



TEST REPORT



Report No. : KES-EM243529

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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. : TNV-C8014RM

Variant Model : TNV-C8034RM, SPG-VAN23W

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

3. Date of Receipt : Oct. 15, 2024

4. Test date : Oct. 24, 2024 ~ Nov. 04, 2024

5. Date of Issue : Nov. 14, 2024

6. Test Results : In Compliance

Tested by

Reviewed by

Jae Won, Lee
EMC Test Engineer

Dae Jung, Choi
EMC Technical Manager

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

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

KES Co., Ltd.

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



REPORT REVISION HISTORY

| Date | Test Report No. | Revision History |
|---------------|-----------------|------------------|
| Nov. 14, 2024 | KES-EM243529 | Issued |
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1.0 General Product Description

Main Specifications of EUT are:

Internal highest operating frequency : 1.866 Mhz

| | |
|---------------------------------------|---|
| Mechanical | |
| Color / Material | White / Aluminum |
| RAL Code | RAL9003 |
| Product Dimensions / Weight | 106x105x55mm(4.17x4.13x2.17"), 466g(1.03 lb) |
| Certifications & Standards | |
| Network | None |
| EMC | FCC 47 CFR 15 Subpart B Class A ICES-3(A)/NMB-3(A) CE/UKCA - EN 55032 Class A, EN 50130-4, EN 61000-3-2, EN 61000-3-3 VCCI CISPR 32 Class A RCM AS/NZS CISPR 32 Class A Railway/Vehicle Application EN50121-4, EN50121-3-2 |
| Safety | UL 62368-1, CAN/CSA C22.2 NO. 62368-1 IEC/EN 62471 |
| Environment | IEC/EN 63000 IEC/EN 60529 IP66, IEC/EN 62262 IK10 Railway/Vehicle Application JIS E 5006, IEC62236-3-2, IEC62236-4, EN50121-4, , JIS E 4031, EN50498, EN50155, IEC/EN61373, EN45545-2 HL3, |
| Video | None |
| Compatible Models | |
| Dome Cover | SPB-VAN23W, SPG-VAN23W |
| Other Compatible Models | SBD-110GPA |
| DORI (EN62676-4 standard) | |
| Detect (25PPM/ 8PPF) | 43.5m(142.71ft) |
| Observe (63PPM/ 19PPF) | 17.5m(57.09ft) |
| Recognize (125PPM/ 38PPF) | 8.7m(28.54ft) |
| Identify (250PPM/ 76PPF) | 4.3m(14.27ft) |



| | |
|---|---|
| Bitrate Control | H.264/H.265: CBR or VBR MJPEG: VBR |
| Streaming | Unicast(20 users) / Multicast Multiple streaming(Up to 5 profiles) |
| Protocol | IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP/SFTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP, CDP, SRTP(TCP, UDP Unicast), MQTT |
| SIP support (VoIP, Peer-to-peer, SIP/PB | None |
| Security | None |
| Application Programming Interface | ONVIF Profile S/G/T/M SUNAPI(HTTP API) Hanwha Vision Open Platform |
| Security | |
| OS / Firmware Protect | Encrypted firmware, Secure boot, Signed firmware |
| User authentication | Digest authentication, Prevent brute-force attack |
| Network authentication | IEEE 802.1X(EAP-TLS, EAP-LEAP, EAP-PEAP, MSCHAPv2) |
| Secure Communication | HTTPS, WSS(WebSocket Secure) |
| Access Control | IP-based access control |
| Data Protect | Encryption credentials, Encrypt compress for live recording file |
| Audit | Access / System / Event Log management |
| Device ID | Device certificate(Hanwha Vision Root CA) |
| Secure Storage | SDcard partition encrypt |
| Security Certificate | None |
| General | |
| Webpage Language | English, Korean, Simplified Chinese, Traditional Chinese, French, Italian, Spanish, German, Japanese, Russian, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek |
| Web Viewer | None |
| Edge Storage | Micro SD/SDHC/SDXC 1slot 256GB |
| Memory | 2GB RAM, 1GB Flash |
| Environmental & Electrical | |
| Operating Temperature / Humidity | -40°C~+55°C(-40°F~+131°F) / 0~100% RH(Condensing) * Start up should be done at above -30°C Humidity control /w Air vapor control |
| Storage Temperature / Humidity | -40°C~+55°C(-40°F~+131°F) / 0~95% RH |
| Wind Load | None |
| EPA(Effective Projected Area) | None |
| Certification | IP66, IK10 |
| Input Voltage | PoE(IEEE802.3af, Class3) |
| Power Consumption | PoE: Max 7.2W, typical 4.2W |



| | |
|--------------------------|--|
| Digital PTZ | Support |
| Video Rotation | Flip, Mirror, Hallway view(90°/270°) |
| Analytics | <p>Classified object type: Person/Vehicle(Type:car/bus/truck/motorcycle/bicycle) Attributes: Person(Upper/lower clothes color), Vehicle(Type:car/bus/truck/motorcycle/bicycle and color) Support BestShot Analytics events based on AI engine - Motion detection*, Object detection, Virtual line*(Crossing/Direction), Virtual area*(Loitering/Intrusion/Enter/Exit) Analytics events - Defocus detection, Tampering, Shock detection, Virtual area(Appear/Disappear)</p> <p>* Some of the video analytics only works with people and vehicle detection</p> |
| Business Intelligence | Based on AI engine: People counting, Vehicle counting, Queue management, Heatmap |
| Serial Interface | None |
| Alarm I/O | None |
| Alarm Triggers | Analytics, Network disconnect, MQTT subscription |
| Alarm Events | <p>When alarm trigger occurred - File upload(image) : e-mail/FTP/SFTP - Notification : e-mail - Recording : SD/SDHC/SDXC or NAS recording at event triggers - Handover(PTZ preset, Send message by HTTP/HTTPS/TCP/Custom String) - Audio clip playback - MQTT: publication</p> |
| Audio Streaming | None |
| Audio In | Selectable(Mic in/Line in/Built-in mic) |
| Audio Out | Line out |
| Light Type | IR LED (850nm) |
| Light Viewable Length | 20m(65.62ft) (QA컨셉대기종) |
| Network | |
| Ethernet | M12(10/100BASE-T) |
| Video Compression | H.265/H.264: Main/High, MJPEG |
| Audio Compression | <p>G.711 u-law /G.726 selectable G.726(ADPCM) 8KHz, G.711 8KHz G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC: 48Kbps at 16KHz</p> |
| Smart Codec | Manual(5ea area), WiseStreamⅢ(Based on AI engine) |
| Video Quality Adjustment | <p>H.264/H.265: Target bitrate level control MJPEG: Quality Level control</p> |



| | |
|-----------------------------|---|
| Video | |
| Imaging Device | 1/2.8" CMOS |
| Resolution | 2592x1944, 2560x1440, 1920x1080, 1280x960, 1280x720, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240 |
| Max. Framerate | H.265/H.264: Max. 30fps/25fps(60Hz/50Hz) (WDR on/off) MJPEG: Max. 30fps(@5MP Max. 5fps) |
| Min. Illumination | Color: 0.03Lux (F1.6, 1/30sec) BW: 0.003Lux (F1.6, 1/30sec, 30IRE), 0Lux(IR LED on) |
| Video Out | USB: Micro USB Type B, 1280x720 for installation |
| Lens | |
| Focal Length (Zoom Ratio) | 3.0mm fixed focal |
| Max. Aperture Ratio | F1.6 |
| Angular Field of View | H: 100°/ V: 73°/ D: 129° |
| Min. Object Distance | 0.5m (1.64ft) |
| Focus Control | Fixed |
| Lens Type | Fixed IRIS |
| Mount Type | M12 |
| Pan / Tilt / Rotate | |
| Pan / Tilt / Rotate Range | ±5° / 0°~67° / ±90° |
| Operational | |
| Camera Title | Displayed up to 85 characters |
| Day & Night | Auto(ICR) |
| Backlight Compensation | BLC, WDR, SDR, Clear HDR |
| Wide Dynamic Range | 120dB |
| Digital Noise Reduction | WiseNRⅡ(Based on AI engine) SSNRV |
| Digital Image Stabilization | Support(built-in gyro sensor) |
| Defog | Support : Manual |
| Motion Detection | 8ea, 8point polygonal zones |
| Privacy Masking | 32ea, 4point quadrangle zones - Color: Gray/Green/Red/Blue/Black/White Dynamic Privacy Mask - Mosaic |
| Gain Control | Low / Middle / High |
| White Balance | ATW / AWC / Manual / Indoor / Outdoor |
| LDC | Support |
| Electronic Shutter Speed | Minimum / Maximum / Anti flicker (1/5~1/25,000sec) Prefer shutter control(Based on AI engine) |



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

- TNV-C8034RM : Fixed Lens Difference
- SPG-VAN23W : Add derivative model for vendor management

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

| Description | Model Number | Serial Number | Manufacturer | Remarks |
|----------------|--------------|---------------|--|---------|
| NETWORK CAMERA | TNV-C8014RM | - | HANWHA VISION VIETNAM COMPANY LIMITED. | EUT |

1.5 System Configuration

| Description | Model Number | Serial Number | Manufacturer | Remarks |
|-------------|--------------|---------------|--------------|---------|
| - | - | - | - | - |

1.6 Support Equipments

| Description | Model Number | Serial Number | Manufacturer | Remarks |
|--------------------------|------------------|---------------|--|---------|
| Laptop | P95G001 | 9JM8HT2 | DELL INC. | - |
| Laptop Adapter | HA65NM130 | - | Chicony Power Technology(Suzhou)Co. ,Ltd. | - |
| PoE Injector | PT-PSE109GBRO-AH | - | Dongguan PROCET Network Technology Co.,Ltd | - |
| Headset | K550 | - | Britz® | - |
| Smartphone | - | - | SAMSUNG | - |
| 4 Pin to RJ-45 Gender | - | - | - | - |
| Micro SD Card | - | - | SanDisk | 16 GB |



1.7 External I/O Cabling

| Start | | END | | Cable Spec. | |
|-----------------------|--------------------|-----------------------|--------------------|-------------|--------|
| Description | I/O Port | Description | I/O Port | Length | Shield |
| NETWORK CAMERA (EUT) | 4 Pin | 4 Pin to RJ-45 Gender | 4 Pin | - | - |
| | Audio IN | Headset | Audio OUT | 1.5 | U |
| | Audio OUT | | Audio IN | 1.5 | U |
| | Micro SD Card Slot | Micro SD Card | Micro SD Card Slot | - | - |
| 4 Pin to RJ-45 Gender | RJ-45(PoE) | PoE Injector | RJ-45(PoE) | 3.5 | U |
| PoE Injector | RJ-45(LAN) | Laptop | RJ-45(LAN) | 2.0 | U |
| Laptop | DC Jack | Laptop Adapter | DC Jack | 1.6 | U |
| Laptop | 3.5 mm | Smartphone | 3.5 mm | 1.0 | U |

* Unshielded=U, Shielded=S

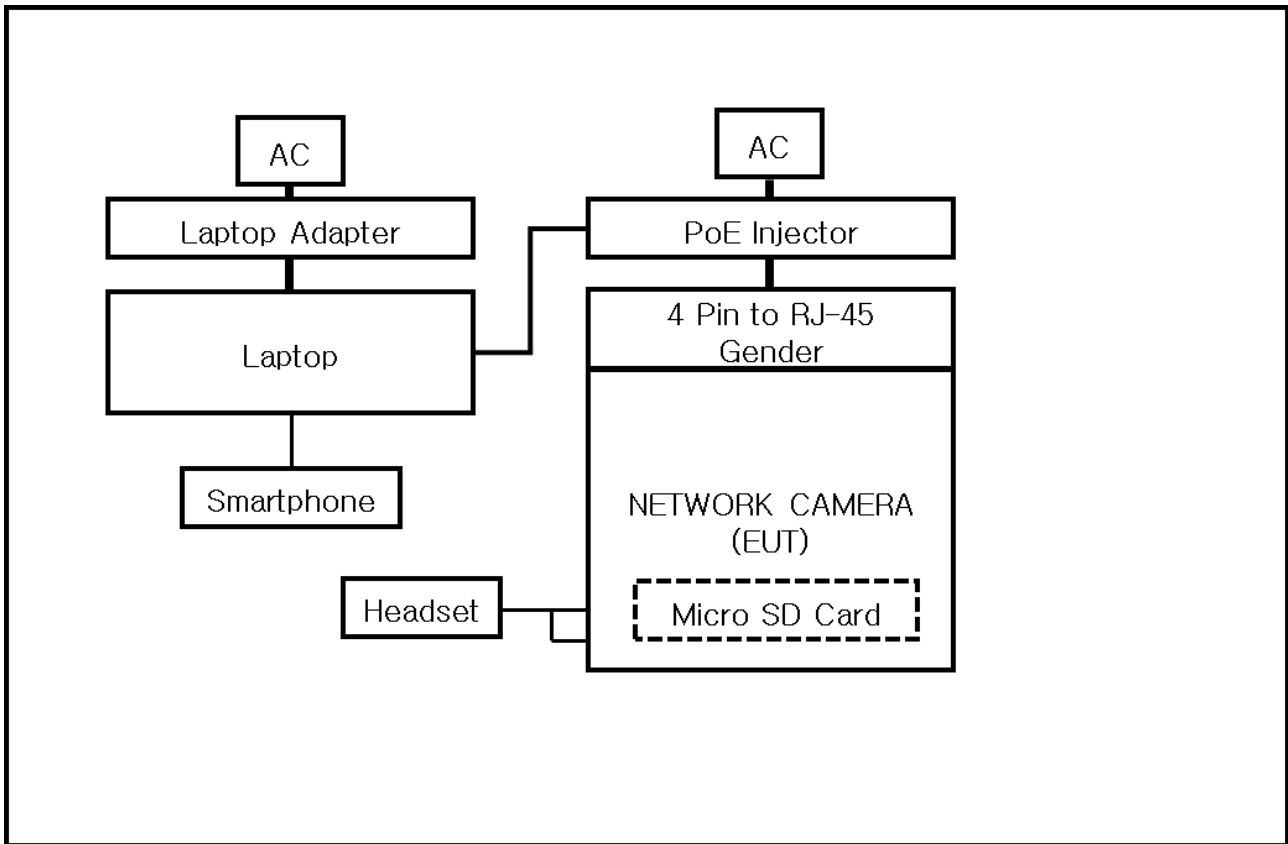
1.8 EUT Operating Mode(s)

| Test mode | Normal operating |
|-----------|--|
| Operating | <ol style="list-style-type: none">1. Connect to the web viewer and test while checking the video output of the test equipment.2. Run the Ping Test to check whether the network of the test equipment is operating normally.3. Confirm normal output from the headset by outputting 1 kHz Tone.4. Activate the microphone in the web viewer to check if the microphone is in normal condition.5. Check whether the recording file is saved on the Micro SD Card before/after the test. |

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



1.9 Configuration





1.10 Remarks When Standards Applied

- It receives PoE power, and the PoE port is considered a wired network port. Test items related to the power port are not applicable.
- The Micro 5 Pin port is not tested as it is for administrator use.
- Administrator port photo



1.11 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.

1.12 Test Facility

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



1.13 Laboratory Accreditations and Listings

| Country | Agency | Scope of Accreditation | Logo |
|---------------|---------|---|--|
| KOREA | RRA | EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) |  KR0100 |
| International | KOLAS | EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) |  KT489 |
| USA | FCC | 3 m & 10 m Semi-Anechoic Chamber Conducted test site to perform FCC Part 15/18 measurements. |  KR0100 |
| Canada | ISED | 3 m & 10 m Semi-Anechoic Chamber and Conducted test site |  23298 |
| JAPAN | VCCI | EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) |  C-20136, T-20137, R-20181, G-20176 |
| Europe | TÜV SÜD | EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) |  CARAT 001633 0008 |



2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **EMC – Directive 2014/30/EU**

☒ **EN 50121-4:2016/A1:2019**





2.1 Conducted Emissions at Mains Power Ports

Test Date

N/A

Test Location

Electro wave Shieldroom #6

Test Equipment

| Used | Description | Model Number | Manufacturer | Serial Number | Cal. Due |
|--------------------------|-------------------|--------------|--------------|---------------|--------------|
| <input type="checkbox"/> | EMI Test S/W | EMC32 | R & S | 9.12.00 | - |
| <input type="checkbox"/> | EMI TEST RECEIVER | ESR3 | R & S | 101783 | Nov 08, 2024 |
| <input type="checkbox"/> | LISN | ENV216 | R & S | 101787 | Nov 08, 2024 |
| <input type="checkbox"/> | LISN | ENV216 | R & S | 101137 | Nov 08, 2024 |
| <input type="checkbox"/> | PULSE LIMITER | ESH3-Z2 | R & S | 101915 | Nov 08, 2024 |

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

RemarksRefer to 'Remarks when standards applied'.



2.2 Conducted Emissions at Telecommunication Ports

Test Date

Oct. 24, 2024

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 | Nov 08, 2024 |
| <input checked="" type="checkbox"/> | LISN | ENV216 | R & S | 101787 | Nov 08, 2024 |
| <input checked="" type="checkbox"/> | LISN | ESH2-Z5 | R & S | 100450 | Nov 08, 2024 |
| <input checked="" type="checkbox"/> | PULSE LIMITER | ESH3-Z2 | R & S | 101915 | Nov 08, 2024 |
| <input checked="" type="checkbox"/> | 8-WIRE ISN CAT3,5 | ENY81 | R & S | 100174 | Nov 09, 2024 |
| <input type="checkbox"/> | 8-WIRE ISN CAT6 | ENY81-CAT6 | R & S | 101666 | Mar 06, 2025 |

Test Conditions

Temperature: (24,1 ± 0,1) °C
Relative Humidity: (47,0 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.3 Impulse Noise (click)

Test Date

N/A

Test Location

Electro wave Shieldroom #6

Test Equipment

| Used | Description | Model Number | Manufacturer | Serial Number | Cal. Due |
|--------------------------|----------------|--|--------------------|---------------|--------------|
| <input type="checkbox"/> | EMI Test S/W | CLICK METER SOFTWARE CMS FOR DDA55 | AFJ | 4.19 | - |
| <input type="checkbox"/> | CLICK ANALYZER | DDA55+ | AFJ INSTRUMENTS | 14042211198 | Feb 13, 2025 |
| <input type="checkbox"/> | LISN | ENV216 | R & S | 101786 | Jan 10, 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

RemarksRefer to 'Remarks when standards applied'.



2.4 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Nov. 03, 2024

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

| Used | Description | Model Number | Manufacturer | Serial Number | Cal. Due |
|-------------------------------------|-------------------|--------------|------------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W | EP5/RE | TOYO Corporation | 6.0.0 | - |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER | ESU26 | R & S | 100551 | Feb 13, 2025 |
| <input checked="" type="checkbox"/> | AMPLIFIER | SCU 01 | R & S | 100603 | Nov 08, 2024 |
| <input checked="" type="checkbox"/> | BILOG ANTENNA | VULB 9168 | SCHWARZBECK | 9168-461 | May 09, 2026 |
| <input checked="" type="checkbox"/> | ATTENUATOR | 6806.17.A | HUBER+SUHNER | - | Feb 13, 2025 |

Test Conditions

Temperature: (23,4 ± 0,1) °C

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

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.5 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Oct. 25, 2024

Test Location

SEMI ANECHOIC CHAMBER #3

Test Equipment

| Used | Description | Model Number | Manufacturer | Serial Number | Cal. Due |
|-------------------------------------|----------------------------|--------------|------------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W | EP5/RE | TOYO Corporation | 6.0.0 | - |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER | ESR7 | R & S | 101190 | Jul 29, 2025 |
| <input checked="" type="checkbox"/> | PREAMPLIFIER | 8449B | AGILENT | 3008A01967 | Mar 05, 2025 |
| <input checked="" type="checkbox"/> | ATTENUATOR | 8491A | HP | 35496 | Feb 13, 2025 |
| <input checked="" type="checkbox"/> | DOUBLE RIDGED HORN ANTENNA | SAS-571 | A.H.SYSTEM,INC | 781 | Mar 05, 2025 |

Test Conditions

Temperature: (23,7 ± 0,1) °C

Relative Humidity: (45,3 ± 0,1) % R.H.

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.6 Harmonic Current Emissions

Test Date

N/A

Test Location

SHIELD ROOM #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 | Mar 28, 2025 |
| <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

RemarksRefer to 'Remarks when standards applied'.



2.7 Voltage Fluctuations and Flicker

Test Date

N/A

Test Location

SHIELD ROOM #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 | Mar 28, 2025 |
| <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

RemarksRefer to 'Remarks when standards applied'.



3.0 Criteria for Compliance

Criteria for compliance was based on the following guidelines:

General performance criteria

The general principles (performance criteria) for the evaluation of the immunity test results are the following.

Performance criteria A

The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criteria B

The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criteria C

Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.



3.1 Electrostatic Discharge

Reference Standard

EN 61000-4-2

Test Date

Nov. 02, 2024

Test Location

EMS-ESD: SHIELD ROOM #6

Test Equipment

| Used | Description | Model Number | Manufacturer | Serial Number | Cal. Due |
|-------------------------------------|---------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | ESD SIMULATOR | ESS-2000 | Noise Ken | ESS01Z0454 | Jan 30, 2025 |
| <input checked="" type="checkbox"/> | HCP | - | KES | - | - |
| <input checked="" type="checkbox"/> | VCP | - | Noise Ken | - | - |

Test Conditions

Temperature: (23,3 ± 0,1) °C
Relative Humidity: (45,8 ± 0,1) % R.H.
Atmospheric Pressure: (100,1 ± 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 |

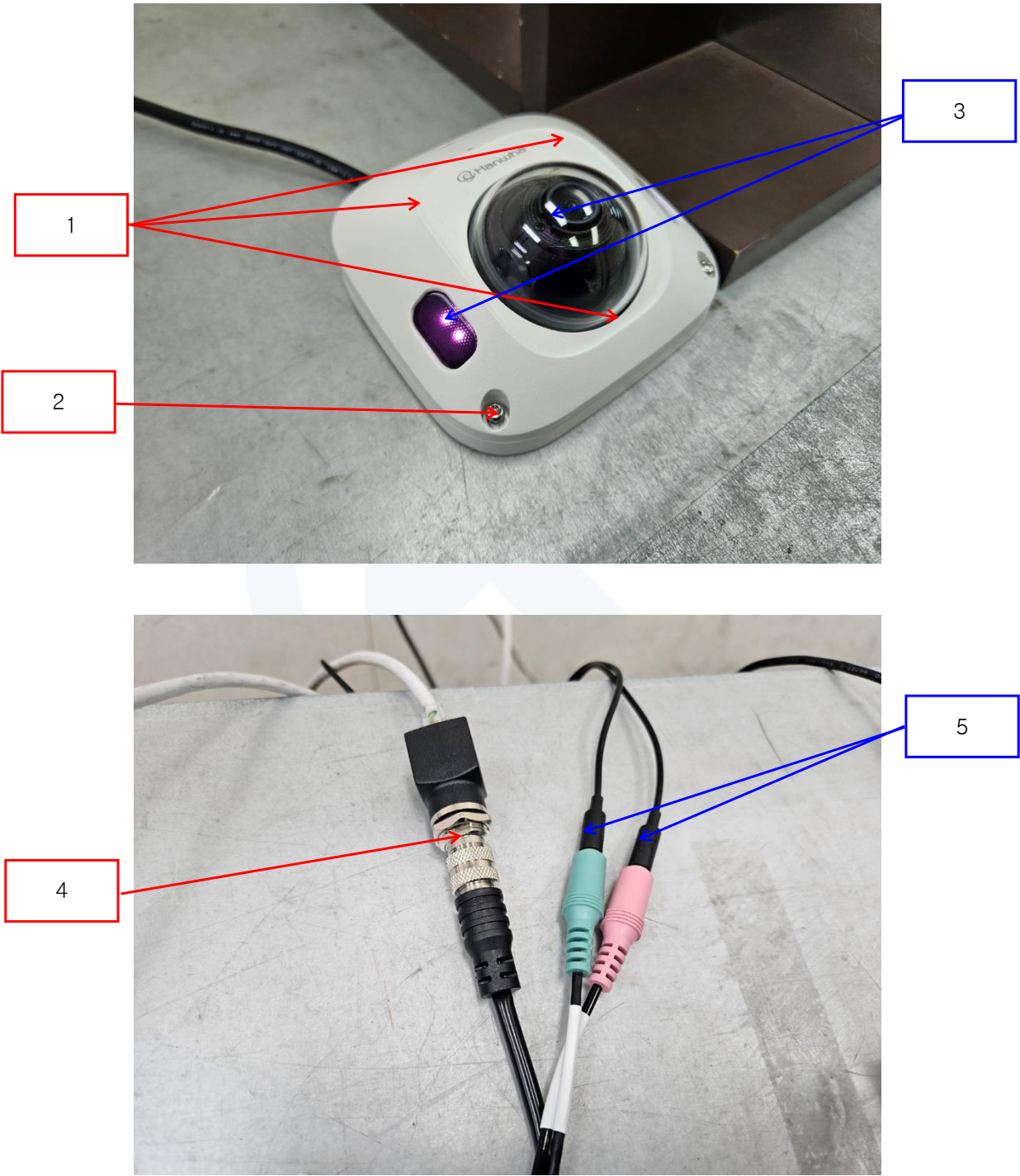
Notes: HCP: Horizontal Coupling Plane

VCP: Vertical Coupling Plane

Required Performance Criteria: ☒ B



Location of Discharge:



**Test Data**

Indirect Discharge

| No. | Test Point | Discharge Method | Performance | |
|-----|-------------|-------------------|-------------|---------|
| | | | Criteria | Results |
| 1 | HCP Contact | Contact Discharge | B | A |
| 2 | VCP Contact | Contact Discharge | B | A |

Direct Discharge

| No. | Test Point | Discharge Method | Performance | |
|-----|-------------------|-------------------|-------------|---------|
| | | | Criteria | Results |
| 1 | Enclosure | Contact Discharge | B | A |
| 2 | Screw | Contact Discharge | B | A |
| 3 | Camera Lens | Air Discharge | B | A |
| 4 | Around the Port 1 | Contact Discharge | B | A |
| 5 | Around the Port 2 | Air Discharge | B | A |

Note: "Blank" = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results

☒ PASS Required Performance Criteria

☐ NOT PASS Required Performance Criteria

Remarks

Any degradations of performance was not observed during in the test.



3.2 Radio-frequency Electromagnetic Field

Reference Standard

EN IEC 61000-4-3

Test Date

Nov. 02, 2024

Test LocationEMS-RS: ☒ SEMI ANECHOIC CHAMBER #3 ☐ SEMI ANECHOIC CHAMBER #4(10 m)**Test Equipment**

| Used | Description | Model Number | Manufacturer | Serial Number | Cal. Due |
|-------------------------------------|---------------------------------|--------------|-----------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W | EMC32 | R & S | 9.12.00 | - |
| <input checked="" type="checkbox"/> | SIGNAL GENERATOR | SMB 100A | Rohde & Schwarz | 108252 | Jul 29, 2025 |
| <input checked="" type="checkbox"/> | HIGH POWER DUAL AMP | SSA532 | SUNGSAN | SSA532-001 | - |
| <input checked="" type="checkbox"/> | POWER METER | E4419B | Agilent | GB40203000 | Feb 13, 2025 |
| <input checked="" type="checkbox"/> | AVERAGE POWER SENSOR | E9301A | Agilent | MY52170007 | Feb 13, 2025 |
| <input checked="" type="checkbox"/> | AVERAGE POWER SENSOR | E9301A | Agilent | MY41498669 | Feb 13, 2025 |
| <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 | Mar 05, 2025 |

Test Conditions

Temperature: (22,4 ± 0,6) °C
Relative Humidity: (46,0 ± 0,6) % R.H.
Atmospheric Pressure: (100,2 ± 0,0) kPa



Test Specifications

Antenna Polarization: Horizontal & Vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

Frequency Range: ☒ 80 MHz to 800 MHz [10V/m]
[Field Strength] ☒ 800 MHz to 1 GHz [20 V/m]
☒ 1,4 GHz to 2,0 GHz [10 V/m]
☒ 2,0 GHz to 2,7 GHz [5 V/m]
☒ 5,1 GHz to 6,0 GHz [3 V/m]

Modulation: ☒ 80 % AM, 1 kHz sine wave

Frequency Step: ☒ 1 % step

Dwell Time: ☐ 1 s ☒ 3 s

of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ A

**Test Data**

| Side Exposed | Performance Criteria | Results | |
|--------------|----------------------|------------|----------|
| | | Horizontal | Vertical |
| Front | A | A | A |
| Right | A | A | A |
| Back | A | A | A |
| Left | A | A | A |

Note: "Blank" = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results

☒ PASS Required Performance Criteria

☐ NOT PASS Required Performance Criteria

Remarks

Any degradations of performance was not observed during in the test.



3.3 Fast Transients

Reference Standard

EN 61000-4-4

Test Date

Nov. 04, 2024

Test Location

EMS-EFT: SHIELD ROOM #7

Test Equipment

| Used | Description | Model Number | Manufacturer | Serial Number | Cal. Due |
|-------------------------------------|---------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W | iec.control | EM TEST | 5.4.8 | - |
| <input checked="" type="checkbox"/> | ULTRA COMPACT SIMULATOR | UCS 500N7 | EM TEST | P1608172950 | Nov 09, 2024 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC | MV2616 | EM TEST | P1552169719 | Nov 09, 2024 |
| <input checked="" type="checkbox"/> | CAPACITIVE COUPLING CLAMP | HFK | EM TEST | P1633183115 | Nov 10, 2024 |

Test Conditions

Temperature: (22,6 ± 0,1) °C
Relative Humidity: (45,9 ± 0,1) % R.H.
Atmospheric Pressure: (100,3 ± 0,0) kPa

Test Specifications

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

Pulse Amplitude & Polarity: ☒ ± 2.0 kV ☐ ± 4.0 kV
(Signal Lines)

Pulse Amplitude & Polarity: ☐ ± 1.0 kV
(Earth Lines)

Burst Period: ☒ 300 ms

Repetition Rate: ☒ 5 kHz

Duration of Test Voltage: ☒ ≥ 1 min

Required Performance Criteria: ☒ A

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

| Mode of Application | Performance Criteria | Results | |
|---------------------|----------------------|----------------|----------------|
| | | (+) Burst (kV) | (-) Burst (kV) |
| - | A | - | - |

☒ Signal ports and telecommunication ports – Coupling Clamp used

| Mode of Application | Performance Criteria | Results | |
|---------------------|----------------------|----------------|----------------|
| | | (+) Burst (kV) | (-) Burst (kV) |
| RJ-45(PoE) | A | A | A |

☐ Earth ports – Coupling Clamp used

| Mode of Application | Performance Criteria | Results | |
|---------------------|----------------------|----------------|----------------|
| | | (+) Burst (kV) | (-) Burst (kV) |
| - | A | - | - |

Note: “Blank” = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**Any degradations of performance was not observed during in the test.



3.4 Surges

Reference Standard

EN 61000-4-5

Test Date

Nov. 04, 2024

Test Location

EMS-Surge: SHIELD ROOM #7

Test Equipment

| Used | Description | Model Number | Manufacturer | Serial Number | Cal. Due |
|-------------------------------------|----------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W | iec.control | EM TEST | 5.4.8 | - |
| <input checked="" type="checkbox"/> | ULTRA COMPACT SIMULATOR | UCS 500N7 | EM TEST | P1608172950 | Nov 09, 2024 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC | MV2616 | EM TEST | P1552169719 | Nov 09, 2024 |
| <input checked="" type="checkbox"/> | CDN | CNV 508N1 | EM TEST | P1610176296 | Nov 10, 2024 |

Test Conditions

Temperature: (22,6 ± 0,6) °C
Relative Humidity: (45,9 ± 0,6) % R.H.
Atmospheric Pressure: (100,3 ± 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
☐ (2,0) kV
Differential Mode
☐ (1,0) kVNumber of Surges: ☐ 5 surges per angleAngle: ☐ 0°, 90°, 180°, 270° (input AC power port)Polarity: ☐ Positive & NegativeRepetition Rate: ☐ 1 surge per min ☐ 1 surge per 30 sec.Required Performance Criteria: ☐ B**DC Power Lines**Source Impedance: 42 ohm
Surge Amplitude: Common Mode
☐ (2,0) kV
Differential Mode
☐ (1,0) kVNumber of Surges: ☐ 5 SurgesPolarity: ☐ Positive & NegativeRepetition Rate: ☐ 1 surge per min ☐ 1 surge per 30 sec.Required Performance Criteria: ☐ B**Signal Lines**Source Impedance: 42 ohm
Surge Amplitude: Common Mode
☒ (2,0) kV
Differential Mode
☒ (1,0) kVNumber of Surges: ☒ 5 SurgesPolarity: ☒ Positive & NegativeRepetition Rate: ☒ 1 surge per min ☐ 1 surge per 30 sec.Required Performance Criteria: ☒ B

**Test Data**☐ Line to Line – Differential Mode

| Mode of Application | Performance Criteria | Results | |
|---------------------|----------------------|----------------|----------------|
| | | (+) Surge (kV) | (-) Surge (kV) |
| - | B | - | - |

☐ Line to Earth – Common Mode

| Mode of Application | Performance Criteria | Results | |
|---------------------|----------------------|----------------|----------------|
| | | (+) Surge (kV) | (-) Surge (kV) |
| - | B | - | - |

Signal Lines☒ Line to Line – Differential Mode

| Mode of Application | Performance Criteria | Observations | |
|---------------------|----------------------|----------------|----------------|
| | | (+) Surge (kV) | (-) Surge (kV) |
| RJ-45(PoE) | B | A | A |

☒ Line to Earth – Common Mode

| Mode of Application | Performance Criteria | Results | |
|---------------------|----------------------|----------------|----------------|
| | | (+) Surge (kV) | (-) Surge (kV) |
| RJ-45(PoE) | B | A | A |

Note: "Blank" = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**Any degradations of performance was not observed during in the test.



3.5 Conducted Disturbance

Reference Standard

EN 61000-4-6

Test Date

Nov. 04, 2024

Test Location

EMS-Surge: SHIELD ROOM #7

Test Equipment

| Used | Description | Model Number | Manufacturer | Serial Number | Cal. Due |
|-------------------------------------|------------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W | icd.control | EM TEST | 5.3.12 | - |
| <input checked="" type="checkbox"/> | CONTINUOUS WAVE SIMULATOR | CWS 500N1.4 | EM TEST | P1602169880 | Nov 08, 2024 |
| <input checked="" type="checkbox"/> | ATTENUATOR | ATT 6/80 | EM TEST | P1614178148 | Nov 08, 2024 |
| <input checked="" type="checkbox"/> | CDN | CDN M016 | TESEQ | 43694 | Nov 08, 2024 |
| <input checked="" type="checkbox"/> | CDN | CDN M016 | TESEQ | 43697 | Nov 08, 2024 |
| <input checked="" type="checkbox"/> | CDN | CDN T8RJ45 | EM TEST | 0909-09 | Jul 28, 2025 |
| <input type="checkbox"/> | EM CLAMP | KEMZ 801A | TESEQ | 44099 | Nov 09, 2024 |

Test Conditions

Temperature: (22,8 ± 0,6) °C
Relative Humidity: (45,7 ± 0,6) % R.H.
Atmospheric Pressure: (100,0 ± 0,0) kPa

Test Specifications

Frequency Range: ☒ 150 kHz to 80 MHz
Voltage Level: ☒ 10 Vrms
Modulation: ☒ 80 % AM, 1 kHz sine wave
Frequency Step: ☒ 1 % step
Dwell Time: ☐ 1 s ☒ 3 s
Required Performance Criteria: ☒ A

**Test Data**☐ Input a.c. power ports

| Coupling Location (Line Stressed) | Coupling Method | Performance Criteria | Results |
|--------------------------------------|-----------------|-------------------------|---------|
| - | - | - | - |

☒ Signal ports and telecommunication ports

| Coupling Location (Line Stressed) | Coupling Method | Performance Criteria | Results |
|--------------------------------------|-----------------|-------------------------|---------|
| RJ-45(PoE) | CDN | A | A |

☐ Earth ports

| Coupling Location (Line Stressed) | Coupling Method | Performance Criteria | Results |
|--------------------------------------|-----------------|-------------------------|---------|
| - | - | - | - |

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

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**Any degradations of performance was not observed during in the test.



3.6 Power Frequency Magnetic Field Immunity

Reference Standard

EN 61000-4-8

Test Date

Nov. 04, 2024

Test Location

EMS-Surge: SHIELD ROOM #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"/> | EMS Test S/W | NET.CONTROL | EM TEST | 1.2.11 | - |
| <input checked="" type="checkbox"/> | ULTRA COMPACT SIMULATOR | UCS 500N7 | EM TEST | P1608172950 | Nov 09, 2024 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC | MV2616 | EM TEST | P1552169719 | Nov 09, 2024 |
| <input checked="" type="checkbox"/> | MAGNETIC FIELD COIL | MS 100N | EM TEST | P1536163691 | Nov 10, 2024 |
| <input checked="" type="checkbox"/> | CURRENT TRANSFORMER | MC 26100 | EM TEST | P1550168963 | Feb 14, 2025 |
| <input checked="" type="checkbox"/> | MULTIFUNCTION AC/DC POWER SOURCE | NETWAVE 7-400 | EM TEST | P1614178393 | Nov 08, 2024 |
| <input checked="" type="checkbox"/> | MAGNETICFIELD COIL | INA 703 | Teseq AG | 3006 | Feb 14, 2025 |

Test Conditions

Temperature: (22,6 ± 0,1) °C
Relative Humidity: (45,9 ± 0,1) % R.H.
Atmospheric Pressure: (100,3 ± 0,0) kPa

Test Specifications

Field Strength(Power Source): ☒ 100 A/m (ac)
☒ 300 A/m (dc)
Frequency (ac): ☒ 16.7 Hz ☒ 50 Hz ☐ 60 Hz
Frequency (dc): ☒ 0 Hz
Required Performance Criteria: ☒ A

**Test Data**☒ Immersion method

| Coil orientation | Performance | |
|------------------|-------------|---------|
| | Criteria | Results |
| X - axis | A | A |
| Y - axis | A | A |
| Z - axis | A | A |

Note: "blank" = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**Any degradations of performance was not observed during in the test.



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]

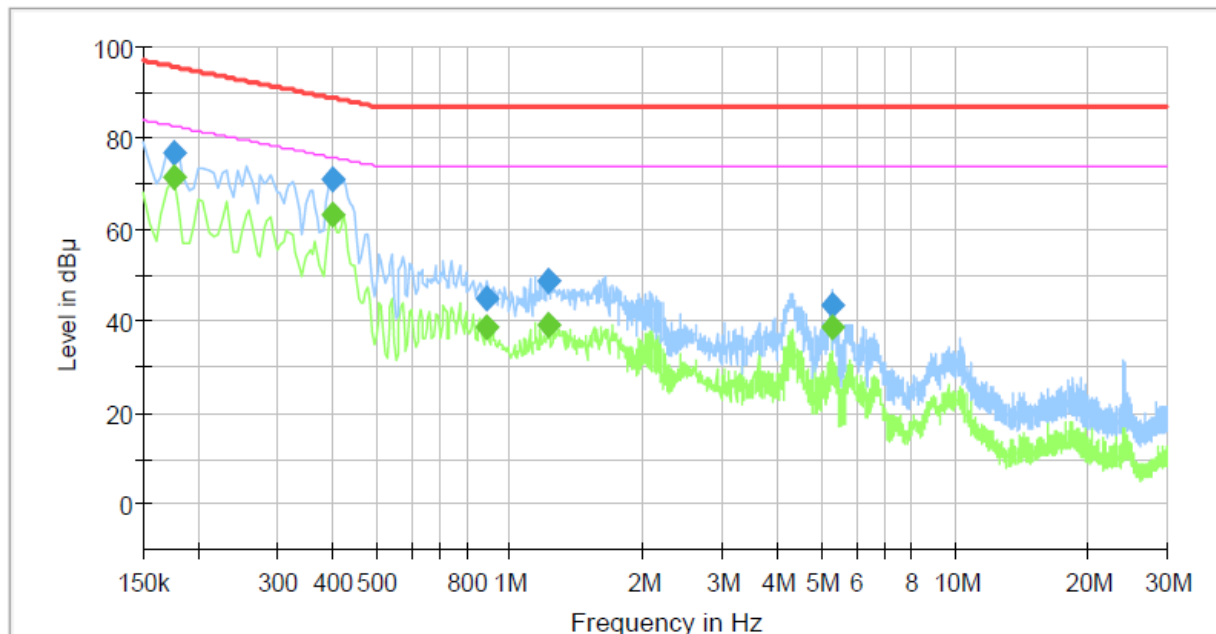
QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

**Conducted Emissions at Telecommunication Ports****[100 Mbps]****Common Information**

Test Description: Telecommunication Emission
Job No.: KES-EM243529
Mode : TEL 100 Mbps
Speed :
Operator Name: KES

**Final Result**

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|-------------|------------|
| 0.175000 | --- | 71.31 | 82.72 | 11.41 | 1000.0 | 9.000 | Single Line | 19.9 |
| 0.175000 | 77.05 | --- | 95.72 | 18.67 | 1000.0 | 9.000 | Single Line | 19.9 |
| 0.400000 | --- | 63.31 | 75.85 | 12.54 | 1000.0 | 9.000 | Single Line | 19.6 |
| 0.400000 | 71.28 | --- | 88.85 | 17.57 | 1000.0 | 9.000 | Single Line | 19.6 |
| 0.885000 | --- | 38.71 | 74.00 | 35.29 | 1000.0 | 9.000 | Single Line | 19.5 |
| 0.885000 | 45.08 | --- | 87.00 | 41.92 | 1000.0 | 9.000 | Single Line | 19.5 |
| 1.225000 | --- | 39.27 | 74.00 | 34.73 | 1000.0 | 9.000 | Single Line | 19.5 |
| 1.225000 | 48.66 | --- | 87.00 | 38.34 | 1000.0 | 9.000 | Single Line | 19.5 |
| 5.295000 | --- | 38.91 | 74.00 | 35.09 | 1000.0 | 9.000 | Single Line | 19.7 |
| 5.295000 | 43.40 | --- | 87.00 | 43.60 | 1000.0 | 9.000 | Single Line | 19.7 |

♦ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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

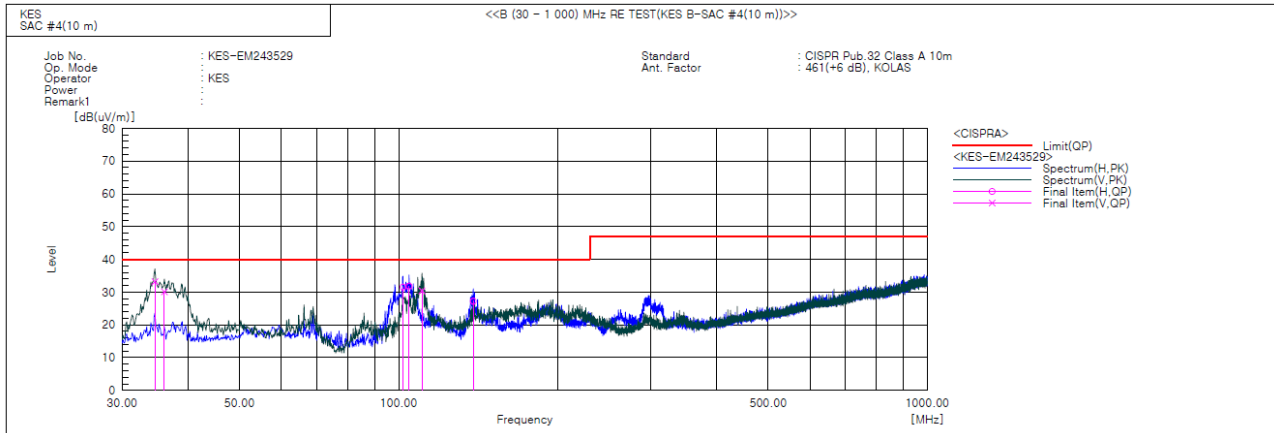
KES Co., Ltd.

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



Impulse Noise (click)

N/A

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

| No. | Frequency [MHz] | (P) | Reading QP [dB(μV)] | c.f [dB(1/m)] | Result QP [dB(μV/m)] | Limit QP [dB(μV/m)] | Margin QP [dB] | Height [cm] | Angle [deg] | Remark |
|-----|--------------------|-----|---------------------------|------------------|----------------------------|---------------------------|----------------------|----------------|----------------|--------|
| 1 | 34.608 | V | 55.6 | -22.4 | 33.2 | 40.0 | 6.8 | 114.0 | 278.0 | |
| 2 | 36.063 | V | 52.4 | -22.3 | 30.1 | 40.0 | 9.9 | 112.0 | 99.0 | |
| 3 | 101.901 | H | 56.2 | -24.7 | 31.5 | 40.0 | 8.5 | 195.0 | 115.0 | |
| 4 | 104.690 | H | 56.1 | -24.3 | 31.8 | 40.0 | 8.2 | 397.0 | 112.0 | |
| 5 | 110.753 | V | 53.9 | -23.5 | 30.4 | 40.0 | 9.6 | 147.0 | 77.0 | |
| 6 | 138.398 | H | 47.6 | -20.4 | 27.2 | 40.0 | 12.8 | 199.0 | 308.0 | |

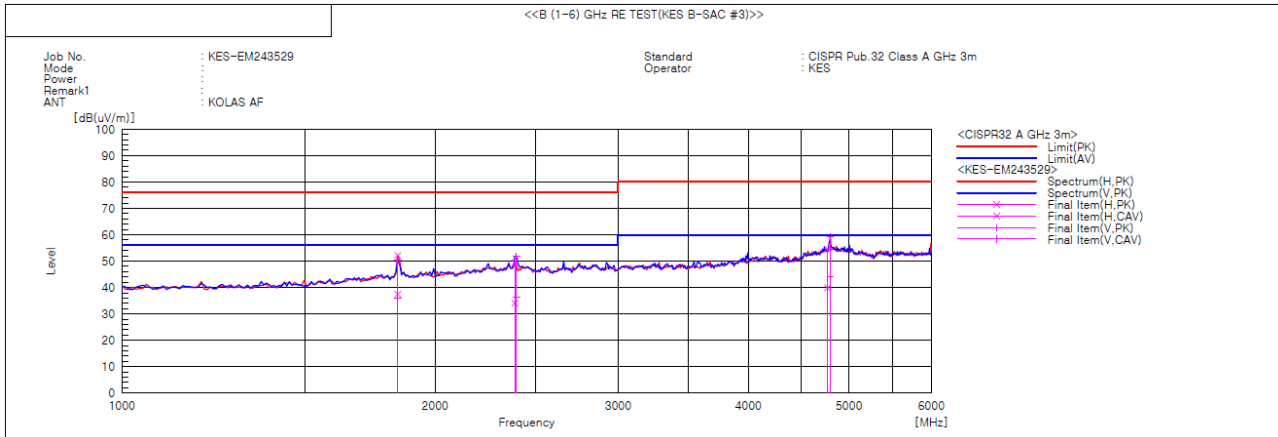
◆ Calculation

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

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

Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

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

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

| No. | Frequency [MHz] | (P) | Reading PK [dB(uV)] | Reading CAV [dB(uV)] | c.f [dB(1/m)] | Result PK [dB(uV/m)] | Result CAV [dB(uV/m)] | Limit PK [dB(uV/m)] | Limit AV [dB(uV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] | Remark |
|-----|-----------------|-----|---------------------|----------------------|---------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|--------|
| 1 | 1841.346 | V | 47.5 | 33.0 | 2.9 | 50.4 | 35.9 | 76.0 | 56.0 | 25.6 | 20.1 | 100.0 | 273.2 | |
| 2 | 1841.387 | H | 49.3 | 34.6 | 2.9 | 52.2 | 37.5 | 76.0 | 56.0 | 23.8 | 18.5 | 100.0 | 357.4 | |
| 3 | 2386.218 | H | 43.0 | 27.7 | 6.4 | 49.4 | 34.1 | 76.0 | 56.0 | 26.6 | 21.9 | 100.0 | 32.4 | |
| 4 | 2394.231 | V | 45.5 | 29.8 | 6.4 | 51.9 | 36.2 | 76.0 | 56.0 | 24.1 | 19.8 | 100.0 | 276.1 | |
| 5 | 4766.025 | H | 39.1 | 24.3 | 15.6 | 54.7 | 39.9 | 80.0 | 60.0 | 25.3 | 20.1 | 100.0 | 197.1 | |
| 6 | 4798.077 | V | 43.3 | 28.4 | 15.8 | 59.1 | 44.2 | 80.0 | 60.0 | 20.9 | 15.8 | 100.0 | 34.3 | |

◆Calculation

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

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

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

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

**Harmonic Current Emissions and Voltage Fluctuations and Flicker****Average harmonic current results**

| Hn | I _{eff} [A] | % of Limit | Limit [A] | Result |
|-----|----------------------|------------|-----------|--------|
| 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.*



Report No. : KES-EM243529

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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: | | | | | |





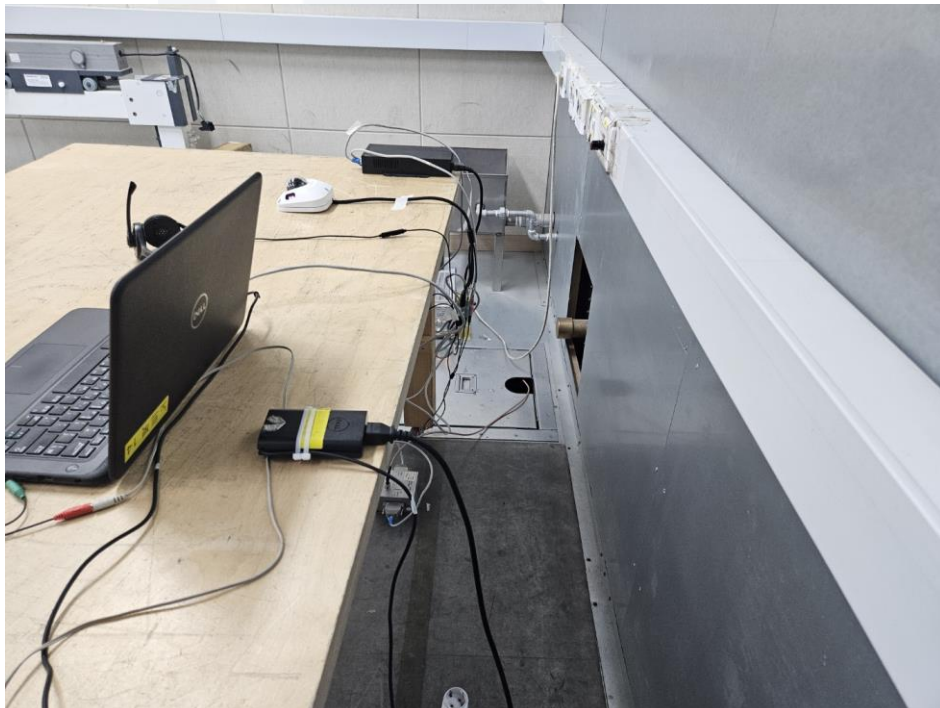
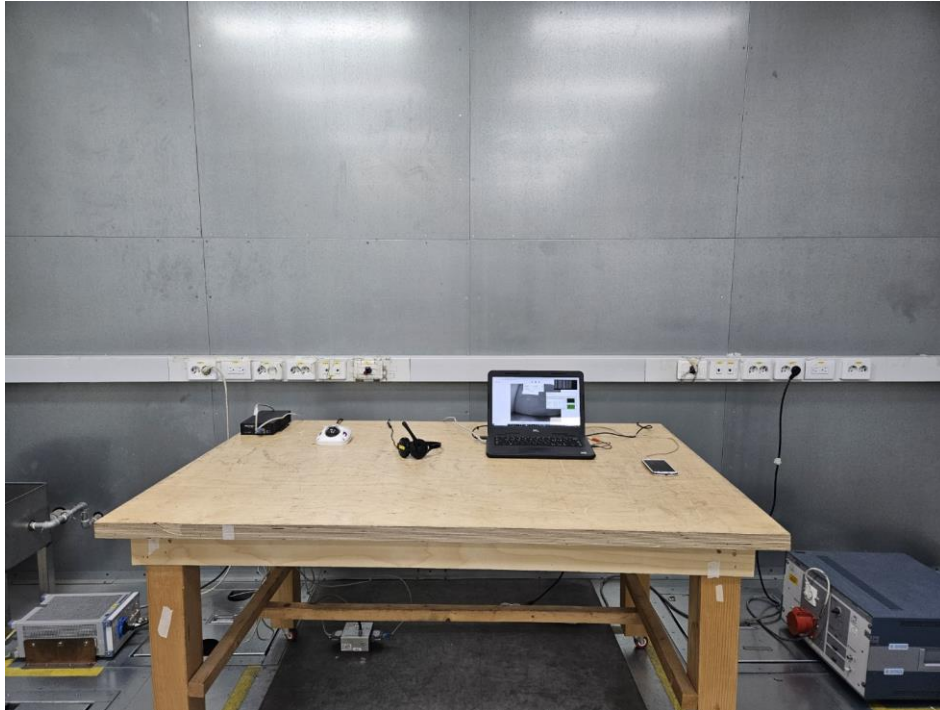
Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

N/A



Conducted Emissions at Telecommunication Ports





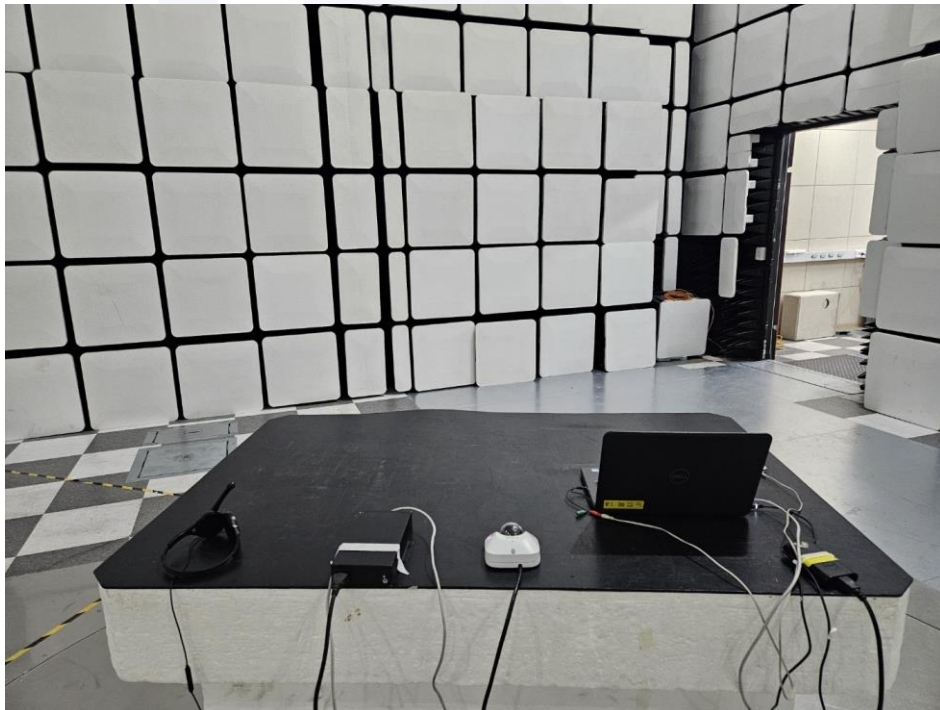
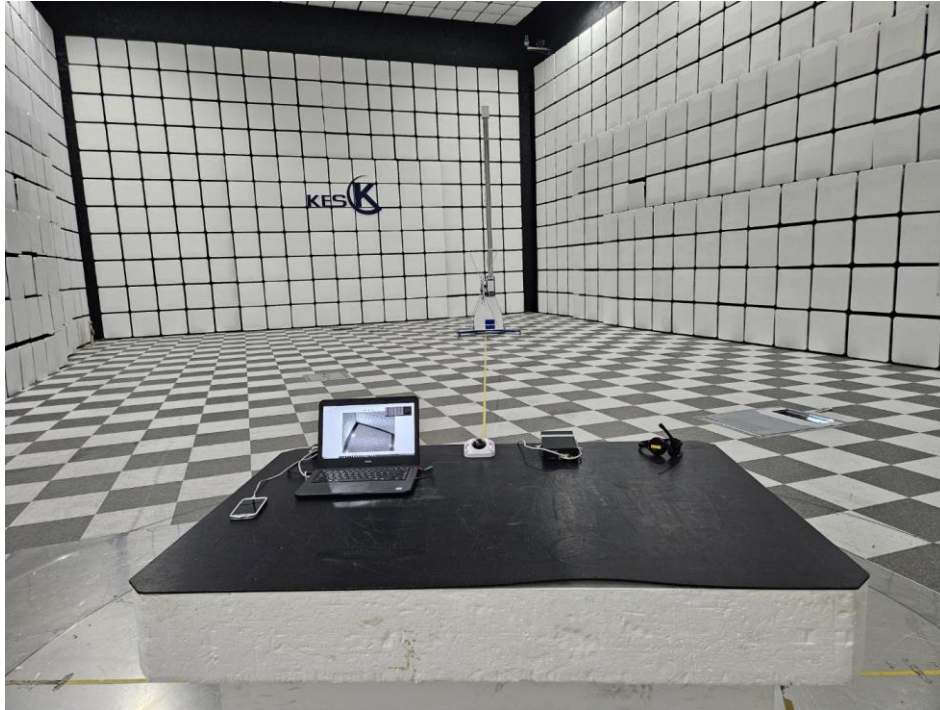
Impulse Noise (click)

N/A



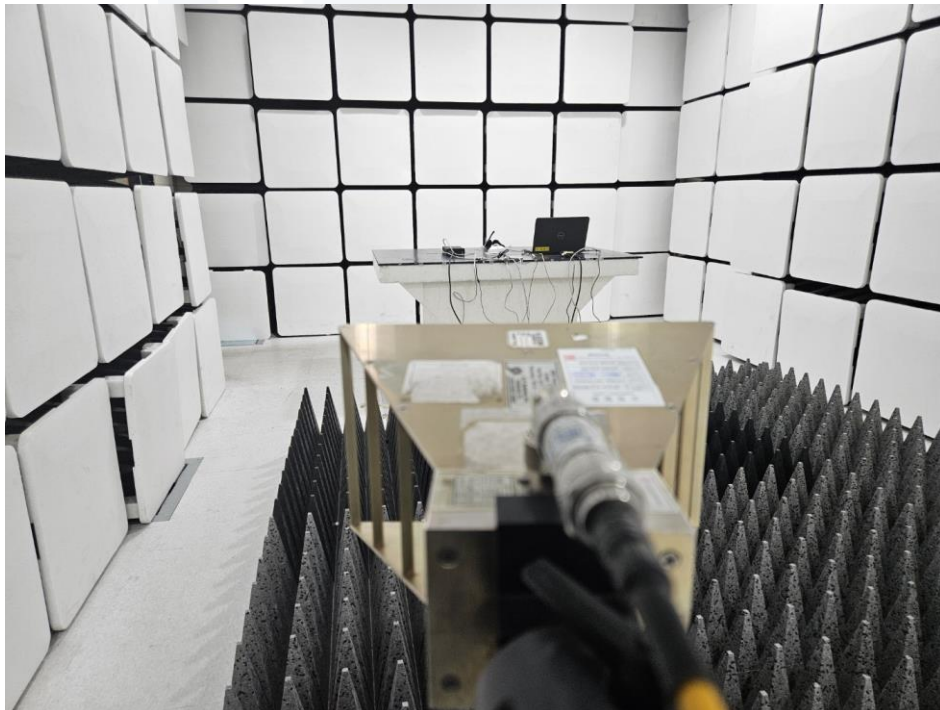


Radiated Electric Field Emissions(Below 1 GHz)





Radiated Electric Field Emissions(Above 1 GHz)





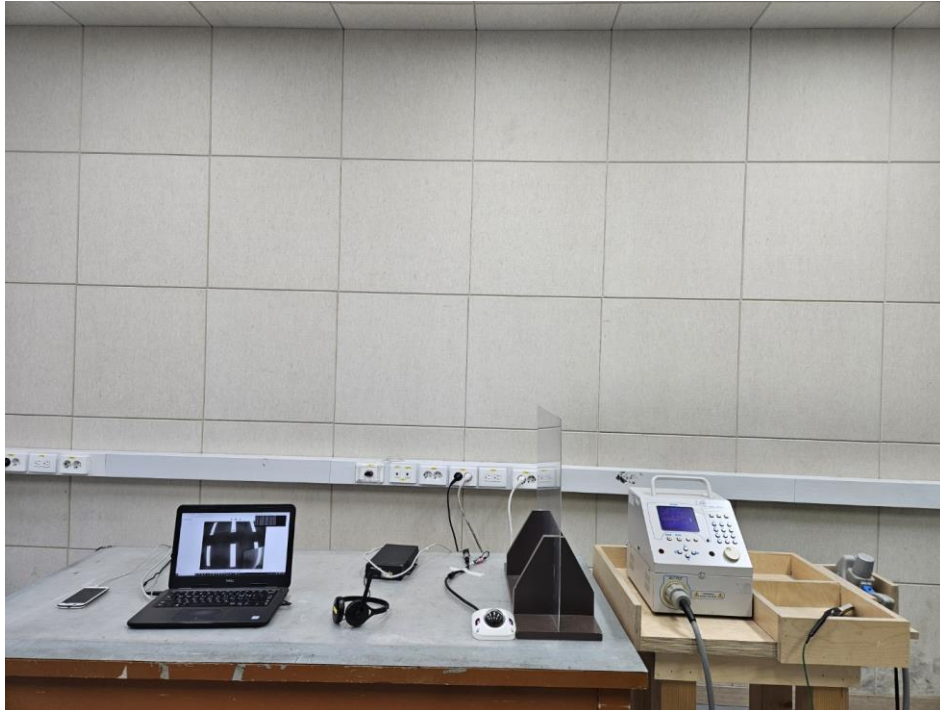
Harmonic Current Emissions and Voltage Fluctuations and Flicker

N/A





Electrostatic Discharge

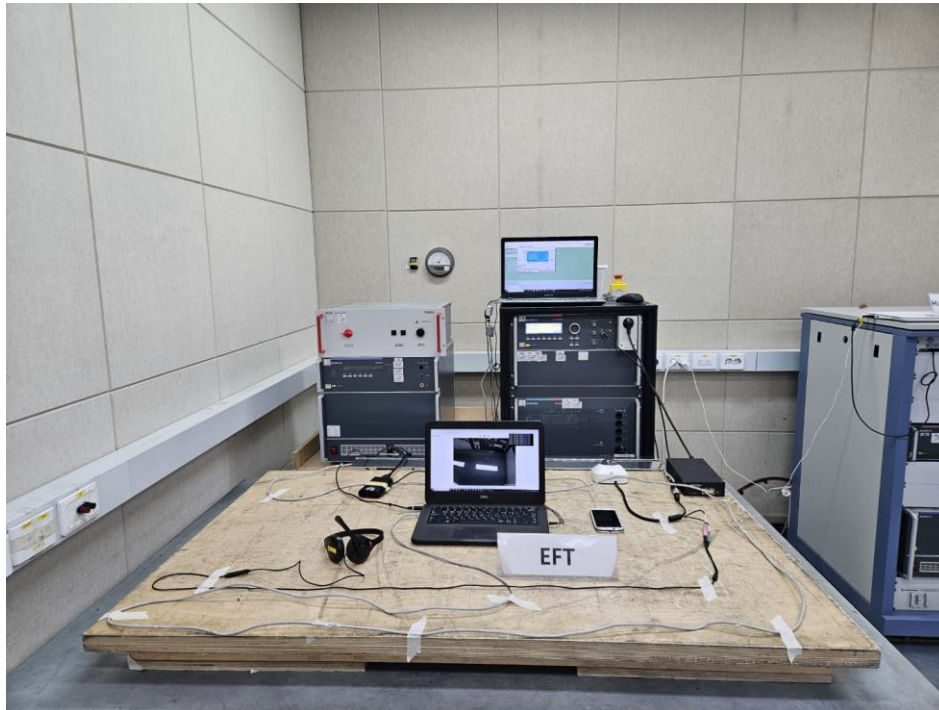


Radio-frequency Electromagnetic Field

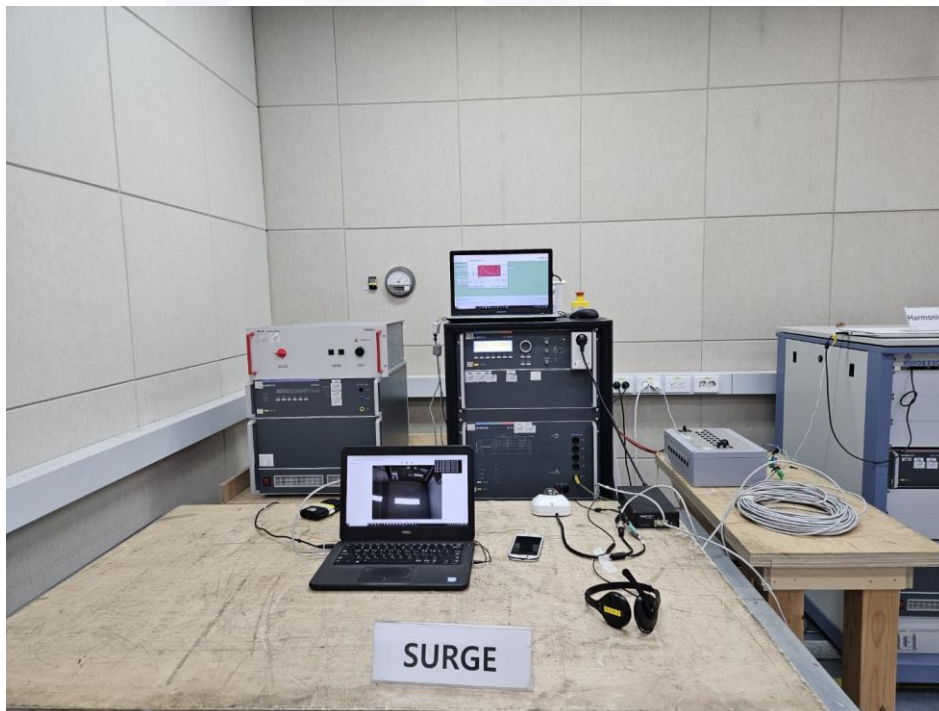




Fast Transients



Surges





Conducted Disturbance





Power Frequency Magnetic Field Immunity

[16.7 Hz (AC), 100 A/m]

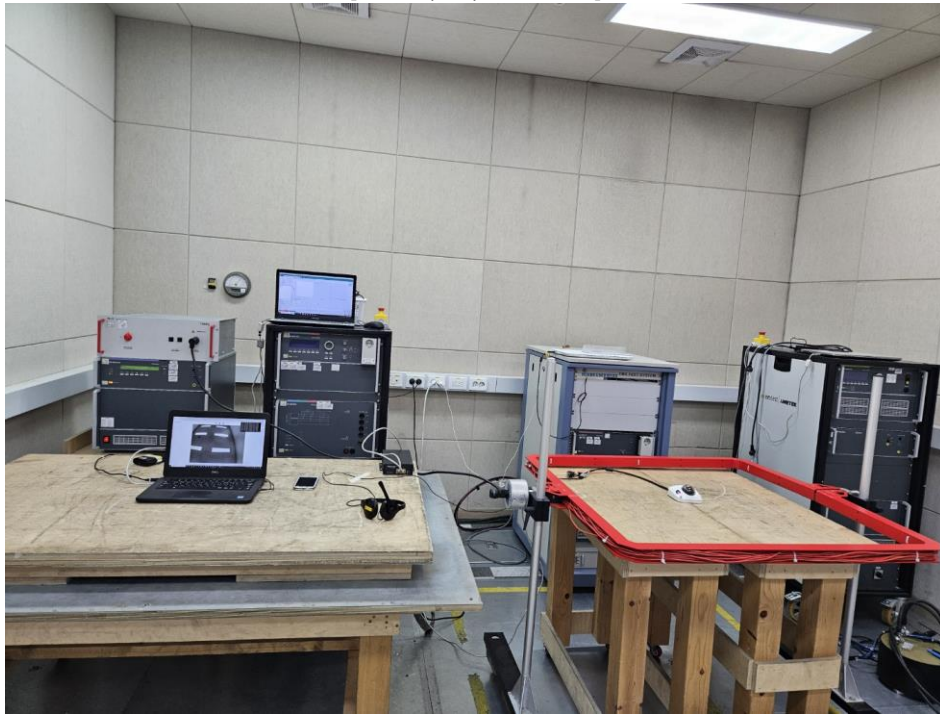


[50 Hz (AC), 100 A/m]





[0 Hz (DC), 300 A/m]





EUT Photographs

(Top)



(Bottom)





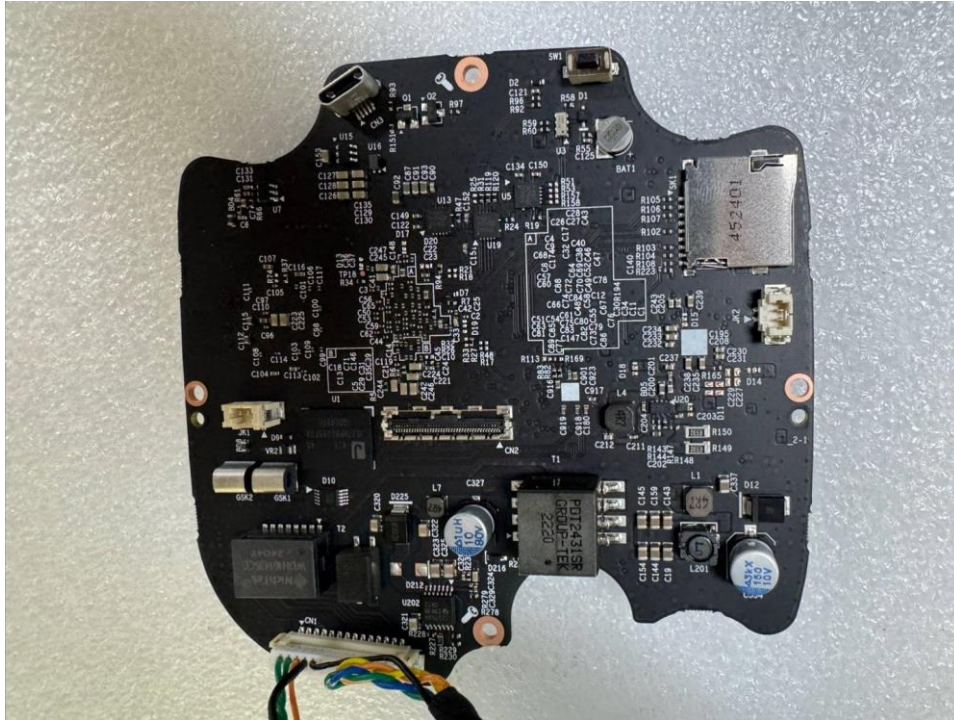
EUT Internal Photographs



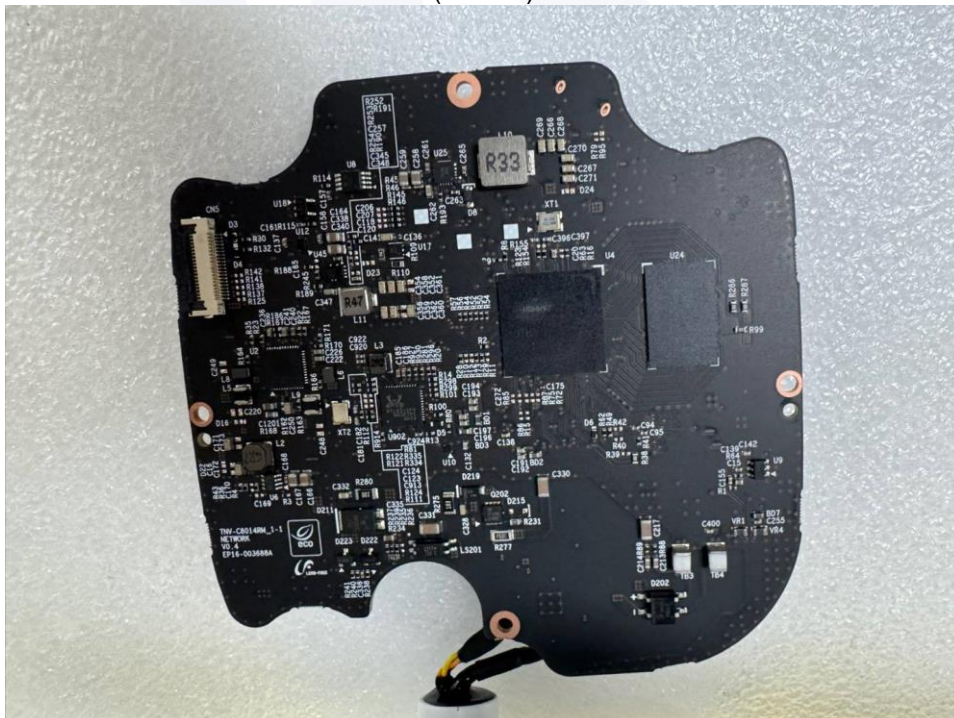


EUT Internal View – Main Board

(Top)



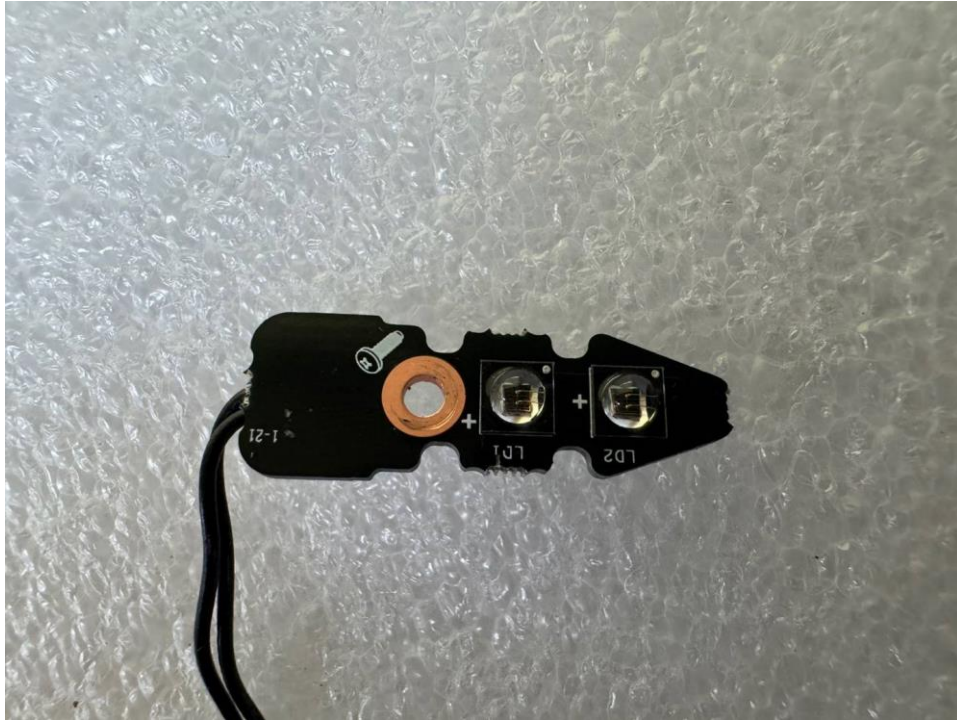
(Bottom)



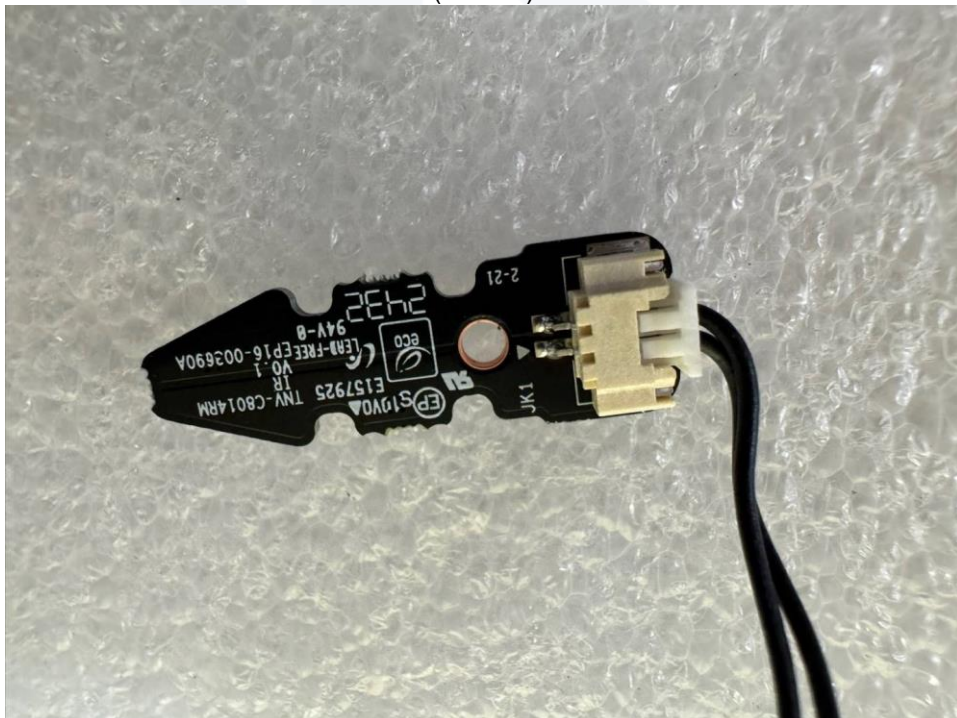


EUT Internal View – SUB Board 1

(Top)



(Bottom)



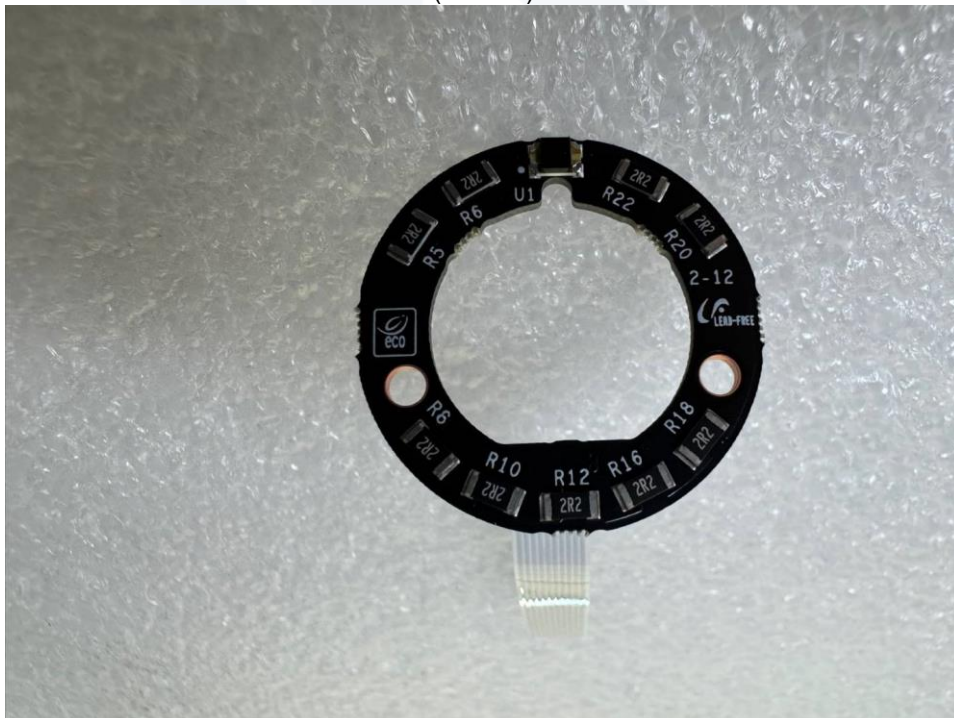


EUT Internal View – SUB Board 2

(Top)



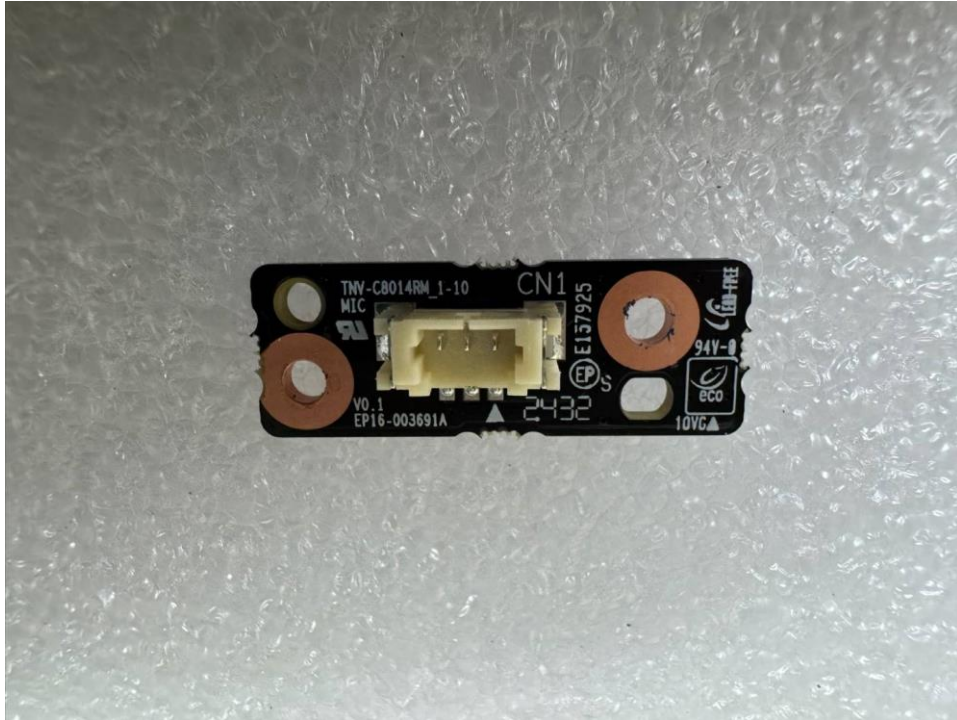
(Bottom)



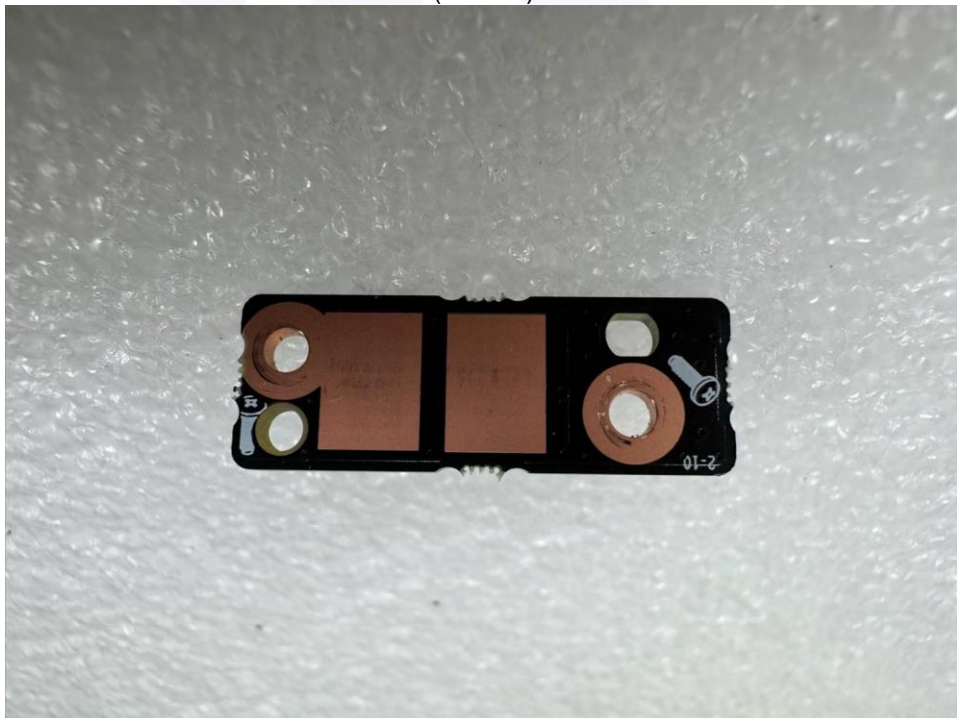


EUT Internal View – SUB Board 3

(Top)



(Bottom)



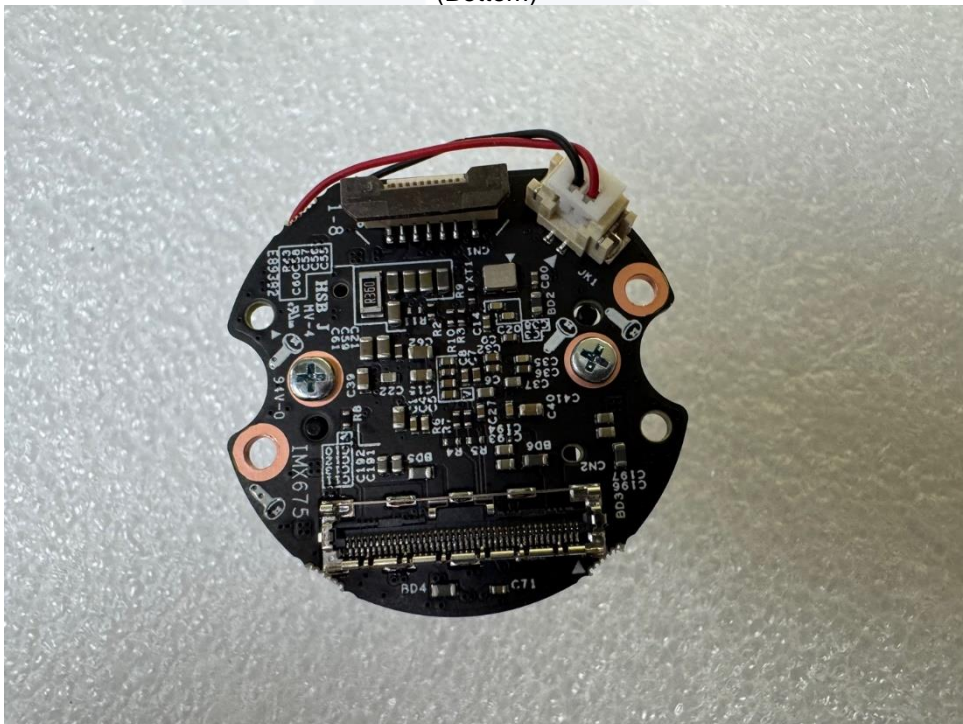


EUT Internal View – Lens Board

(Top)



(Bottom)





EUT Internal View – Microphone

(Top)



(Bottom)





Label and Location



NETWORK CAMERA

Model No : TNV-C8014RM

Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED

Made in Vietnam



The End.