



# TEST REPORT



Report No. : KES-EM251788

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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. : PNV-A9082RZ

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 : Jul. 17, 2025 ~ Jul. 22, 2025

5. Date of Issue : Jul. 29, 2025

6. Test Results : In Compliance

Tested by

Reviewed by

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Keo Il, Lee  
EMC Test Engineer

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Dae Jung, 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 |
|---------------|-----------------|------------------|
| Jul. 29, 2025 | KES-EM251788    | Issued           |
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## 1.0 General Product Description

### Main Specifications of EUT are:

| Division                             |             | Specificity                              |
|--------------------------------------|-------------|------------------------------------------|
| Internal highest operating frequency |             | 1.6 GHz                                  |
| Power                                | Rated Power | PoE                                      |
|                                      | Test Power  | AC 230 V, 50 Hz                          |
| Ports                                | I/O Port    | Micro SD Card Slot 2 EA, RJ-45(PoE) 1 EA |
| Components                           |             | Camera 1 EA                              |
| Ethernet Speed                       |             | 1 000 Mbps                               |

|                             | PNV-A9082RZ                                                                                                                                                       |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Video</b>                |                                                                                                                                                                   |
| 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)<br>MJPEG: Max. 30fps(@8MP Max. 5fps)                                                                                     |
| NETD                        | None                                                                                                                                                              |
| Pixel Size                  | None                                                                                                                                                              |
| Video Out                   | None                                                                                                                                                              |
| Video Transmission Distance | None                                                                                                                                                              |
| <b>Lens</b>                 |                                                                                                                                                                   |
| 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)<br>V: 59°(Wide)~27°(Tele)<br>D: 128°(Wide)~56°(Tele)                                                                                      |
| Focus Control               | Simple focus                                                                                                                                                      |
| Lens Type                   | P-iris(IR corrected)                                                                                                                                              |
| Mount Type                  | None                                                                                                                                                              |
| Optional Lens               | None                                                                                                                                                              |
| <b>Pan / Tilt / Rotate</b>  |                                                                                                                                                                   |
| Pan Range                   | None                                                                                                                                                              |
| Pan Speed                   | None                                                                                                                                                              |
| Tilt Range                  | None                                                                                                                                                              |
| Tilt Speed                  | None                                                                                                                                                              |
| Rotate Range                | None                                                                                                                                                              |
| Sequence                    | None                                                                                                                                                              |
| Preset Accuracy             | None                                                                                                                                                              |



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| Operational                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Camera Title                | Displayed up to 85 characters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Direction Indicator         | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Day & Night                 | Auto(ICR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Backlight Compensation      | BLC, HLC, <b>WDR</b> , SSSR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 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<br>- Color: gray/green/red/blue/black/white/purple/yellow<br>- Mosaic<br>Dynamic Privacy Mask (Based on AI engine)<br>- Color: gray/green/red/blue/black/white/purple/yellow<br>- 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)<br>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<br>Attributes: Person(Gender, Clothing top/bottom color, Bag), Face(Age, Gender, Mask, Glasses), Vehicle(Type: car/bus/truck/motorcycle/bicycle, Color)<br>Support BestShot<br>Support Re-ID(Person)<br><br>Analytics events based on AI engine<br>- 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)<br><br>Analytics events<br>- Defocus detection, Tampering, Shock detection, Audio detection |
| Business Intelligence       | Based on AI engine: People/Vehicle/Crowd counting, Queue management, Heatmap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Serial Interface            | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Alarm I/O                   | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Alarm Triggers              | Analytics, Network disconnection, Alarm input, Time schedule, MQTT subscription, Day/Night, Storage disruption, Case tampering<br>* Alarm input(with NW I/O Box SPM-4210)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Alarm Events                | When alarm trigger occurred<br>- File upload(image): e-mail/FTP/SFTP<br>- File upload(video clip): FTP/SFTP<br>- Notification: e-mail<br>- Recording: SD/SDHC/SDXC or NAS recording at event triggers<br>- Alarm output<br>- Handover: PTZ preset, send message by HTTP/HTTPS/TCP<br>- Audio clip playback(WAV, MP3)<br>- MQTT: publication                                                                                                                                                                                                                                                                                                                                                           |
| Audio Streaming             | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Audio In                    | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Audio Out                   | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |



|                                   |                                                                                                                                                                                                                                              |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Radiometry</b>                 |                                                                                                                                                                                                                                              |
| Temperature Detect Range          | None                                                                                                                                                                                                                                         |
| Temperature Accuracy              | None                                                                                                                                                                                                                                         |
| Temperature Detection             | None                                                                                                                                                                                                                                         |
| Additional                        | None                                                                                                                                                                                                                                         |
| <b>Network</b>                    |                                                                                                                                                                                                                                              |
| Ethernet                          | Metal shielded RJ-45(10/100/1000BASE-T)                                                                                                                                                                                                      |
| Video Compression                 | H.265/H.264: Main/Baseline/High<br>MJPEG                                                                                                                                                                                                     |
| Audio Compression                 | None                                                                                                                                                                                                                                         |
| Smart Codec                       | WiseStream(Based on AI engine)                                                                                                                                                                                                               |
| Video Quality Adjustment          | None                                                                                                                                                                                                                                         |
| Bitrate Control                   | H.264/H.265: CBR or VBR<br>MJPEG: VBR                                                                                                                                                                                                        |
| Streaming                         | Unicast(20 users) / Multicast<br>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<br>SUNAPI(HTTP API)<br>Hanwha Vision Open Platform                                                                                                                                                                     |
| <b>Security</b>                   |                                                                                                                                                                                                                                              |
| 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+)                                                                                                                                                                                 |
| <b>General</b>                    |                                                                                                                                                                                                                                              |
| 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                                                                                                                                                                                                                            |



| Environmental & Electrical       |                                                                                                                                                                                                                         |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Temperature / Humidity | -50°C~+55°C(-58°F~+131°F) / 0~100% RH<br>+74°C(+165°F)(MAX) based on NEMA-TS 2(2.2.7)<br>* Start up should be done at above -30°C<br>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)    | 0.017m²                                                                                                                                                                                                                 |
| Certification                    | IP66/IP67/IP6K9K, NEMA4X, IK11, NEMA-TS 2(2.2.7.2-8, 2.2.8, 2.2.9)                                                                                                                                                      |
| Input Voltage                    | PoE+(IEEE802.3at type2, Class4)                                                                                                                                                                                         |
| Power Consumption                | PoE: Max. 17.5W, typical 11.0W<br>Support Wisepower<br>- Power monitoring(Max./Current/Avg.)                                                                                                                            |
| Mechanical                       |                                                                                                                                                                                                                         |
| Color / Material                 | White / Aluminum<br>Bubble: Hard-coated dome                                                                                                                                                                            |
| RAL Code                         | RAL9003                                                                                                                                                                                                                 |
| Product Dimensions / Weight      | ø180x135mm(ø7.09x5.31"), 2,100g(4.63lb)                                                                                                                                                                                 |
| Compatible Conduit hole / Gang   | 19.1mm(3/4")(M25)<br>single, double, 4" octagon, 4" square                                                                                                                                                              |
| Certifications & Standards       |                                                                                                                                                                                                                         |
| Network                          | None                                                                                                                                                                                                                    |
| EMC                              | FCC 47 CFR 15 Subpart B Class A<br>ICES-3(A)/NMB-3(A)<br>CE/UKCA<br>- EN 55032 Class A, EN 50130-4, EN 61000-3-2, EN 61000-3-3<br>VCCI CISPR 32 Class A<br>RCM AS/NZS CISPR 32 Class A<br>KS C 9832 Class A , KS C 9835 |
| Safety                           | UL 62368-1, CAN/CSA C22.2 NO. 62368-1<br>IEC/EN 62471                                                                                                                                                                   |
| Environment                      | IEC/EN 63000<br>IEC/EN 60529 IP66/IP67/IP6K9K, IEC/EN 62262 IK11, NEMA 250 Type 4X, NEMA-TS 2(2.2.7.2-8, 2.2.8, 2.2.9)<br>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-180HMMW1                                                                               |
| Back Box                    | SBV-180BW, SBV-180WW                                                                       |
| Ceiling Mount (Assy)        | SBP-150CMI, SBP-300CMI, SBP-300CMW1, SBP-900CMW, SBP-300CMTW, SBP-300CMTS, SBP-156CMW      |
| Ceiling Mount (Single Unit) | SBP-180CMB, SBP-140CMB, SBP-180CMS, SBP-900CMP, SBP-300CMP, SBP-150CMP, SBP-C15P, SBP-C15H |
| Wall Mount                  | SBP-400WMW, SBP-250WMW, SBP-156WMW                                                         |
| Wall Mount Adaptor          | None                                                                                       |
| Pole Mount                  | SBD-180PMW                                                                                 |
| In-ceiling Mount            | SHD-1370FPW                                                                                |
| Corner Mount                | SBD-180KMA                                                                                 |
| 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 (included)                                                                            |
| Dome Cover                  | SPB-VAN87W                                                                                 |
| Conduit Adaptor             | None                                                                                       |
| Power Module                | None                                                                                       |
| Interface Box               | SPM-4210                                                                                   |
| Other Compatible Models     | SPB-VAN88W, 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.

☒ PoE

## 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 | PNV-A9082RZ  | -             | HANWHA VISION VIETNAM COMPANY LIMITED | EUT     |

## 1.5 Support Equipments

| Description     | Model Number    | Serial Number | Manufacturer                               | Remarks |
|-----------------|-----------------|---------------|--------------------------------------------|---------|
| Micro SD Card 1 | -               | -             | SanDisk                                    | 16 GB   |
| Micro SD Card 2 | -               | -             | SanDisk                                    | 32 GB   |
| Laptop          | P95G001         | 9JM8HT2       | DELL INC.                                  | -       |
| Laptop Adapter  | HA65NM130       | -             | Chicony Power Technology(Suzhou)Co.,Ltd.   | -       |
| PoE Injector    | PT-PSE109GBRO-D | -             | Creative Lianjie Network Technology Co.Ltd | -       |

## 1.6 External I/O Cabling

| Start                |                    | END             |                    | Cable Spec. |        |
|----------------------|--------------------|-----------------|--------------------|-------------|--------|
| Description          | I/O Port           | Description     | I/O Port           | Length      | Shield |
| Network Camera (EUT) | Micro SD Card Slot | Micro SD Card 1 | Micro SD Card Slot | -           | -      |
|                      | Micro SD Card Slot | Micro SD Card 2 | Micro SD Card Slot | -           | -      |
|                      | RJ-45 (PoE)        | PoE Injector    | RJ-45 (PoE)        | 3.5         | U      |
| PoE Injector         | RJ-45 (LAN)        | Laptop          | RJ-45 (LAN)        | 4.0         | U      |
| Laptop               | DC Jack            | Laptop Adapter  | DC Jack            | 1.6         | U      |

\* Unshielded=U, Shielded=S

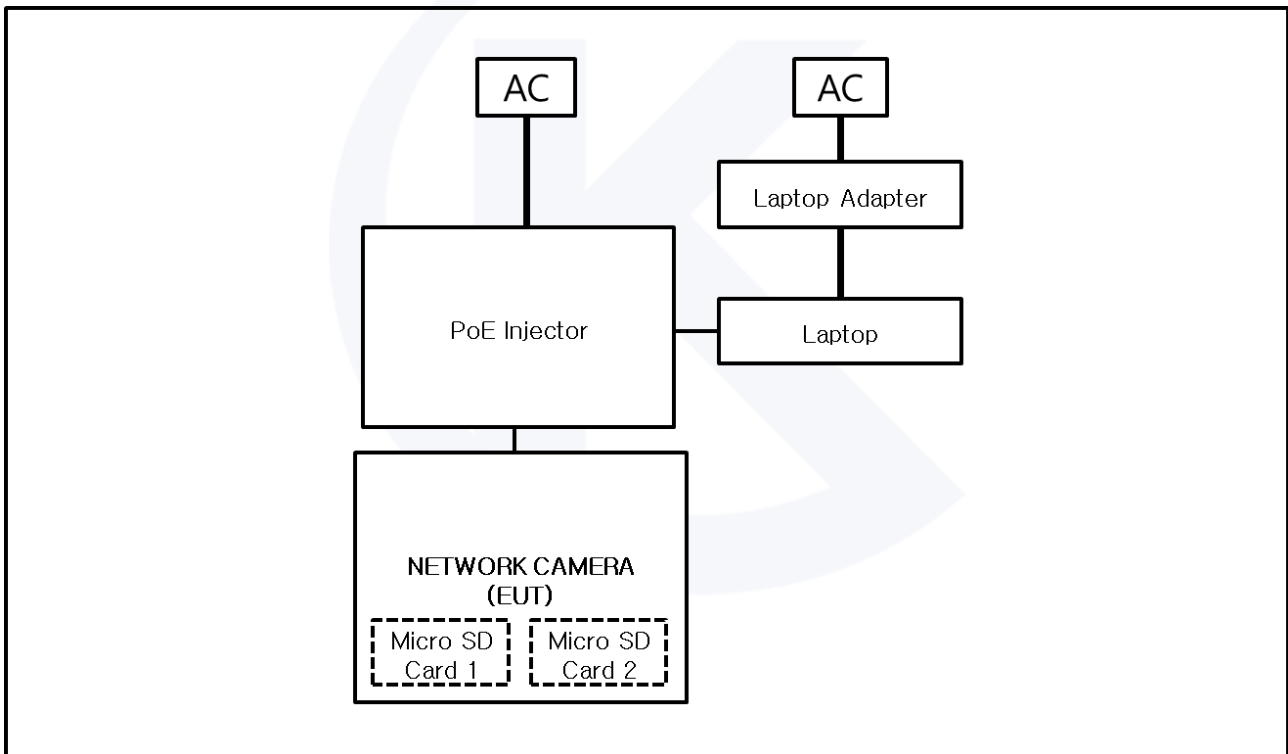


## 1.7 EUT Operating Mode(s)

| Test mode | Normal operating                                                                                                                                                                                                                                                                                              |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating | Checked the network status of the EUT with the laptop Ping Test, and Checked the camera operation with watching streaming of through the Web Viewer. During the test, checked IR sensor operating and whether EUT recognized Micro SD Cards inserted. After testing, check the data saving in Micro SD Cards. |

| EUT Test operating S/W |         |                                       |
|------------------------|---------|---------------------------------------|
| Name                   | Version | Manufacture Company                   |
| Web Viewer             | -       | HANWHA VISION VIETNAM COMPANY LIMITED |

## 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, Yeoju-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)<br>EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) | <br>KR0100                                  |
| International | KOLAS   | EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)<br>EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) | <br>KT489                                  |
| USA           | FCC     | 3 m & 10 m Semi-Anechoic Chamber Conducted test site to perform FCC Part 15/18 measurements.                                            | <br>KR0100                                |
| Canada        | ISED    | 3 m & 10 m Semi-Anechoic Chamber and Conducted test site                                                                                | <br>23298                                 |
| JAPAN         | VCCI    | EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)                                                                          | <br>C-20136, T-20137,<br>R-20181, G-20176 |
| Europe        | TÜV SÜD | EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)<br>EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) | <br>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**

N/A

**Test Location**

Electro wave Shieldroom #6

**Test Equipment**

| Used                     | Description              | Model Number | Manufacturer | Serial Number | Cal. Due     |
|--------------------------|--------------------------|--------------|--------------|---------------|--------------|
| <input type="checkbox"/> | EMI Test SW              | EMC32        | R & S        | 9.12.00       | -            |
| <input type="checkbox"/> | EMI TEST RECEIVER        | ESR3         | R & S        | 101783        | 11, 06, 2025 |
| <input type="checkbox"/> | LISN                     | ENV216       | R & S        | 101786        | 01, 09, 2026 |
| <input type="checkbox"/> | ARTIFICIAL MAINS NETWORK | ESH2-Z5      | R & S        | 100450        | 11, 06, 2025 |
| <input type="checkbox"/> | PULSE LIMITER            | ESH3-Z2      | R & S        | 101915        | 11, 06, 2025 |

**Test Conditions**

Temperature:

°C

Relative Humidity:

% R.H.

**Frequency Range of Measurement**

150 kHz to 30 MHz

**Instrument Settings**

IF Band Width: 9 kHz

**Test Results**

The requirements are:

- ☐ PASS  
☐ NOT PASS  
☒ NOT APPLICABLE

**Remarks**

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**

Jul. 17, 2025

**Test Location**

Electro wave Shieldroom #6

**Test Equipment**

| Used                                | Description              | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|--------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W             | EMC32        | R & S        | 9.12.00       | -            |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER        | ESR3         | R & S        | 101783        | 11, 06, 2025 |
| <input checked="" type="checkbox"/> | LISN                     | ENV216       | R & S        | 101786        | 01, 09, 2026 |
| <input checked="" type="checkbox"/> | ARTIFICIAL MAINS NETWORK | ESH2-Z5      | R & S        | 100450        | 11, 06, 2025 |
| <input checked="" type="checkbox"/> | PULSE LIMITER            | ESH3-Z2      | R & S        | 101915        | 11, 06, 2025 |
| <input checked="" type="checkbox"/> | 8-WIRE ISN CAT6          | ENY81-CAT6   | R & S        | 101666        | 02, 27, 2026 |

**Test Conditions**

Temperature: (23,8 ± 0,1) °C  
Relative Humidity: (46,2 ± 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.



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

**Test Date**

Jul. 22, 2025

**Test Location**☒ SEMI ANECHOIC CHAMBER #4(10m)**Test Equipment**

| Used                                | Description       | Model Number | Manufacturer     | Serial Number | Cal. Due     |
|-------------------------------------|-------------------|--------------|------------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W      | EP5/RE       | TOYO Corporation | 6.0.0         | -            |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER | ESU26        | Rohde & Schwarz  | 100552        | 02, 13, 2026 |
| <input checked="" type="checkbox"/> | AMPLIFIER         | SCU 01       | R & S            | 100603        | 11, 06, 2025 |
| <input checked="" type="checkbox"/> | BILOG ANTENNA     | VULB 9168    | SCHWARZBECK      | 9168-461      | 05, 09, 2026 |
| <input checked="" type="checkbox"/> | ATTENUATOR        | 6806.17.A    | HUBER+SUHNER     | -             | 02, 13, 2026 |

**Test Conditions**

Temperature: (25,3 ± 0,1) °C

Relative Humidity: (51,3 ± 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

**Remarks**See Appendix A for test data.



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

**Test Date**

Jul. 17, 2025

**Test Location**

SEMI ANECHOIC CHAMBER #5

**Test Equipment**

| Used                                | Description       | Model Number | Manufacturer     | Serial Number | Cal. Due     |
|-------------------------------------|-------------------|--------------|------------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test SW       | ES10/RE      | TOYO Corporation | 2022.01.000   | -            |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER | ESU26        | Rohde & Schwarz  | 100552        | 02, 13, 2026 |
| <input checked="" type="checkbox"/> | HORN ANTENNA      | BBHA 9120D   | SCHWARZBECK      | 9120D-1802    | 11, 04, 2025 |
| <input checked="" type="checkbox"/> | PREAMPLIFIER      | 8449B        | HP               | 3008A00538    | 04, 30, 2026 |
| <input checked="" type="checkbox"/> | ATTENUATOR        | 8491B        | HP               | 23094         | 02, 13, 2026 |

**Test Conditions**

Temperature: (23,7 ± 0,1) °C

Relative Humidity: (46,7 ± 0,1) % R.H.

**Frequency Range of Measurement**

1 GHz to 6 GHz

**Instrument Settings**

IF Band Width: 1 MHz

**Test Results**

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

**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**

N/A

**Test Location**

Electro wave Shieldroom #7

**Test Equipment**

| Used                     | Description            | Model Number | Manufacturer | Serial Number | Cal. Due     |
|--------------------------|------------------------|--------------|--------------|---------------|--------------|
| <input type="checkbox"/> | EMI Test S/W           | net.control  | EM TEST      | 2.1.4         | -            |
| <input type="checkbox"/> | DIGITAL POWER ANALYZER | DPA 500N     | EM TEST      | V1024106759   | 03, 31, 2026 |
| <input type="checkbox"/> | POWER SOURCE           | ACS 500N6    | EM TEST      | V1024106760   | -            |

**Test Conditions**

Temperature:

°C

Relative Humidity:

% R.H.

**Classification of Equipment for Harmonic Current Emissions**

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

**Test Results**

The requirements are:

- ☐ PASS
- ☐ NOT PASS
- ☒ NOT APPLICABLE

**Remarks**

The LAN port is regarded as a wired communication network port and power-related ports are not tested.



## 2.6 Voltage Fluctuations and Flicker

**Test Date**

N/A

**Test Location**

Electro wave Shieldroom #7

**Test Equipment**

| Used                     | Description            | Model Number | Manufacturer | Serial Number | Cal. Due     |
|--------------------------|------------------------|--------------|--------------|---------------|--------------|
| <input type="checkbox"/> | EMI Test SW            | net.control  | EM TEST      | 2.1.4         | -            |
| <input type="checkbox"/> | DIGITAL POWER ANALYZER | DPA 500N     | EM TEST      | V1024106759   | 03, 31, 2026 |
| <input type="checkbox"/> | POWER SOURCE           | ACS 500N6    | EM TEST      | V1024106760   | -            |

**Test Conditions**

Temperature:

°C

Relative Humidity:

% R.H.

**Test Results**

The requirements are:

- ☐ PASS  
☐ NOT PASS  
☒ NOT APPLICABLE

**Remarks**

The LAN port is regarded as a wired communication network port and power-related ports are not tested.



### 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  $3 \text{ V/m}$ .

For components of CCTV systems, where the picture is allowed at  $10 \text{ V/m}$ , 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  $3 \text{ V/m}$ , 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  $1 \text{ V/m}$ .



### **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**

Jul. 17, 2025

**Test Location**

EMS-ESD: Electro wave Shieldroom #6

**Test Equipment**

| Used                                | Description   | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|---------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | ESD SIMULATOR | ESS-2000     | Noise Ken    | ESS01Z0454    | 01, 21, 2026 |
| <input checked="" type="checkbox"/> | HCP           | -            | KES          | -             | -            |
| <input checked="" type="checkbox"/> | VCP           | -            | Noise Ken    | -             | -            |

**Test Conditions**

Temperature: (23,8 ± 0,1) °C  
Relative Humidity: (48,2 ± 0,1) % R.H.  
Atmospheric Pressure: (98,5 ± 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                                      |
|                    | <input type="checkbox"/> 2 kV            | <input checked="" type="checkbox"/> 2 kV | <input type="checkbox"/> 2 kV            | <input type="checkbox"/> 2 kV            |
|                    | <input type="checkbox"/> 4 kV            | <input checked="" type="checkbox"/> 4 kV | <input type="checkbox"/> 4 kV            | <input type="checkbox"/> 4 kV            |
|                    | <input checked="" type="checkbox"/> 6 kV | <input type="checkbox"/> 6 kV            | <input checked="" type="checkbox"/> 6 kV | <input checked="" type="checkbox"/> 6 kV |
|                    | <input type="checkbox"/> 8 kV            | <input checked="" type="checkbox"/> 8 kV | <input type="checkbox"/> 8 kV            | <input type="checkbox"/> 8 kV            |
|                    | <input type="checkbox"/> 15 kV           | <input type="checkbox"/> 15 kV           | <input type="checkbox"/> 15 kV           | <input type="checkbox"/> 15 kV           |

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

Required Performance Criteria: ☒ Complied



Location of Discharge:



**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   | Camera cover | Air Discharge     | Complied     | -       |
| 2   | Enclosure    | Contact Discharge | Complied     | -       |
| 3   | Screw        | Contact Discharge | Complied     | -       |

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

**Test Results**

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

**Remarks**

PASS Required Performance Criteria



### 3.2 Radiated Electric Field Immunity

**Reference Standard**

EN IEC 61000-4-3

**Test Date**

Jul. 19, 2025

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

| Used                                | Description                     | Model Number | Manufacturer    | Serial Number | Cal. Due     |
|-------------------------------------|---------------------------------|--------------|-----------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W                    | EMC32        | R & S           | 10.10.02      | -            |
| <input checked="" type="checkbox"/> | SIGNAL GENERATOR                | SMB 100A     | Rohde & Schwarz | 108252        | 07, 29, 2025 |
| <input checked="" type="checkbox"/> | HIGH POWER DUAL AMP             | SSA532       | SUNGSAN         | SSA532-001    | -            |
| <input checked="" type="checkbox"/> | POWER METER                     | E4419B       | Agilent         | GB40203000    | 02, 13, 2026 |
| <input checked="" type="checkbox"/> | AVERAGE POWER SENSOR            | E9301A       | Agilent         | MY52170007    | 02, 13, 2026 |
| <input checked="" type="checkbox"/> | AVERAGE POWER SENSOR            | E9301A       | Agilent         | MY41498669    | 02, 13, 2026 |
| <input checked="" type="checkbox"/> | STACKED DOUBLE LOG-PER- ANTENNA | STPL9128 E   | Schwarzbeck     | 9128ES-121    | -            |
| <input checked="" type="checkbox"/> | DOUBLE RIDGED HORN ANTENNA      | SAS-571      | A.H.SYSTEM,INC  | 781           | 03, 05, 2026 |

**Test Conditions**

Temperature: (24,5 ± 0,3) °C

Relative Humidity: (46,5 ± 0,3) % R.H.

Atmospheric Pressure: (99,8 ± 0,0) kPa





### Test Specifications

Antenna Polarization: Horizontal & vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

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

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

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

Frequency step: ☒ 1 % step

Dwell Time: ☐ 1 s ☒ 3 s

# of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ Complied

**Test Data**

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

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

**Test Results**

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

**Remarks**

PASS Required Performance Criteria



### 3.3 Electrical Fast Transients/Bursts

**Reference Standard**

EN 61000-4-4

**Test Date**

Jul. 19, 2025

**Test Location**

EMS-EFT: Electro wave Shieldroom #7

**Test Equipment**

| Used                                | Description                  | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|------------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W                 | iec.control  | EM TEST      | 5.4.8         | -            |
| <input checked="" type="checkbox"/> | ULTRA COMPACT<br>SIMULATOR   | UCS 500N7    | EM TEST      | P1608172950   | 11, 06, 2025 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC                 | MV2616       | EM TEST      | P1552169719   | 11, 07, 2025 |
| <input checked="" type="checkbox"/> | CAPACITIVE<br>COUPLING CLAMP | HFK          | EM TEST      | P1633183115   | 11, 06, 2025 |

**Test Conditions**

Temperature: (24,0 ± 0,1) °C  
Relative Humidity: (46.4 ± 0,1) % R.H.  
Atmospheric Pressure: (100,2 ± 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) |
| -                   | -              | -              |

☐ 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       |

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**

Jul. 19, 2025

**Test Location**

EMS-Surge: Electro wave Shieldroom #7

**Test Equipment**

| Used                                | Description                | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|----------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W               | iec.control  | EM TEST      | 5.4.8         | -            |
| <input checked="" type="checkbox"/> | ULTRA COMPACT<br>SIMULATOR | UCS 500N7    | EM TEST      | P1608172950   | 11, 07, 2025 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC               | MV2616       | EM TEST      | P1552169719   | 11, 07, 2025 |
| <input checked="" type="checkbox"/> | CDN                        | CNV 508N1    | EM TEST      | P1610176296   | 11, 08, 2025 |

**Test Conditions**

Temperature: (24,0 ± 0,3) °C  
Relative Humidity: (46,4 ± 0,3) % R.H.  
Atmospheric Pressure: (100,2 ± 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**☐ 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**

Jul. 18, 2025

**Test Location**

EMS-CS: Electro wave Shieldroom #7

**Test Equipment**

| Used                                | Description                            | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|----------------------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W                           | icd.control  | EM TEST      | 8.0.0         | -            |
| <input checked="" type="checkbox"/> | TEST SYSTEM FOR CONDUCTED AND RADIATED | NSG4070      | TESEQ        | 65585         | 11, 18, 2025 |
| <input checked="" type="checkbox"/> | ATTENUATOR                             | ATT 6/80     | EM TEST      | P1614178148   | 11, 06, 2025 |
| <input type="checkbox"/>            | CDN                                    | CDN M016     | TESEQ        | 43694         | 11, 07, 2025 |
| <input type="checkbox"/>            | CDN                                    | CDN M016     | TESEQ        | 43697         | 11, 07, 2025 |
| <input checked="" type="checkbox"/> | CDN                                    | CDN T8RJ45   | EM TEST      | 0909-09       | 07, 29, 2025 |
| <input type="checkbox"/>            | EM CLAMP                               | KEMZ 801A    | TESEQ        | 44099         | 11, 08, 2025 |

**Test Conditions**

Temperature: (23,5 ± 0,1) °C  
Relative Humidity: (46,7 ± 0,1) % R.H.  
Atmospheric Pressure: (100,3 ± 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<br>(Line Stressed) | Coupling Method | Observations |
|--------------------------------------|-----------------|--------------|
| -                                    | -               | -            |

☐ Input d.c. power ports

| Coupling Location<br>(Line Stressed) | Coupling Method | Observations |
|--------------------------------------|-----------------|--------------|
| -                                    | -               | -            |

☒ Signal ports and telecommunication ports

| Coupling Location<br>(Line Stressed) | Coupling Method | Observations |
|--------------------------------------|-----------------|--------------|
| RJ-45 (PoE)                          | 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

**Test Date**

N/A

**Test Location**

EMS-Voltage dip: Electro wave Shieldroom #7

**Test Equipment**

| Used                     | Description                | Model Number | Manufacturer | Serial Number | Cal. Due     |
|--------------------------|----------------------------|--------------|--------------|---------------|--------------|
| <input type="checkbox"/> | EMS Test S/W               | iec.control  | EM TEST      | 5.4.8         | -            |
| <input type="checkbox"/> | ULTRA COMPACT<br>SIMULATOR | UCS 500N7    | EM TEST      | P1608172950   | 11, 07, 2025 |
| <input type="checkbox"/> | MOTOR VARIAC               | MV2616       | EM TEST      | P1552169719   | 11, 07, 2025 |

**Test Conditions**

Temperature:

°C

Relative Humidity:

% R.H.

Atmospheric Pressure:

kPa

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

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

**- Voltage variations**

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

**Observations:**

Complied – No degradation of function

Degradation - See "Remarks "

**Test Results**

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

**Remarks**N/A : RJ-45 port is regarded as a wired communication network port.



## APPENDIX A – TEST DATA

### Conducted Emissions at Mains Power Ports

[HOT]

N/A



[NEUTRAL]

N/A

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

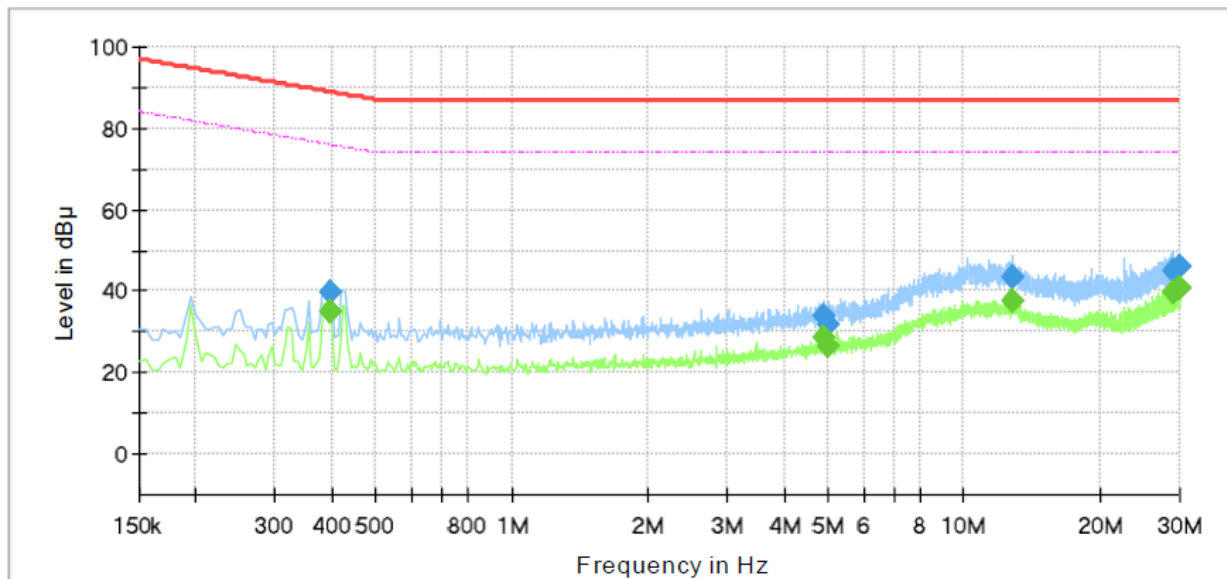
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

**Conducted Emissions at Telecommunication Ports**

- LAN

**[1 000 Mbps]**

Test Description: Telecommunication Emission  
Job No.: KES-EM251788  
Mode :  
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) |
|-----------------|-------------------|------------------|---------------|-------------|-----------------|-----------------|-------------|------------|
| 0.395000        | 39.70             | ---              | 88.96         | 49.26       | 1000.0          | 9.000           | Single Line | 19.4       |
| 0.395000        | ---               | 34.92            | 75.96         | 41.04       | 1000.0          | 9.000           | Single Line | 19.4       |
| 4.875000        | 33.81             | ---              | 87.00         | 53.19       | 1000.0          | 9.000           | Single Line | 19.5       |
| 4.875000        | ---               | 28.74            | 74.00         | 45.26       | 1000.0          | 9.000           | Single Line | 19.5       |
| 5.025000        | 31.86             | ---              | 87.00         | 55.14       | 1000.0          | 9.000           | Single Line | 19.5       |
| 5.025000        | ---               | 26.40            | 74.00         | 47.60       | 1000.0          | 9.000           | Single Line | 19.5       |
| 12.805000       | ---               | 37.39            | 74.00         | 36.61       | 1000.0          | 9.000           | Single Line | 19.7       |
| 12.805000       | 43.29             | ---              | 87.00         | 43.71       | 1000.0          | 9.000           | Single Line | 19.7       |
| 28.930000       | ---               | 39.88            | 74.00         | 34.12       | 1000.0          | 9.000           | Single Line | 20.0       |
| 28.930000       | 45.00             | ---              | 87.00         | 42.00       | 1000.0          | 9.000           | Single Line | 20.0       |
| 29.910000       | ---               | 40.71            | 74.00         | 33.29       | 1000.0          | 9.000           | Single Line | 20.1       |
| 29.910000       | 45.86             | ---              | 87.00         | 41.14       | 1000.0          | 9.000           | Single Line | 20.1       |

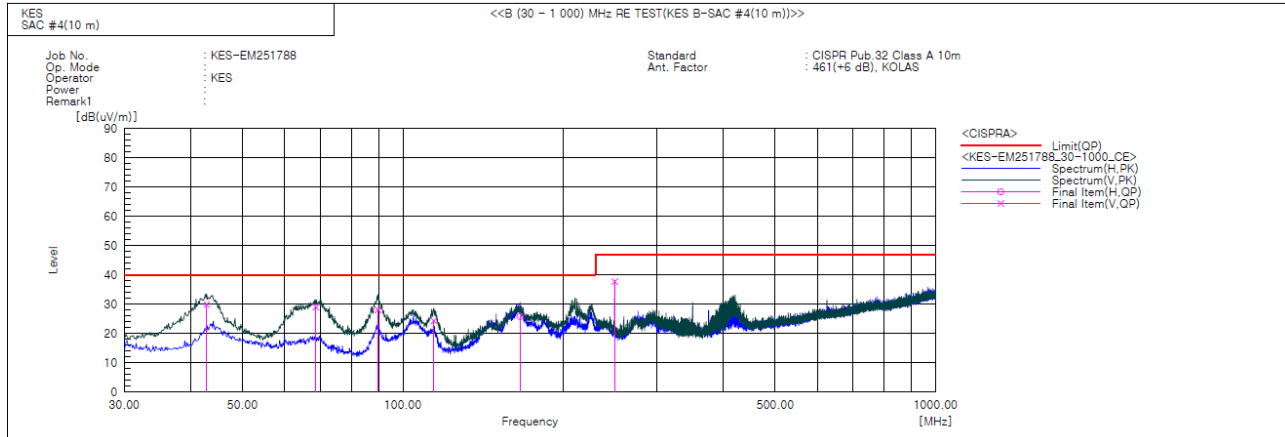
## ◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

**Radiated Electric Field Emissions(Below 1 GHz)****Final Result**

| No. | Frequency<br>[MHz] | (P) | Reading<br>QP<br>[dB(uV)] | c.f<br>[dB(1/m)] | Result<br>QP<br>[dB(uV/m)] | Limit<br>QP<br>[dB(uV/m)] | Margin<br>QP<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark |
|-----|--------------------|-----|---------------------------|------------------|----------------------------|---------------------------|----------------------|----------------|----------------|--------|
| 1   | 42.853             | V   | 51.4                      | -21.5            | 29.9                       | 40.0                      | 10.1                 | 102.0          | 105.0          |        |
| 2   | 68.679             | V   | 51.4                      | -22.4            | 29.0                       | 40.0                      | 11.0                 | 101.0          | 338.0          |        |
| 3   | 89.776             | V   | 54.2                      | -26.1            | 28.1                       | 40.0                      | 11.9                 | 101.0          | 45.0           |        |
| 4   | 114.269            | V   | 47.3                      | -23.0            | 24.3                       | 40.0                      | 15.7                 | 105.0          | 150.0          |        |
| 5   | 165.921            | H   | 45.5                      | -19.7            | 25.8                       | 40.0                      | 14.2                 | 360.0          | 165.0          |        |
| 6   | 249.948            | V   | 57.1                      | -19.4            | 37.7                       | 47.0                      | 9.3                  | 105.0          | 214.0          |        |

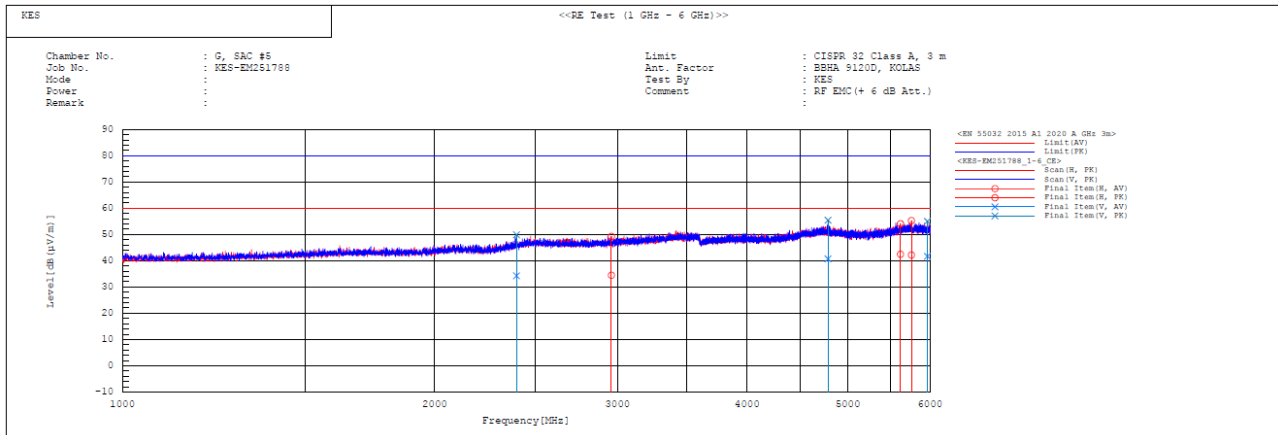
**◆ Calculation**

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] | Pol | Reading AV [dB( $\mu\text{V}$ )] | Reading PK [dB( $\mu\text{V}$ )] | c.f [dB(1/m)] | Result PK [dB( $\mu\text{V/m}$ )] | Limit AV [dB( $\mu\text{V/m}$ )] | Limit PK [dB( $\mu\text{V/m}$ )] | Margin AV [dB] | Margin PK [dB] | Height [cm] | Angle [deg] | Remark |
|-----|-----------------|-----|----------------------------------|----------------------------------|---------------|-----------------------------------|----------------------------------|----------------------------------|----------------|----------------|-------------|-------------|--------|
| 1   | 2398.151        | V   | 29.6                             | 45.2                             | 4.7           | 49.9                              | 60.0                             | 80.0                             | 25.7           | 30.1           | 100.0       | 91.0        |        |
| 2   | 2960.192        | H   | 28.2                             | 43.0                             | 6.3           | 49.3                              | 60.0                             | 80.0                             | 25.5           | 30.7           | 100.0       | 58.1        |        |
| 3   | 4786.081        | V   | 29.0                             | 43.7                             | 11.7          | 55.4                              | 60.0                             | 80.0                             | 19.3           | 24.6           | 100.0       | 12.9        |        |
| 4   | 5620.650        | H   | 28.9                             | 40.5                             | 13.6          | 54.1                              | 60.0                             | 80.0                             | 17.5           | 25.9           | 100.0       | 0.7         |        |
| 5   | 5758.433        | H   | 28.2                             | 41.3                             | 14.0          | 55.3                              | 60.0                             | 80.0                             | 17.8           | 24.7           | 100.0       | 132.8       |        |
| 6   | 5966.210        | V   | 27.4                             | 40.7                             | 14.3          | 55.0                              | 60.0                             | 80.0                             | 18.3           | 25.0           | 100.0       | 0.6         |        |

**◆ Calculation**

Result(PK/CAV) [dB( $\mu\text{V/m}$ )] = (Reading(PK/CAV)[dB( $\mu\text{V}$ )] + c.f[dB(1/m)])

Margin(PK/CAV)[dB] = Limit[dB( $\mu\text{V/m}$ )] - Result(PK/CAV) [dB( $\mu\text{V/m}$ )]

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*****Average harmonic current results***

| Hn  | I <sub>eff</sub> [A] | % of Limit | Limit [A] | Result |
|-----|----------------------|------------|-----------|--------|
| 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 <sub>eff</sub> [A] | % of Limit | Limit [A] | Result |
|-----|----------------------|------------|-----------|--------|
| 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

## Maximum Flicker results

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





## Test Setup Photos and Configuration

### Conducted Emissions at Mains Power Ports

N/A



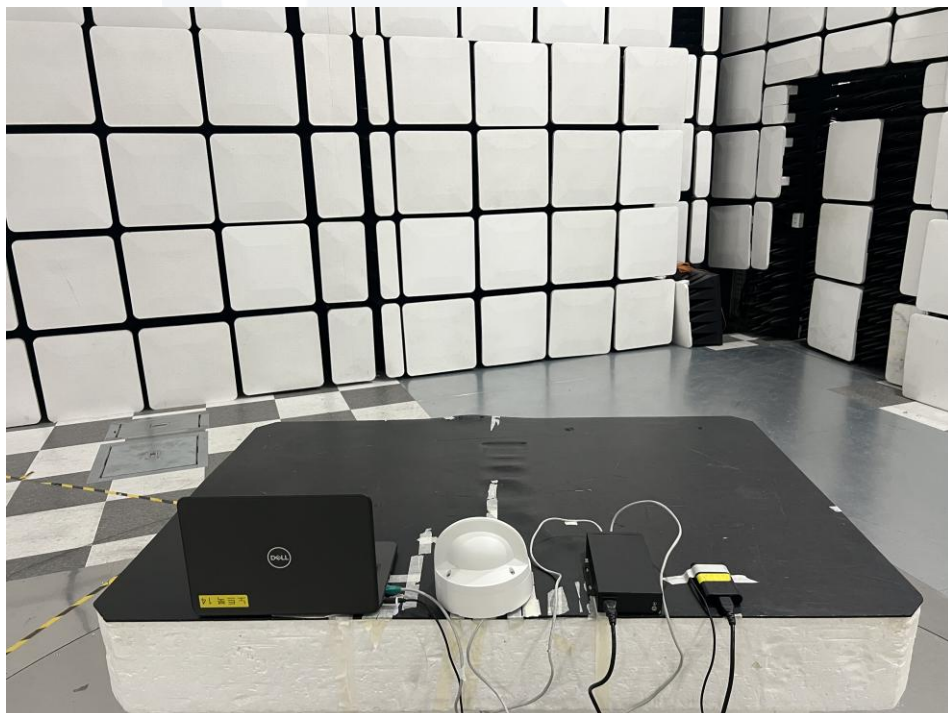
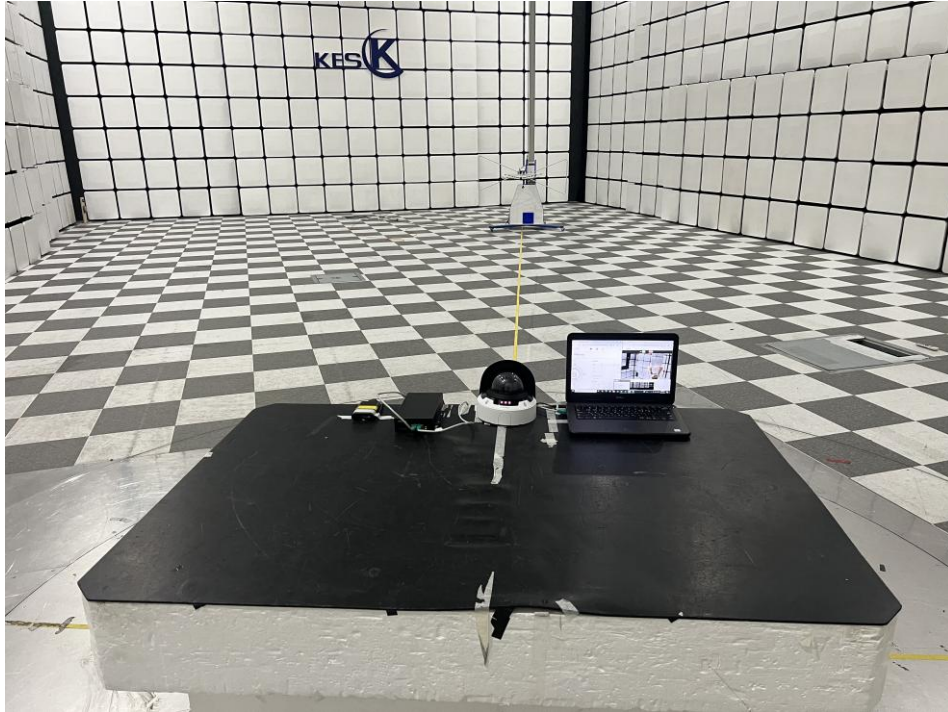


## Conducted Emissions at Telecommunication Ports





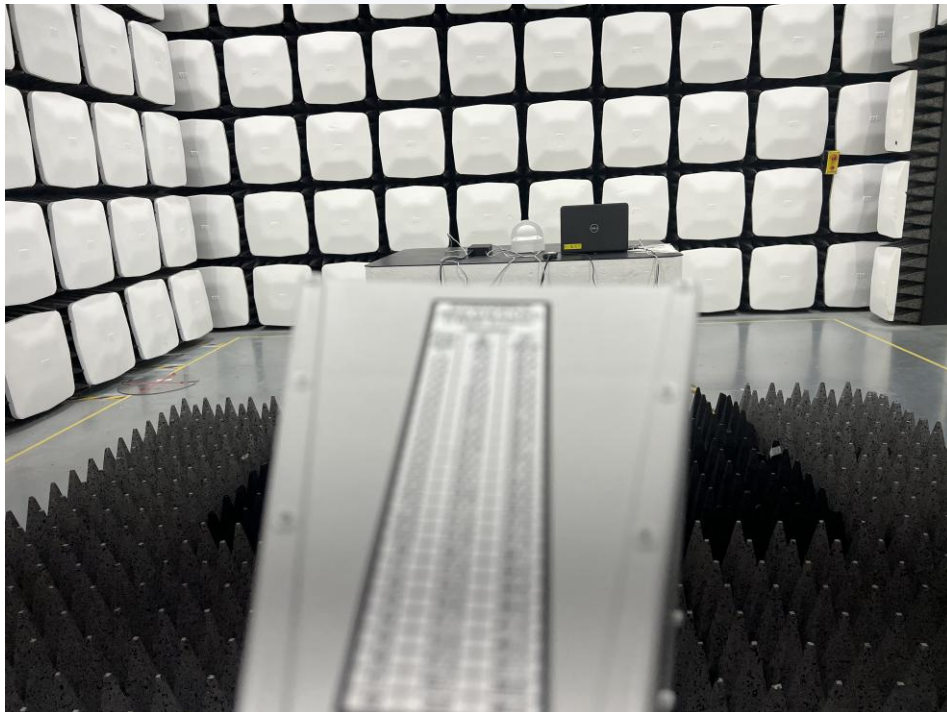
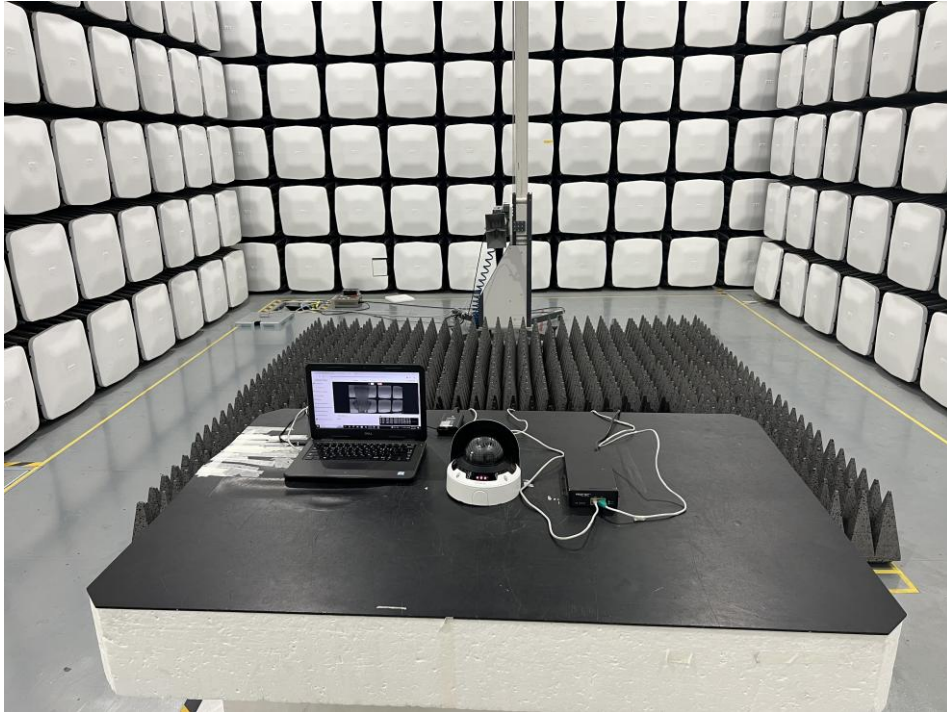
## Radiated Electric Field Emissions(Below 1 GHz)







## Radiated Electric Field Emissions(Above 1 GHz)





## Harmonic Current Emissions and Voltage Fluctuations and Flicker

N/A



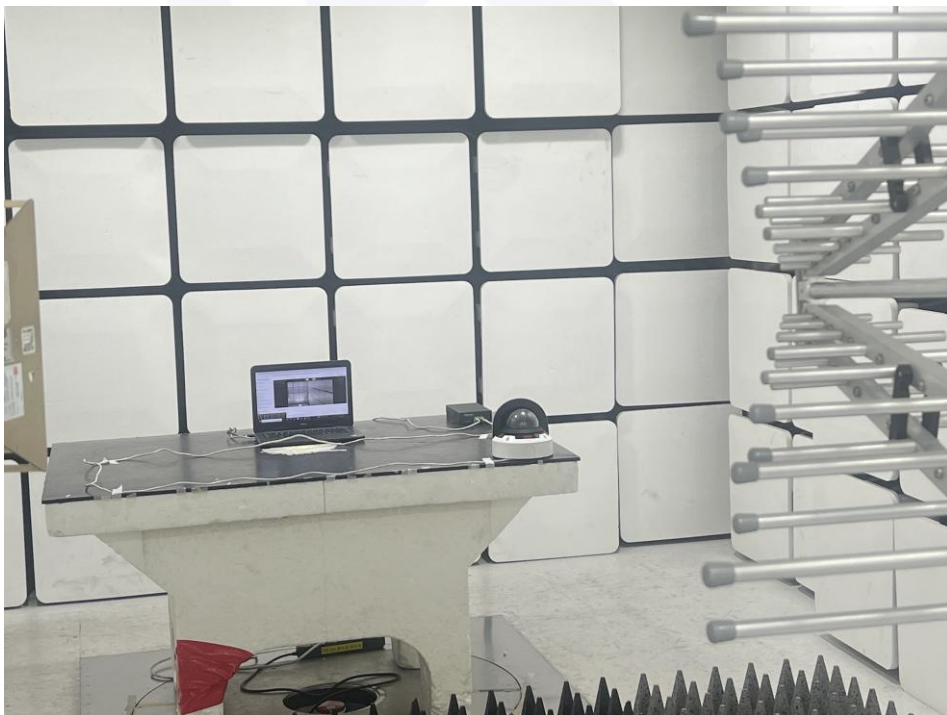




## Electrostatic Discharge

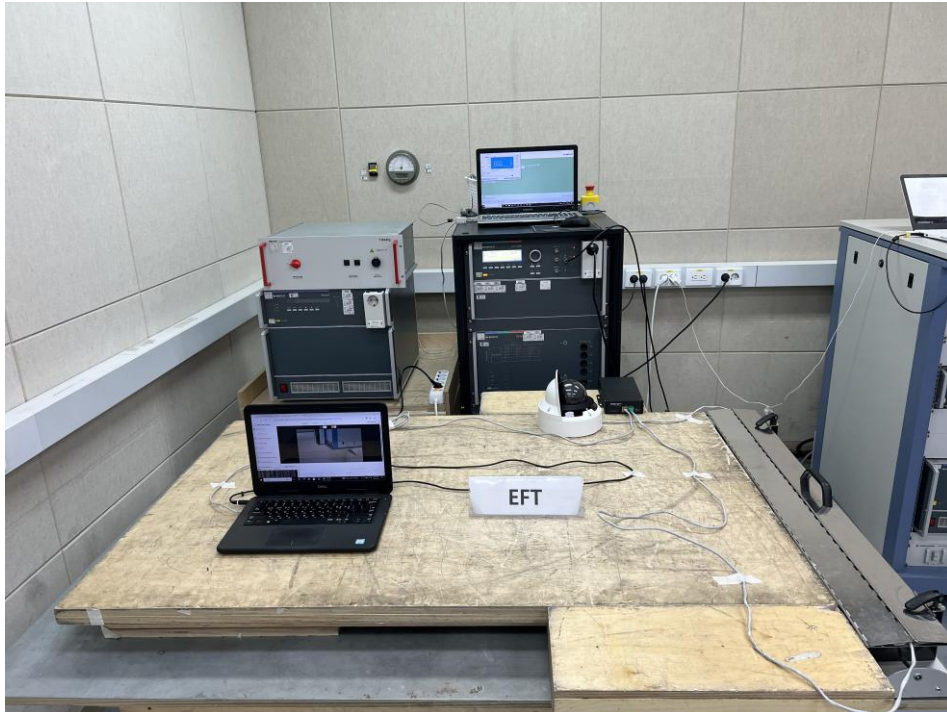


## Radiated Electric Field Immunity





## Electrical Fast Transients/Bursts

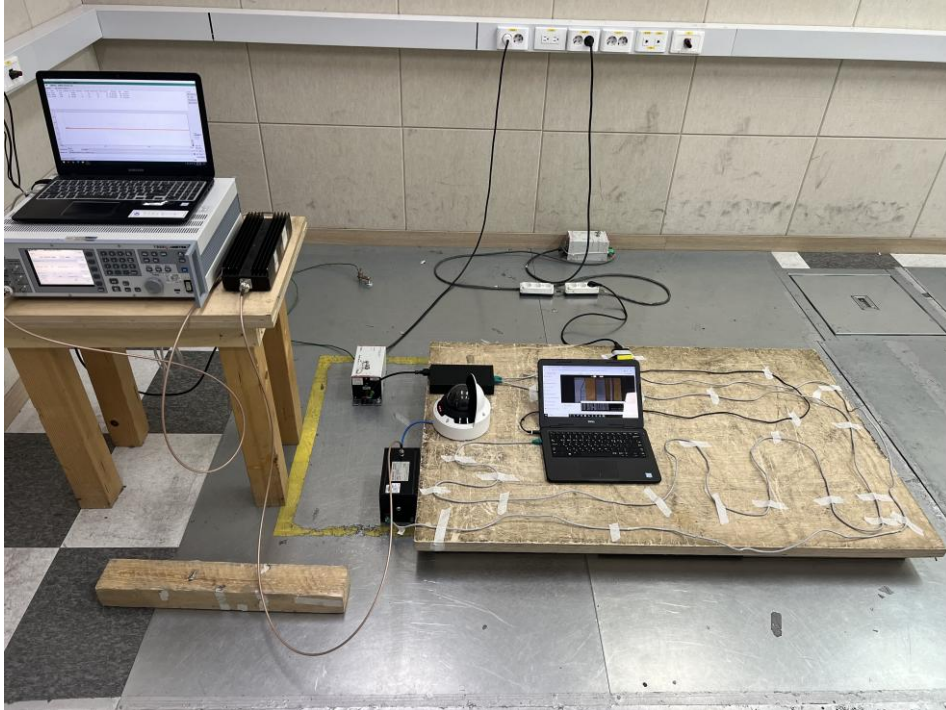


## Surge Transients





## Conducted Disturbance



## Voltage Dips and Short Interruptions

N/A





## EUT External Photographs

(Top)



(Bottom)





## EUT Internal Photographs

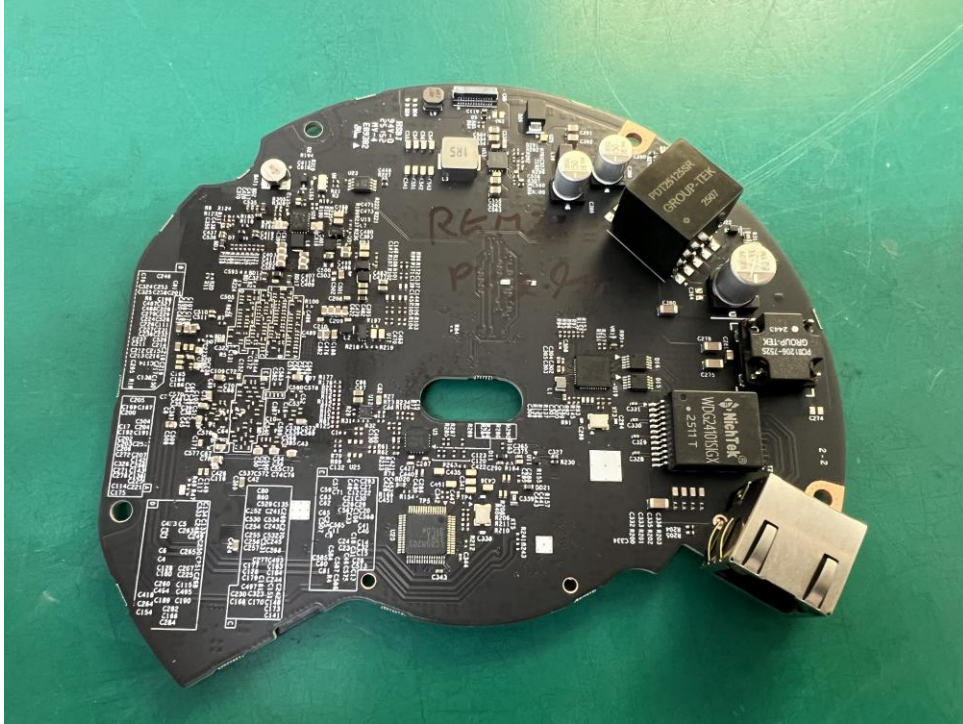
(Internal View)



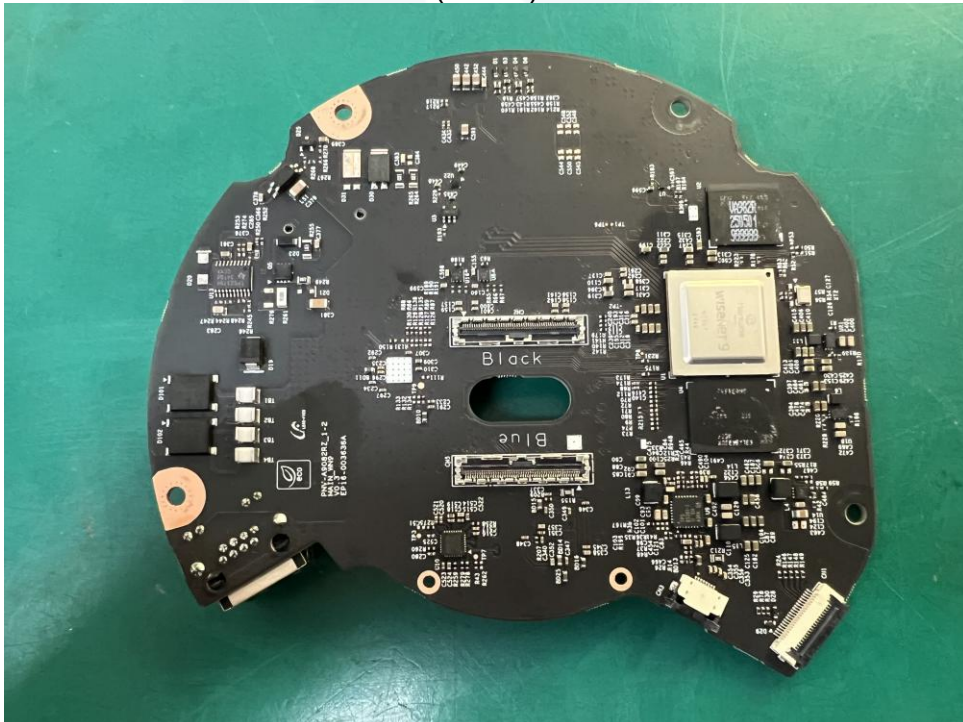


## EUT Internal View – Main Board

(Top)



(Bottom)







### EUT Internal View – CDS Board

(Top)



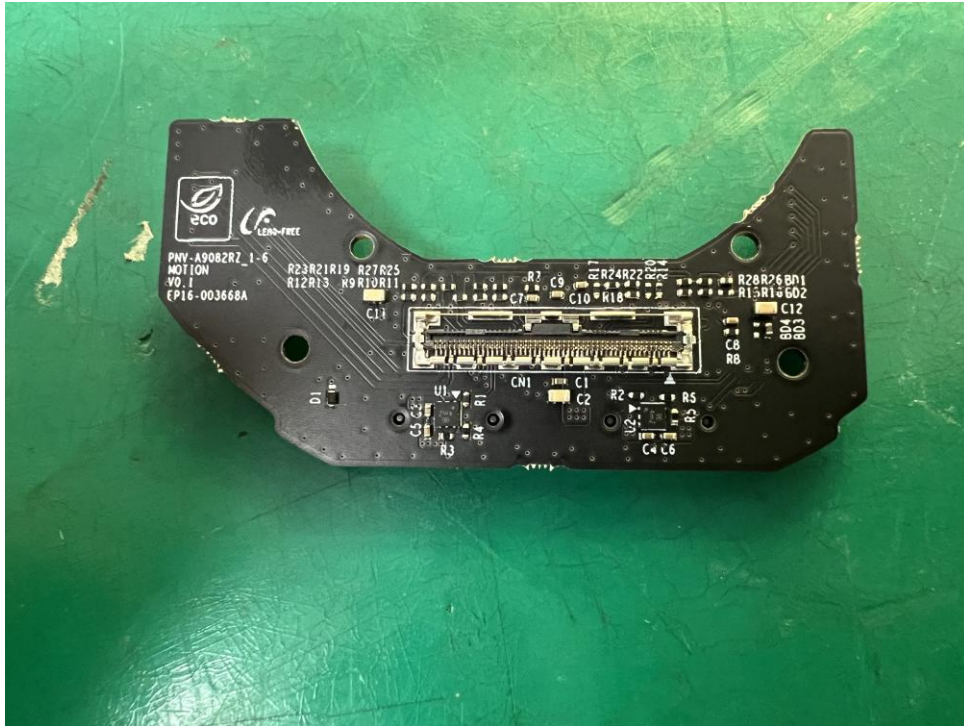
(Bottom)



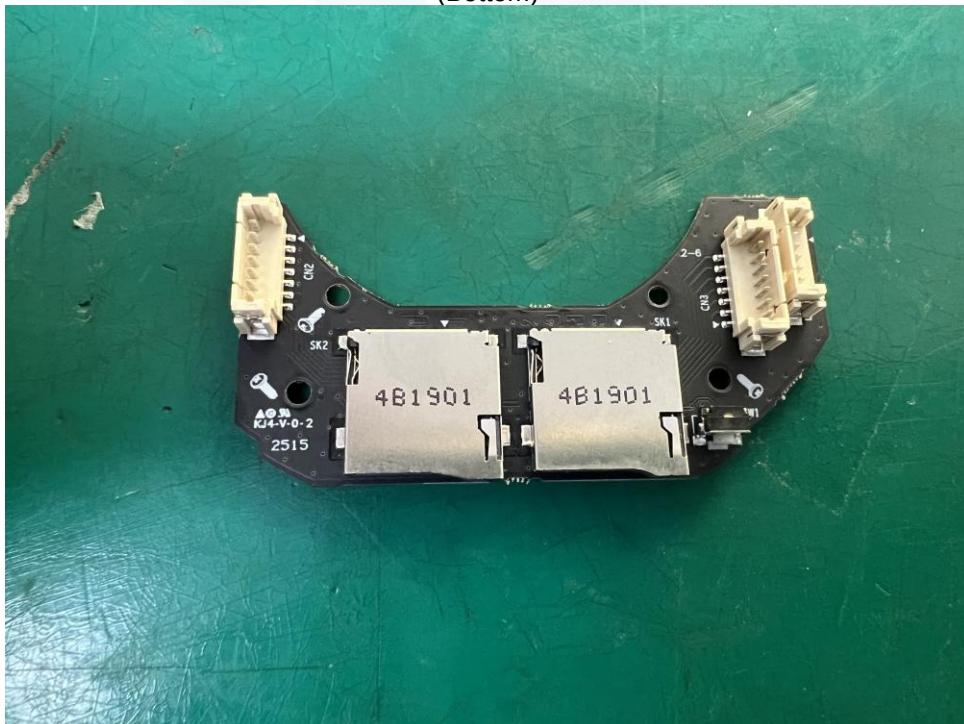


## EUT Internal View – Motion Board

(Top)



(Bottom)





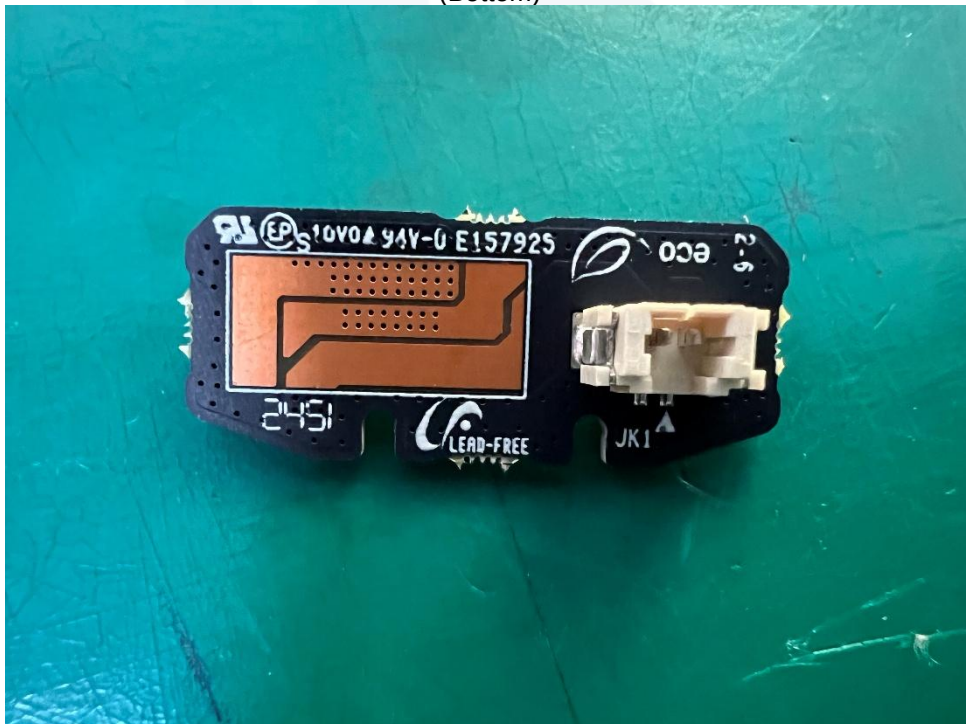


### EUT Internal View – OUTDOOR IR\_1-6

(Top)



(Bottom)



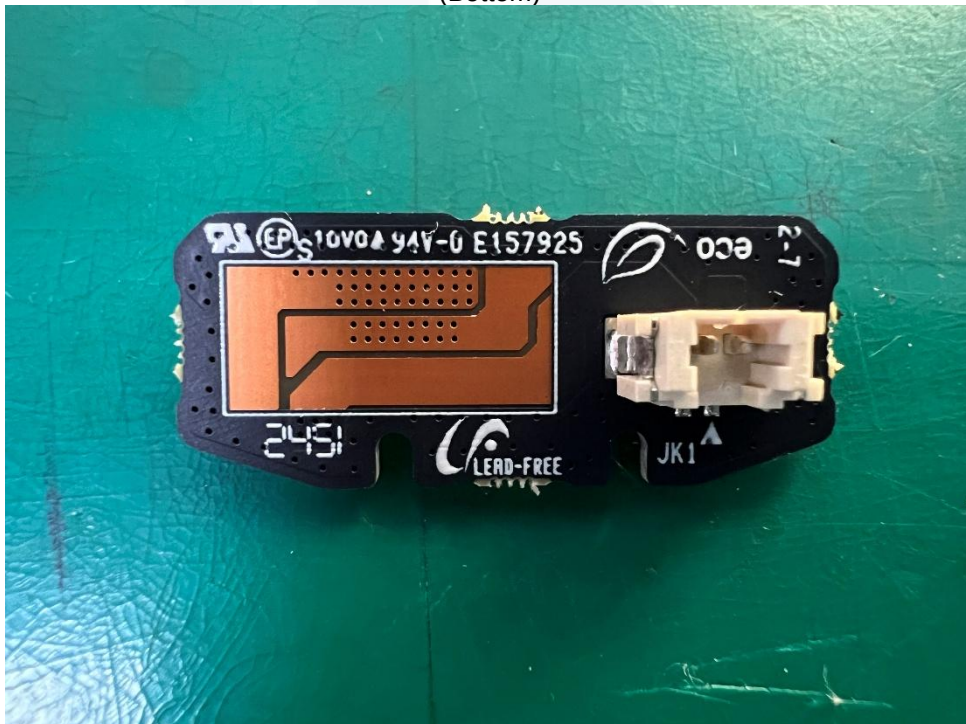


### EUT Internal View – OUTDOOR IR\_1-7

(Top)



(Bottom)

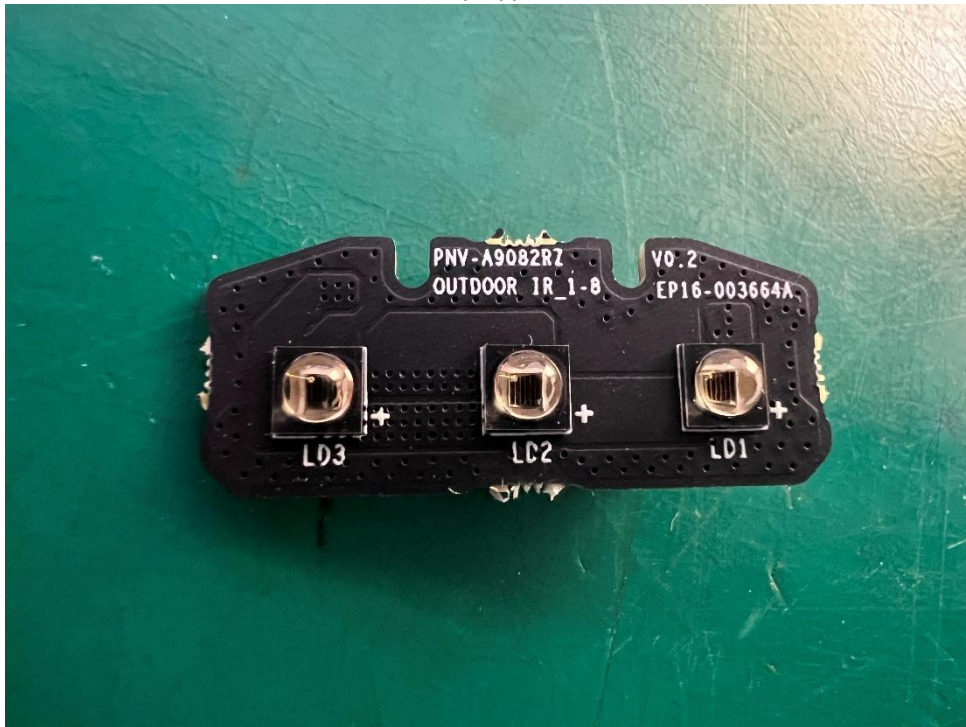




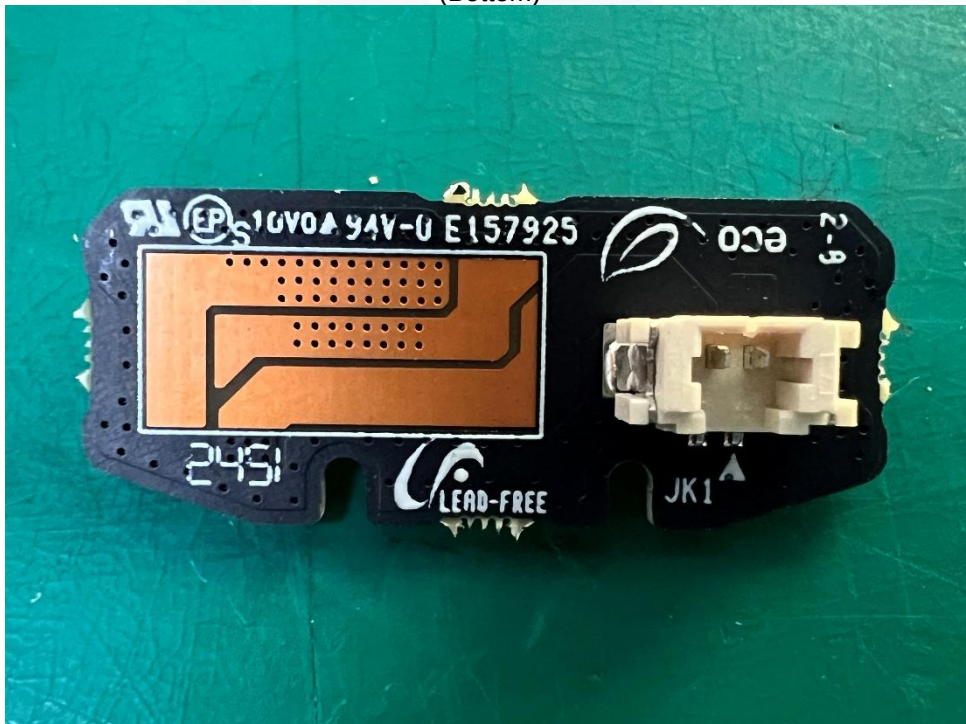


### EUT Internal View – OUTDOOR IR\_1-8

(Top)



(Bottom)



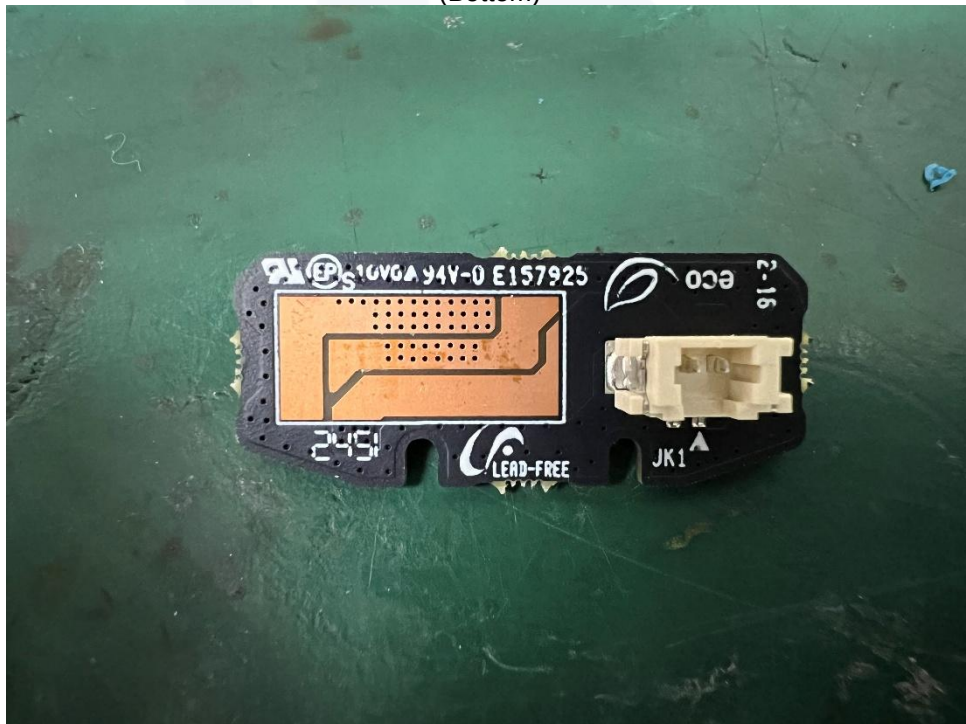


## EUT Internal View – OUTDOOR IR-1-18

(Top)



(Bottom)

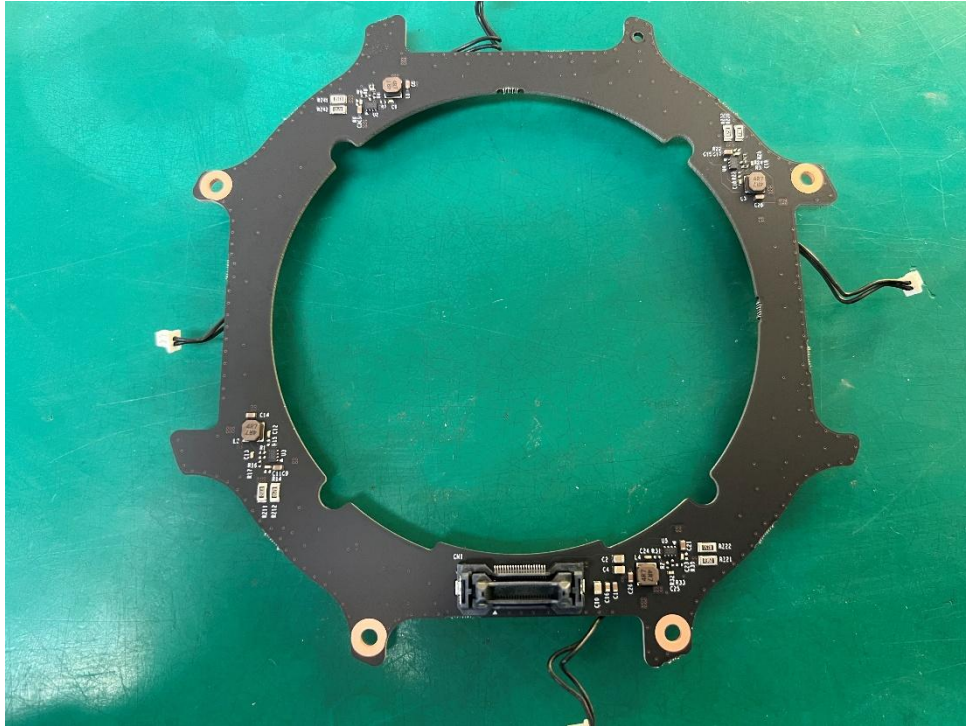






## EUT Internal View – OUTDOOR IR-ITFC Board

(Top)



(Bottom)





### EUT Internal View – SUB Board

(Top)



(Bottom)





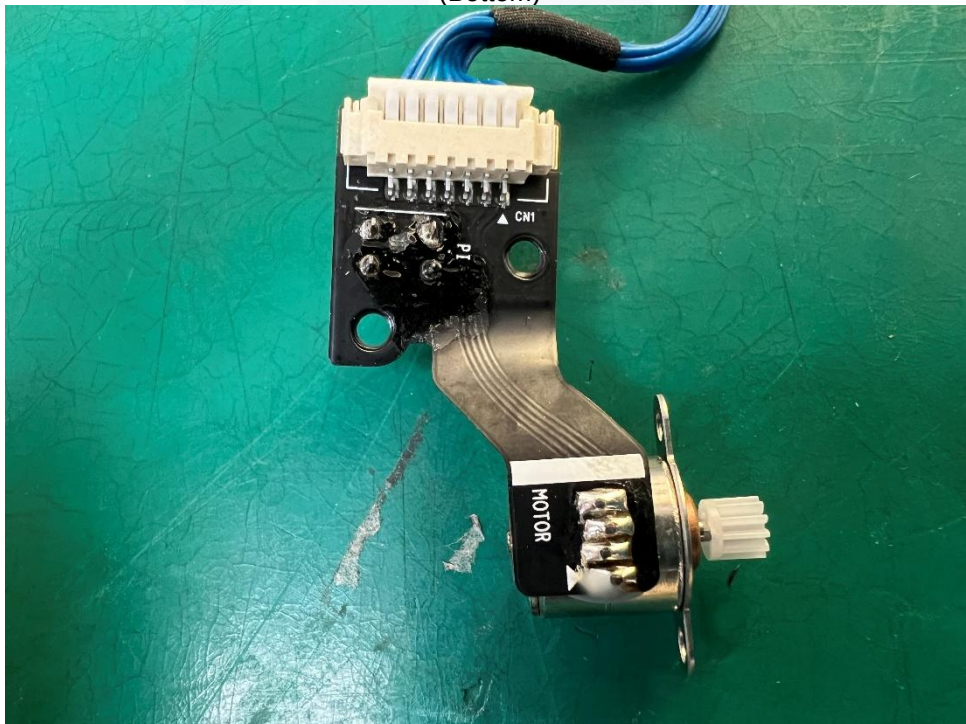


## EUT Internal View – Motor 1

(Top)



(Bottom)

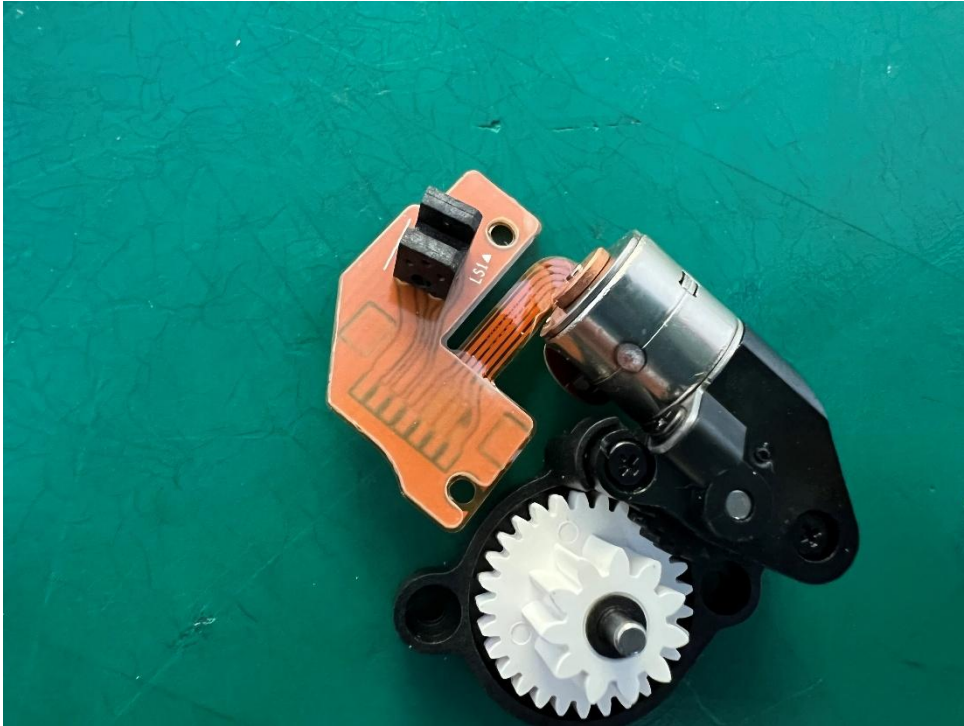




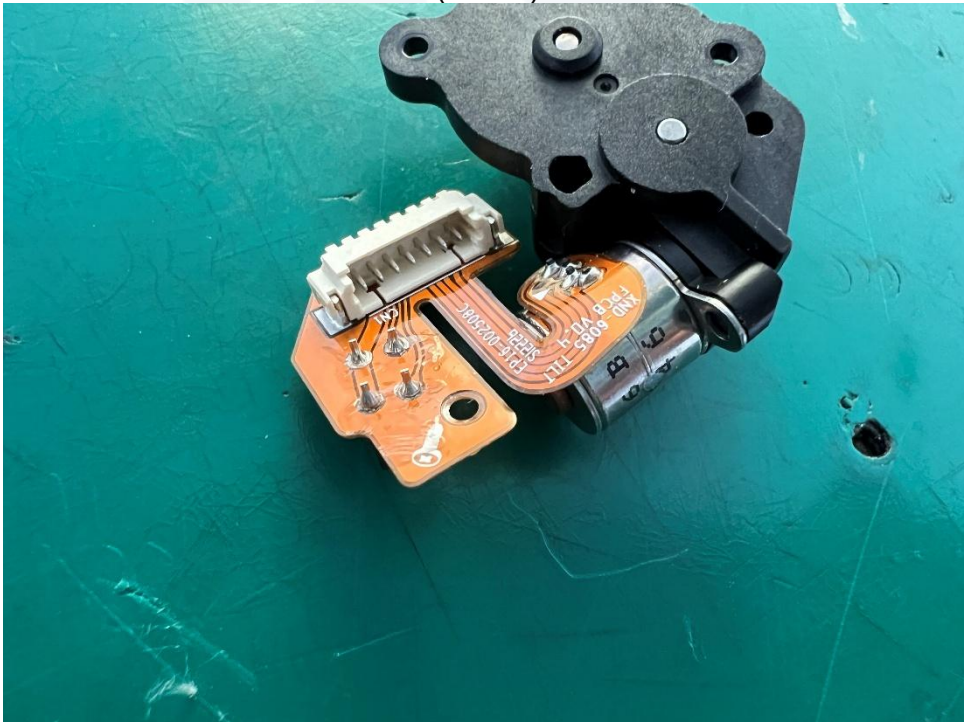


### EUT Internal View – Motor 2

(Top)



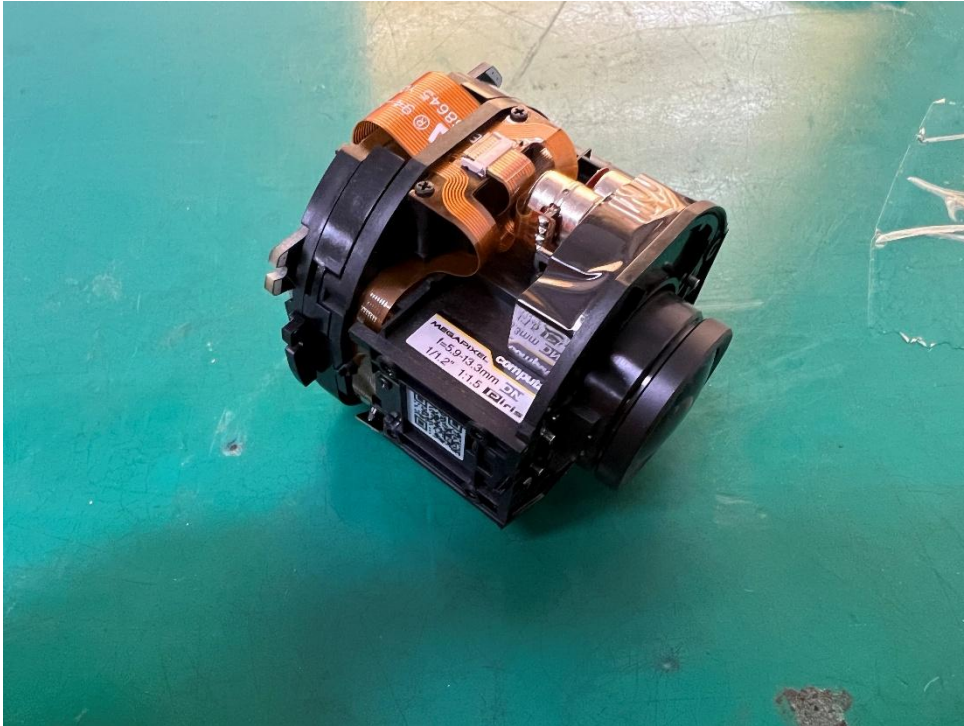
(Bottom)



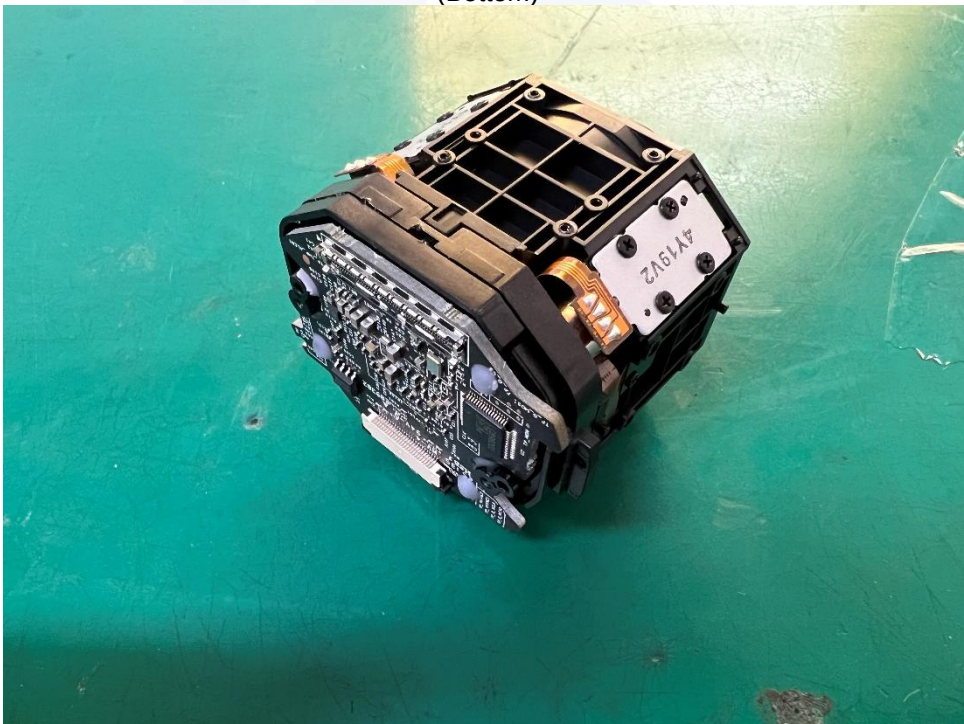


### EUT Internal View – Camera module

(Top)



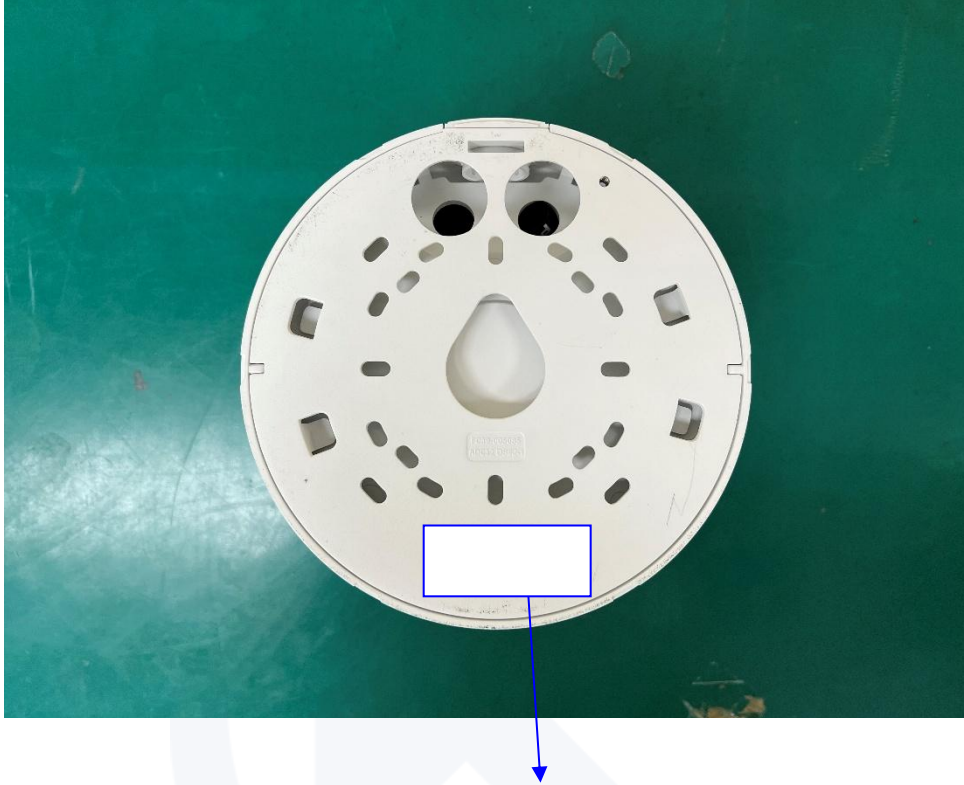
(Bottom)







### Label and Location



**NETWORK CAMERA**

Model No : PNV-A9082RZ

Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED

Made in Vietnam



The End.