

# EMC TEST REPORT For RCM

Test Report No. : KES-EM-23T0259

Date of Issue : Mar. 17, 2023

Product name : Network Camera

Model/Type No. : XNP-C6403RW

Variant Model : -

Applicant : Hanwha Vision Co., Ltd

Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,  
Gyeonggi-do, Republic of Korea

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 (Suwon Industrial Complex)

Date of Receipt : Feb. 21, 2023

Test date : Mar. 02, 2023

Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

*Tested by*

Eun Gu, Jeon  
EMC Test Engineer

*Reviewed by*

Dong Hun, Jang  
EMC Technical Manager

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

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**REPORT REVISION HISTORY**

| Date          | Test Report No. | Revision History |
|---------------|-----------------|------------------|
| Mar. 17, 2023 | KES-EM-23T0259  | Issued           |
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## 1.0 General Product Description

### Main Specifications of EUT are:

| Video                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Imaging Device              | 1/2.8" CMOS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Resolution                  | 1920x1080, 1280x1024, 1280x960, 1280x720,<br>1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240                                                                                                                                                                                                                                                                                                                                                                               |
| Max. Frame rate             | H.265/H.264: Max. 60fps/50fps/60Hz/50Hz)<br>MPEG: Max. 30fps/25fps/60Hz/50Hz)                                                                                                                                                                                                                                                                                                                                                                                                                      |
| NETD                        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Pixel Size                  | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Min. Illumination           | Color: 0.05Lux(F1.6, 1/30sec)<br>BW: 0Lux(IR LED On)                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Video Out                   | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Video Transmission Distance | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Lens                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Focal Length (Zoom Ratio)   | 4.25~170mm(40x) zoom (digital 32x, total 1280x zoom)                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Max. Aperture Ratio         | F1.6(Wide)~F4.95(Tele)                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Angular Field of View       | H: 65.66°(Wide)~1.88°(Tele) / V: 39.4°(Wide)~1.09°(Tele)                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Min. Object Distance        | 3m(9.84ft)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Focus Control               | Oneshot AF, Focus save                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Lens Type                   | DC auto iris                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Mount Type                  | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Optional Lens               | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Pan / Tilt / Rotate         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Pan / Tilt / Rotate Range   | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Pan Range                   | 360° Endless                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Pan Speed                   | Max. 500°/sec, Manual: 0.024°/sec~250°/sec                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Tilt Range                  | 110° (-20°~90°)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Tilt Speed                  | Max. 350°/sec, Manual: 0.024°/sec~250°/sec                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Rotate Range                | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Sequence                    | Preset(300ea), Swing, Group(5ea), Trace, Tour, Auto Run, Schedule                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Preset Accuracy             | Up to ±0.1°, Pan/Tilt correction                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Operational                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Camera Title                | Displayed up to 85 characters                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Direction Indicator         | Support                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Day & Night                 | Auto(ICR)/Color/BW/Schedule                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Backlight Compensation      | BLC, HLC, WDR, SSOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Wide Dynamic Range          | Extreme WDR(150dB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Digital Noise Reduction     | SSNRV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Digital Image Stabilization | Support(built-in gyro sensor)                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Defog                       | Support                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Motion Detection            | 8ea, 8point polygonal zones                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Privacy Masking             | 32ea, Quadangle Support<br>- Color: Grey/Green/Red/Blue/Black/White<br>- Mosaic                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Gain Control                | Manual / Max                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| White Balance               | ATW / Narrow ATW / AWC / Manual / Indoor / Outdoor / Mercury / Sodium                                                                                                                                                                                                                                                                                                                                                                                                                              |
| LDC                         | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Electronic Shutter Speed    | Minimum / Maximum / Anti flicker (2~1/12,000sec)                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Digital PTZ                 | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Video Rotation              | Flip, Mirror                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Analytics                   | Classified object type : Person/Face/Vehicle/License plate<br>Attributes : Vehicle(Type:car/bus/truck/motorcycle/bicycle)<br>Support DetectionShot<br>Analytics events based on AI engine<br>- Object detection, Virtual line(Crossing/Direction), Virtual area(Loitering/Intusion/Enter/Exit)<br>Analytics events<br>- Defocus detection, Motion detection, Tampering, Fog detection, Shock detection, Virtual area(Appear/Disappear)<br>* Audio detection, Sound classification(with NW I/O Box) |
| Business Intelligence       | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Serial Interface            | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Alarm I/O                   | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

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|                                       |                                                                                                                                                            |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Environmental &amp; Electrical</b> |                                                                                                                                                            |
| Operating Temperature / Humidity      | -40°C ~ +55°C (-40°F ~ +131°F) /<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>0~95% RH(Non-condensing) |
| Storage Temperature / Humidity        | -50°C ~ +60°C (-58°F ~ +140°F) / 0~90% RH                                                                                                                  |
| Certification                         | IP66, IK10, NEMA4X, NEMA TS 2(2.2.8, 2.2.9)                                                                                                                |
| Input Voltage                         | HiPoE(IEEE802.3bt, Class6, Type3, Injector included)                                                                                                       |
| Power Consumption                     | Typical 26W, Max 46W                                                                                                                                       |
| <b>Mechanical</b>                     |                                                                                                                                                            |
| Color / Material                      | White, Black / Aluminum+Polycarbonate                                                                                                                      |
| RAL Code                              | White: RAL9003 / Black: RAL9005                                                                                                                            |
| Product Dimensions / Weight           | ø184.9x318.8mm(7.28x12.55") / 5.6kg (12.34lb)                                                                                                              |
| Compatible Conduit hole / Gangbox     | None                                                                                                                                                       |
| Hanging Mount (Dome)                  | None                                                                                                                                                       |
| Skin Cover                            | None                                                                                                                                                       |
| Skin Cover (Dome)                     | None                                                                                                                                                       |
| Weather Cap (Dome)                    | None                                                                                                                                                       |
| Power Module                          | None                                                                                                                                                       |
| Backbox                               | None                                                                                                                                                       |
| <b>Certifications &amp; Standards</b> |                                                                                                                                                            |
| Network                               | None                                                                                                                                                       |
| EMC                                   | None                                                                                                                                                       |
| Safety                                | None                                                                                                                                                       |
| Environment                           | None                                                                                                                                                       |
| Video                                 | None                                                                                                                                                       |
| <b>DORI (EN62676-4 standard)</b>      |                                                                                                                                                            |
| Detect (25PPM/ 8PPF)                  | Wide: 59.5m(195.3ft) / Tele: 2340.4m(7678.4ft)                                                                                                             |
| Observe (63PPM/ 19PPF)                | Wide: 23.8m(78.1ft) / Tele: 936.2m(3071.4ft)                                                                                                               |
| Recognize (125PPM/ 38PPF)             | Wide: 11.9m(39.1ft) / Tele: 468.1m(1535.7ft)                                                                                                               |
| Identify (250PPM/ 76PPF)              | Wide: 6.0m(19.5ft) / Tele: 234.0m(767.8ft)                                                                                                                 |
| <b>LPR/ANPR/MMCR</b>                  |                                                                                                                                                            |
| 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                                                                                                                                                       |
| <b>Wisenet Road AI LPR/ANPR/MMCR</b>  |                                                                                                                                                            |
| 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                                                                                                                                                       |

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|                                           |                                                                                                                                                                                                               |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alarm Triggers                            | Analytics, Network disconnect<br>* Alarm input(with NW I/O Box)                                                                                                                                               |
| Alarm Events                              | File upload via FTP and e-mail<br>Notification via e-mail<br>SD/SDHC/SDXC or NAS recording at event triggers<br>PTZ Preset<br>Handover<br>* Alarm output(with NW I/O Box)                                     |
| Audio Streaming                           | None                                                                                                                                                                                                          |
| Audio In                                  | None                                                                                                                                                                                                          |
| Audio Out                                 | None                                                                                                                                                                                                          |
| IR Viewable Length                        | 200m(656.17ft), Wise IR                                                                                                                                                                                       |
| IR Illuminator (Optional)                 | None                                                                                                                                                                                                          |
| IR Radiation angle                        | None                                                                                                                                                                                                          |
| IR LED                                    | None                                                                                                                                                                                                          |
| IR Wavelength                             | None                                                                                                                                                                                                          |
| IR Operation                              | None                                                                                                                                                                                                          |
| Water Removal                             | Support(Wipe)                                                                                                                                                                                                 |
| Auto Tracking                             | Object auto tracking(Person/Vehicle), Target lock tracking                                                                                                                                                    |
| 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(10/100BASE-T)                                                                                                                                                                            |
| Video Compression                         | H.265/H.264: Main/Baseline/High, MJPEG                                                                                                                                                                        |
| Audio Compression                         | None                                                                                                                                                                                                          |
| Smart Codec                               | Manual(Sea area), WiseStream II                                                                                                                                                                               |
| Video Quality Adjustment                  | H.264/H.265: Target bitrate level control<br>MJPEG: Target bitrate level control                                                                                                                              |
| Bitrate Control                           | H.264/H.265: CBR or VBR<br>MJPEG: VBR                                                                                                                                                                         |
| Streaming                                 | Unicast(20 users) / Multicast (128 users)<br>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, PIM-SM, UPnP, Bonjour, LLDP, SRTP, NTCIP, MQTT |
| SIP support (VoIP, Peer-to-peer, SIP/PBX) | None                                                                                                                                                                                                          |
| Security                                  | HTTPS(SSL) Login Authentication<br>Digest Login Authentication<br>IP Address Filtering<br>User access log<br>802.1X Authentication(EAP-TLS, EAP-LEAP)<br>Device certificate(Hanwha Techwin Root CA)           |
| Application Programming Interface         | ONVIF Profile S/G/T<br>SUNAPI(HTTP API)<br>Wisenet open platform                                                                                                                                              |
| <b>General</b>                            |                                                                                                                                                                                                               |
| 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                                                                                                                                                                                  |
| Memory                                    | 4GB RAM, 512MB Flash                                                                                                                                                                                          |

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## 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 (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     | XNP-C6403RW            | -             | HANWHA VISION<br>VIETNAM COMPANY<br>LIMITED      | EUT     |
| Fiber PoE Injector | PT-PSE109GBRO-<br>AH-S | PT2250220722  | Dongguan PROCET<br>Network Technology<br>Co.,Ltd | -       |

## 1.5 Support Equipments

| Description        | Model Number          | Serial Number         | Manufacturer                                     | Remarks |
|--------------------|-----------------------|-----------------------|--------------------------------------------------|---------|
| Fiber PoE Injector | PT-PSE106GBR-<br>AH-S | PT2050210591          | Dongguan PROCET<br>Network Technology<br>Co.,Ltd | -       |
| Notebook           | LG15N54               | 506NZGK000615         | LG Electronics Co., Ltd.                         | -       |
| Notebook Adapter   | PA-1650-43(65W)       | OF58U63849302Y60<br>9 | LG Electronics Co., Ltd.                         | -       |
| Optical Module 1   | SFP-LX20              | -                     | SOL TECH                                         | -       |
| Optical Module 2   | SFP-LX20              | -                     | SOL TECH                                         | -       |
| Micro SD card 1    | -                     | -                     | SanDisk                                          | 16 GB   |
| Micro SD card 2    | -                     | -                     | SanDisk                                          | 16 GB   |

## 1.6 External I/O Cabling

| Start                    |                    | END                      |                    | Cable Spec. |        |
|--------------------------|--------------------|--------------------------|--------------------|-------------|--------|
| Description              | I/O Port           | Description              | I/O Port           | Length      | Shield |
| Network Camera (EUT)     | RJ-45              | Fiber PoE Injector (EUT) | PoE (RJ-45)        | 2.5         | U      |
|                          | Micro SD card slot | Micro SD card 1          | Micro SD card slot | -           | -      |
|                          | Micro SD card slot | Mico SD card 2           | Micro SD card slot | -           | -      |
| Fiber PoE Injector (EUT) | LAN (RJ-45)        | Notebook                 | RJ-45              | 3.1         | U      |
|                          | SFP                | Optical Module 1         | SFP                | -           | -      |
|                          | Ground             | Enclosure Ground         | Ground             | -           | U      |
| Optical Module 1         | Optical            | Optical Module 2         | Optical            | 5.0         | U      |
| Optical Module 2         | SFP                | Fiber PoE Injector       | SFP                | -           | -      |
| Notebook                 | DC jack            | Notebook Adapter         | Line               | 1.5         | U      |

\* Unshielded = U, Shielded = S

## 1.7 EUT Operating Mode(s)

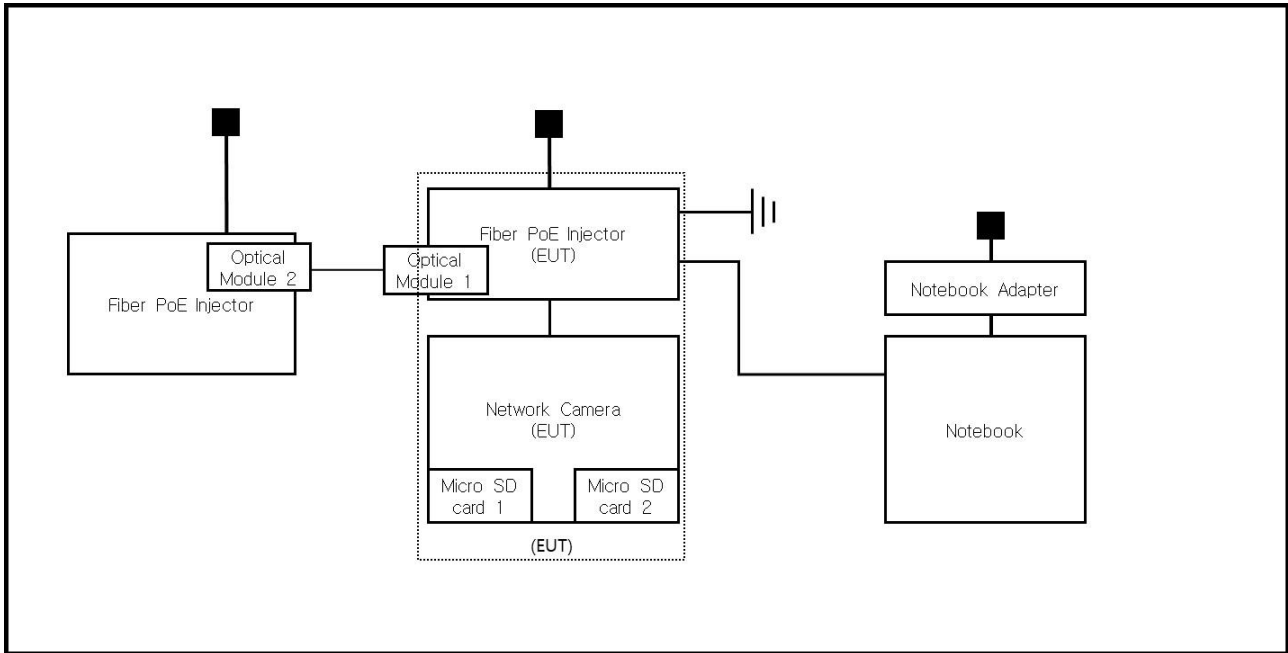
| Test mode | operating                                                                                                                                                                                                  |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operater  | 1. Check if the EUT image is output to the laptop normally.<br>2. Check if the network is operating normally through a ping test.<br>3. After the test, check if the EUT video has been recorded normally. |

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



## 1.8 Configuration

■ AC Main  
 □ DC Main



## 1.9 Remarks when standards applied

N/A

## 1.10 Calibration Details of Equipment Used for Measurement

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

## 1.11 Test Facility

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

## 1.12 Laboratory Accreditations and Listings

| Country       | Agency  | Scope of Accreditation                                                                                                                  | Logo                                                                                                                           |
|---------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| KOREA         | RRA     | EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)<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<br>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 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**

Mar. 02, 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: (23,4 ± 0,1) °C

Relative Humidity: (42,5 ± 0,1) % R.H.

**Frequency Range of Measurement**

150 kHz to 30 MHz

**Instrument Settings**

IF Band Width: 9 kHz

**Test Results**

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

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

## 2.2 Conducted Emissions at Telecommunication Ports

### Test Date

Mar. 02, 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 checked="" type="checkbox"/> | 8-WIRE ISN CAT3,5 | ENY81        | R & S        | 100174        | 11, 22, 2023 |
| <input type="checkbox"/>            | 8-WIRE ISN CAT6   | ENY81-CAT6   | R & S        | 101665        | 11, 22, 2023 |
| <input type="checkbox"/>            | CDN               | CDNS502A     | TESEQ        | 40431         | 11, 10, 2023 |

### Test Conditions

Temperature: (23,4 ± 0,1) °C

Relative Humidity: (42,5 ± 0,1) % R.H.

### Frequency Range of Measurement

150 kHz to 30 MHz

### Instrument Settings

IF Band Width: 9 kHz

### Test Results

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

- See Appendix A for test data.  
- For Ethernet interfaces, measurements are required at the highest data rate supported by the interface.

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

**Test Date**

Mar. 02, 2023

**Test Location**☐ OPEN AREA TEST SITE #2☒ 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        | 03, 31, 2023 |
| <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, 08, 2023 |

**Test Conditions**

Temperature: (23,6 ± 0,2) °C

Relative Humidity: (42,7 ± 0,1) % R.H.

**Frequency Range of Measurement**

30 MHz to 1 GHz

**Instrument Settings**

IF Band Width: 120 kHz

**Test Results**

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

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

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

### Test Date

N/A

### Test Location

SEMI ANECHOIC CHAMBER #3

### Test Equipment

| Used                     | Description                | Model Number | Manufacturer     | Serial Number | Cal. Due     |
|--------------------------|----------------------------|--------------|------------------|---------------|--------------|
| <input type="checkbox"/> | EMI Test S/W               | EP5/RE       | TOYO Corporation | 6.0.0         | -            |
| <input type="checkbox"/> | EMI TEST RECEIVER          | ESR7         | R & S            | 101190        | 08, 01, 2023 |
| <input type="checkbox"/> | PREAMPLIFIER               | 8449B        | AGILENT          | 3008A01967    | 04, 01, 2023 |
| <input type="checkbox"/> | ATTENUATOR                 | 8491A        | HP               | 35496         | 03, 08, 2023 |
| <input type="checkbox"/> | DOUBLE RIDGED HORN ANTENNA | SAS-571      | A.H.SYSTEM,INC   | 781           | 03, 03, 2023 |

### Test Conditions

Temperature: °C  
Relative Humidity: % 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

Not applicable, the EUT of the maximum clock frequency is 48 Mhz.  
(If the maximum clock frequency is 108 Mhz or less, measurement up to 1 Ghz)

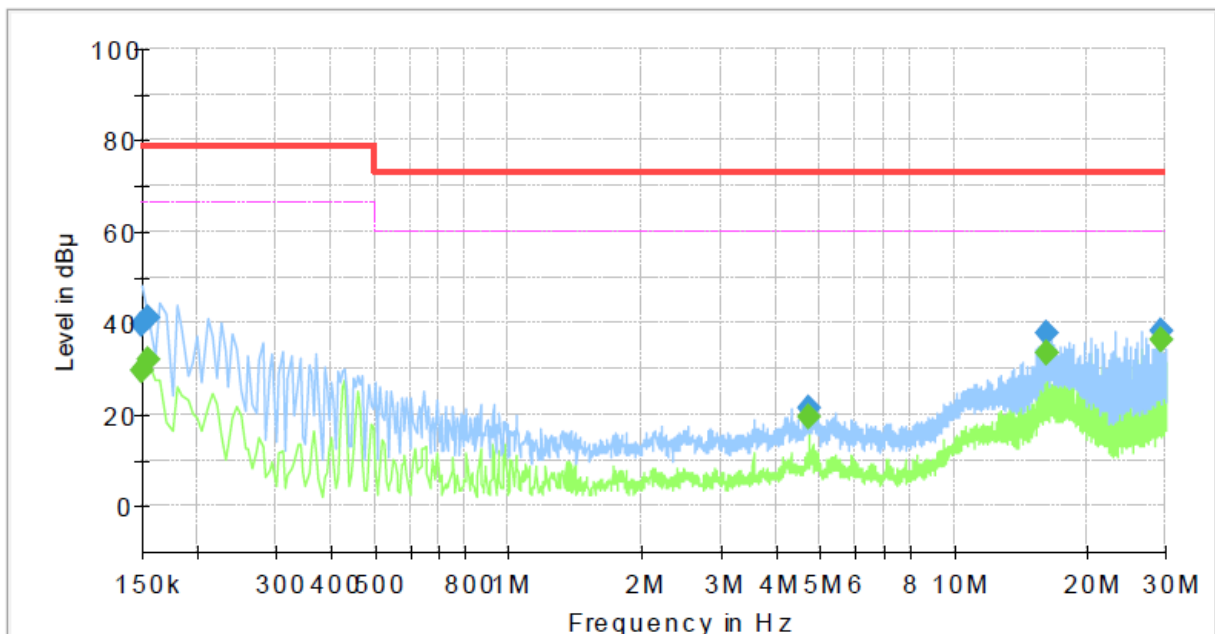
## APPENDIX A – TEST DATA

### Conducted Emissions at Mains Power Ports

HOT LINE

#### Common Information

Test Description: Conducted Emission  
Model No.: XNP-C6403RW  
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) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.150000        | ---              | 29.42           | 66.00        | 36.58       | 1000.0          | 9.000           | L1   | 19.5       |
| 0.150000        | 39.84            | ---             | 79.00        | 39.16       | 1000.0          | 9.000           | L1   | 19.5       |
| 0.155000        | ---              | 31.75           | 66.00        | 34.25       | 1000.0          | 9.000           | L1   | 19.5       |
| 0.155000        | 41.12            | ---             | 79.00        | 37.88       | 1000.0          | 9.000           | L1   | 19.5       |
| 4.730000        | ---              | 19.61           | 60.00        | 40.39       | 1000.0          | 9.000           | L1   | 19.7       |
| 4.730000        | 21.25            | ---             | 73.00        | 51.75       | 1000.0          | 9.000           | L1   | 19.7       |
| 16.230000       | ---              | 33.49           | 60.00        | 26.51       | 1000.0          | 9.000           | L1   | 20.0       |
| 16.230000       | 37.99            | ---             | 73.00        | 35.01       | 1000.0          | 9.000           | L1   | 20.0       |
| 29.235000       | ---              | 36.19           | 60.00        | 23.81       | 1000.0          | 9.000           | L1   | 20.4       |
| 29.235000       | 38.10            | ---             | 73.00        | 34.90       | 1000.0          | 9.000           | L1   | 20.4       |

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## NEUTRAL LINE

### Common Information

Test Description:

Model No.:

Phase:

Mode:

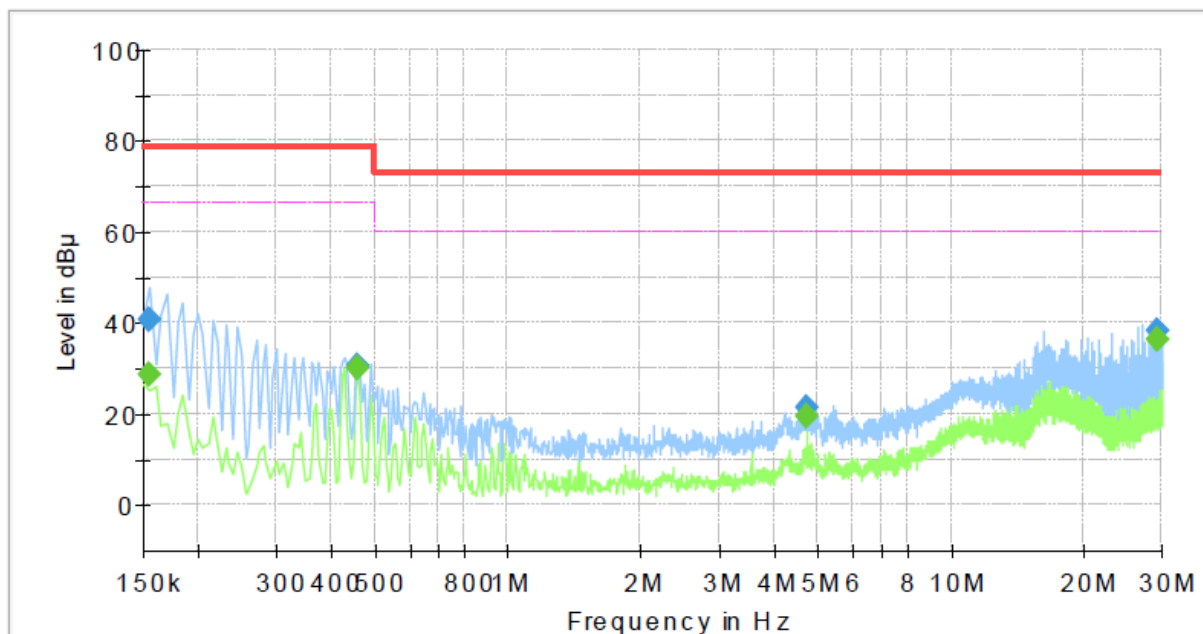
Operator Name:

Conducted Emission

XNP-C6403RW

N

KES



### Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.155000        | ---              | 28.59           | 66.00        | 37.41       | 1000.0          | 9.000           | N    | 19.4       |
| 0.155000        | 40.45            | ---             | 79.00        | 38.55       | 1000.0          | 9.000           | N    | 19.4       |
| 0.460000        | ---              | 29.81           | 66.00        | 36.19       | 1000.0          | 9.000           | N    | 19.7       |
| 0.460000        | 30.57            | ---             | 79.00        | 48.43       | 1000.0          | 9.000           | N    | 19.7       |
| 4.730000        | ---              | 19.56           | 60.00        | 40.44       | 1000.0          | 9.000           | N    | 19.7       |
| 4.730000        | 21.38            | ---             | 73.00        | 51.62       | 1000.0          | 9.000           | N    | 19.7       |
| 29.235000       | ---              | 36.32           | 60.00        | 23.68       | 1000.0          | 9.000           | N    | 20.4       |
| 29.235000       | 38.23            | ---             | 73.00        | 34.77       | 1000.0          | 9.000           | N    | 20.4       |

#### ◆ Calculation

$$\text{QuasiPeak [dBuV]} / \text{CAverage [dBuV]} = \text{Reading Value [dBuV]} + \text{Corr. [dB]}$$

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

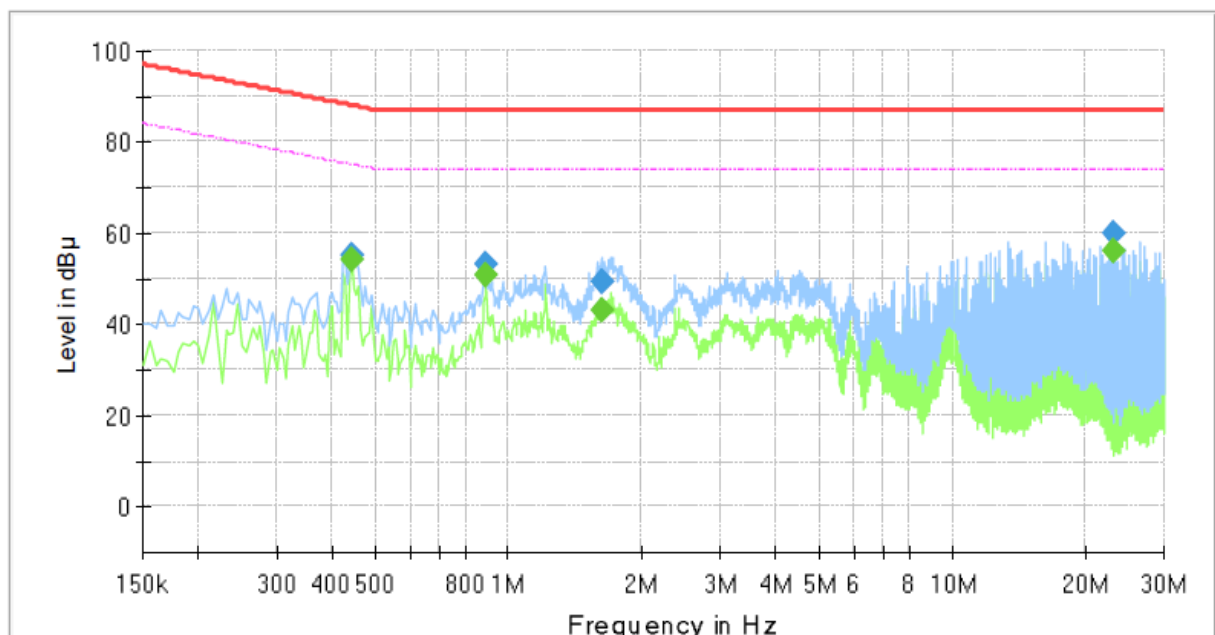
## Conducted Emissions at Telecommunication Ports

■ LAN

[100 Mbps]

### Common Information

|                   |                            |
|-------------------|----------------------------|
| Test Description: | Telecommunication Emission |
| Model No.:        | XNP-C6403RW                |
| Mode :            | LAN                        |
| Speed :           | 100 Mbps                   |
| Operator Name:    | KES                        |



### Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line        | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|-------------|------------|
| 0.445000        | ---              | 53.99           | 74.97        | 20.98       | 1000.0          | 9.000           | Single Line | 19.7       |
| 0.445000        | 54.92            | ---             | 87.97        | 33.05       | 1000.0          | 9.000           | Single Line | 19.7       |
| 0.890000        | ---              | 50.95           | 74.00        | 23.05       | 1000.0          | 9.000           | Single Line | 20.0       |
| 0.890000        | 53.37            | ---             | 87.00        | 33.63       | 1000.0          | 9.000           | Single Line | 20.0       |
| 1.615000        | ---              | 43.09           | 74.00        | 30.91       | 1000.0          | 9.000           | Single Line | 20.1       |
| 1.615000        | 49.29            | ---             | 87.00        | 37.71       | 1000.0          | 9.000           | Single Line | 20.1       |
| 23.130000       | ---              | 56.27           | 74.00        | 17.73       | 1000.0          | 9.000           | Single Line | 20.1       |
| 23.130000       | 59.97            | ---             | 87.00        | 27.03       | 1000.0          | 9.000           | Single Line | 20.1       |

#### ◆ 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))

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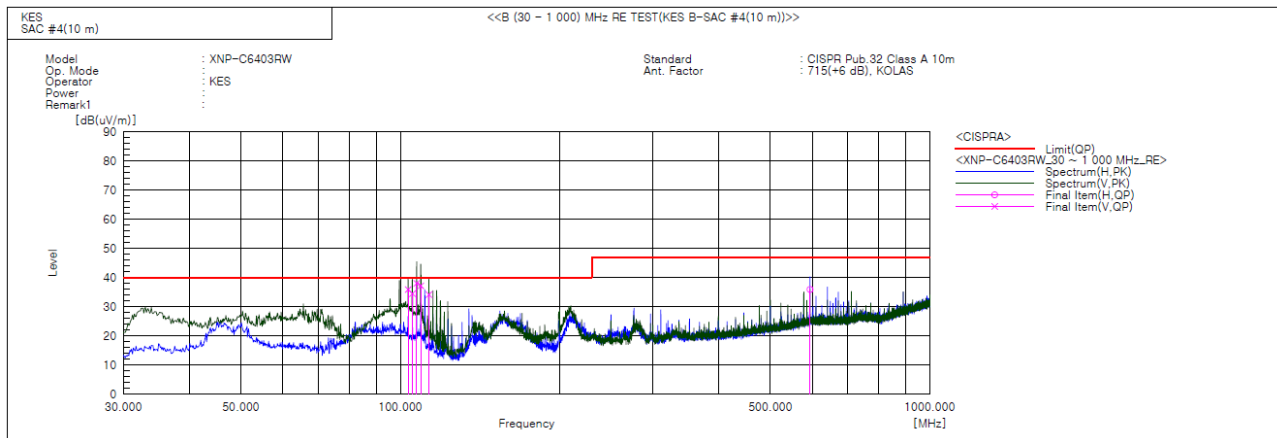
3701, 40, Simin-daero 365beon-gil,  
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea  
Tel: +82-31-425-6200 / Fax: +82-31-424-0450  
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Report No.:

KES-EM-23T0259

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### 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   | 103.478            | V   | 58.3                      | -22.4            | 35.9                       | 40.0                      | 4.1                  | 108.0          | 320.0          |        |
| 2   | 105.418            | V   | 57.0                      | -22.5            | 34.5                       | 40.0                      | 5.5                  | 100.0          | 264.0          |        |
| 3   | 107.358            | V   | 60.6                      | -22.6            | 38.0                       | 40.0                      | 2.0                  | 102.0          | 252.0          |        |
| 4   | 109.298            | V   | 60.0                      | -22.8            | 37.2                       | 40.0                      | 2.8                  | 131.0          | 215.0          |        |
| 5   | 113.299            | V   | 57.4                      | -23.2            | 34.2                       | 40.0                      | 5.8                  | 161.0          | 260.0          |        |
| 6   | 594.081            | H   | 44.2                      | -8.3             | 35.9                       | 47.0                      | 11.1                 | 393.0          | 27.0           |        |

#### ◆ 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

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

N/A

#### ◆ Calculation

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

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

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

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## **Test Setup Photos and Configuration**

### **Conducted Emissions at Mains Power Ports**

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## **Conducted Emissions at Telecommunication Ports**

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

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

N/A

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## EUT External Photographs

(Top)



(Bottom)



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## EUT Internal Photographs

(Internal View)

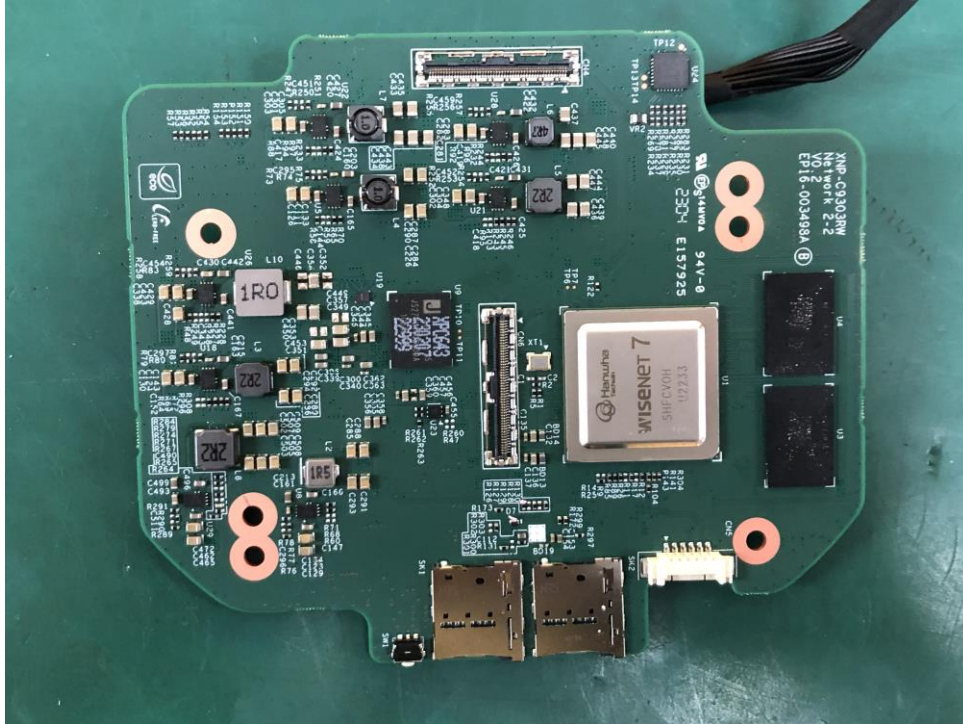


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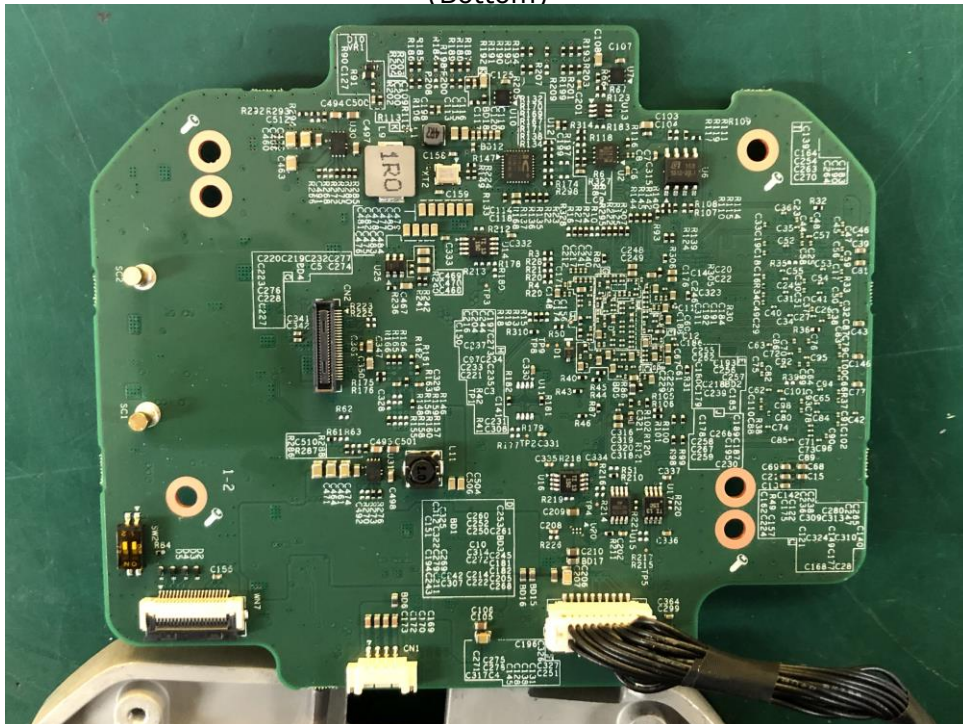


## EUT Internal View – Main Board

(Top)



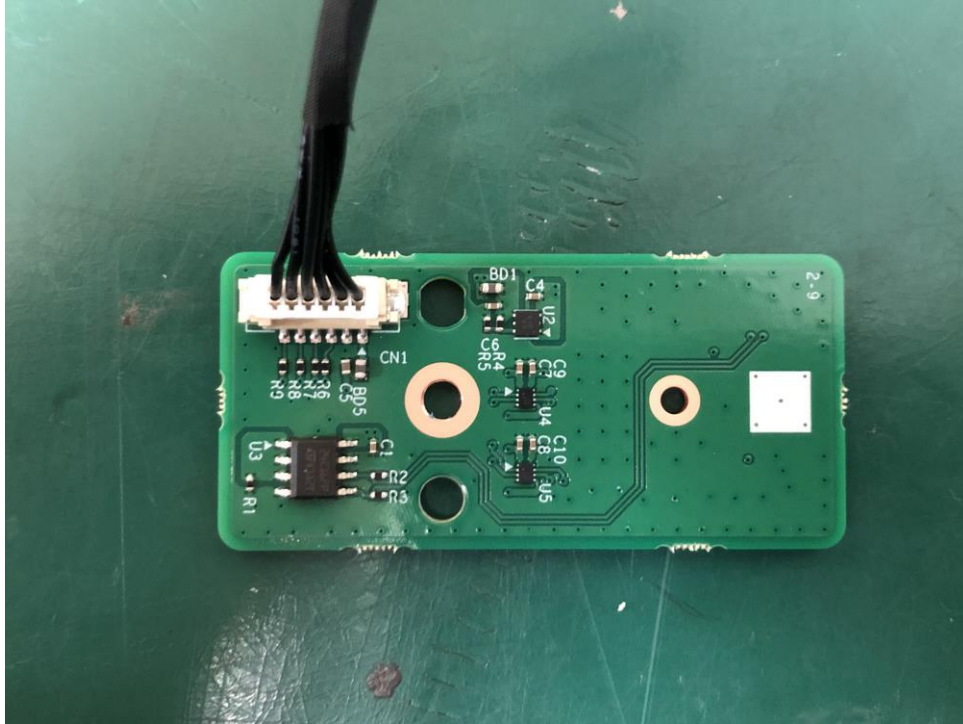
(Bottom)



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## EUT Internal View – SUB Board 1

(Top)



(Bottom)

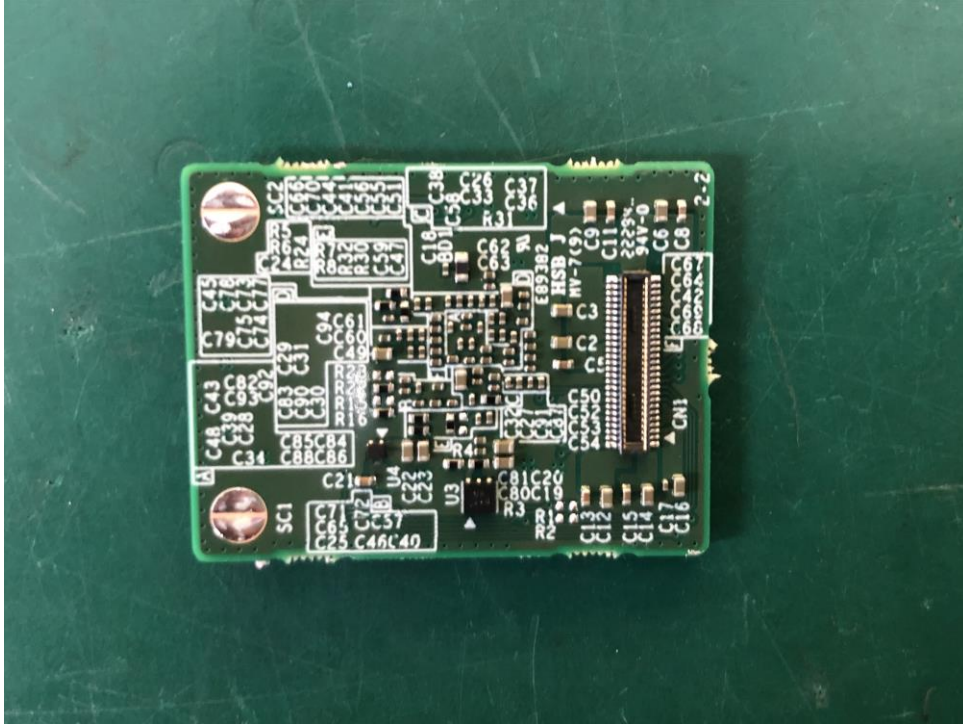


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## EUT Internal View – SUB Board 2

(Top)



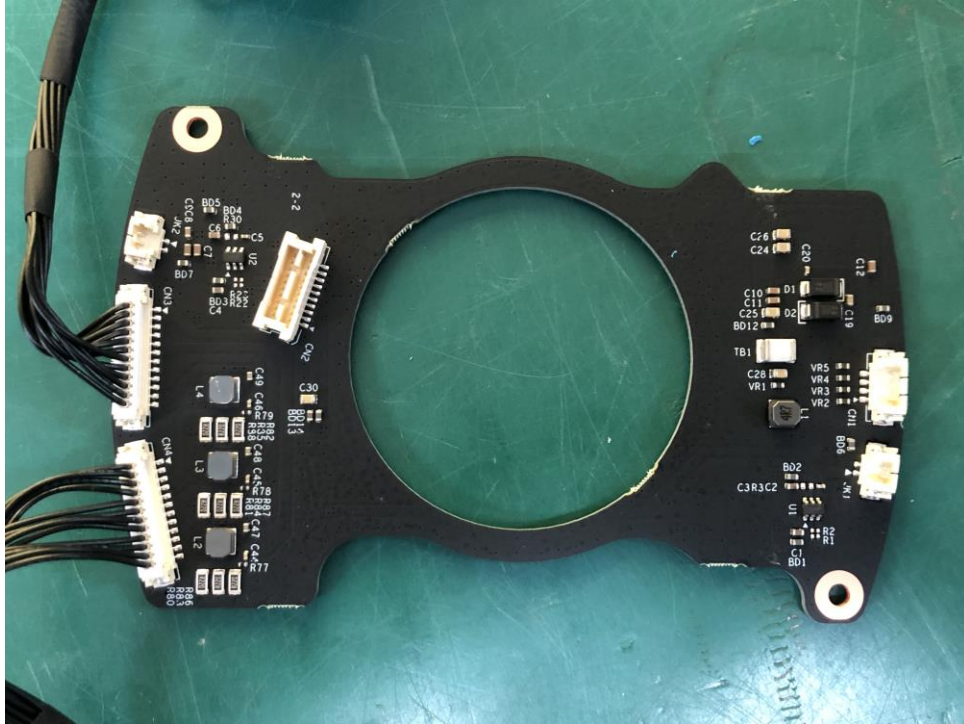
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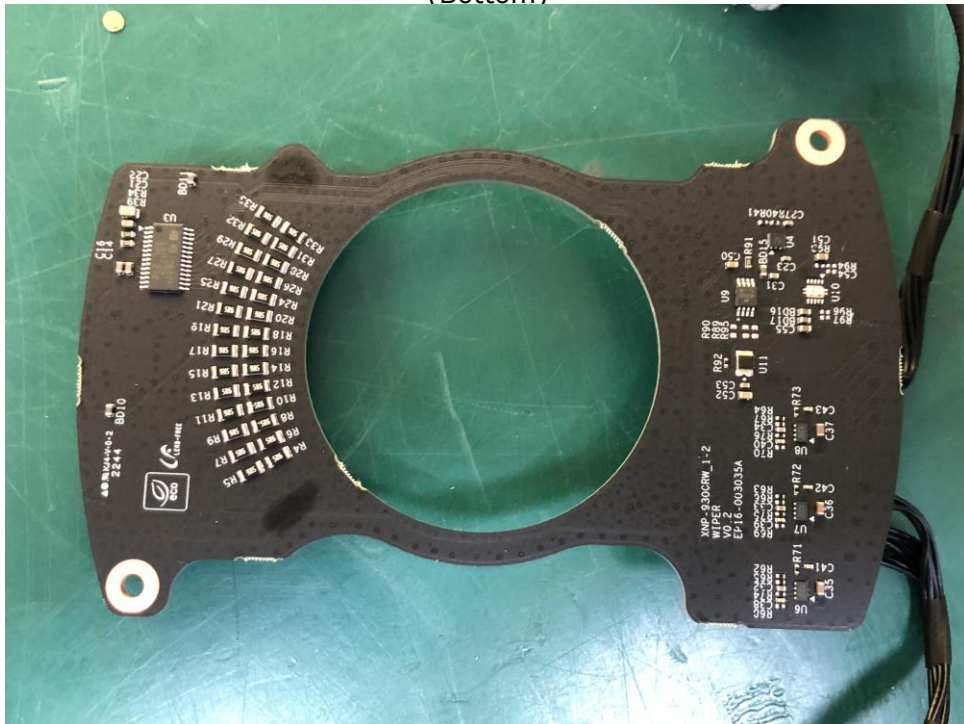
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## EUT Internal View – SUB Board 3

(Top)



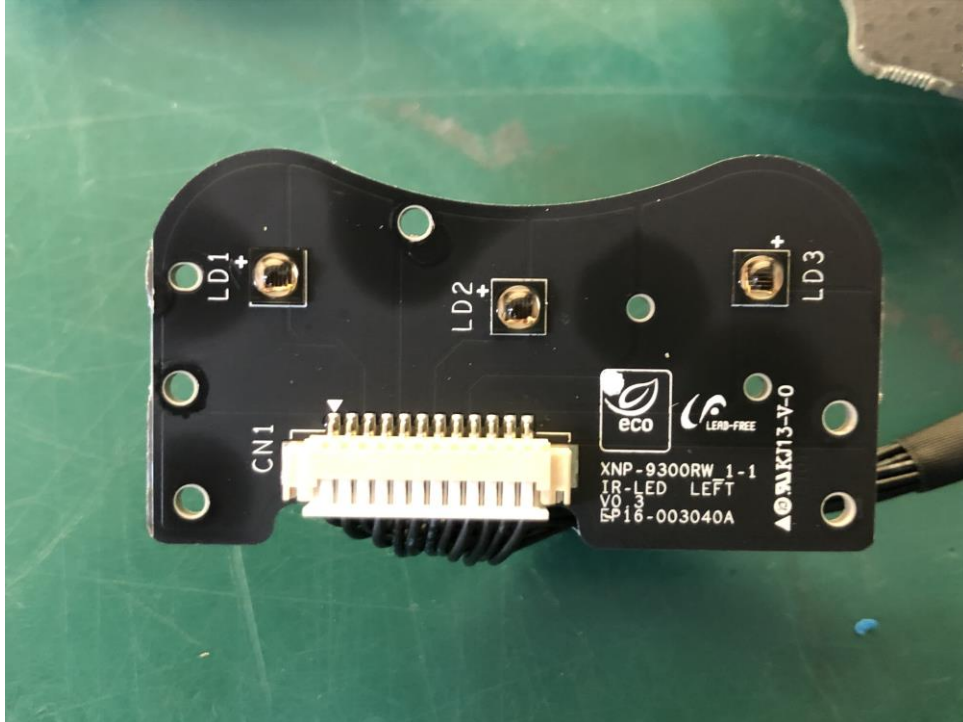
(Bottom)





**EUT Internal View – SUB Board 4**

(Top)



(Bottom)



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## EUT Internal View – SUB Board 5

(Top)



(Bottom)



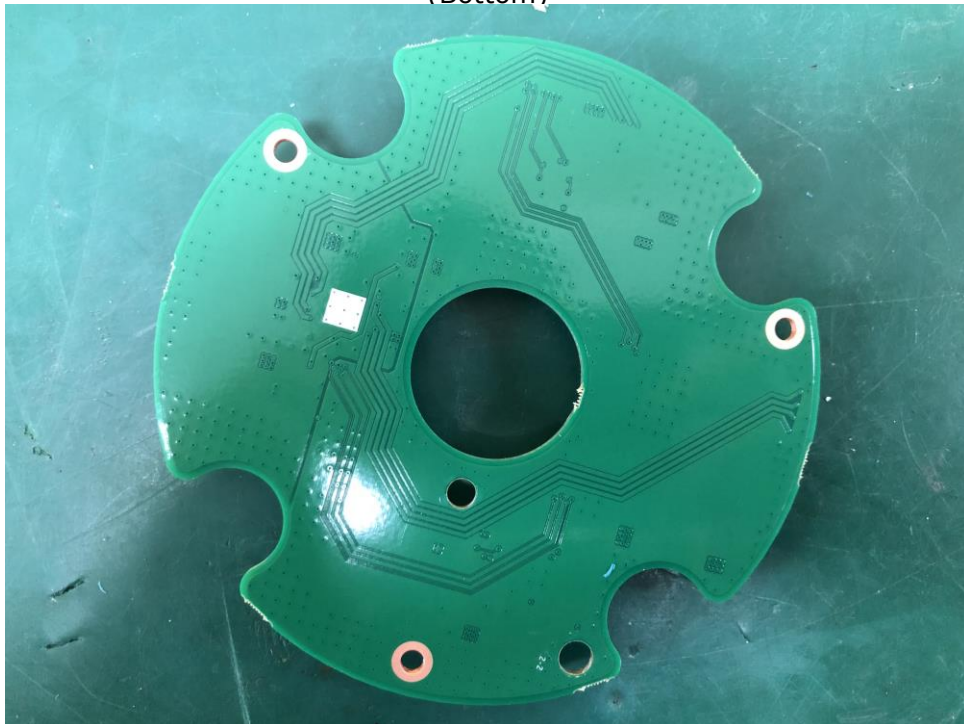


## EUT Internal View – SUB Board 6

(Top)



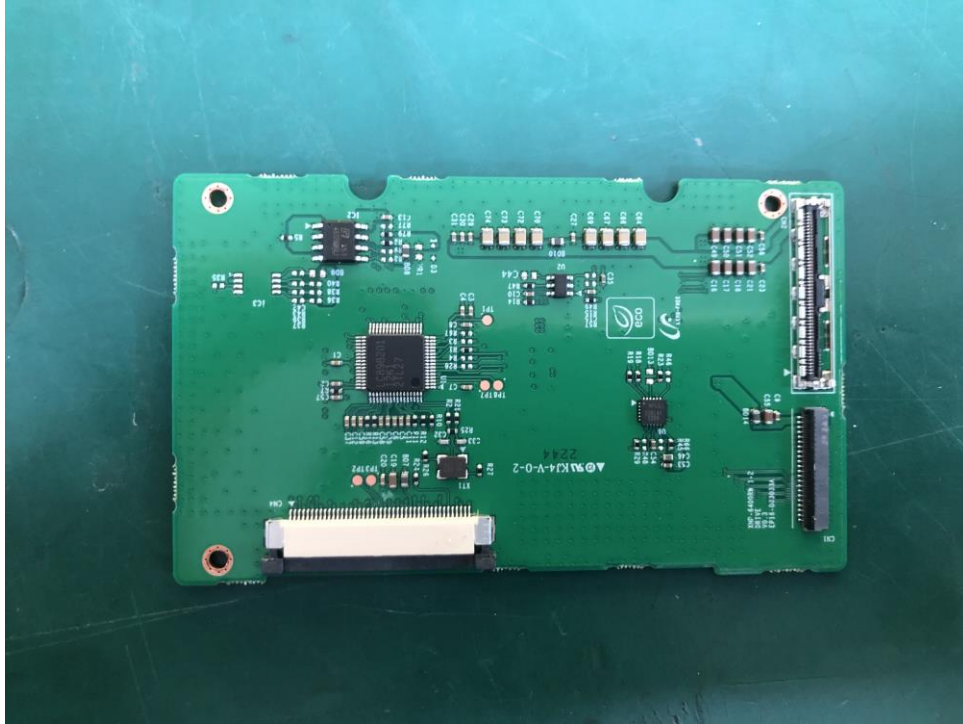
(Bottom)



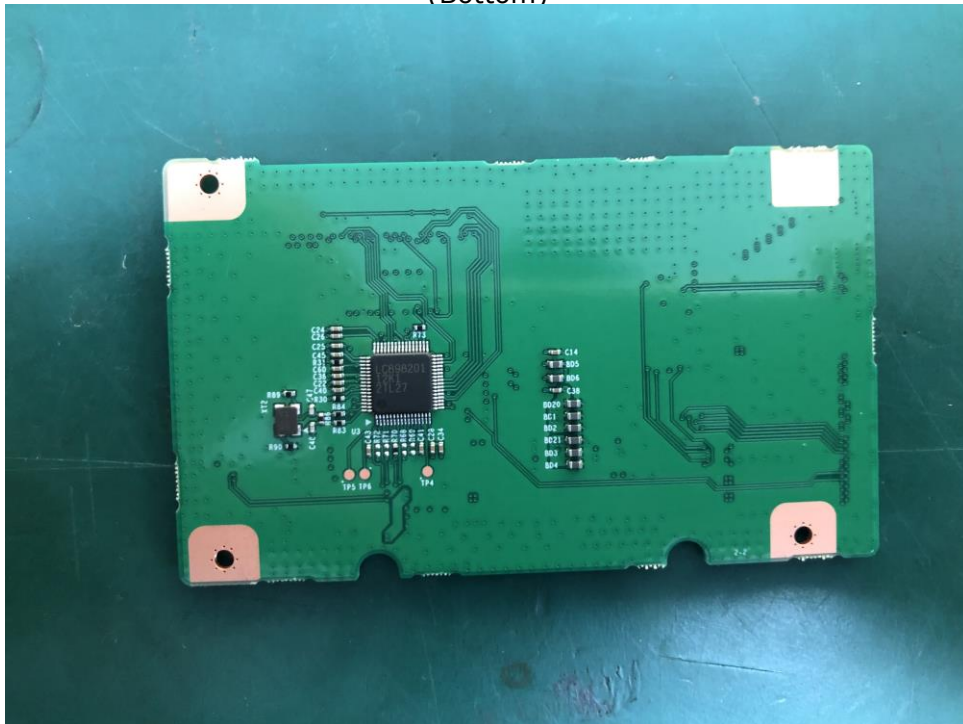
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## EUT Internal View – Camera Board 1

(Top)



(Bottom)

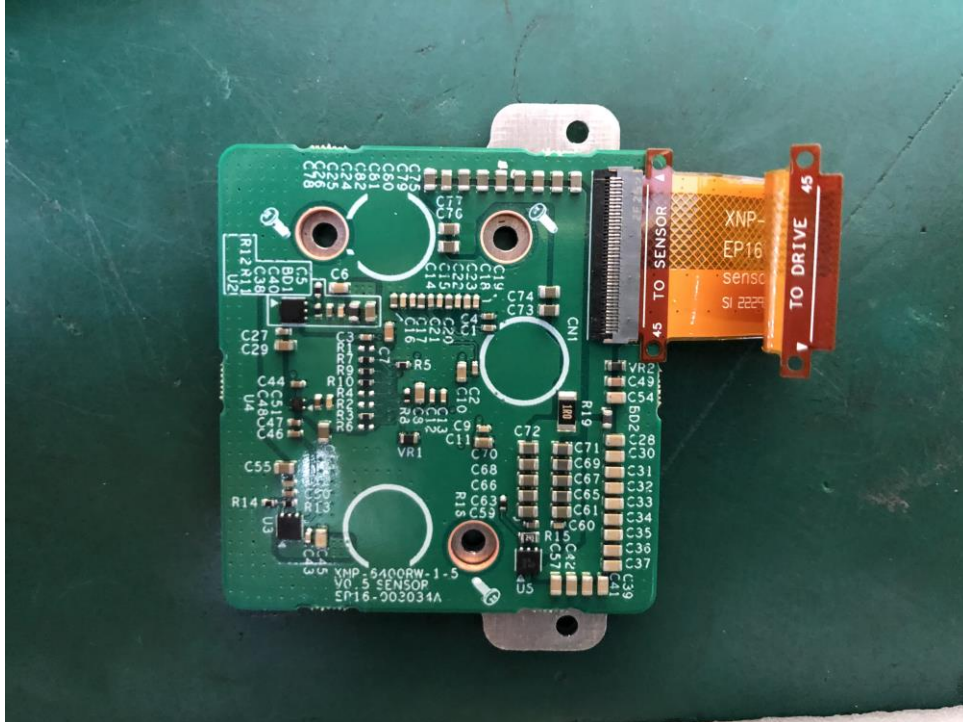


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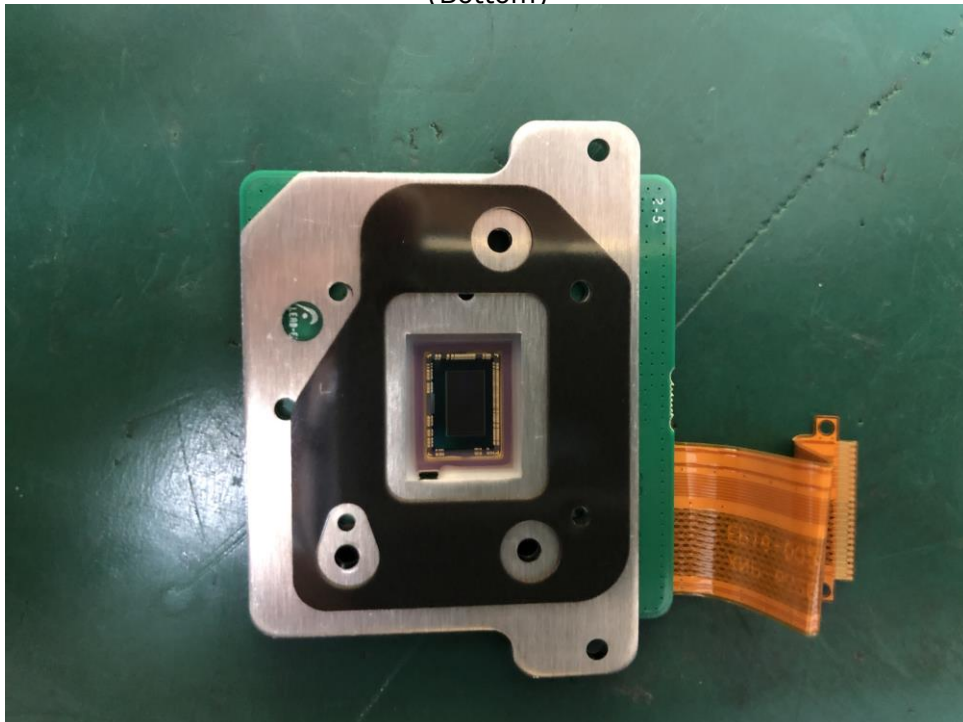


## EUT Internal View – Camera Board 2

[\(Top\)](#)



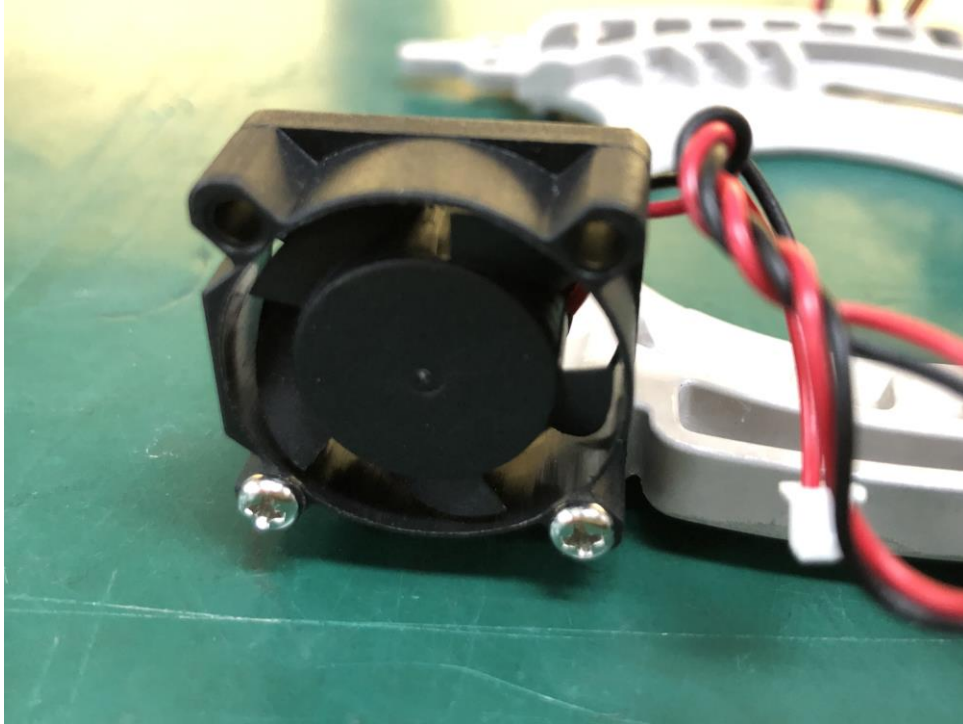
(Bottom)



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## EUT Internal View – FAN

(Top)



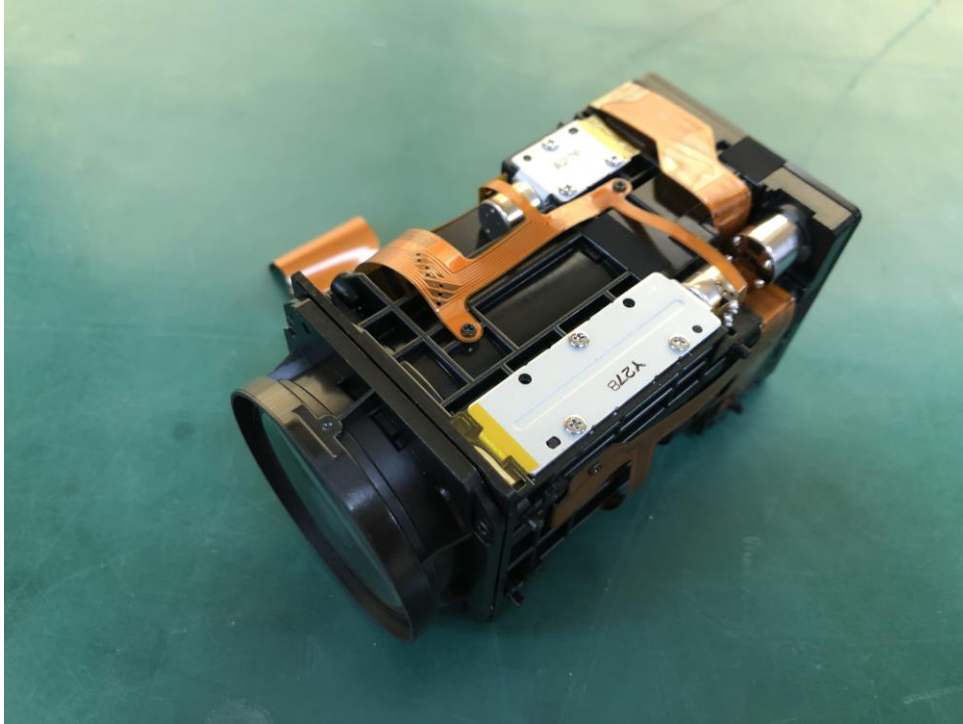
(Bottom)



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## EUT Internal View – Lens

(Top)



(Bottom)



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