

TEST REPORT



Report No. : KES-EM-23T0916

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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. : XNP-C9310R

Variant Model : -

Manufacturer : 1. HANWHA VISION VIETNAM COMPANY LIMITED
2. D-TECH CO.,LTD.

Manufacturer Address : 1. Lot O-2, Que Vo Industrial Zone extended area, Nam Son commune,
Bac Ninh city, Bac Ninh province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do, Korea

3. Date of Receipt : Oct. 13, 2023

4. Test date : Oct. 23, 2023 ~ Oct. 24, 2023

5. Date of Issue : Oct. 26, 2023

6. Test Results : In Compliance

Tested by

김종인

Dong In, Kim
EMC Test Engineer

Reviewed by

이종일

Dong Il, Lee
EMC Technical Manager

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

REPORT REVISION HISTORY

| Date | Test Report No. | Revision History |
|---------------|-----------------|------------------|
| Oct. 26, 2023 | KES-EM-23T0916 | Issued |
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1.0 General Product Description

Main Specifications of EUT are:

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

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

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

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

KES Co., Ltd.

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

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

1.1 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

☒ AC 240 V, 50 Hz

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

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

1.5 Support Equipments

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

1.6 External I/O Cabling

| Start | | END | | Cable Spec. | |
|----------------------|--------------------|---------------------------|--------------------|-------------|--------|
| Description | I/O Port | Description | I/O Port | Length | Shield |
| NETWORK CAMERA (EUT) | RJ-45 (PoE) | PoE Adapter (EUT) | RJ-45 (PoE) | 2.0 | U |
| | Micro SD Card Slot | Micro SD Card 1 | Micro SD Card Slot | - | - |
| | Micro SD Card Slot | Micro SD Card 2 | Micro SD Card Slot | - | - |
| Notebook 1 Adapter | DC Jack | Notebook 1 | DC Jack | 1.5 | U |
| PoE Adapter (EUT) | RJ-45 (LAN) | | RJ-45 (LAN) | 3.1 | U |
| | SFP | | SFP | - | - |
| | Ground | Enclosure Ground | Ground | 2.0 | - |
| Optical Converter | SFP | Optical Module 2 | SFP | - | - |
| | DC Jack | Optical Converter Adapter | DC Jack | 1.4 | U |
| | RJ-45 (LAN) | Notebook 2 | RJ-45 (LAN) | 2.0 | U |
| Notebook 2 Adapter | DC Jack | | DC Jack | 1.5 | U |

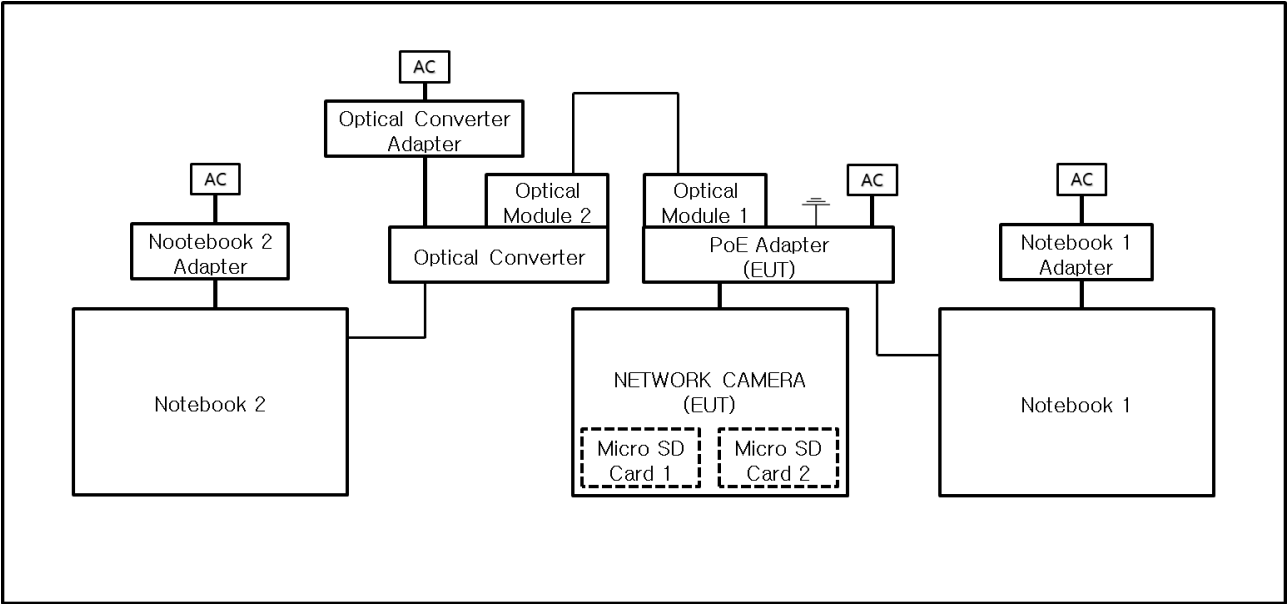
* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

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

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

1.8 Configuration



1.9 Remarks when standards applied

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





1.10 Calibration Details of Equipment Used for Measurement

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

1.11 Test Facility

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

1.12 Laboratory Accreditations and Listings

| Country | Agency | Scope of Accreditation | Logo |
|---------------|---------|---|--|
| KOREA | RRA | EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) |  KR0100 |
| International | KOLAS | EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) |  KT489 |
| USA | FCC | 3 m & 10 m Semi-Anechoic Chamber Conducted test site to perform FCC Part 15/18 measurements. |  KR0100 |
| Canada | ISED | 3 m & 10 m Semi-Anechoic Chamber and Conducted test site |  23298 |
| JAPAN | VCCI | EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) |  C-20136, T-20137, R-20181, G-20176 |
| Europe | TÜV SÜD | EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) |  CARAT 001633 0004 |

2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **AS/NZS CISPR 32:2015 AMD 1:2020**

☒ Class A

☐ Class B

2.1 Conducted Emissions at Mains Power Ports

Test Date

Oct. 23, 2023

Test Location

Electro wave Shieldroom #6

Test Equipment

| Used | Description | Model Number | Manufacturer | Serial Number | Cal. Due |
|-------------------------------------|-------------------|--------------|--------------|---------------|--------------|
| <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, 11, 2023 |
| <input checked="" type="checkbox"/> | LISN | ENV216 | R & S | 101787 | 11, 10, 2023 |
| <input checked="" type="checkbox"/> | LISN | ESH2-Z5 | R & S | 100450 | 11, 10, 2023 |
| <input checked="" type="checkbox"/> | PULSE LIMITER | ESH3-Z2 | R & S | 101915 | 11, 10, 2023 |

Test Conditions

Temperature: (22,8 ± 0,0) °C

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

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Oct. 23, 2023

Test Location

Electro wave Shieldroom #6

Test Equipment

| Used | Description | Model Number | Manufacturer | Serial Number | Cal. Due |
|-------------------------------------|-------------------|--------------|--------------|---------------|--------------|
| <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, 11, 2023 |
| <input checked="" type="checkbox"/> | LISN | ENV216 | R & S | 101787 | 11, 10, 2023 |
| <input checked="" type="checkbox"/> | LISN | ESH2-Z5 | R & S | 100450 | 11, 10, 2023 |
| <input checked="" type="checkbox"/> | PULSE LIMITER | ESH3-Z2 | R & S | 101915 | 11, 10, 2023 |
| <input type="checkbox"/> | 8-WIRE ISN CAT3,5 | ENY81 | R & S | 100174 | 03, 06, 2024 |
| <input checked="" type="checkbox"/> | 8-WIRE ISN CAT6 | ENY81-CAT6 | R & S | 101665 | 11, 10, 2023 |

Test Conditions

Temperature: (22,8 ± 0,0) °C

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

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

- See Appendix A for test data.

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

2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Oct. 23, 2023

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

| Used | Description | Model Number | Manufacturer | Serial Number | Cal. Due |
|-------------------------------------|--------------------------|--------------|------------------|---------------|--------------|
| <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 | 03, 21, 2024 |
| <input checked="" type="checkbox"/> | AMPLIFIER | SCU 01 | R & S | 100603 | 11, 10, 2023 |
| <input checked="" type="checkbox"/> | TRILOG-BROADBAND ANTENNA | VULB9163 | Schwarzbeck | 715 | 11, 17, 2024 |
| <input checked="" type="checkbox"/> | ATTENUATOR | 8491A | HP | 32173 | 03, 03, 2024 |

Test Conditions

Temperature: (22,5 ± 0,0) °C

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

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.

2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Oct. 24, 2023

Test Location

SEMI ANECHOIC CHAMBER #5

Test Equipment

| Used | Description | Model Number | Manufacturer | Serial Number | Cal. Due |
|-------------------------------------|-------------------|--------------|------------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W | ES10/RE | TOYO Corporation | 2022.01.000 | - |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER | ESU26 | Rohde & Schwarz | 100552 | 03, 21, 2024 |
| <input checked="" type="checkbox"/> | HORN ANTENNA | BBHA 9120D | SCHWARZBECK | 9120D-1802 | 11, 08, 2023 |
| <input checked="" type="checkbox"/> | PREAMPLIFIER | 8449B | HP | 3008A00538 | 05, 31, 2024 |
| <input checked="" type="checkbox"/> | ATTENUATOR | 8491B | HP | 23094 | 03, 21, 2024 |

Test Conditions

Temperature: (24,0 ± 0,0) °C

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

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

- See Appendix A for test data.
- The Average of the test data is the cispr average result.

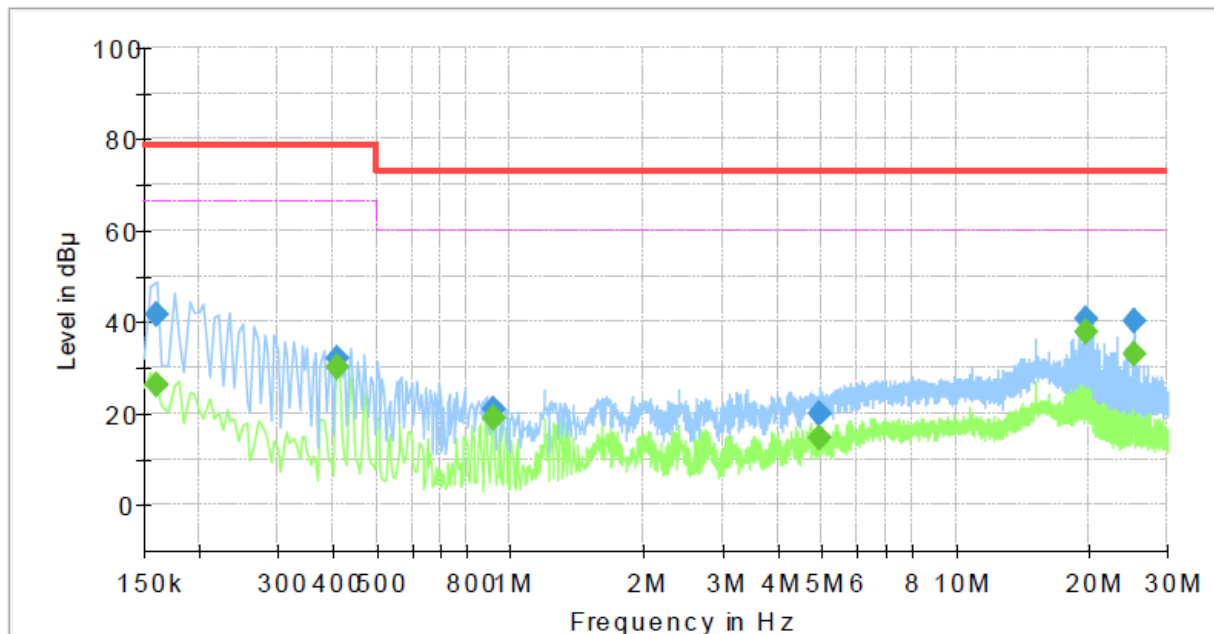
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

HOT LINE

Common Information

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



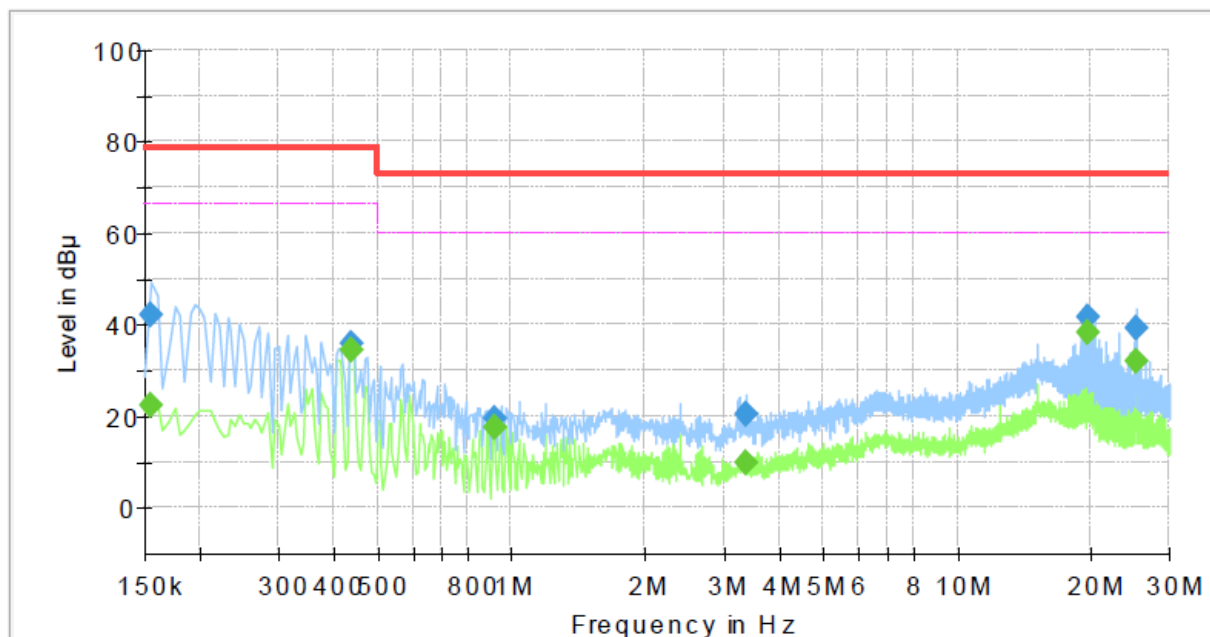
Final Result

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

NEUTRAL LINE

Common Information

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

**Final Result**

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.155000 | --- | 22.48 | 66.00 | 43.52 | 1000.0 | 9.000 | N | 19.4 |
| 0.155000 | 42.22 | --- | 79.00 | 36.78 | 1000.0 | 9.000 | N | 19.4 |
| 0.440000 | --- | 34.62 | 66.00 | 31.38 | 1000.0 | 9.000 | N | 19.4 |
| 0.440000 | 35.79 | --- | 79.00 | 43.21 | 1000.0 | 9.000 | N | 19.4 |
| 0.915000 | --- | 17.34 | 60.00 | 42.66 | 1000.0 | 9.000 | N | 19.5 |
| 0.915000 | 19.38 | --- | 73.00 | 53.62 | 1000.0 | 9.000 | N | 19.5 |
| 3.370000 | --- | 9.84 | 60.00 | 50.16 | 1000.0 | 9.000 | N | 19.6 |
| 3.370000 | 20.26 | --- | 73.00 | 52.74 | 1000.0 | 9.000 | N | 19.6 |
| 19.710000 | --- | 38.23 | 60.00 | 21.77 | 1000.0 | 9.000 | N | 20.2 |
| 19.710000 | 41.53 | --- | 73.00 | 31.47 | 1000.0 | 9.000 | N | 20.2 |
| 25.205000 | --- | 31.98 | 60.00 | 28.02 | 1000.0 | 9.000 | N | 20.3 |
| 25.205000 | 39.25 | --- | 73.00 | 33.75 | 1000.0 | 9.000 | N | 20.3 |

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

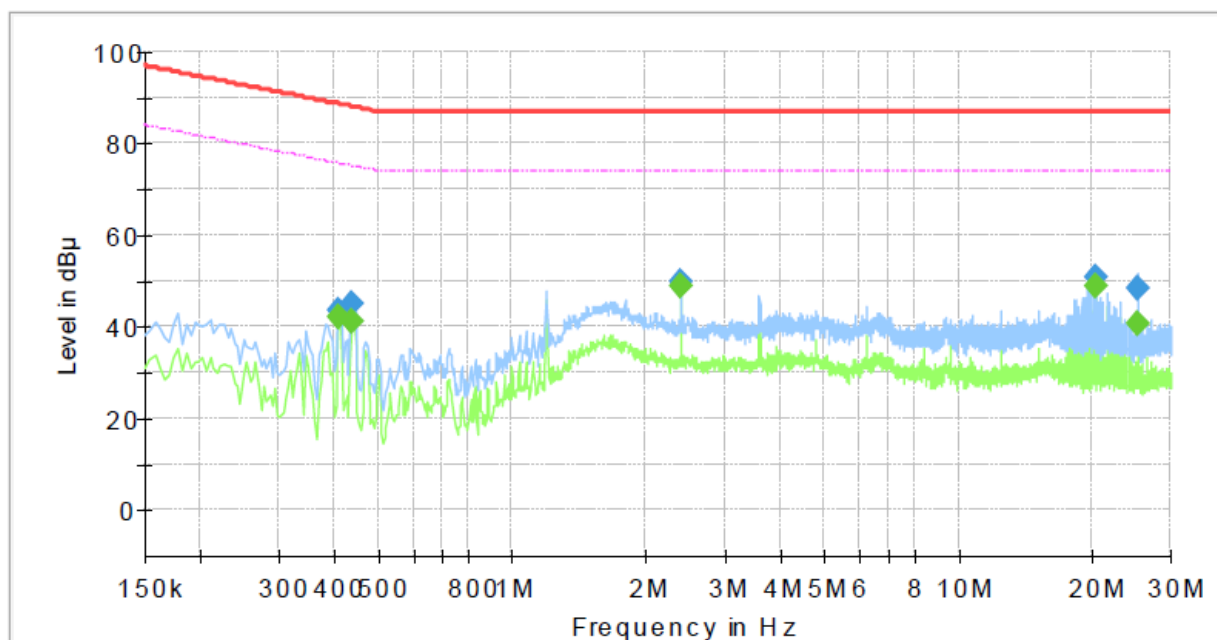
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

Conducted Emissions at Telecommunication Ports

[1 000 Mbps]

Common Information

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



Final Result

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

◆ Calculation

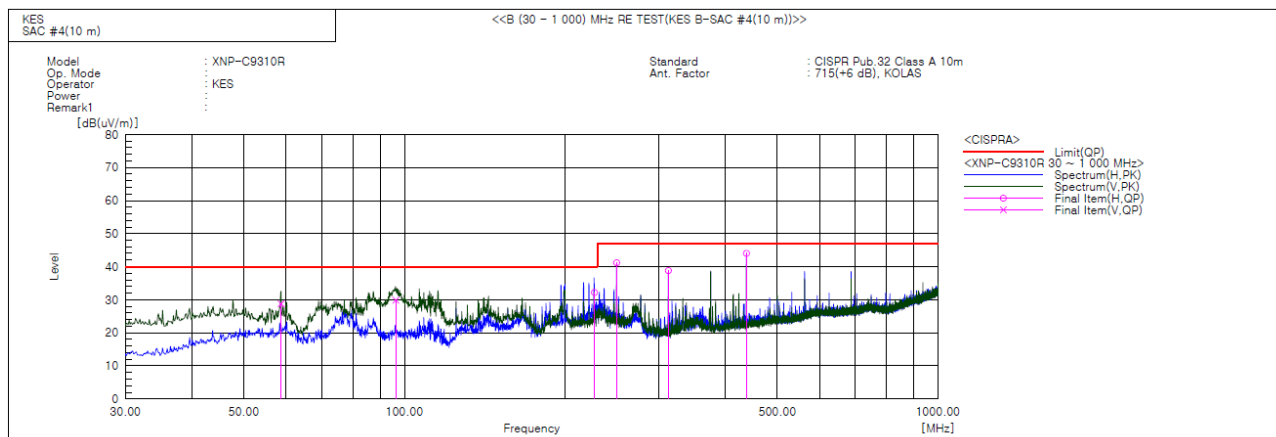
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

Radiated Electric Field Emissions(Below 1 GHz)



Final Result

| No. | Frequency [MHz] | (P) | Reading QP [dB(uV)] | c.f [dB(1/m)] | Result QP [dB(uV/m)] | Limit QP [dB(uV/m)] | Margin QP [dB] | Height [cm] | Angle [deg] | Remark |
|-----|-----------------|-----|---------------------|---------------|----------------------|---------------------|----------------|-------------|-------------|--------|
| 1 | 58.729 | V | 50.1 | -21.3 | 28.8 | 40.0 | 11.2 | 105.0 | 262.0 | |
| 2 | 96.321 | V | 52.2 | -22.3 | 29.9 | 40.0 | 10.1 | 111.0 | 82.0 | |
| 3 | 227.011 | H | 51.5 | -19.3 | 32.2 | 40.0 | 7.8 | 390.0 | 199.0 | |
| 4 | 250.014 | H | 60.0 | -18.8 | 41.2 | 47.0 | 5.8 | 383.0 | 214.0 | |
| 5 | 312.524 | H | 55.6 | -16.8 | 38.8 | 47.0 | 8.2 | 388.0 | 243.0 | |
| 6 | 437.532 | H | 56.7 | -12.7 | 44.0 | 47.0 | 3.0 | 384.0 | 329.0 | |

◆ Calculation

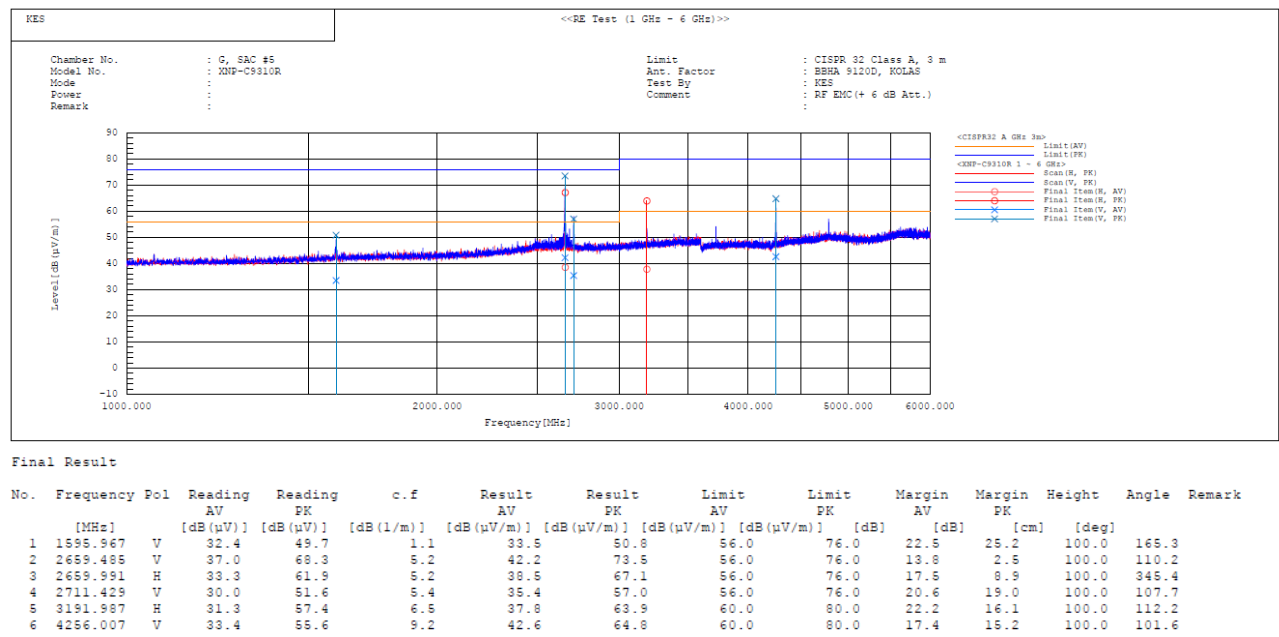
Result(QP) [dB(μV/m)] = (Reading(QP)[dB(μV)] + c.f[dB(1/m)])

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)



◆ Calculation

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

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

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

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

Test Setup Photos and Configuration

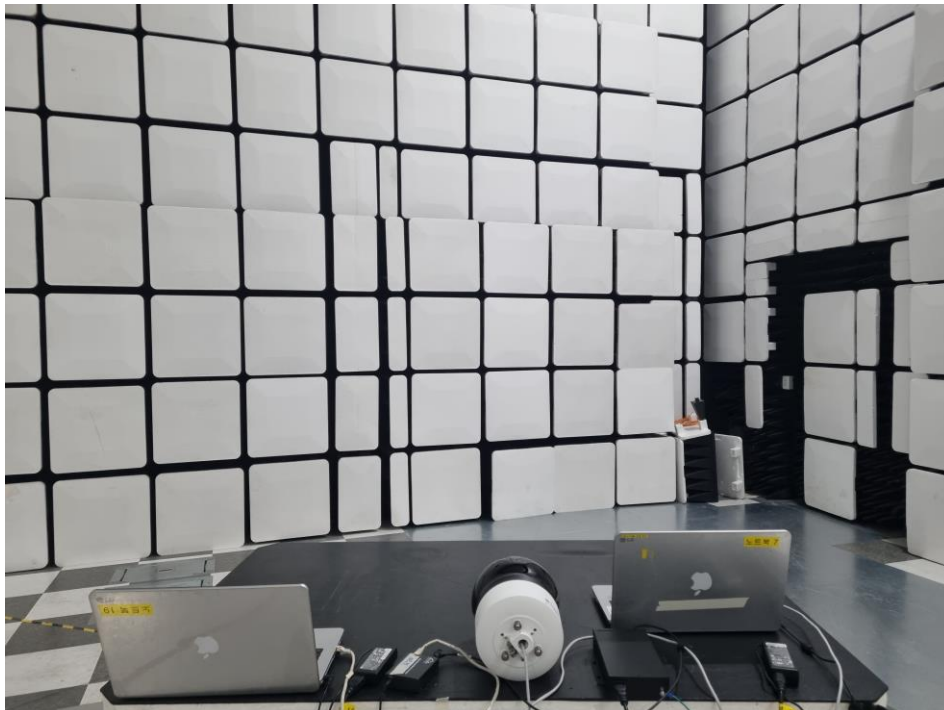
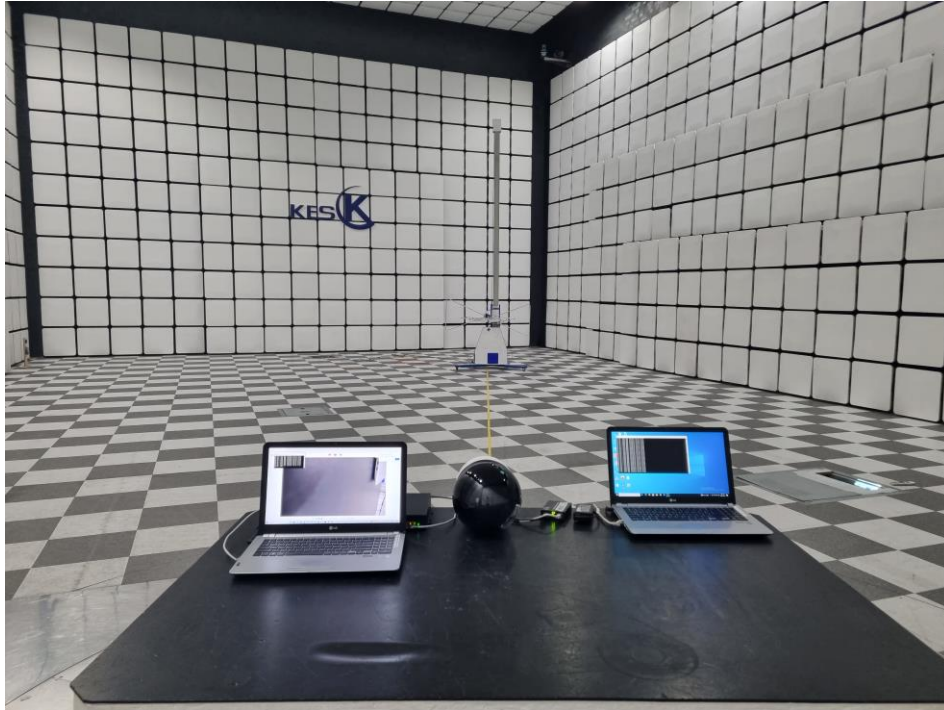
Conducted Emissions at Mains Power Ports



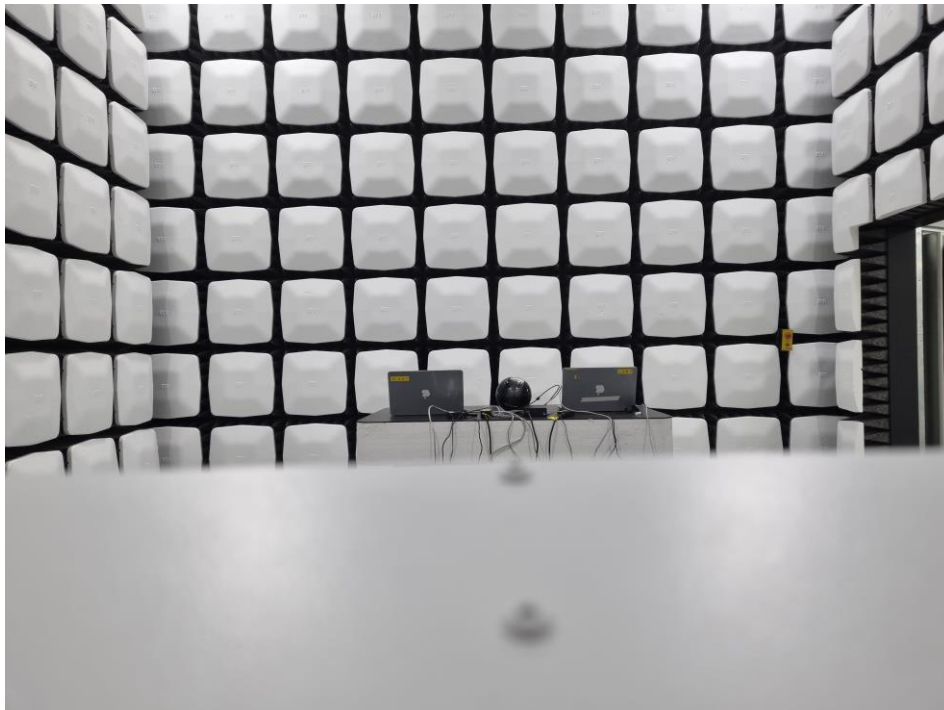
Conducted Emissions at Telecommunication Ports



Radiated Electric Field Emissions(Below 1 GHz)



Radiated Electric Field Emissions(Above 1 GHz)



EUT External Photographs

(Top)



(Bottom)



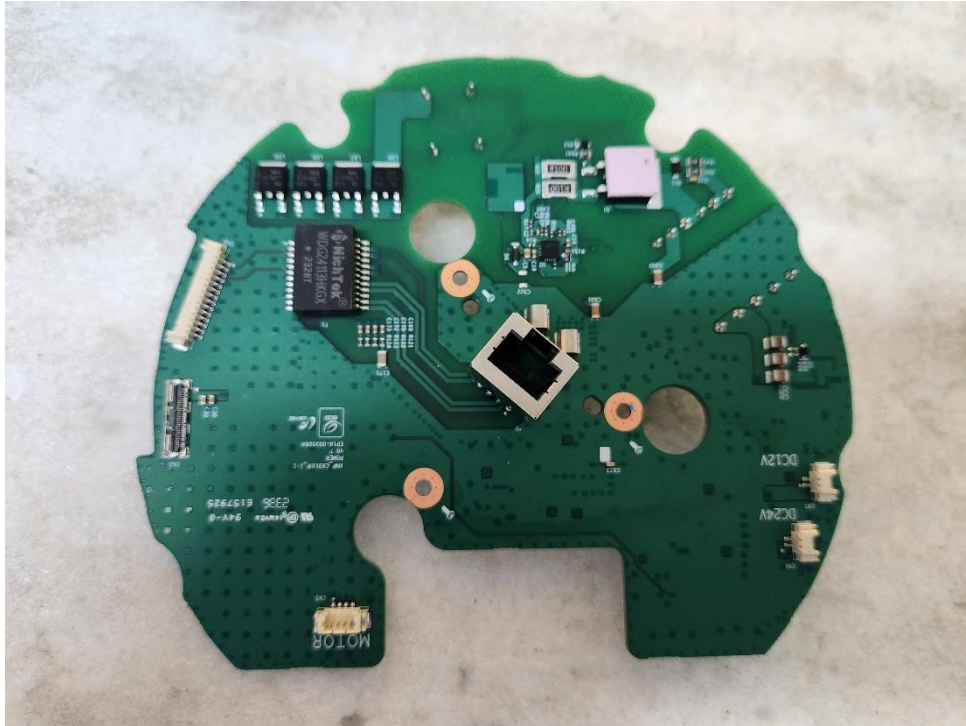
EUT Internal Photographs

(Internal View)

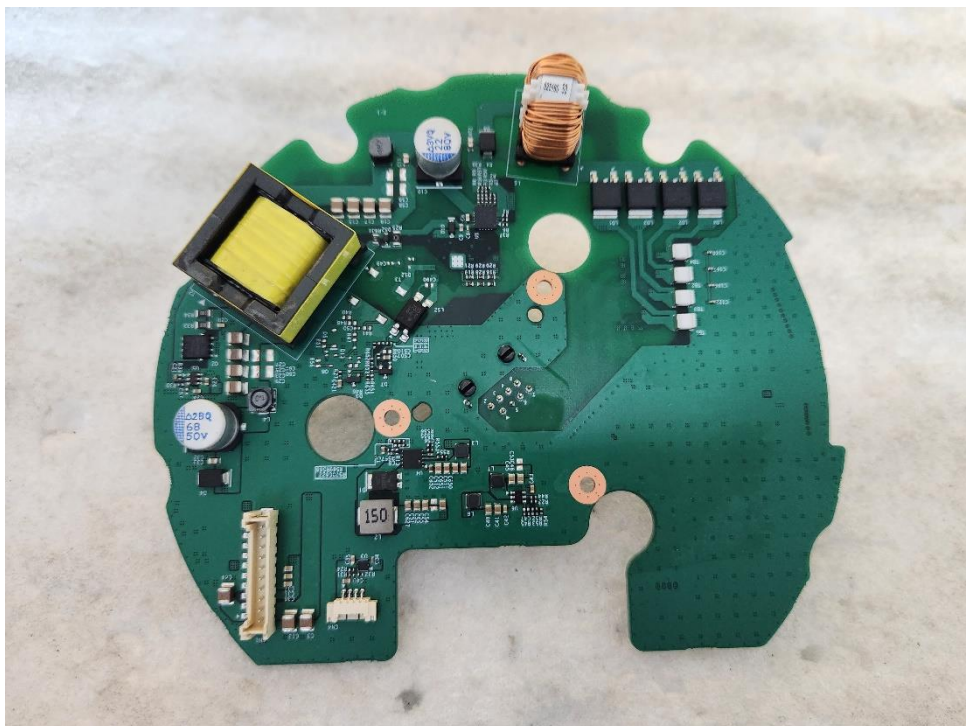


EUT Internal View – Main Board

(Top)

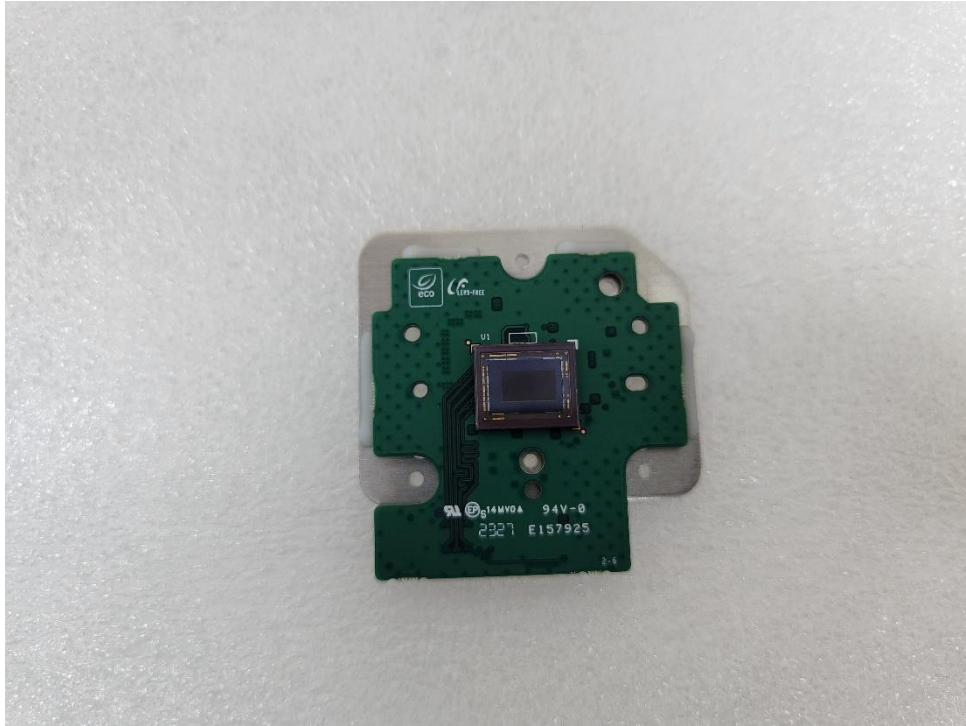


(Bottom)

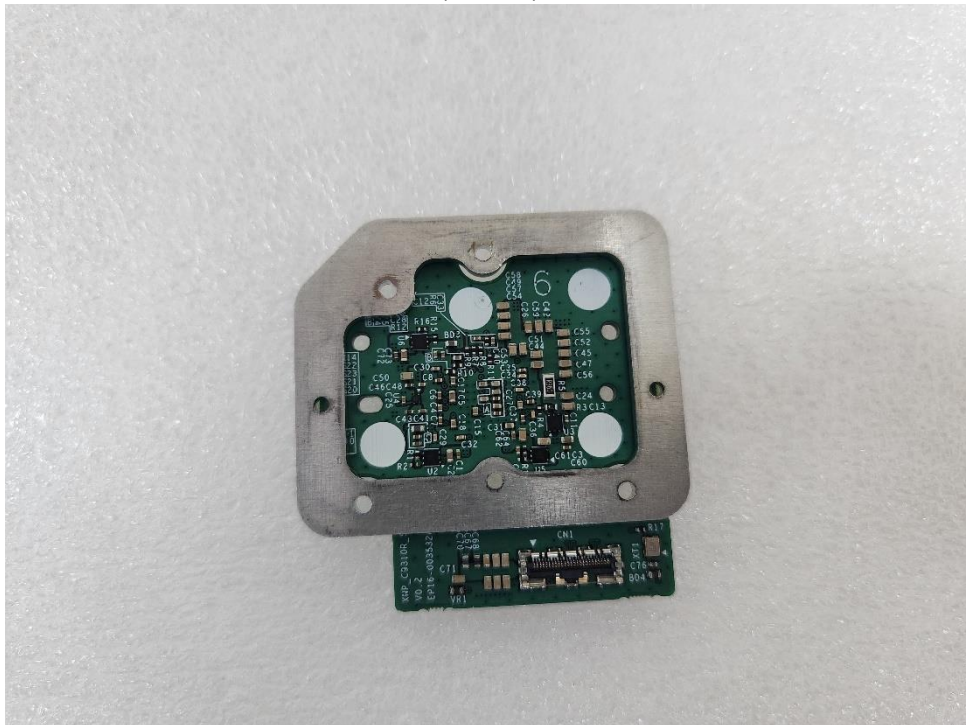


EUT Internal View – Lens Board

(Top)

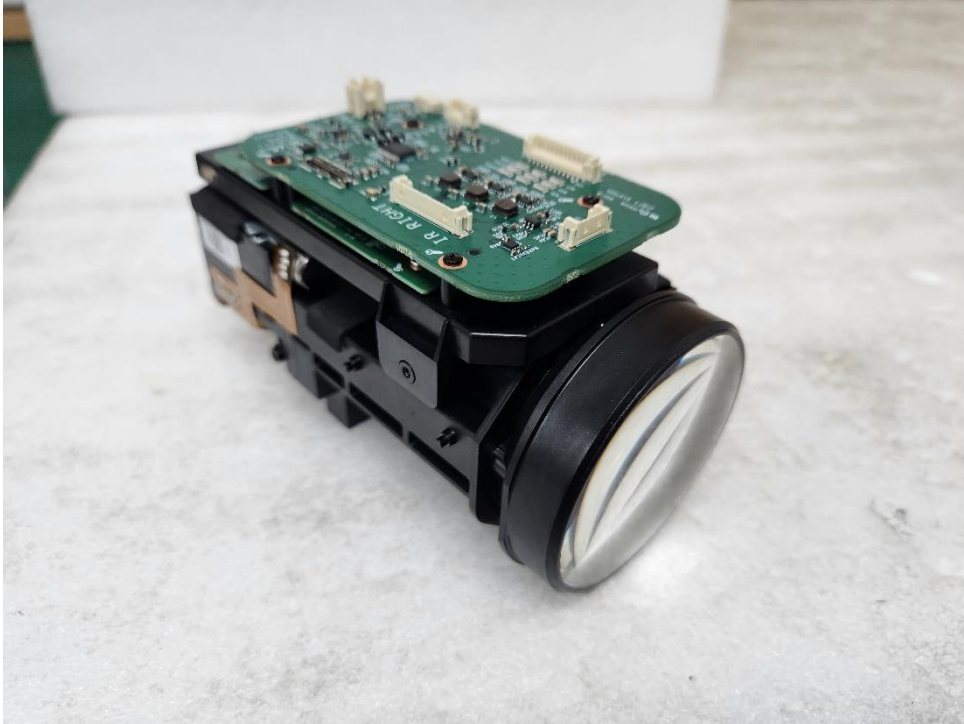


(Bottom)

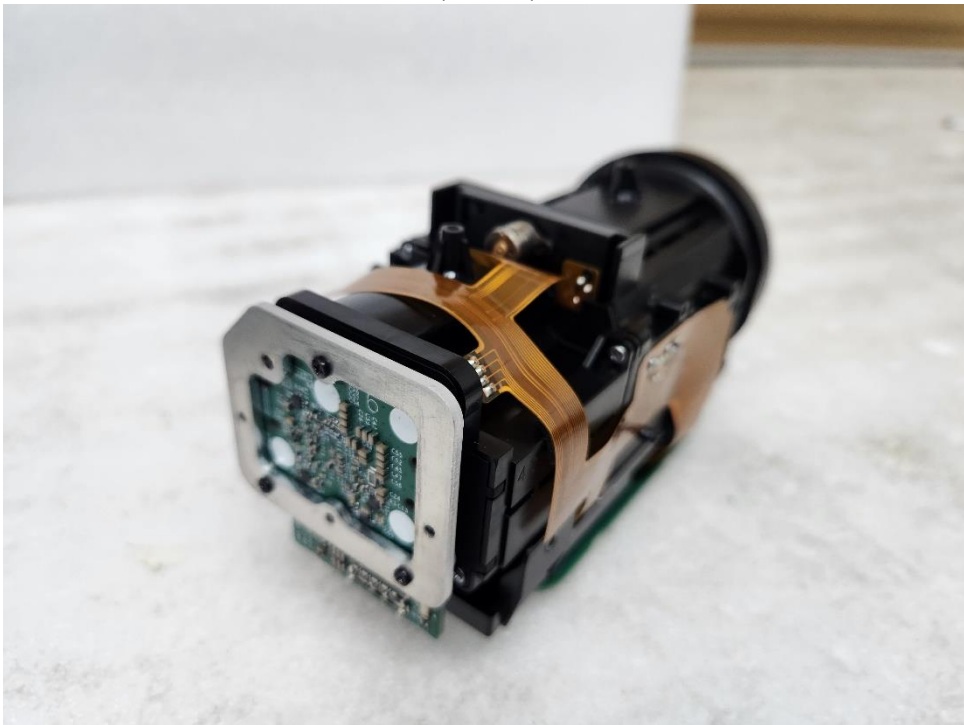


EUT Internal View – Lens

(Top)



(Bottom)

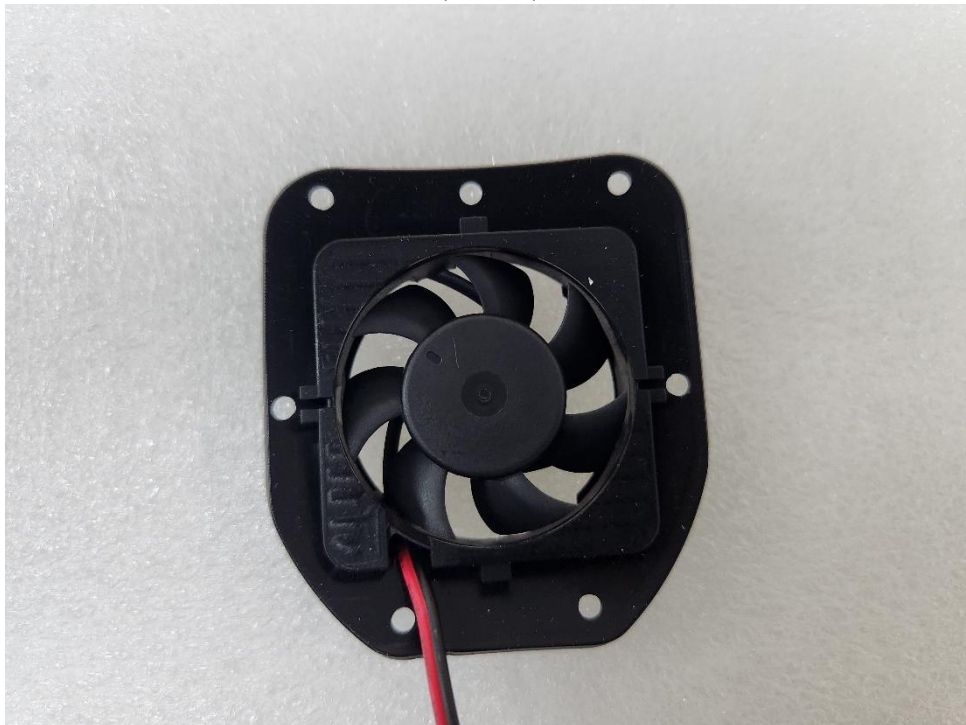


EUT Internal View – FAN 1

(Top)



(Bottom)

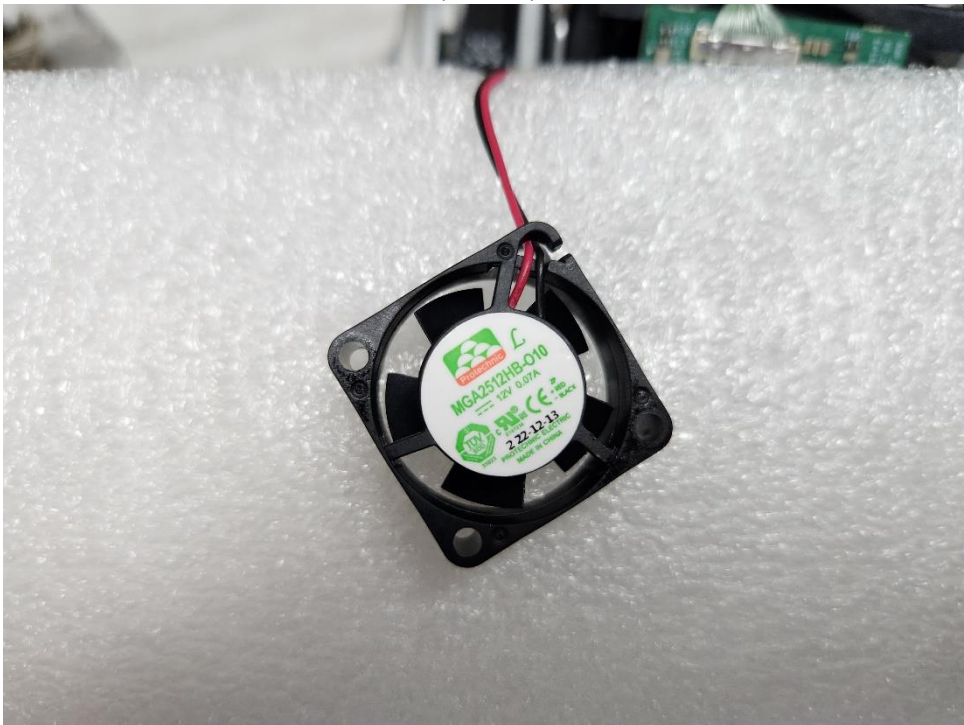


EUT Internal View – FAN 2

(Top)

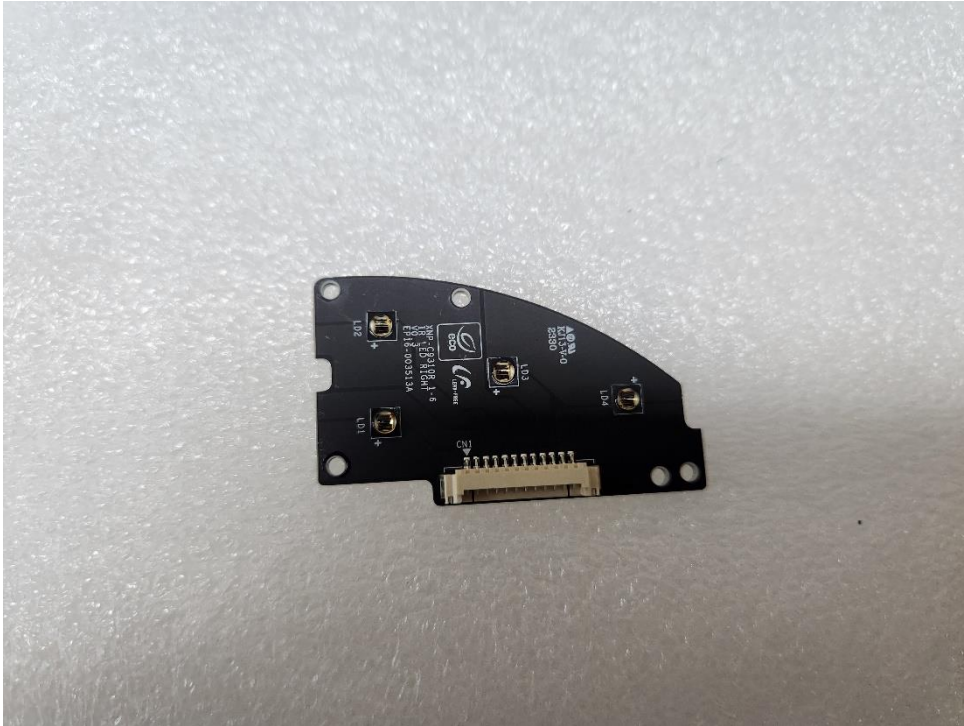


(Bottom)



EUT Internal View – IR Board 1

(Top)

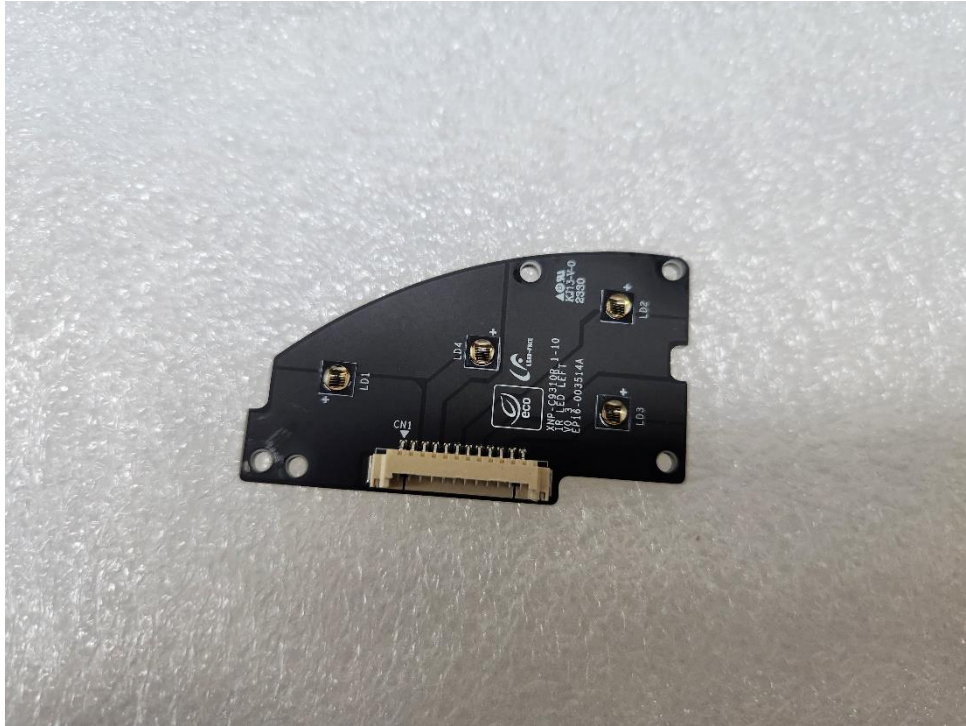


(Bottom)



EUT Internal View – IR Board 2

(Top)

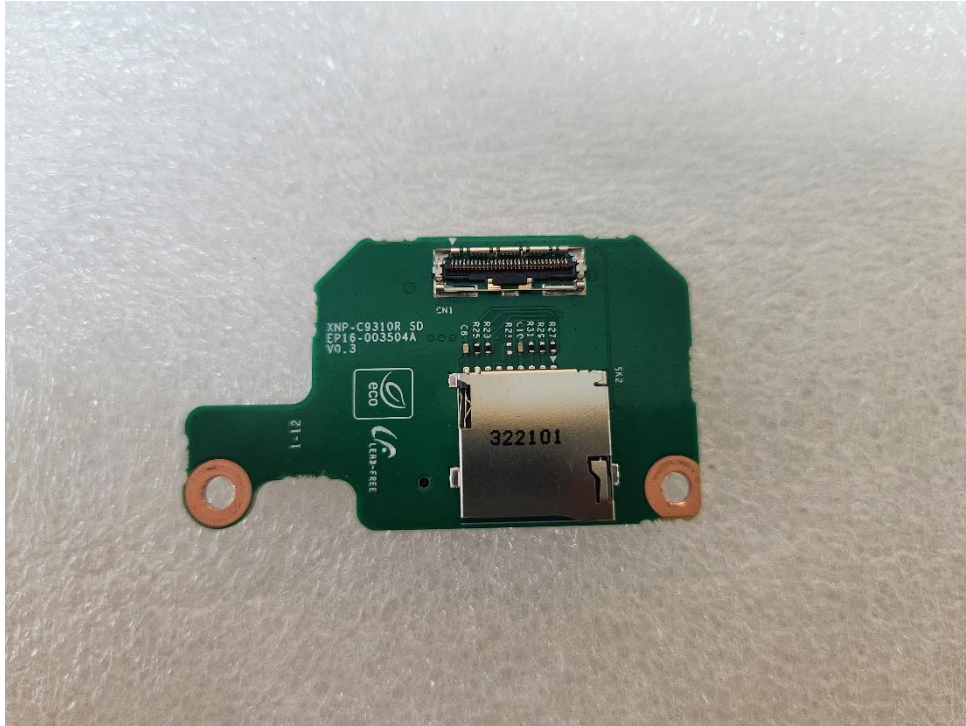


(Bottom)

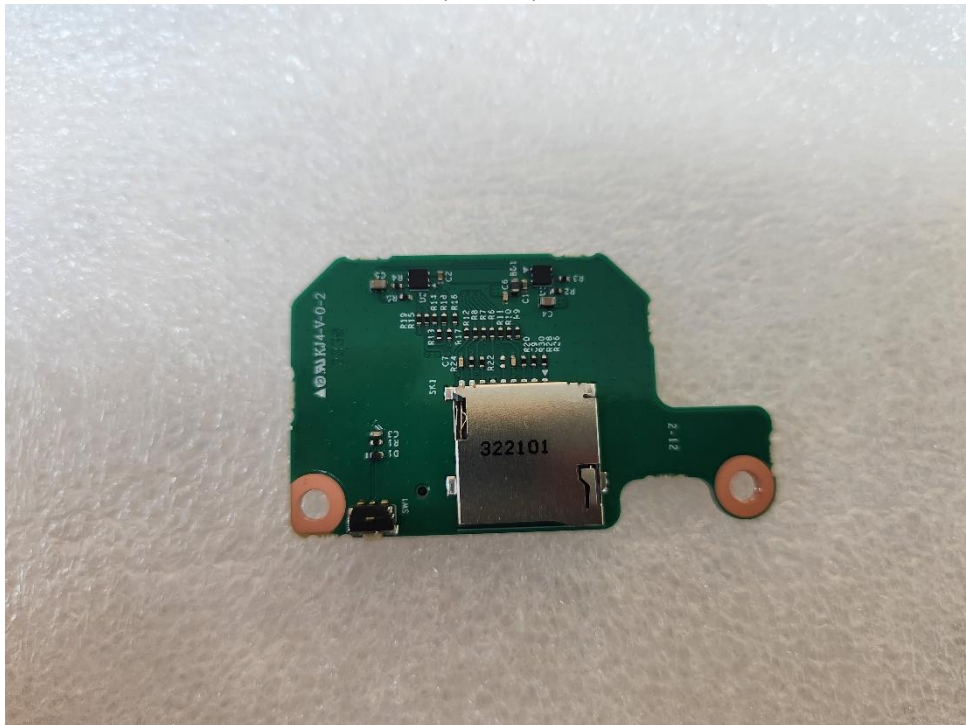


EUT Internal View – SD Card Board

(Top)

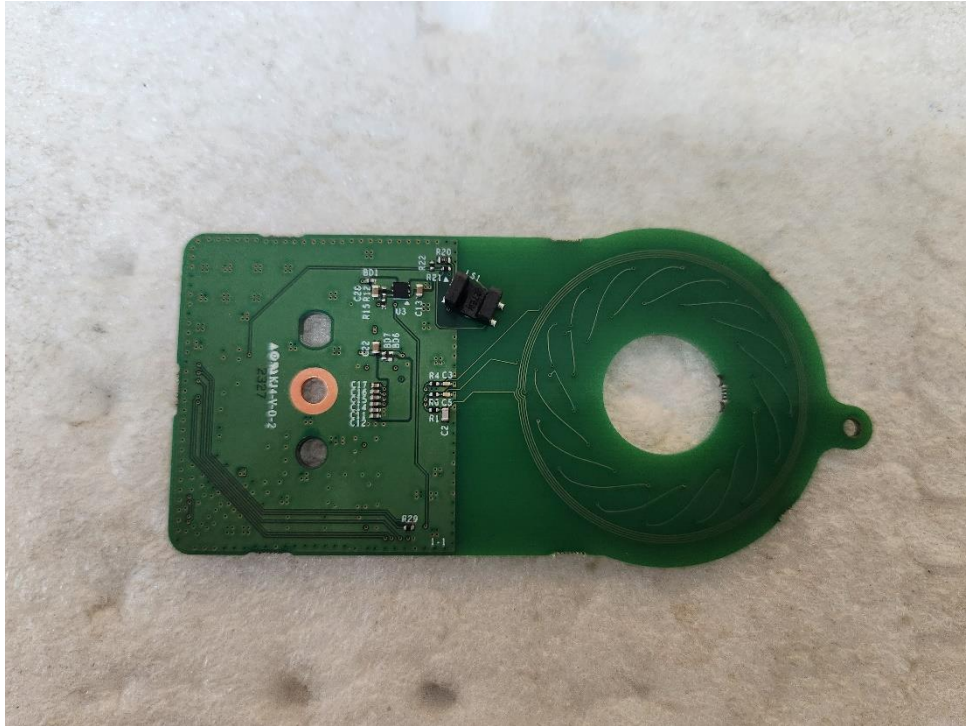


(Bottom)

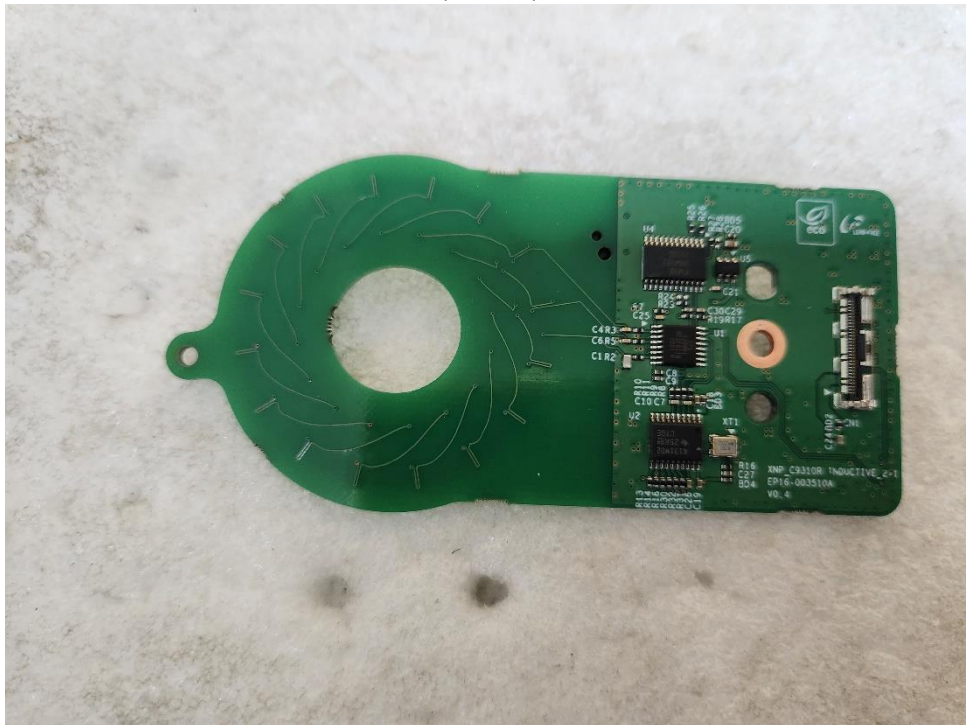


EUT Internal View – SUB Board 1

(Top)

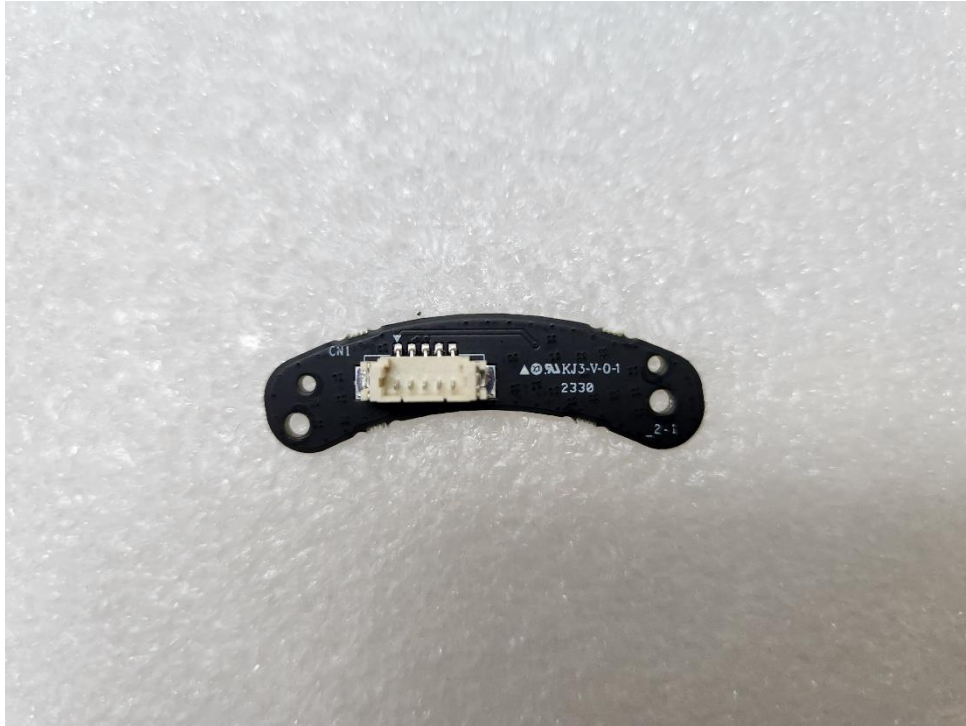


(Bottom)



EUT Internal View – SUB Board 2

(Top)



(Bottom)

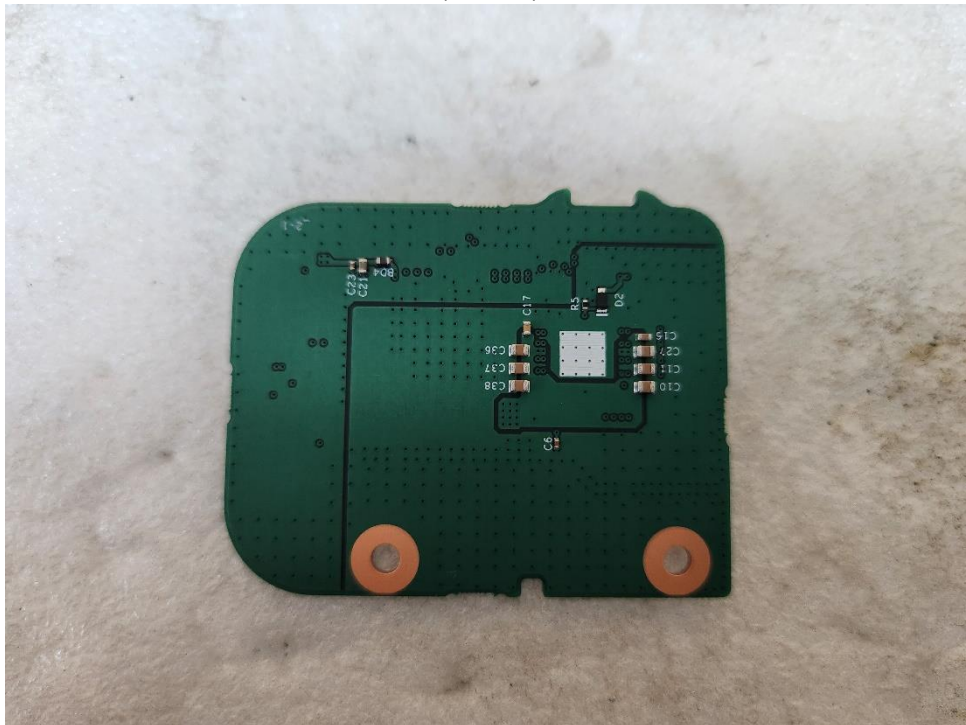


EUT Internal View – SUB Board 3

(Top)



(Bottom)



EUT Internal View – SUB Board 4

(Top)

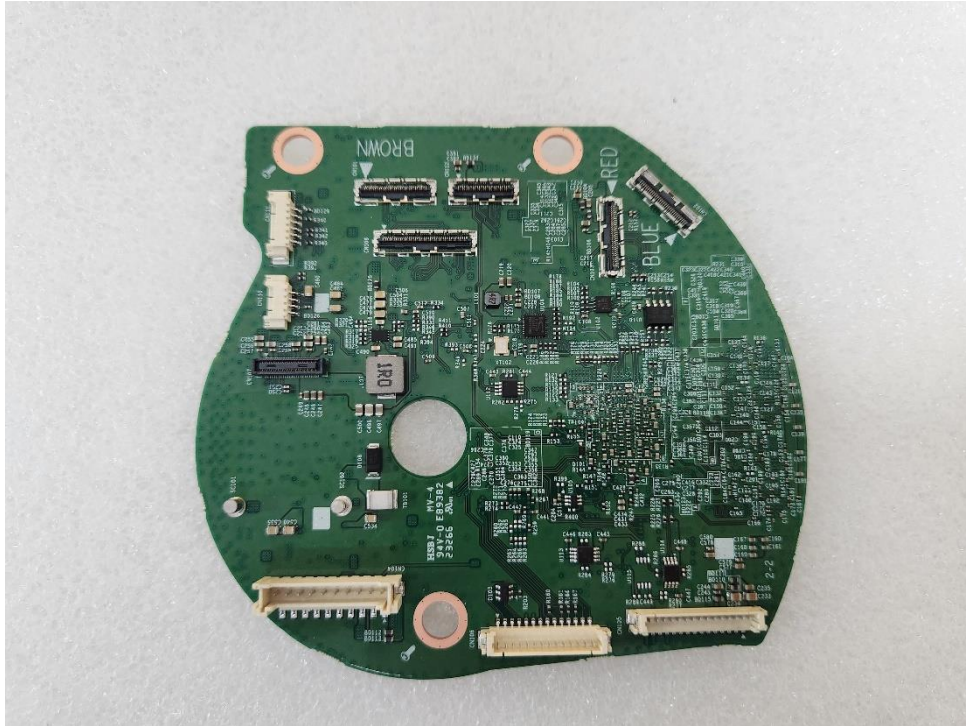


(Bottom)

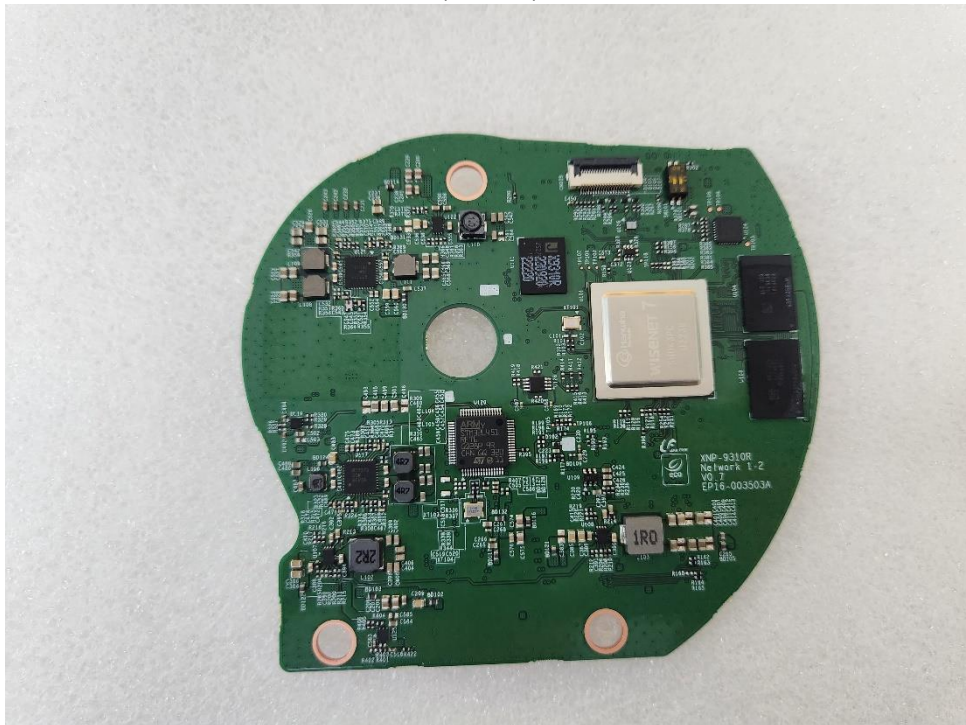


EUT Internal View – SUB Board 5

(Top)

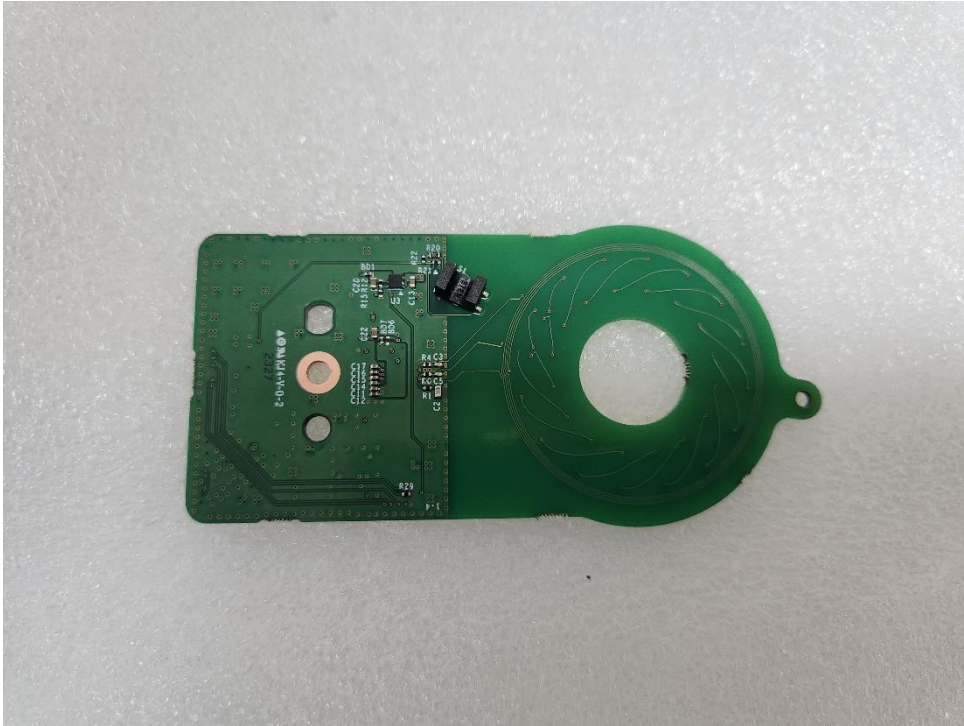


(Bottom)

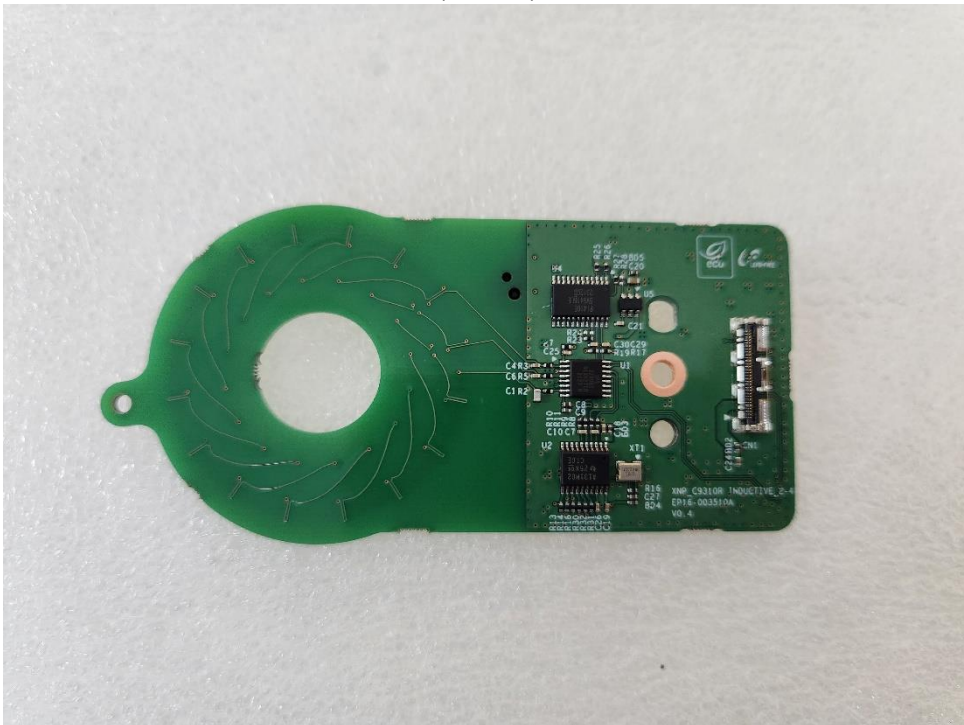


EUT Internal View – SUB Board 6

(Top)

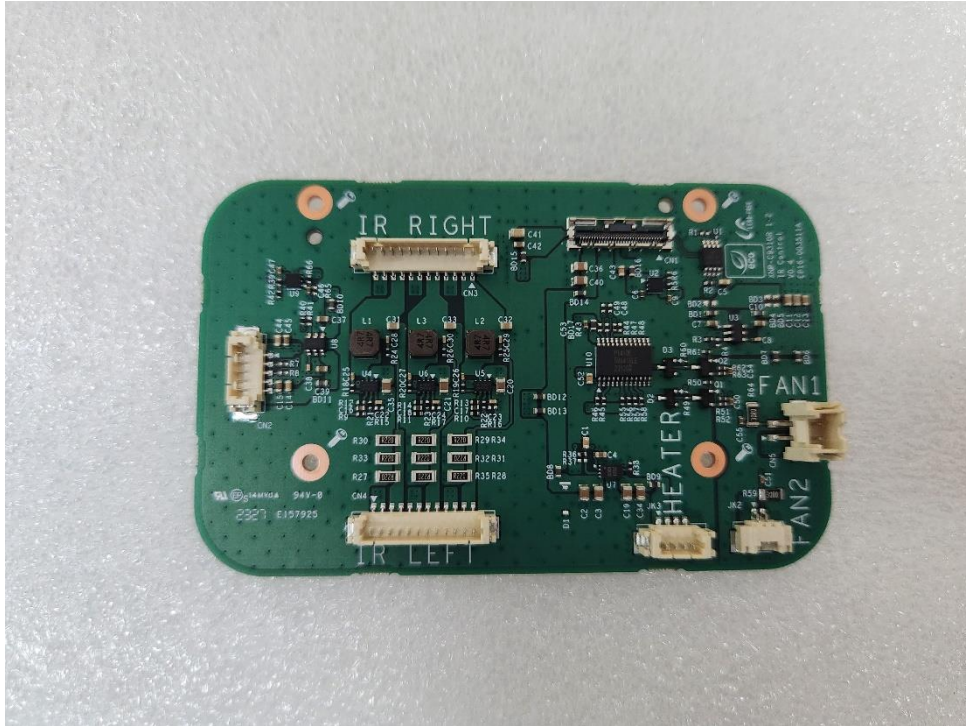


(Bottom)

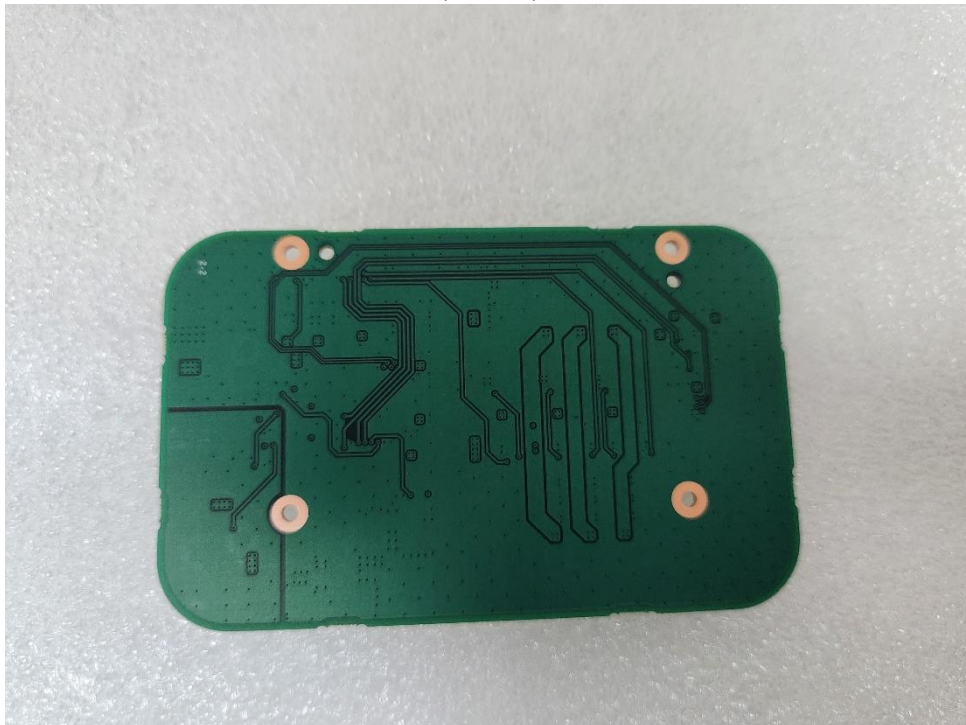


EUT Internal View – SUB Board 7

(Top)

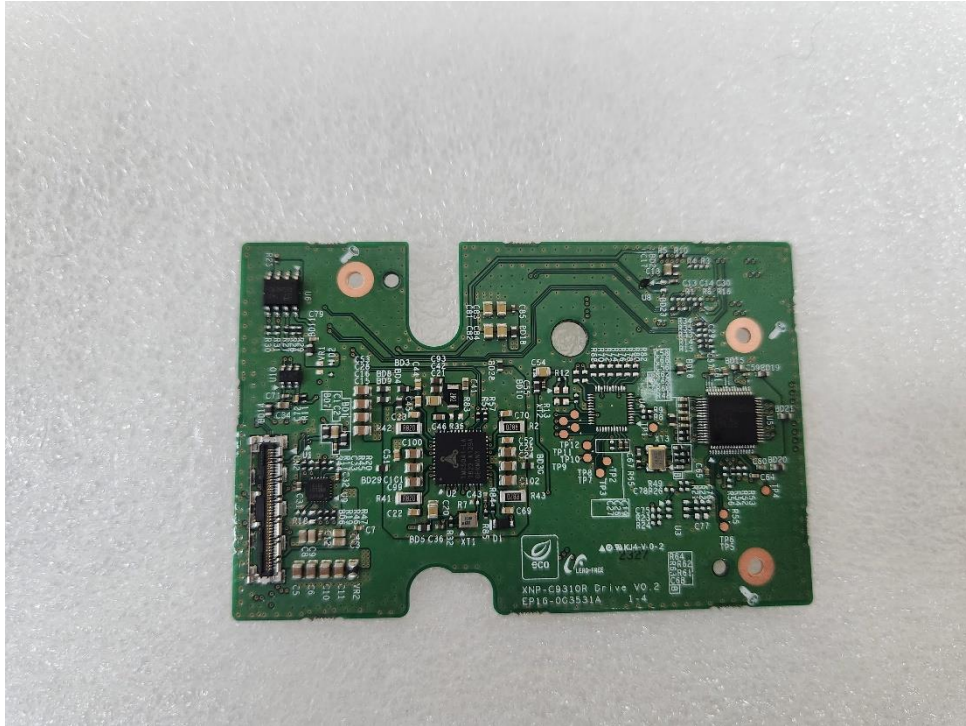


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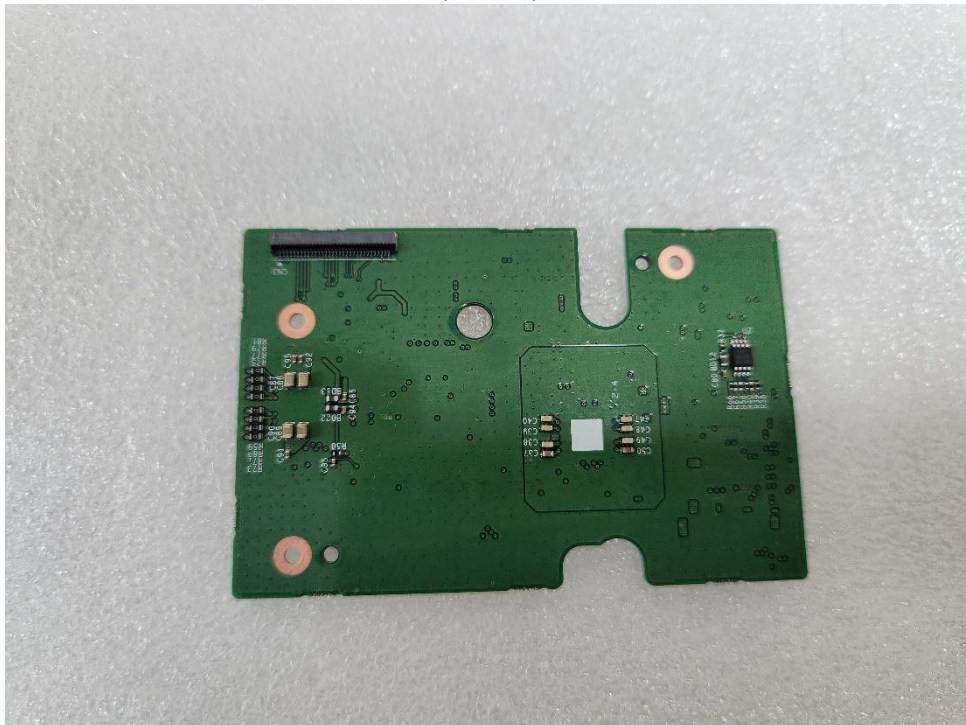


EUT Internal View – SUB Board 8

(Top)

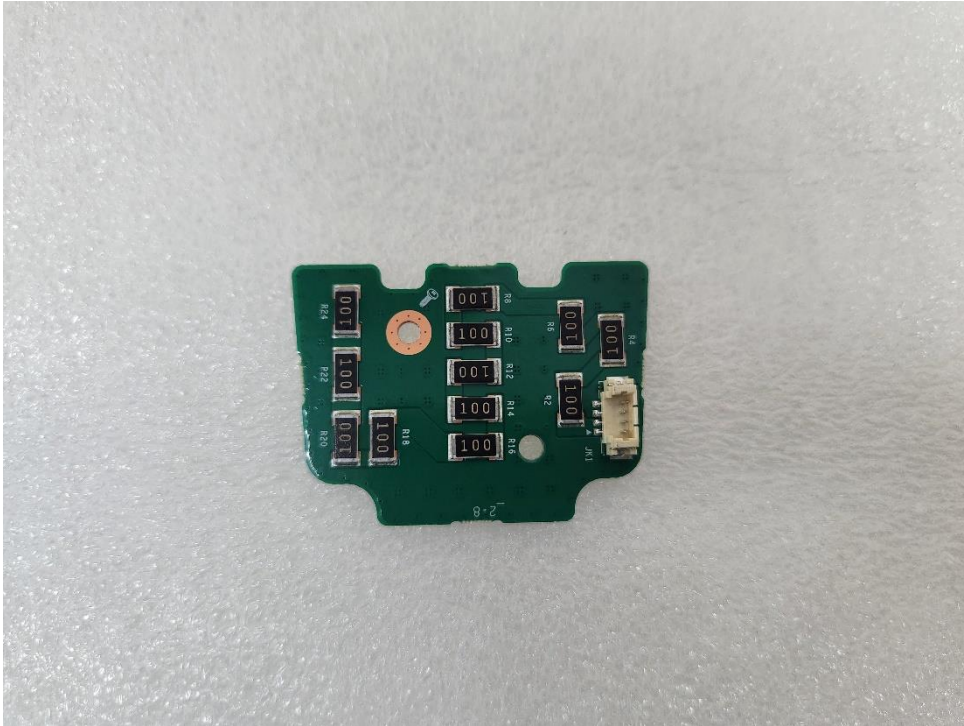


(Bottom)



EUT Internal View – SUB Board 9

(Top)



(Bottom)

