP, Peer-to-peer)	None
Security	None
Application Programming Interface	ONVIF Profile S/G/T/M SUNAPI(HTTP API) Hanwha Vision Open Platform
Security	
OS / Firmware Protect	Encrypted Firmware, Secure boot, Signed Firmware
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	IP-based access control, MAC-based access control, Auto logout
Data Protect	Encryption Credentials, Encrypt compress for live recording file export
Audit	Access / System / Event Log management
Device ID	Device Certificate(Hanwha vision Root CA)
Secure Storage	Secure element, SDcard partition encrypt
Security Certificate	ETSI EN 303 645, Secure element(FIPS 140-3 level3, CC EAL6+)
General	
Webpage Language	English, Korean, Simplified Chinese, Traditional Chinese, French, Italian, Spanish, German, Japanese, Russian, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Web Viewer	None
Edge Storage	Micro SD/SDHC/SDXC 2slots 2TB(1TBx2)
Memory	4GB RAM, 8GB eMMC

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

KES Co., Ltd.

The authenticity of this test report can be found on the verification page of our website (www.kes.co.kr).



Environmental & Electrical	
Operating Temperature / Humidity	-50°C~+55°C(-58°F~+131°F) / 0~100% RH +74°C(+165°F)(MAX) based on NEMA-TS 2(2.2.7) * Start up should be done at above -30°C Humidity control /w AIR vent
Storage Temperature / Humidity	-50°C~+60°C(-58°F~+140°F) / 0~90% RH
Wind Load	None
EPA(Effective Projected Area)	0.026m²
Certification	IP66/IP67, NEMA4X, IK10, NEMA-TS 2(2.2.7.2-8, 2.2.8, 2.2.9)
Input Voltage	PoE+(IEEE802.3at type2, Class4), 12VDC
Power Consumption	PoE: Max. 19.2W, typical 11.0W 12VDC: Max. 16.5W, typical 9.5W Support Wisepower - Power monitoring(Max/Current/Avg.) - Power Redundance Failover
Mechanical	
Color / Material	White / Aluminum Window: Hard-coated window
RAL Code	RAL9003
Product Dimensions / Weight	ø93.4x298.4mm(ø3.68x11.75"), 2,060g(4.54lb)
Compatible Conduit hole / Gang	19.1mm(3/4")(M25) single, double, 4" octagon, 4" square
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 250 Type 4X, NEMA-TS 2(2.2.7.2-8, 2.2.8, 2.2.9) IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-6, IEC 60068-2-14, IEC 60068-2-27, IEC 60068-2-78
Video	None
Compatible Models	
Hanging Adaptor	SBP-160HMMW1
Back Box	Included
Ceiling Mount (Assy)	SBP-150CMI, SBP-300CMI, SBP-300CMW1, SBP-900CMW, SBP-300CMTW, SBP-300CMTS
Ceiling Mount (Single Unit)	SBP-180CMB, SBP-140CMB, SBP-180CMS, SBP-900CMP, SBP-300CMP, SBP-150CMP, SBP-C15P, SBP-C15H
Wall Mount	SBP-160WMW1, SBP-400WMW, SBP-250WMW, SBP-300WMW, SBP-300WMW1
Wall Mount Adaptor	None
Pole Mount	SBD-180PMW, SBP-300PMW2
In-ceiling Mount	None
Corner Mount	SBP-156KMW, SBP-300KMW1
Parapet Mount	SBP-156LMW1, SBP-300LMW
Tilt Mount	None
Cabinet	SBP-150NBW, SBP-300NBW
Housing	None
Gang Plate	None
Skin Cover	None
Weather Cap	None
Dome Cover	None
Conduit Adaptor	SBP-060BA
Power Module	None
Interface Box	SPM-4210
Other Compatible Models	SBP-115PFA
DORI (EN62676-4 standard)	
Detect (25PPM/ 8PPF)	Wide: 54.8m(179.73ft) / Tele: 168.5m(552.89ft)
Observe (63PPM/ 19PPF)	Wide: 21.9m(71.89ft) / Tele: 67.4m(221.16ft)
Recognize (125PPM/ 38PPF)	Wide: 11.0m(35.95ft) / Tele: 33.7m(110.58ft)
Identify (250PPM/ 76PPF)	Wide: 5.5m(17.97ft) / Tele: 16.9m(55.29ft)



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 (AC/DC Adapter Input power) ☒ AC 230 V, 50 Hz (PoE Adapter Input power)

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	PNO-A9082R	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE Injector	PT-PSE109GBRO-A	-	Dongguan PROCET Network Technology Co.,Ltd	-
AC/DC Adapter	2ACB022F	-	Channel Well Technology (Guangzhou) Co., Ltd.	-
Laptop	P95G001	9JM8HT2	DELL INC.	-
Laptop Adapter	LA65NS2-01	-	LITE-ON TECHNOLOGY (CHANGZHOU)CO.,LTD.	-
Micro SD Card1	-	-	SanDisk	-
Micro SD Card2	-	-	SanDisk	-
Headset	K550	-	Britz®	-
Alarm	PRO-SL	-	SENSOR PRO	-
Button Alarm	-	-	-	-



1.6 External I/O Cabling

■ mode 1

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	DC IN	AC/DC Adapter	DC OUT	1.5	U
	RJ-45 (LAN)	Laptop	RJ-45 (LAN)	3.5	U
	8 Pin (Audio OUT)	Headset	8 Pin (Audio IN)	2.0	U
	8 Pin (Audio IN)		8 Pin (Audio OUT)	2.0	U
	8 Pin (Alarm OUT)	Alarm	8 Pin (Alarm IN)	3.5	U
	8 Pin (Alarm IN)	Button Alarm	8 Pin (Alarm OUT)	3.5	U
	Micro SD Slot	Micor SD Card1	Micro SD Slot	-	-
	Micro SD Slot	Micor SD Card2	Micro SD Slot	-	-
Laptop	DC Jack	Laptop Adapter	DC Jack	1.5	U

* Unshielded=U, Shielded=S

■ mode 2

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45 (PoE)	PoE Injector	RJ-45 (PoE)	3.5	U
	8 Pin (Audio OUT)	Headset	8 Pin (Audio IN)	2.0	U
	8 Pin (Audio IN)		8 Pin (Audio OUT)	2.0	U
	8 Pin (Alarm OUT)	Alarm	8 Pin (Alarm IN)	3.5	U
	8 Pin (Alarm IN)	Button Alarm	8 Pin (Alarm OUT)	3.5	U
	Micro SD Slot	Micor SD Card1	Micro SD Slot	-	-
	Micro SD Slot	Micor SD Card2	Micro SD Slot	-	-
PoE Injector	RJ-45 (LAN)	Laptop	RJ-45 (LAN)	2.0	U
Laptop	DC Jack	Laptop Adapter	DC Jack	1.5	U

* Unshielded=U, Shielded=S



1.7 EUT Operating Mode(s)

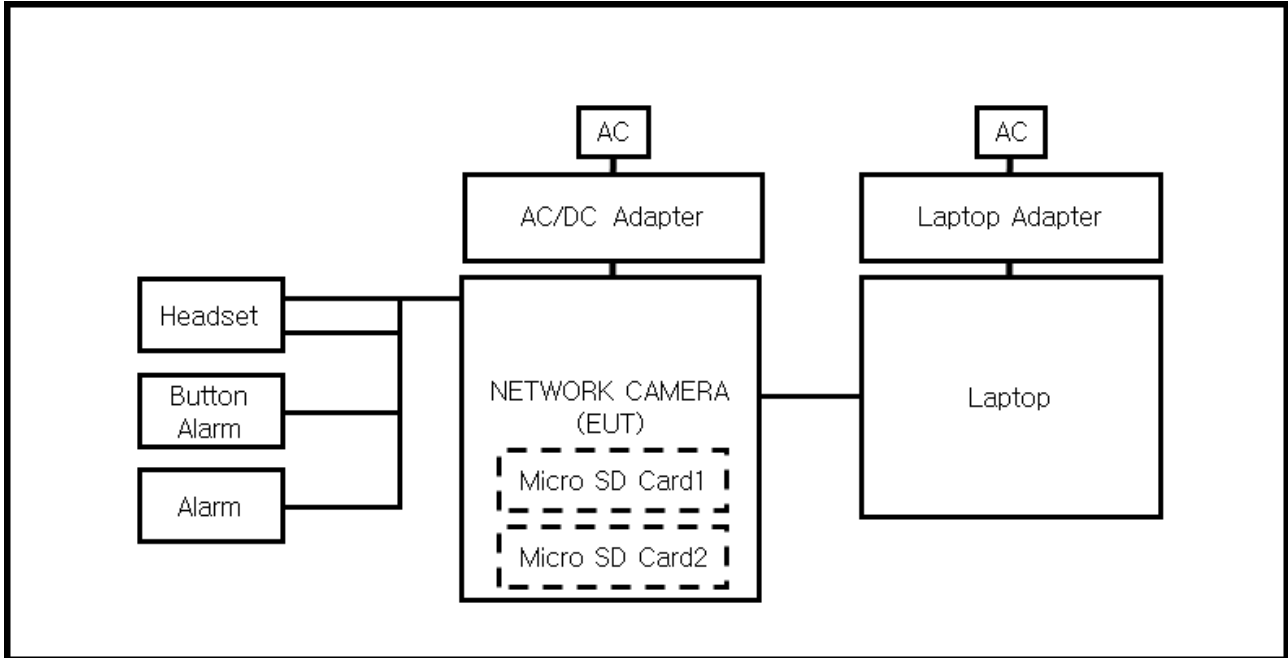
Test No.	Test mode	Operating	Test Voltages
mode 1	DC Power	- Monitoring EUT Using Web Viewer, Ping Test - When the Button Alarm is pressed, make sure the Alarm is working	AC 230 V, 50 Hz
mode 2	PoE Power	- Uploaded the 1 kHz tone sound to the Web Viewer and checked if the sound is output to the headset. - After the test, the recorded video stored on the Micro SD Card was checked and the microphone motion was also confirmed.	

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

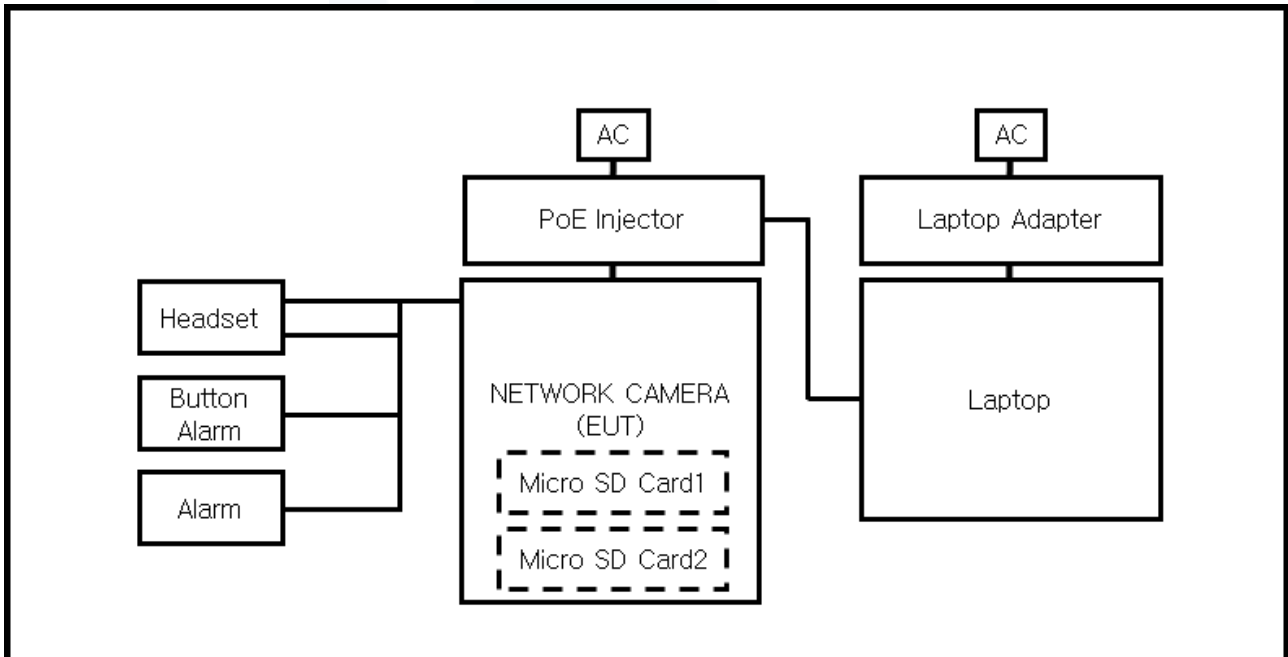


1.8 Configuration

■mode 1



■mode 2





1.9 Remarks when standards applied

- Mode 2 is powered by the PoE port, PoE port is considered to be wired network port, so power-related test items are excluded.
- The USB port was excluded from the test as a port for administrators.

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 0008



2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **EMC – Directive 2014/30/EU**

☒ EN 55032:2015/A1:2020

☒ Class A

☐ Class B

☒ EN 50130-4:2011/A1:2014

☒ EN IEC 61000-3-2:2019

☒ EN 61000-3-3:2013/A2:2021

☒ **EMC – Regulations 2016**

☒ EN 55032:2015/A1:2020

☒ Class A

☐ Class B

☒ EN 50130-4:2011/A1:2014

☒ EN IEC 61000-3-2:2019

☒ EN 61000-3-3:2013/A2:2021



2.1 Conducted Emissions at Mains Power Ports

Test Date

May. 18, 2025

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, 06, 2025
☒	LISN	ENV216	R & S	101786	01, 09, 2026
☒	ARTIFICIAL MAINS NETWORK	ESH2-Z5	R & S	100450	11, 06, 2025
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 06, 2025

Test Conditions

Temperature: (23,1 ± 0,0) °C

Relative Humidity: (46,4 ± 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.- The LAN port is regarded as a wired communication network port and power-related ports are not tested.



2.2 Conducted Emissions at Telecommunication Ports

Test Date

May. 18, 2025

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, 06, 2025
☒	LISN	ENV216	R & S	101786	01, 09, 2026
☒	ARTIFICIAL MAINS NETWORK	ESH2-Z5	R & S	100450	11, 06, 2025
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 06, 2025
☒	8-WIRE ISN CAT6	NTFM 8158	SCHWARZBECK	8158-0029	01, 09, 2026

Test Conditions

Temperature: (23,1 ± 0,0) °C
Relative Humidity: (46,4 ± 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

RemarksSee Appendix A for test data.



2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

May. 22, 2025

Test Location☒ 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	ESW8	R & S	101319	03, 24, 2026
☒	AMPLIFIER	SCU 01	R & S	100603	11, 06, 2025
☒	BILOG ANTENNA	VULB 9168	SCHWARZBECK	9168-461	05, 09, 2026
☒	ATTENUATOR	6806.17.A	HUBER+SUHNER	-	02, 13, 2026

Test Conditions

Temperature: (23,4 ± 0,1) °C

Relative Humidity: (47,7 ± 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

May. 21, 2025

Test Location

SEMI ANECHOIC CHAMBER #5

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	ES10/RE	TOYO Corporation	2022.01.000	-
☒	EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	02, 13, 2026
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	11, 04, 2025
☒	PREAMPLIFIER	8449B	HP	3008A00538	04, 30, 2026
☒	ATTENUATOR	8491B	HP	23094	02, 13, 2026

Test Conditions

Temperature: (23,0 ± 0,2) °C

Relative Humidity: (47,3 ± 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.
- The Average of the test data is the cispr average result.



2.5 Harmonic Current Emissions

Test Date

May. 19, 2025

Test Location

Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	03, 31, 2026
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (23,2 ± 0,0) °C

Relative Humidity: (46,2 ± 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

May. 19, 2025

Test Location

Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	03, 31, 2026
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (23,2 ± 0,3) °C

Relative Humidity: (46,2 ± 0,4) % 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

Test Date

May. 18, 2025

Test Location

EMS-ESD: Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS01Z0454	01, 21, 2026
☒	HCP	-	KES	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions

Temperature: (23,1 ± 0,0) °C
Relative Humidity: (46,4 ± 0,0) % R.H.
Atmospheric Pressure: (100,0 ± 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

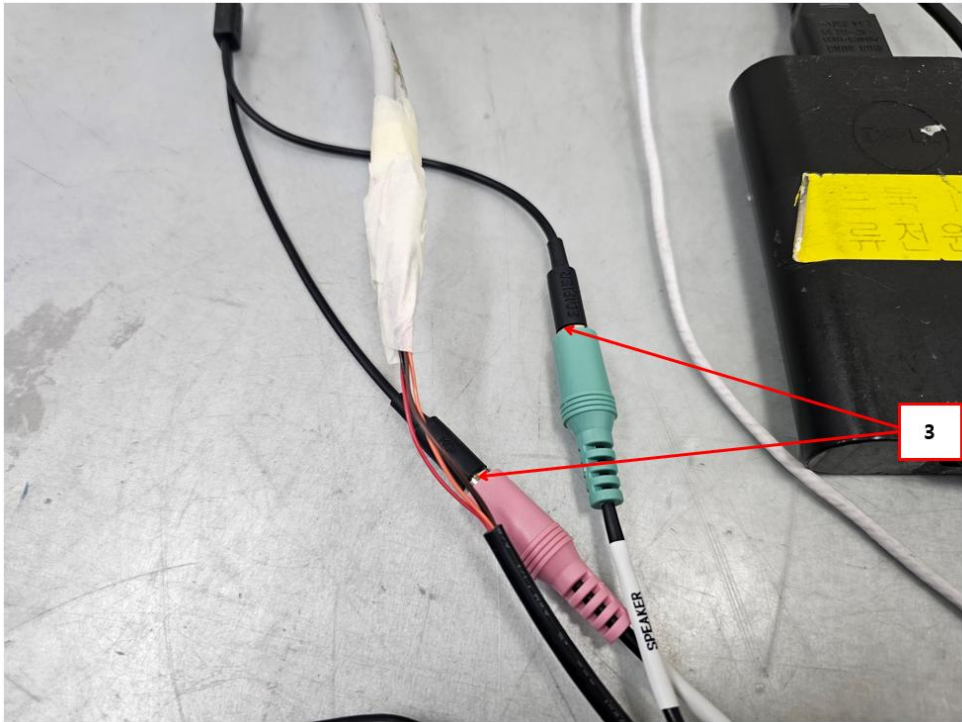
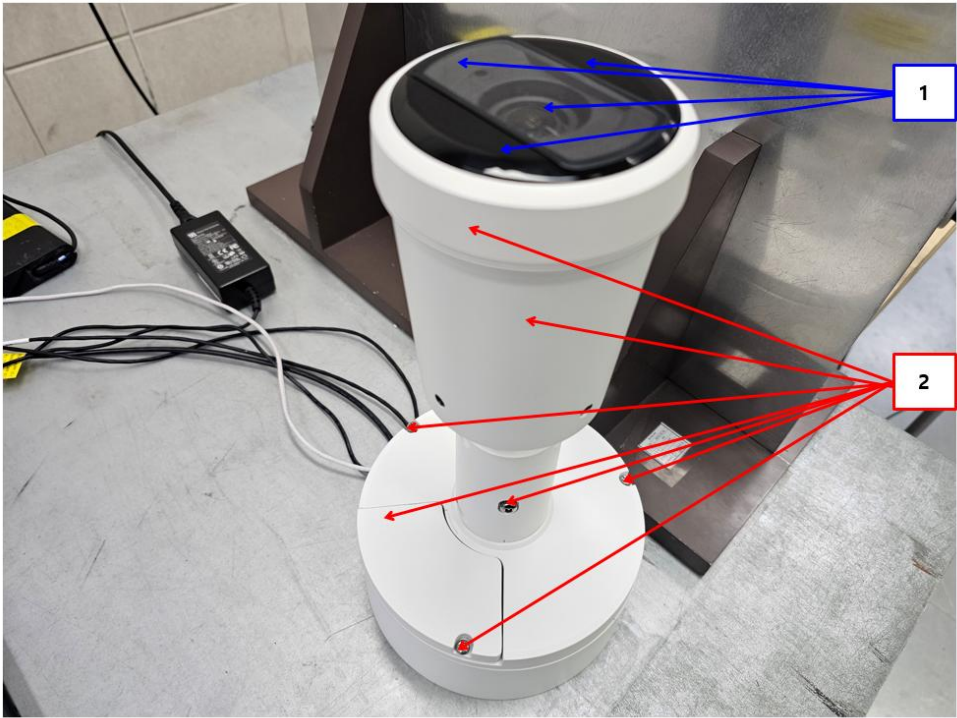
Discharge Voltage:	Contact	Air	HCP	VCP
	☐ 2 kV	☒ 2 kV	☐ 2 kV	☐ 2 kV
	☐ 4 kV	☒ 4 kV	☐ 4 kV	☐ 4 kV
	☒ 6 kV	☐ 6 kV	☒ 6 kV	☒ 6 kV
	☐ 8 kV	☒ 8 kV	☐ 8 kV	☐ 8 kV
	☐ 15 kV	☐ 15 kV	☐ 15 kV	☐ 15 kV

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

Required Performance Criteria: ☒ Complied



Location of Discharge:



**Test Data****mode 1**

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, Screws	Contact Discharge	Complied	-
3	Port	Contact Discharge	Complied	-

mode 2

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, Screws	Contact Discharge	Complied	-
3	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

Test Date

May. 19, 2025

Test LocationEMS-RS: ☐ SEMI ANECHOIC CHAMBER #2☒ SEMI ANECHOIC CHAMBER #4(10 m)**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, 29, 2025
☒	HIGH POWER DUAL AMP	SSA532	SUNGSAN	SSA532-001	-
☒	POWER METER	E4419B	Agilent	GB40203000	02, 13, 2026
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY52170007	02, 13, 2026
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY41498669	02, 13, 2026
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 05, 2026

Test Conditions

Temperature: (23,8 ± 1,3) °C
Relative Humidity: (47,4 ± 0,8) % 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**

■ mode 1

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

■ mode 2

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

Test Date

May. 23, 2025

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, 06, 2025
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 07, 2025
☒	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	11, 06, 2025

Test Conditions

Temperature: (23,4 ± 0,1) °C
Relative Humidity: (46,5 ± 0,1) % R.H.
Atmospheric Pressure: (100,0 ± 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****mode 1**☒ Input a.c. power ports – Coupling/Decoupling Network used

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

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

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

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45 (LAN)	Complied	Complied
8 Pin (Alarm OUT)	Complied	Complied
8 Pin (Alarm IN)	Complied	Complied

mode 2☐ Input a.c. power ports – Coupling/Decoupling Network used

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

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

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

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45 (PoE)	Complied	Complied
8 Pin (Alarm OUT)	Complied	Complied
8 Pin (Alarm IN)	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

Test Date

May. 23, 2025

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, 07, 2025
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 07, 2025
☒	CDN	CNV 508N1	EM TEST	P1610176296	11, 08, 2025

Test Conditions

Temperature: (23,4 ± 0,4) °C
Relative Humidity: (46,5 ± 0,3) % R.H.
Atmospheric Pressure: (100,0 ± 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) 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**

■ mode 1

☒ Line to Line – Differential Mode

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

☐ Line to Earth – Common Mode

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

Signal Lines☒ Line to Earth – Common Mode

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

■ mode 2

☐ Line to Line – Differential Mode

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

☐ 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 (PoE)	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

Test Date

May. 24, 2025

Test Location

EMS-CS: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	icd.control	EM TEST	7.2.0	-
☒	TEST SYSTEM FOR CONDUCTED AND RADIATED	NSG4070	TESEQ	65585	11, 18, 2025
☒	ATTENUATOR	ATT 6/80	EM TEST	P1614178148	11, 06, 2025
☒	CDN	CDN M016	TESEQ	43694	11, 07, 2025
☒	CDN	CDN M016	TESEQ	43697	11, 07, 2025
☒	CDN	CDN T8RJ45	EM TEST	0909-09	07, 29, 2025
☒	EM CLAMP	KEMZ 801A	TESEQ	44099	11, 08, 2025

Test Conditions

Temperature: (23,0 ± 0,9) °C
Relative Humidity: (46,1 ± 0,5) % R.H.
Atmospheric Pressure: (100,0 ± 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**

■ mode 1

☒ Input a.c. power ports

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

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45 (LAN)	CDN	Complied
8 Pin (Alarm OUT)	Clamp	Complied
8 Pin (Alarm IN)	Clamp	Complied

■ mode 2

☐ Input a.c. power ports

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

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45 (PoE)	CDN	Complied
8 Pin (Alarm OUT)	Clamp	Complied
8 Pin (Alarm IN)	Clamp	Complied

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

Observations:

Complied – No degradation of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**PASS Required Performance Criteria



3.6 Voltage Dips and Short Interruptions

Reference Standard

EN IEC 61000-4-11

Test Date

May. 23, 2025

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, 07, 2025
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 07, 2025

Test Conditions

Temperature: (23,4 ± 0,0) °C
Relative Humidity: (46,5 ± 0,0) % R.H.
Atmospheric Pressure: (100,0 ± 0,0) kPa

**Test Specifications & Observations/Remarks**

■ mode 1

- Voltage Dips and Short Interruptions

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

- Voltage variations

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

Observations:

Complied – No degradation of function

Degradation - See "Remarks "

Test Results

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

Remarks

During the test(100%, 250cycle), EUT was turned off but after the test, it was recovered without operator's intervention.



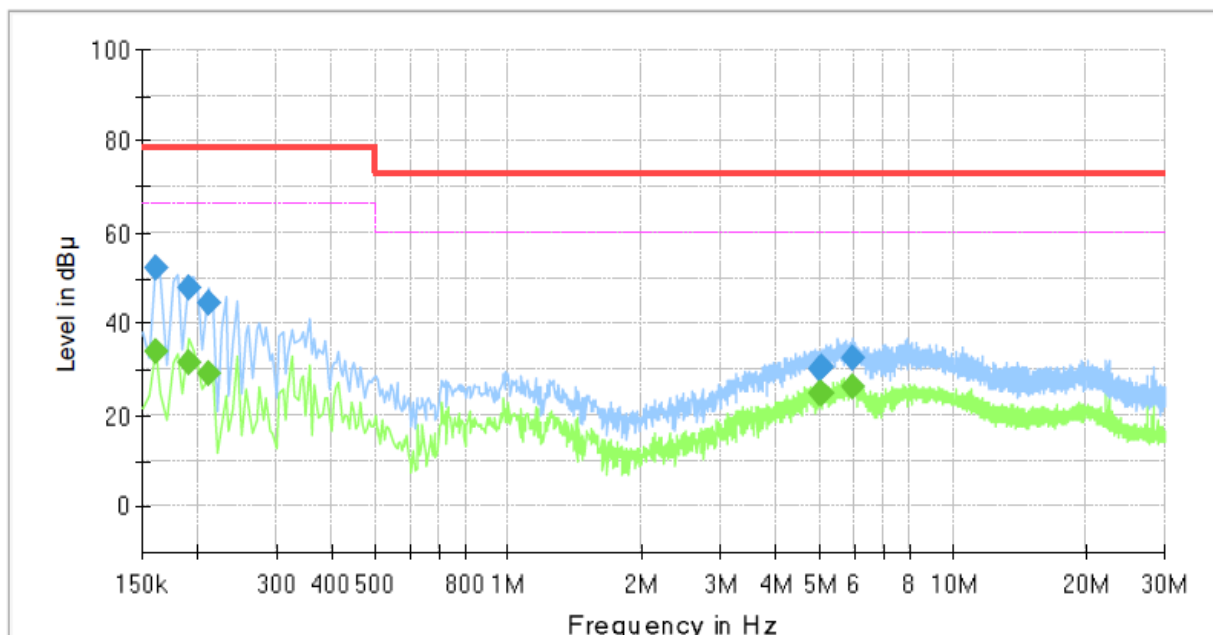
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

■ mode 1

[HOT]

Test Description: Conducted Emission
Job No.: KES-EM251773
Phase: L
Mode: mode 1
Operator Name: KES

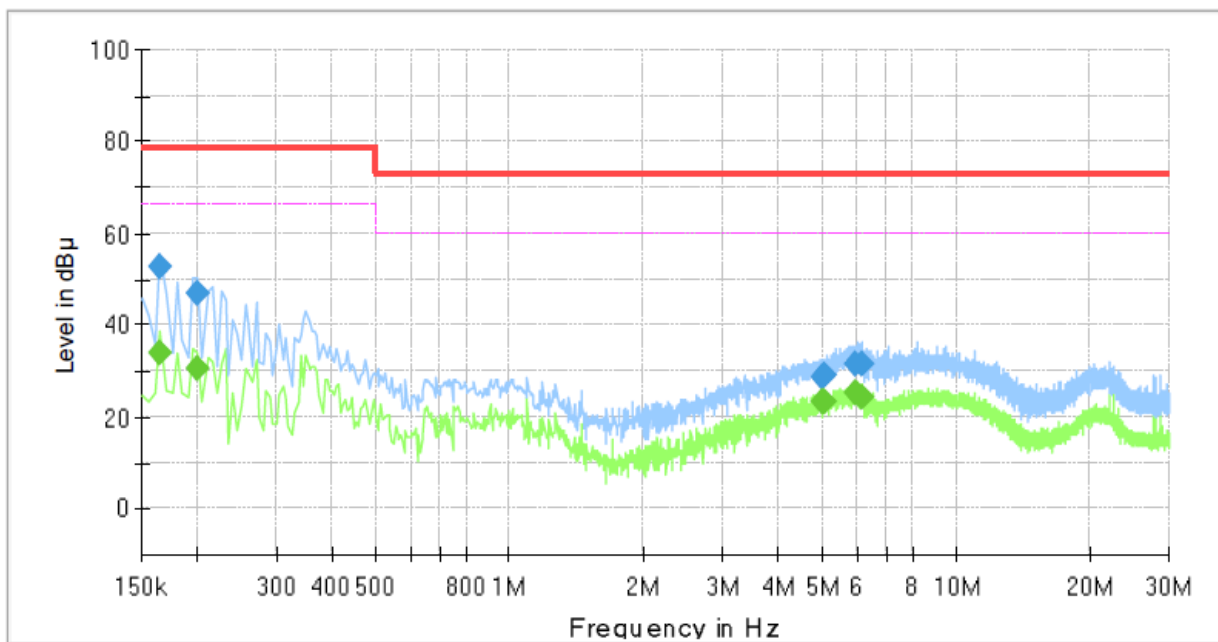


Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	34.03	66.00	31.97	1000.0	9.000	L1	19.5
0.160000	52.39	---	79.00	26.61	1000.0	9.000	L1	19.5
0.190000	---	31.46	66.00	34.54	1000.0	9.000	L1	19.5
0.190000	48.00	---	79.00	31.00	1000.0	9.000	L1	19.5
0.210000	---	28.86	66.00	37.14	1000.0	9.000	L1	19.5
0.210000	44.31	---	79.00	34.69	1000.0	9.000	L1	19.5
5.020000	---	24.55	60.00	35.45	1000.0	9.000	L1	19.9
5.020000	30.26	---	73.00	42.74	1000.0	9.000	L1	19.9
5.090000	---	24.92	60.00	35.08	1000.0	9.000	L1	19.9
5.090000	30.61	---	73.00	42.39	1000.0	9.000	L1	19.9
5.950000	---	26.35	60.00	33.65	1000.0	9.000	L1	20.0
5.950000	32.50	---	73.00	40.50	1000.0	9.000	L1	20.0

**[NEUTRAL]**

Test Description: Conducted Emission
Job No.: KES-EM251773
Phase: N
Mode: mode 1
Operator Name: KES

**Final_Result**

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165000	---	33.96	66.00	32.04	1000.0	9.000	N	19.5
0.165000	52.59	---	79.00	26.41	1000.0	9.000	N	19.5
0.200000	---	30.41	66.00	35.59	1000.0	9.000	N	19.5
0.200000	46.72	---	79.00	32.28	1000.0	9.000	N	19.5
5.010000	---	23.16	60.00	36.84	1000.0	9.000	N	19.9
5.010000	28.69	---	73.00	44.31	1000.0	9.000	N	19.9
5.065000	---	23.44	60.00	36.56	1000.0	9.000	N	19.9
5.065000	28.89	---	73.00	44.11	1000.0	9.000	N	19.9
5.925000	---	25.00	60.00	35.00	1000.0	9.000	N	19.9
5.925000	31.29	---	73.00	41.71	1000.0	9.000	N	19.9
6.130000	---	24.37	60.00	35.63	1000.0	9.000	N	19.9
6.130000	31.30	---	73.00	41.70	1000.0	9.000	N	19.9

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

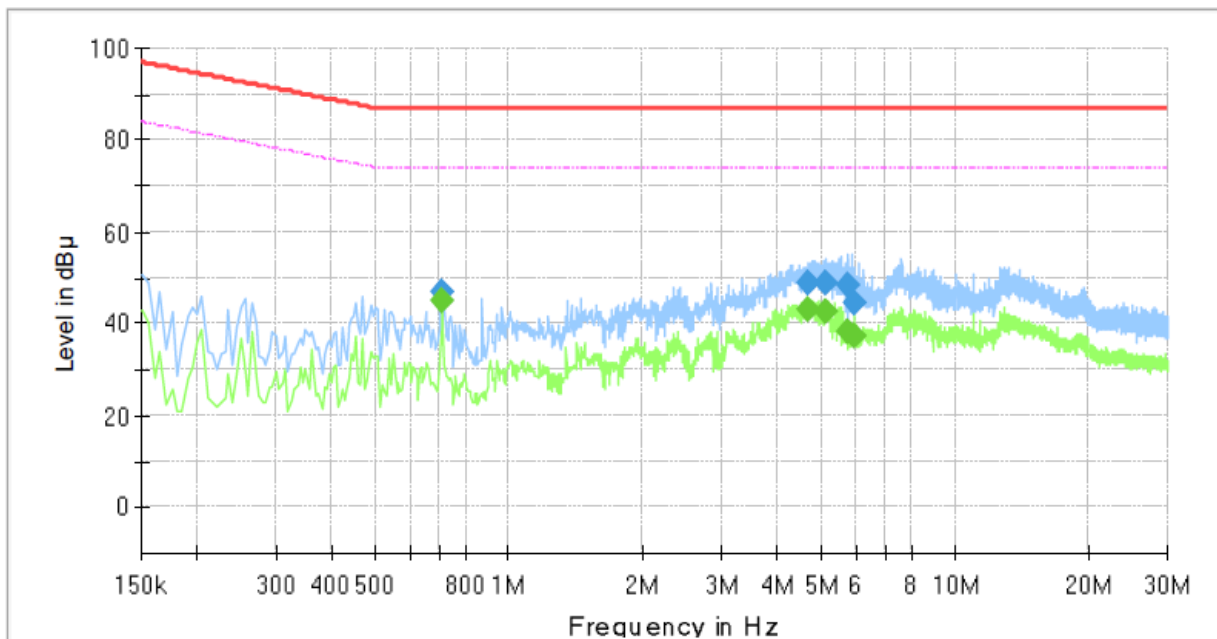
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

**Conducted Emissions at Telecommunication Ports**

■ mode 1

[1 000 Mbps]

Test Description: Telecommunication Emission
Job No.: KES-EM251773
Mode : mode 1
Speed : 1 000 Mbps
Operator Name: KES

**Final_Result**

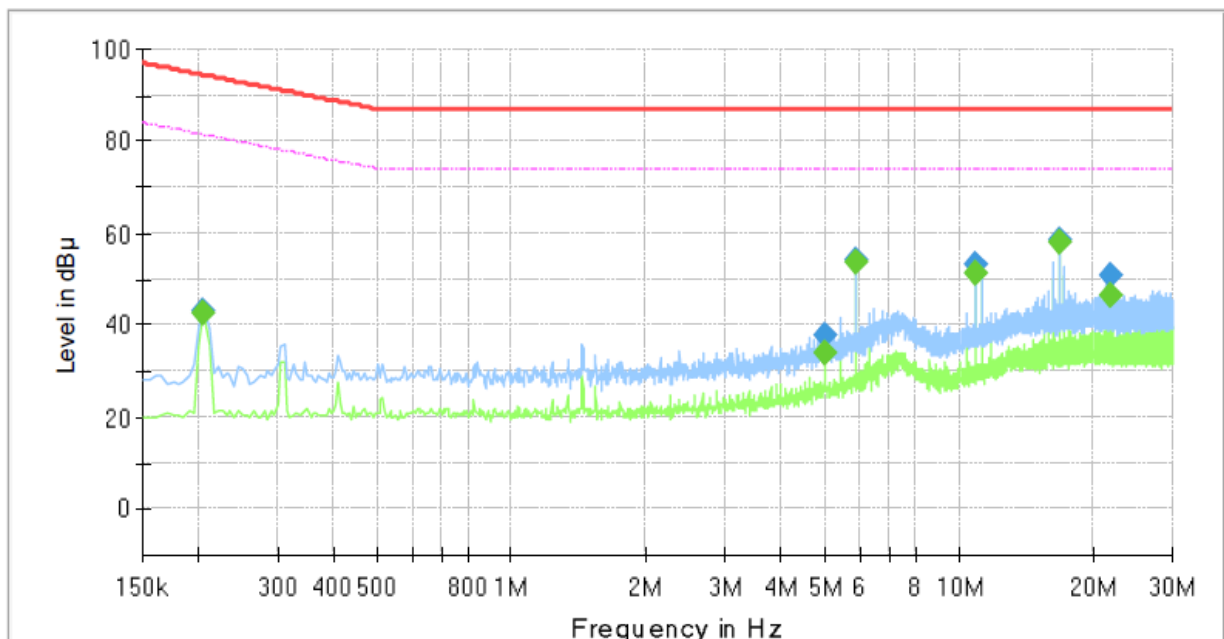
Frequency (MHz)	QuasiPeak (dB μV)	CAverage (dB μV)	Limit (dB μV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.710000	---	44.91	74.00	29.09	1000.0	9.000	Single Line	19.3
0.710000	46.75	---	87.00	40.25	1000.0	9.000	Single Line	19.3
4.705000	---	43.24	74.00	30.76	1000.0	9.000	Single Line	19.5
4.705000	49.07	---	87.00	37.93	1000.0	9.000	Single Line	19.5
5.120000	---	42.47	74.00	31.53	1000.0	9.000	Single Line	19.5
5.120000	48.70	---	87.00	38.30	1000.0	9.000	Single Line	19.5
5.780000	---	38.28	74.00	35.72	1000.0	9.000	Single Line	19.5
5.780000	48.30	---	87.00	38.70	1000.0	9.000	Single Line	19.5
5.945000	---	37.07	74.00	36.93	1000.0	9.000	Single Line	19.5
5.945000	44.71	---	87.00	42.29	1000.0	9.000	Single Line	19.5



■ mode 2

[1 000 Mbps]

Test Description: Telecommunication Emission
Job No.: KES-EM251773
Mode : mode 2
Speed : 1 000 Mbps
Operator Name: KES



Final_Result

Frequency (MHz)	QuasiPeak (dB μV)	CAverage (dB μV)	Limit (dB μV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.205000	---	42.73	81.41	38.68	1000.0	9.000	Single Line	19.6
0.205000	43.17	---	94.41	51.24	1000.0	9.000	Single Line	19.6
4.995000	---	33.96	74.00	40.04	1000.0	9.000	Single Line	19.5
4.995000	37.60	---	87.00	49.40	1000.0	9.000	Single Line	19.5
5.865000	---	53.90	74.00	20.10	1000.0	9.000	Single Line	19.5
5.865000	54.26	---	87.00	32.74	1000.0	9.000	Single Line	19.5
10.860000	---	51.44	74.00	22.56	1000.0	9.000	Single Line	19.6
10.860000	53.06	---	87.00	33.94	1000.0	9.000	Single Line	19.6
16.725000	---	58.04	74.00	15.96	1000.0	9.000	Single Line	19.8
16.725000	58.72	---	87.00	28.28	1000.0	9.000	Single Line	19.8
21.720000	---	46.42	74.00	27.58	1000.0	9.000	Single Line	19.9
21.720000	50.64	---	87.00	36.36	1000.0	9.000	Single Line	19.9

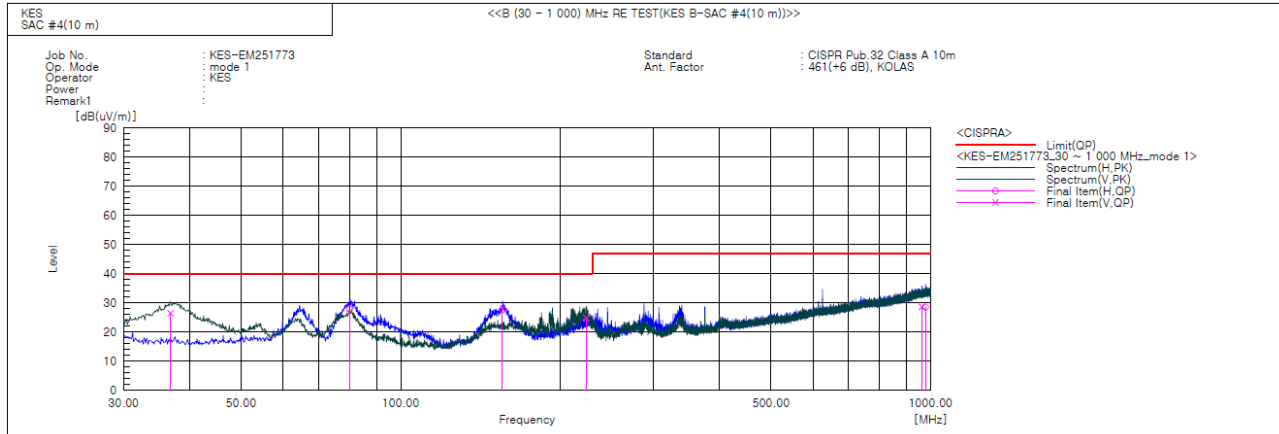
♦ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

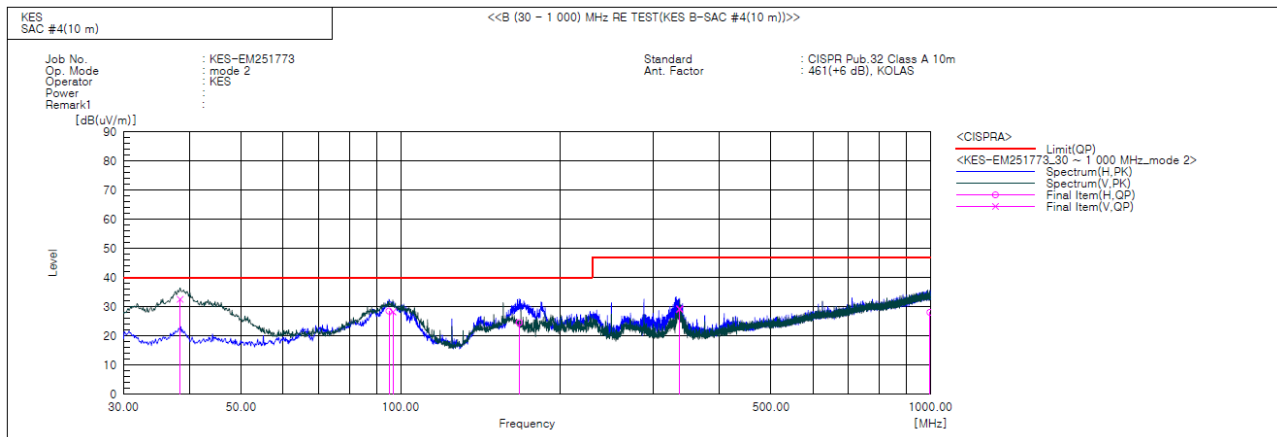
Corr. : Correction values (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

**Radiated Electric Field Emissions(Below 1 GHz)****mode 1****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	36.790	V	48.5	-22.1	26.4	40.0	13.6	147.0	308.0	
2	80.076	H	53.4	-25.5	27.9	40.0	12.1	358.0	245.0	
3	155.615	H	47.0	-19.3	27.7	40.0	12.3	382.0	193.0	
4	224.000	V	45.8	-21.0	24.8	40.0	15.2	106.0	266.0	
5	962.898	V	29.0	-0.4	28.6	47.0	18.4	159.0	60.0	
6	978.175	H	28.7	-0.2	28.5	47.0	18.5	396.0	257.0	



mode 2



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	38.366	V	54.5	-22.0	32.5	40.0	7.5	149.0	87.0	
2	95.111	H	54.2	-25.7	28.5	40.0	11.5	376.0	119.0	
3	96.688	V	53.6	-25.4	28.2	40.0	11.8	166.0	95.0	
4	167.376	H	44.4	-19.8	24.6	40.0	15.4	398.0	271.0	
5	336.156	V	45.1	-15.9	29.2	47.0	17.8	118.0	155.0	
6	997.939	H	28.0	0.1	28.1	47.0	18.9	364.0	14.0	

◆ Calculation

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

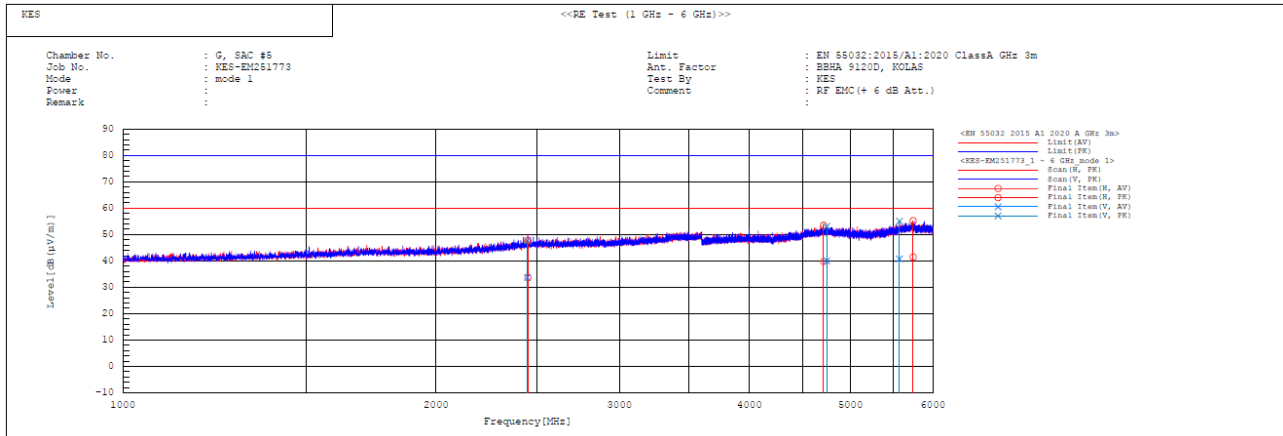
Margin(QP)[dB] = Limit[dB(μ V/m)] - Result(QP) [dB(μ V/m)]

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)**

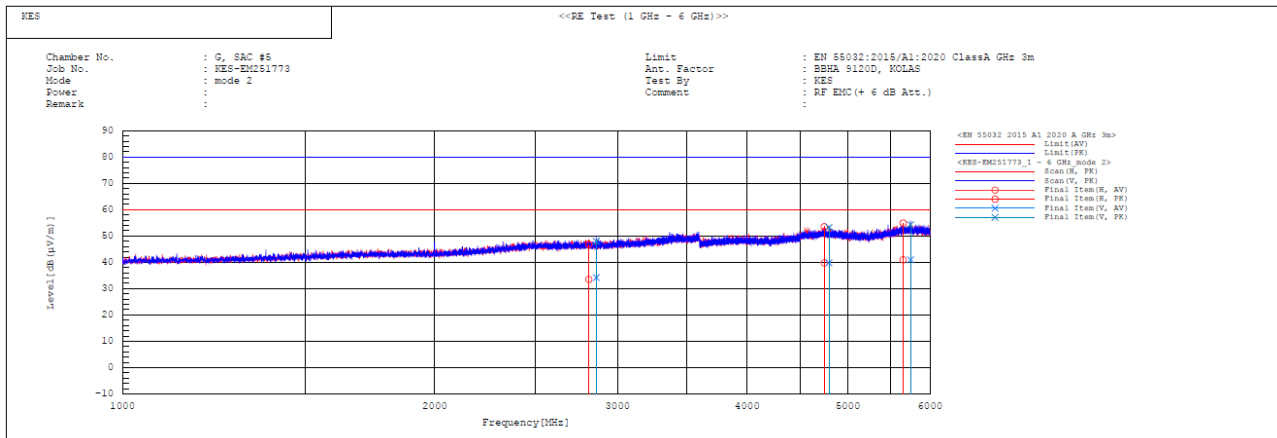
■mode 1

**Final Result**

No.	Frequency [MHz]	Pol	Reading AV [dB (μV)]	Reading PK [dB (μV)]	c.f [dB (1/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	2448.474	V	28.9	42.8	4.8	47.6	60.0	80.0	26.3	32.4	100.0	202.8	
2	2450.219	H	28.9	42.9	4.8	47.7	60.0	80.0	26.3	32.3	100.0	16.6	
3	4712.331	H	28.3	42.0	11.5	53.5	60.0	80.0	20.2	26.5	100.0	40.3	
4	4745.620	V	28.4	41.4	11.6	53.0	60.0	80.0	20.0	27.0	100.0	3.1	
5	5575.742	V	27.3	41.6	13.5	55.1	60.0	80.0	19.2	24.9	100.0	335.0	
6	5744.447	H	27.5	41.2	14.0	55.2	60.0	80.0	18.5	24.8	100.0	148.8	



mode 2



Final Result

No.	Frequency [MHz]	Pol	Reading AV [dB (μV)]	Reading PK [dB (μV)]	c.f [dB (1/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	2814.684	H	27.6	41.0	5.9	46.9	60.0	80.0	26.5	33.1	100.0	338.6	
2	2862.451	V	28.2	42.0	6.0	48.0	60.0	80.0	25.8	32.0	100.0	359.8	
3	4745.406	H	28.2	41.9	11.6	53.5	60.0	80.0	20.2	26.5	100.0	55.7	
4	4796.798	V	28.0	41.5	11.8	53.3	60.0	80.0	20.2	26.7	100.0	337.4	
5	5652.514	H	27.3	41.2	13.7	54.9	60.0	80.0	19.0	25.1	100.0	0.3	
6	5746.993	V	27.0	40.3	14.0	54.3	60.0	80.0	19.0	25.7	100.0	216.5	

◆ Calculation

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

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

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

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

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

■ mode 1

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.054			
2	0.002	0.166	1.080	n/a
3	0.047	2.051	2.300	PASS
4	0.002	0.562	0.430	n/a
5	0.047	4.141	1.140	PASS
6	0.002	0.711	0.300	n/a
7	0.047	6.050	0.770	PASS
8	0.002	0.931	0.230	n/a
9	0.043	10.810	0.400	PASS
10	0.002	1.112	0.184	n/a
11	0.040	12.231	0.330	PASS
12	0.002	1.293	0.153	n/a
13	0.038	17.918	0.210	PASS
14	0.002	1.595	0.131	n/a
15	0.034	22.944	0.150	PASS
16	0.002	1.732	0.115	n/a
17	0.031	23.528	0.132	PASS
18	0.002	1.886	0.102	n/a
19	0.028	23.591	0.118	PASS
20	0.002	2.041	0.092	n/a
21	0.025	15.398	0.161	PASS
22	0.002	2.265	0.084	n/a
23	0.021	14.531	0.147	PASS
24	0.002	2.449	0.077	n/a
25	0.018	13.609	0.135	PASS
26	0.002	2.580	0.071	n/a
27	0.016	12.659	0.125	PASS
28	0.002	2.776	0.066	n/a
29	0.013	11.409	0.116	PASS
30	0.002	2.915	0.061	n/a
31	0.011	10.426	0.109	PASS
32	0.002	3.083	0.058	n/a
33	0.010	9.548	0.102	PASS
34	0.002	3.133	0.054	n/a
35	0.009	9.214	0.096	PASS
36	0.002	3.285	0.051	n/a
37	0.008	8.945	0.091	PASS
38	0.002	3.366	0.048	n/a
39	0.008	8.867	0.087	PASS
40	0.002	3.327	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	0.054			
2	0.002	0.147	1.620	n/a
3	0.048	1.386	3.450	PASS
4	0.003	0.484	0.645	n/a
5	0.048	2.788	1.710	PASS
6	0.003	0.607	0.450	n/a
7	0.047	4.070	1.155	PASS
8	0.003	0.817	0.345	n/a
9	0.044	7.263	0.600	PASS
10	0.003	0.997	0.276	n/a
11	0.041	8.228	0.495	PASS
12	0.003	1.143	0.230	n/a
13	0.038	12.042	0.315	PASS
14	0.003	1.399	0.197	n/a
15	0.035	15.401	0.225	PASS
16	0.003	1.538	0.173	n/a
17	0.031	15.791	0.199	PASS
18	0.003	1.671	0.153	n/a
19	0.028	15.828	0.178	PASS
20	0.003	1.841	0.138	n/a
21	0.025	15.495	0.161	PASS
22	0.003	2.017	0.125	n/a
23	0.021	14.637	0.147	PASS
24	0.002	2.155	0.115	n/a
25	0.019	13.748	0.135	PASS
26	0.002	2.346	0.106	n/a
27	0.016	12.778	0.125	PASS
28	0.002	2.439	0.099	n/a
29	0.013	11.562	0.116	PASS
30	0.002	2.550	0.092	n/a
31	0.011	10.552	0.109	PASS
32	0.002	2.712	0.086	n/a
33	0.010	9.716	0.102	PASS
34	0.002	2.786	0.081	n/a
35	0.009	9.412	0.096	PASS
36	0.002	2.882	0.077	n/a
37	0.008	9.154	0.091	PASS
38	0.002	2.912	0.073	n/a
39	0.008	9.125	0.087	PASS
40	0.002	2.916	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.



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Test Data - Voltage Fluctuations

■ mode 1

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

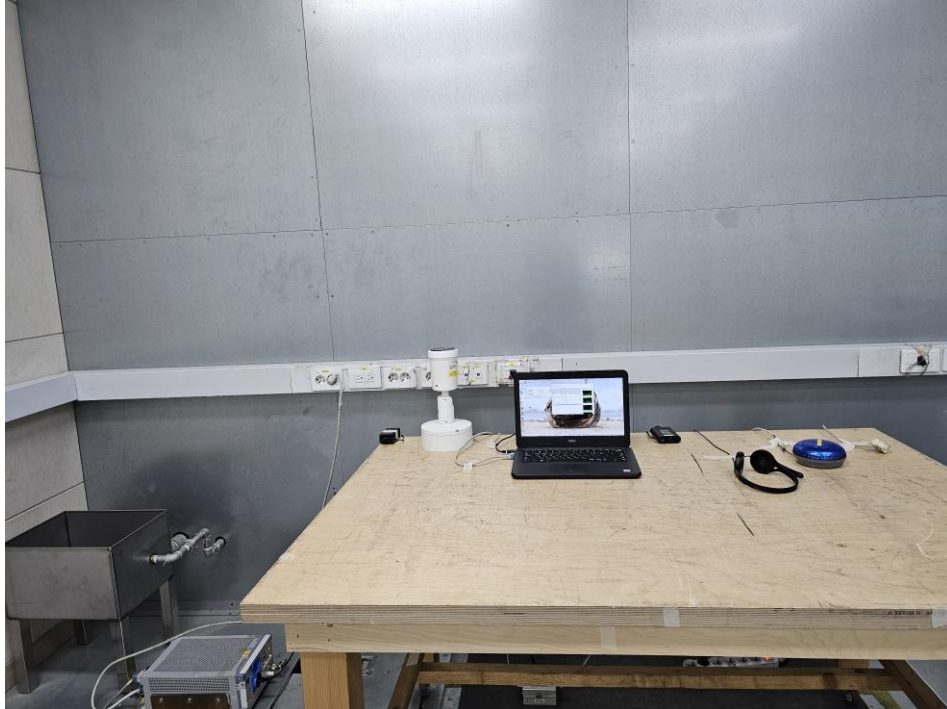
■ mode 1





Conducted Emissions at Telecommunication Ports

■ mode 1





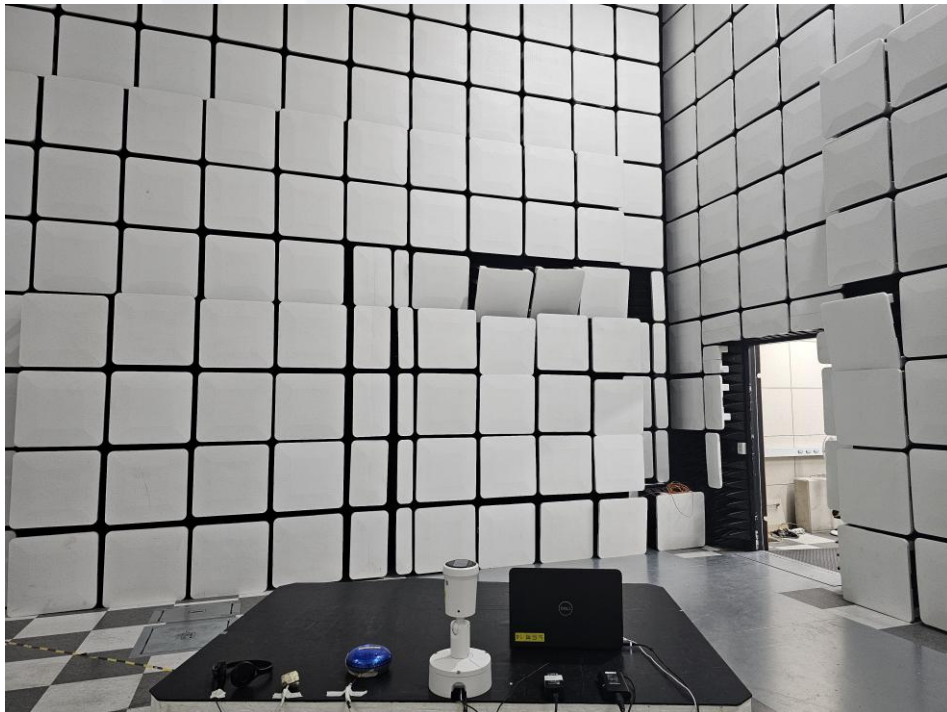
■mode 2





Radiated Electric Field Emissions(Below 1 GHz)

■mode 1





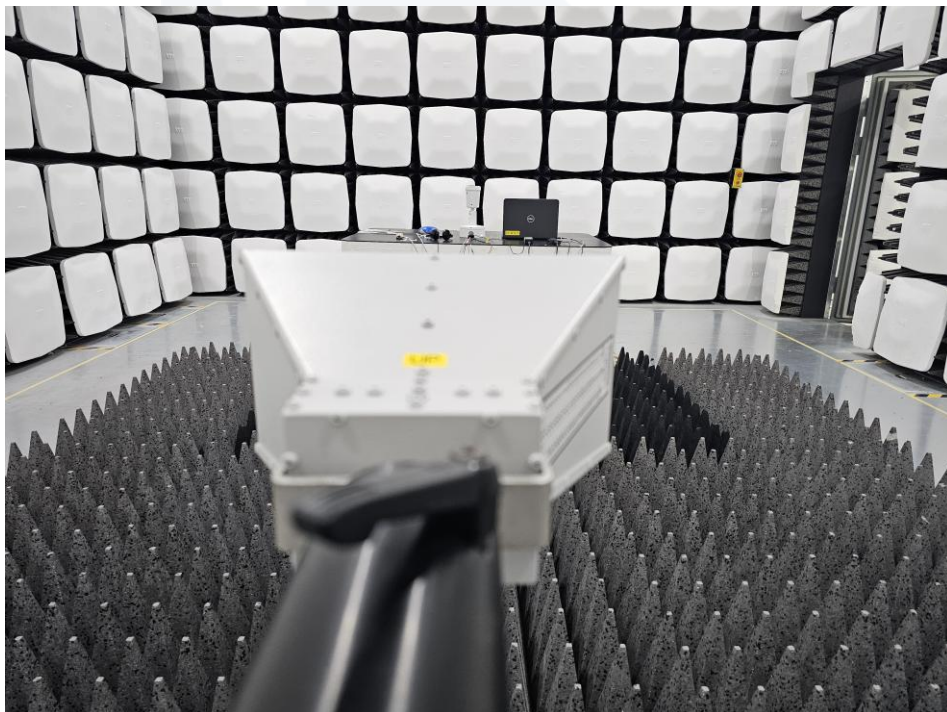
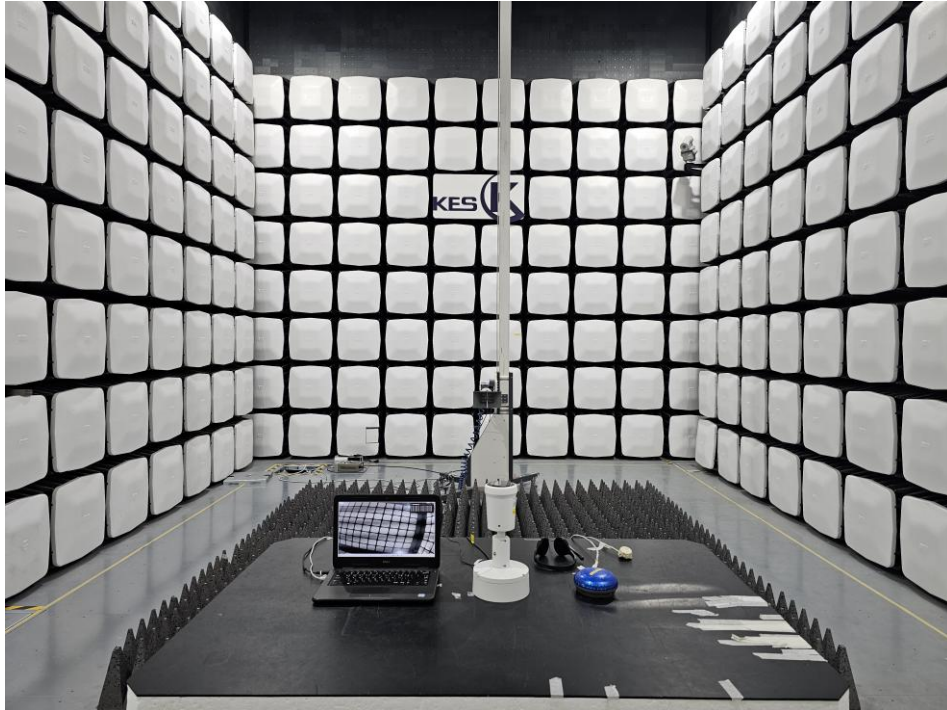
■ mode 2





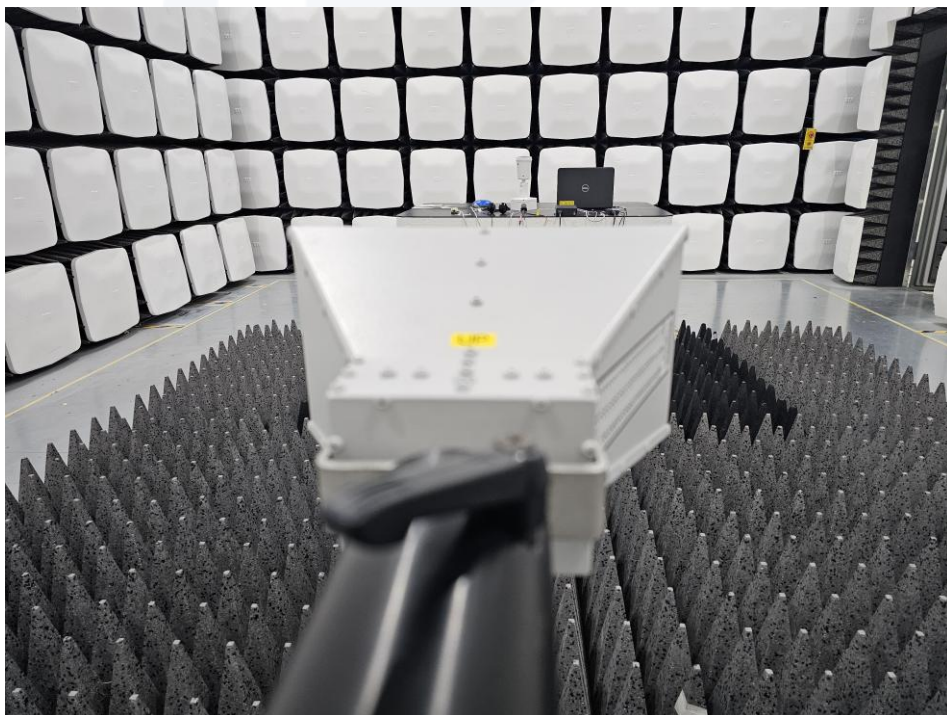
Radiated Electric Field Emissions(Above 1 GHz)

■mode 1





■mode 2





Harmonic Current Emissions and Voltage Fluctuations and Flicker

■ mode 1





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Electrostatic Discharge

■ mode 1



■ mode 2



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

KES Co., Ltd.

The authenticity of this test report can be found on the verification page of our website (www.kes.co.kr).

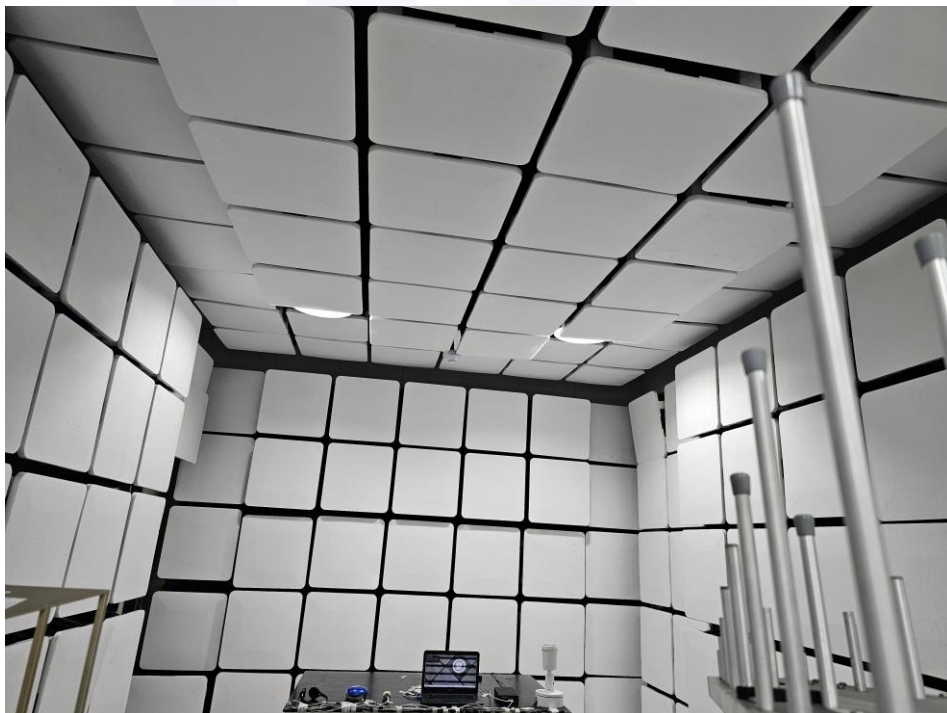


Radiated Electric Field Immunity

■ mode 1



■ mode 2



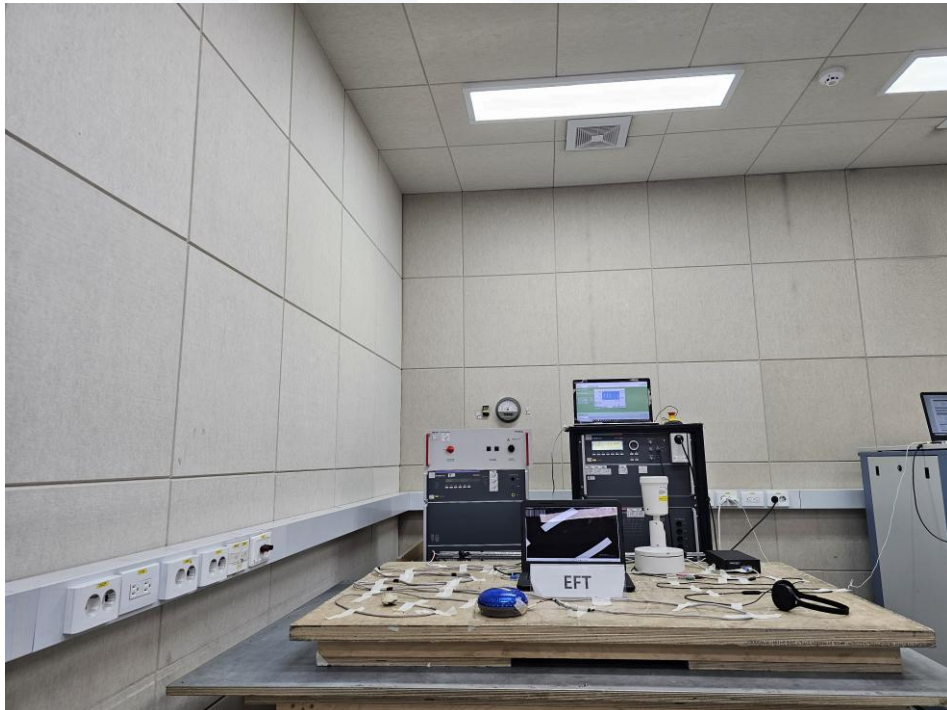


Electrical Fast Transients/Bursts

■mode 1



■mode 2



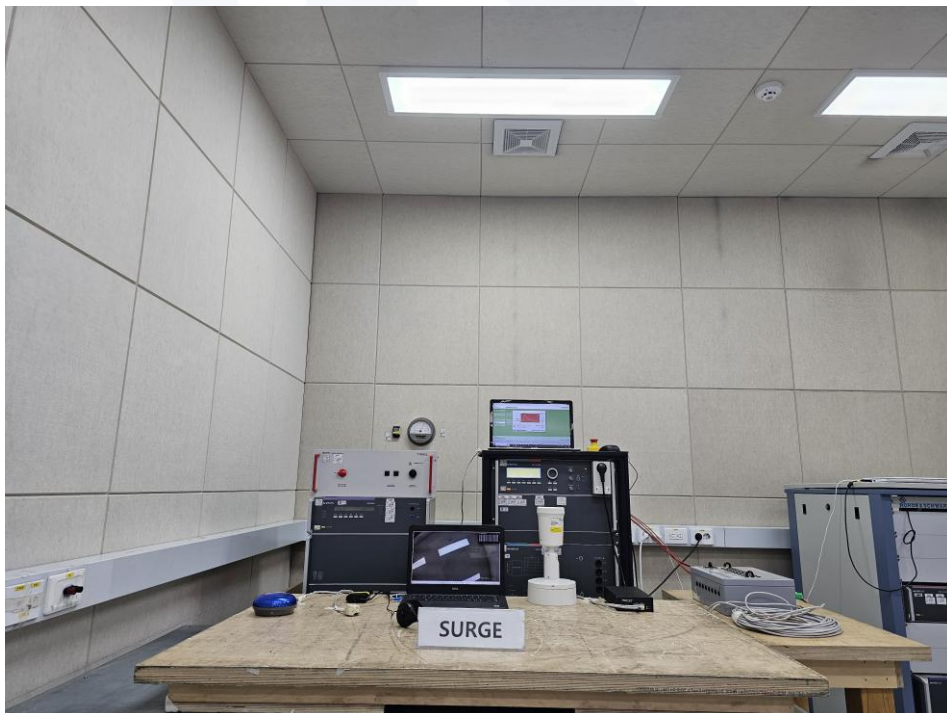


Surge Transients

■mode 1



■mode 2





Conducted Disturbance

■mode 1



■mode 2





Voltage Dips and Short Interruptions

■ mode 1





EUT External Photographs

(Top)



(Bottom)





EUT Internal Photographs

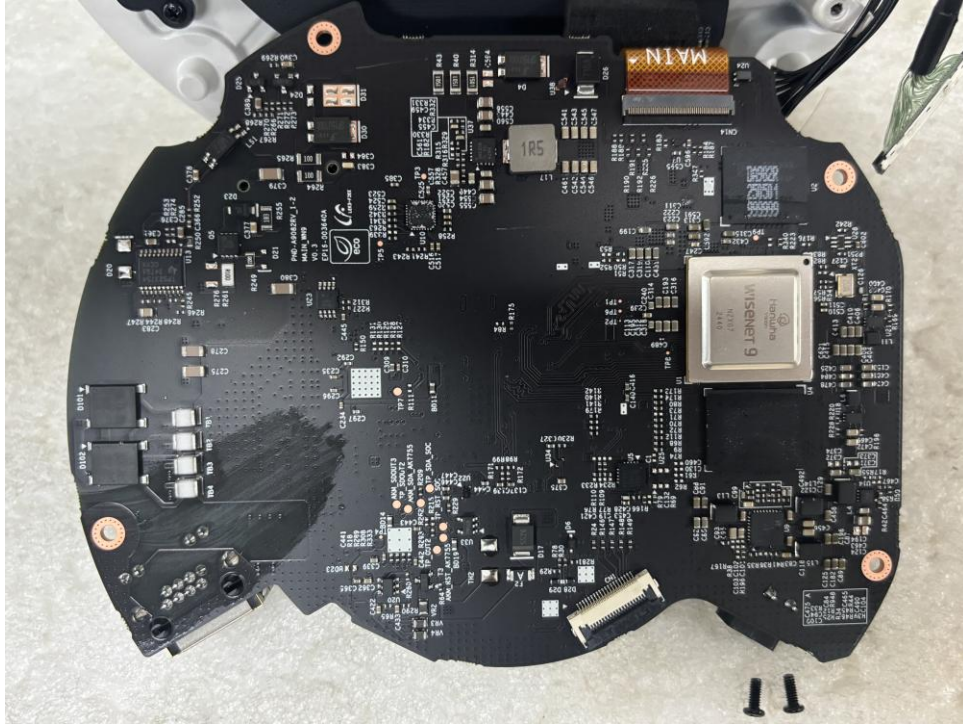
(Internal View)



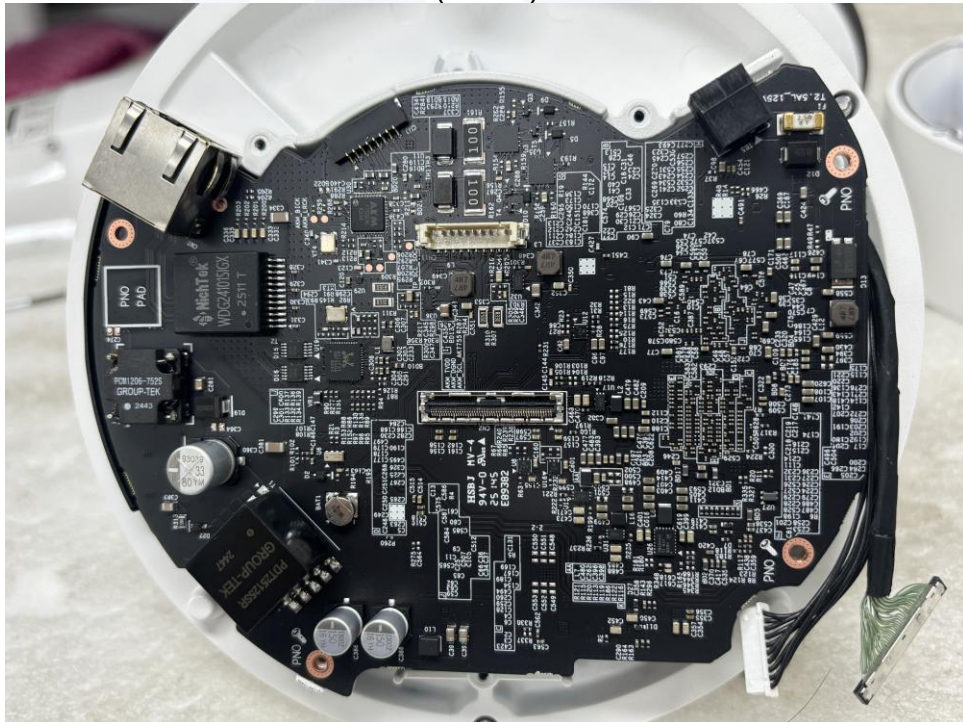


EUT Internal View – Board 1

(Top)



(Bottom)





EUT Internal View – Board 2

(Top)



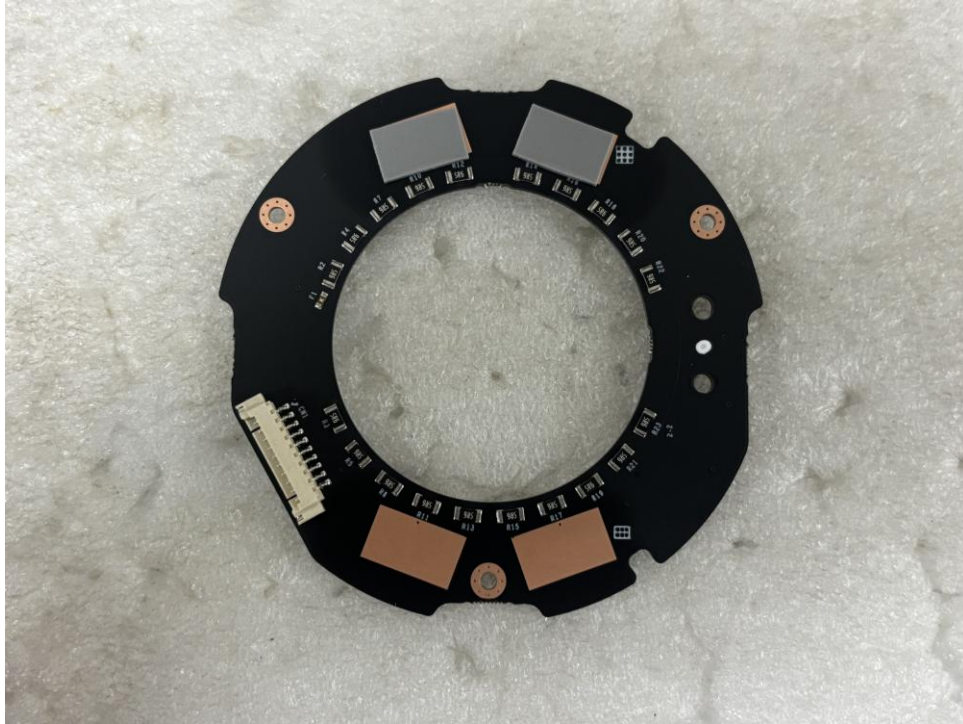
(Bottom)





EUT Internal View – Board 3

(Top)



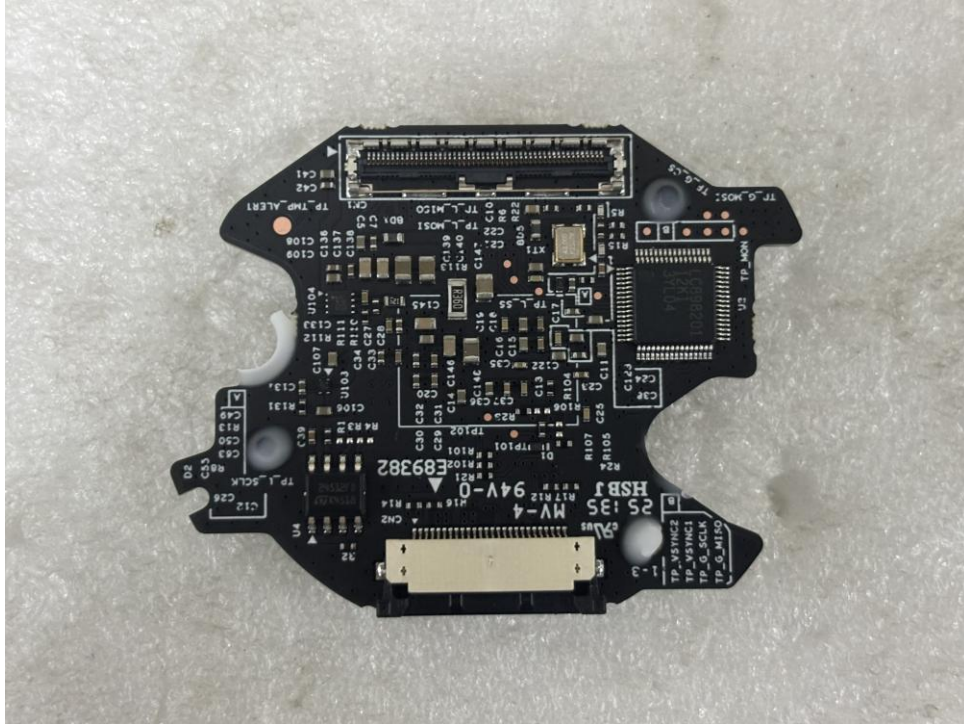
(Bottom)



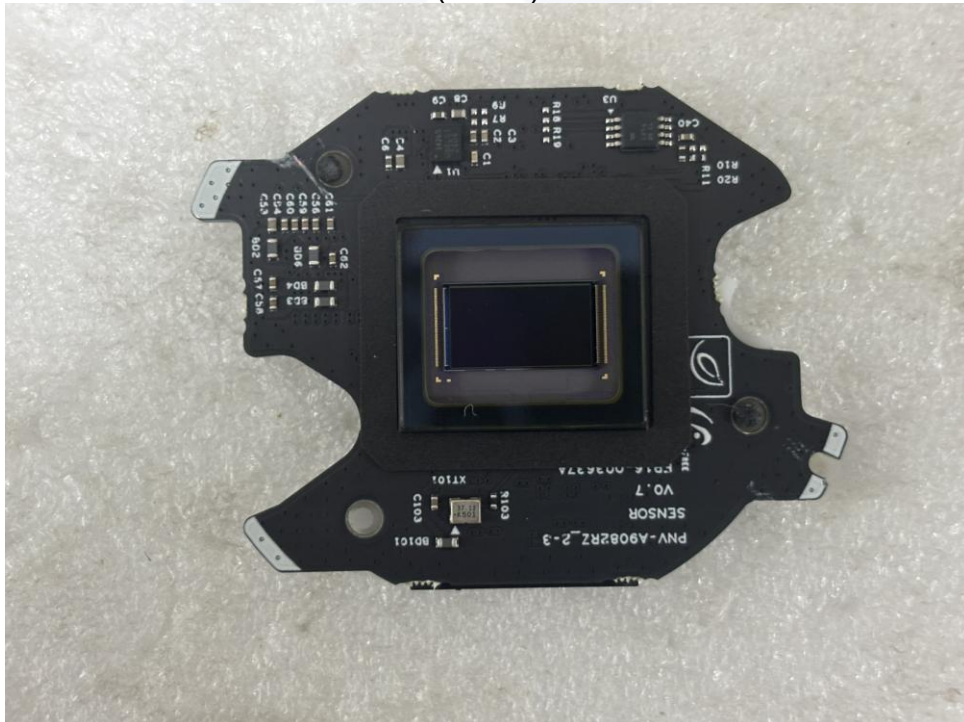


EUT Internal View – Board 4

(Top)



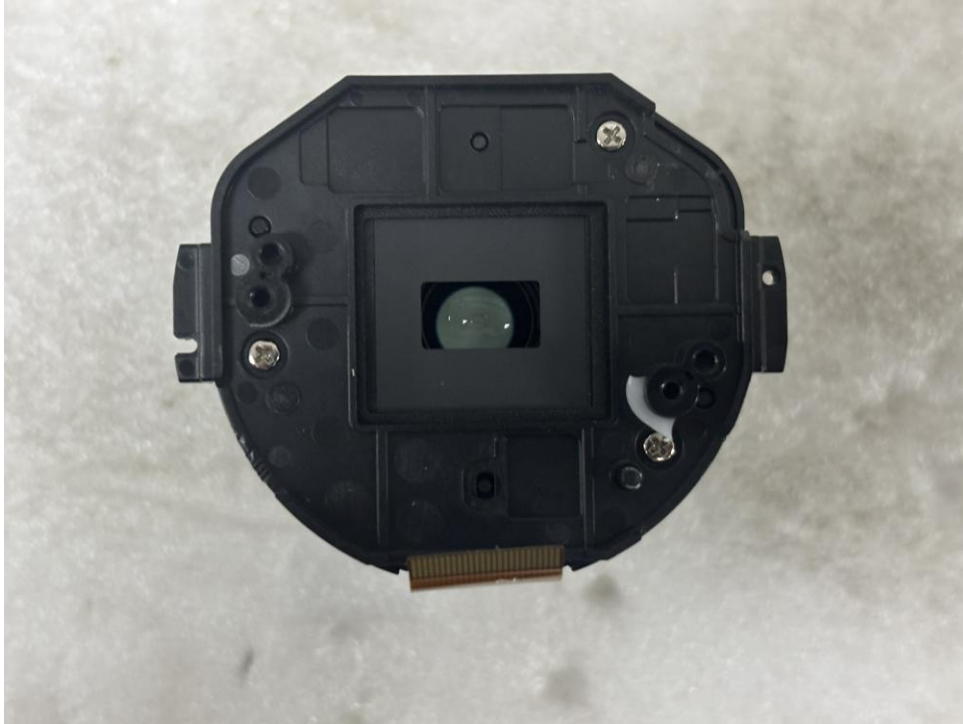
(Bottom)



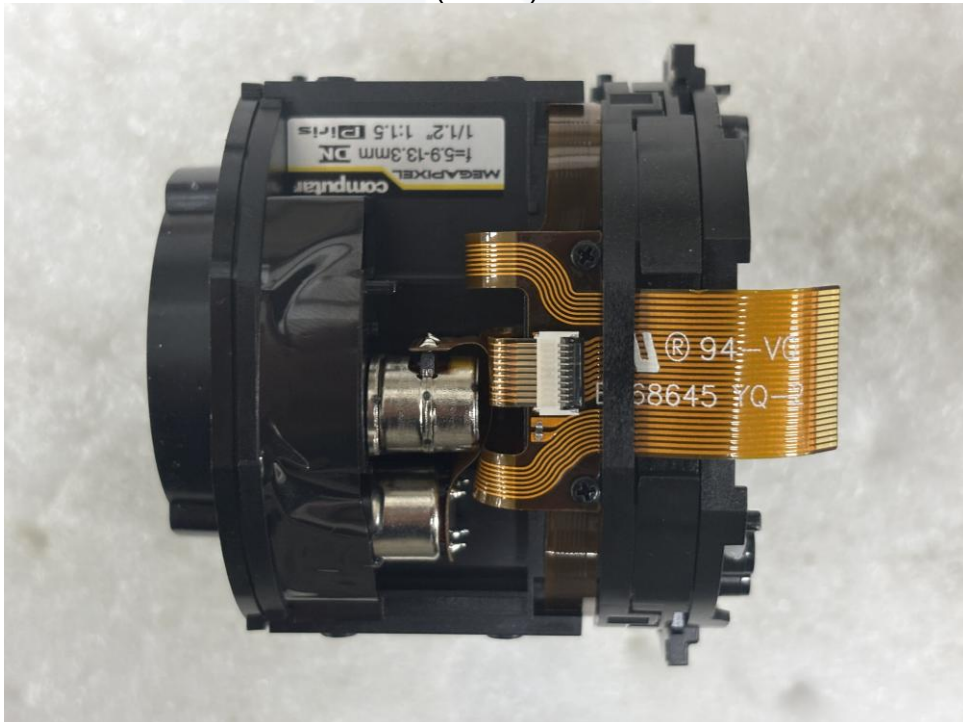


EUT Internal View – Lens

(Top)



(Bottom)





Label and Location



NETWORK CAMERA

Model No : PNO-A9082R

Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED

Made in Vietnam



The End.