



## EMC TEST REPORT

Test Report No. : KES-EM-22T0162-R1  
Date of Issue : Feb. 24, 2023  
Product name : NETWORK CAMERA  
Model/Type No. : XNP-6400RW  
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)  
Equipment authorization : **Supplier's Declaration of Conformity**  
Date of Receipt : Jan. 11, 2022  
Test date : Jan. 14, 2022 ~ Jan. 15, 2022  
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

김 세 현

Se Heon, Kim  
EMC Test Engineer

Reviewed by

Dong-Hun, Jang  
EMC Technical Manager

Tested by Ki Man, Kim  
(Retries person)  
Proxy signature : Se Heon, Kim

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                                                     |
|---------------|-------------------|----------------------------------------------------------------------|
| Jan. 27, 2022 | KES-EM-22T0162    | Issued                                                               |
| Feb. 24, 2023 | KES-EM-22T0162-R1 | Change the Applicant and Manufacturer at the request of the customer |
|               |                   |                                                                      |
|               |                   |                                                                      |
|               |                   |                                                                      |
|               |                   |                                                                      |
|               |                   |                                                                      |
|               |                   |                                                                      |
|               |                   |                                                                      |
|               |                   |                                                                      |

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## 1.0 General Product Description

### Main Specifications of EUT are:

|                           |                                                                                                 |
|---------------------------|-------------------------------------------------------------------------------------------------|
| Video                     |                                                                                                 |
| Imaging Device            | 1/2.8" 2MP CMOS                                                                                 |
| Effective Pixels          | 1944(H)x1212(V)                                                                                 |
| Min. Illumination         | Color: 0.05Lux(F1.6, 1/30sec)<br>BW: 0Lux(IR LED On)                                            |
| Video Out                 | None                                                                                            |
| Lens                      |                                                                                                 |
| Focal Length (Zoom Ratio) | 4.25~170mm(40x) zoom                                                                            |
| Max. Aperture Ratio       | F1.6(Wide)~F4.95(Tele)                                                                          |
| Angular Field of View     | H: 65.66°(Wide)~1.88°(Tele) / V: 39.40°(Wide)~1.09°(Tele)                                       |
| Min. Object Distance      | Wide: 1.5m(4.92ft), Tele: 3m(9.84ft)                                                            |
| Focus Control             | Oneshot AF, Focus save                                                                          |
| Lens Type                 | DC auto iris                                                                                    |
| Pan / Tilt / Rotate       |                                                                                                 |
| 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                                                      |
| Sequence                  | Preset(300ea), Swing, Group(6ea), Trace, Tour, Auto Run,<br>Schedule,<br>Preset trace recording |
| Preset Accuracy           | ±0.1°                                                                                           |
| Azimuth                   | Support                                                                                         |
| Auto Tracking             | Object auto tracking(Person/Vehicle)                                                            |
| Operational               |                                                                                                 |
| IR Viewable Length        | 300m(984.25ft)                                                                                  |
| Camera Title              | Displayed up to 85 characters, Direction Indicator                                              |
| Day & Night               | Auto(ICR)/Color/BW/Schedule                                                                     |
| Backlight Compensation    | BLC, HLC, WDR                                                                                   |
| Wide Dynamic Range        | 150 dB                                                                                          |
| Digital Noise Reduction   | SSNR V                                                                                          |

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|                             |                                                                                                                                                                                                                       |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Digital Image Stabilization | Support(built-in gyro sensor)                                                                                                                                                                                         |
| Defog                       | Support                                                                                                                                                                                                               |
| Motion Detection            | 8ea, 8point polygonal zones                                                                                                                                                                                           |
| Privacy Masking             | 32ea, rectangular Support<br>- Color: Grey/Green/Red/Blue/Black/White<br>- Mosaic                                                                                                                                     |
| Gain Control                | Low / Middle / High                                                                                                                                                                                                   |
| White Balance               | ATW / AWC / Manual / Indoor / Outdoor                                                                                                                                                                                 |
| LDC                         | None                                                                                                                                                                                                                  |
| Electronic Shutter Speed    | Minimum / Maximum / Anti flicker (2~1/12,000sec)                                                                                                                                                                      |
| Video Rotation              | Flip, Mirror                                                                                                                                                                                                          |
| Analytics                   | Directional detection, Fog detection, Face detection, Motion detection, Appear/Disappear, Enter/Exit, Loitering, Tampering, Virtual line, Shock detection<br>* Audio detection, Sound classification(with NW I/O Box) |
| Business Intelligence       | None                                                                                                                                                                                                                  |
| Serial Interface            | None                                                                                                                                                                                                                  |
| Alarm I/O                   | None                                                                                                                                                                                                                  |
| 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>* Alarm output(with NW I/O Box)                                                         |
| Audio In                    | None                                                                                                                                                                                                                  |
| Audio Out                   | None                                                                                                                                                                                                                  |
| Wiper                       | Support                                                                                                                                                                                                               |
| Network                     |                                                                                                                                                                                                                       |
| Ethernet                    | RJ-45(10/100BASE-T)                                                                                                                                                                                                   |
| Video Compression           | H.265/H.264,MJPEG                                                                                                                                                                                                     |

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|                                   |                                                                                                                                                                                                               |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Resolution                        | 1920x1080, 1280x1024, 1280x960, 1280x720,<br>1024x768, 800x600, 800x448, 720x576, 720x480, 640x480,<br>640x360, 320x240                                                                                       |
| Max. Framerate                    | H.265/H.264: Max. 60fps/50fps(60Hz/50Hz)<br>MJPEG: Max. 30fps/25fps(60Hz/50Hz)                                                                                                                                |
| Smart Codec                       | Manual(5ea area), WiseStreamII                                                                                                                                                                                |
| 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 user)<br>Multiple streaming(Up to 10 profiles)                                                                                                                             |
| Audio Compression                 | None                                                                                                                                                                                                          |
| Protocol                          | IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP,<br>NTP, HTTP, HTTPS, SSL/TLS,<br>DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP,<br>DNS, DDNS, QoS, PIM-SM,<br>UPnP, Bonjour, LLDP, SRTSP |
| 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)           |
| Edge Storage                      | Micro SD/SDHC/SDXC 2slot 1TB                                                                                                                                                                                  |
| Application Programming Interface | ONVIF Profile S/G/T<br>SUNAPI(HTTP API)<br>Wisenet open platform                                                                                                                                              |
| Webpage Language                  | English, Korean, Chinese, French, Italian, Spanish, German,<br>Japanese, Russian, Swedish,<br>Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek                                                     |

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|                                        |                                                                                                                                                                                                                   |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Web Viewer                             | Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10, 10.11, 10.12<br>Recommended Browser: Google Chrome<br>Supported Browser: MS Explore11, MS Edge, Mozilla Firefox(Window 64bit only), Apple Safari(Mac OS X only) |
| Memory                                 | 4GB RAM, 512MB Flash                                                                                                                                                                                              |
| Environmental                          |                                                                                                                                                                                                                   |
| Operating Temperature / Humidity (TBD) | -40°C~+60°C (-40°F ~ +140°F) / Less than 95% RH(Non-condensing)<br>Maximum Temperature : +60°C(+140°F), □□□ within 8 hours<br>Absolute maximum(According to NEMA TS2, 2.2.7):+74°C → TBD                          |
| Storage Temperature / Humidity         | -50°C~+60°C (-58°F~+140°F) / Less than 95% RH(Non-condensing)                                                                                                                                                     |
| Certification                          | IP66, IK10(Camera body only→TBD), NEMA4X                                                                                                                                                                          |
| Electrical                             |                                                                                                                                                                                                                   |
| Input Voltage(TBD)                     | HPoE(IEEE802.3bt, Class7, Type4). TBD(Power Class)                                                                                                                                                                |
| Power Consumption(TBD)                 | Typ.20W, Max.35W Camera only                                                                                                                                                                                      |
| Mechanical                             |                                                                                                                                                                                                                   |
| Color / Material                       | White, Black / Aluminum + Polycarbonate + ASA (Sun shield) + Tempered glass (Window)                                                                                                                              |
| RAL Code                               | White : RAL 9003 / Black : RAL 9005                                                                                                                                                                               |
| Product dimensions / weight            | Ø184.9 x 318.8.mm / 5.4Kg                                                                                                                                                                                         |
| Conduit hole                           | None                                                                                                                                                                                                              |
| Hanging mount(Dome)                    | None                                                                                                                                                                                                              |
| Skin cover(Dome)                       | None                                                                                                                                                                                                              |
| Weather cap(Dome)                      | None                                                                                                                                                                                                              |
| Power module                           | None                                                                                                                                                                                                              |
| Backbox                                | None                                                                                                                                                                                                              |

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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 120 V, 60 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-6400RW             | -             | HANWHA VISION<br>VIETNAM COMPANY<br>LIMITED      | EUT     |
| Fiber PoE Injector | PT-PSE109GBRO-<br>AH-S | -             | Dongguan PROCET<br>Network Technology<br>Co.,Ltd | EUT     |

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## 1.5 Support Equipments

| Description          | Model Number          | Serial Number      | Manufacturer                              | Remarks |
|----------------------|-----------------------|--------------------|-------------------------------------------|---------|
| Notebook1            | HSN-Q07C              | 5CD8367KND         | HP                                        | -       |
| Notebook1 Adapter    | HSTNN-CA40            | WFTKU0ERLB4Q<br>CH | HP                                        | -       |
| Notebook2            | P98F004               | 21599158359        | DELL INC.                                 | -       |
| Notebook2 Adapter    | LA240PM190            | -                  | LITE-ON TECHNOLOGY<br>(CHANGZHOU)CO.,LTD. | -       |
| Micro SD Card1       | -                     | -                  | SanDisk                                   | 8 GB    |
| Micro SD Card2       | -                     | -                  | SanDisk                                   | 8 GB    |
| Converter            | SFC2000-SFP           | -                  | Soltech                                   | -       |
| Converter<br>Adapter | FJ-<br>SW1260502000DK | -                  | -                                         | -       |
| optical module1      | -                     | -                  | -                                         | -       |
| optical module2      | -                     | -                  | -                                         | -       |

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## 1.6 External I/O Cabling

| Start                    |                 | END                |                 | Cable Spec. |        |
|--------------------------|-----------------|--------------------|-----------------|-------------|--------|
| Description              | I/O Port        | Description        | I/O Port        | Length      | Shield |
| NETWORK CAMERA (EUT)     | SLOT            | Micro SD Card1     | SLOT            | -           | -      |
|                          | SLOT            | Micro SD Card2     | SLOT            | -           | -      |
|                          | RJ-45 (PoE)     | Fiber PoE Injector | RJ-45 (PoE)     | 1.5         | U      |
| Fiber PoE Injector (EUT) | RJ-45 (LAN)     | Notebook1          | RJ-45 (LAN)     | 3.0         | U      |
|                          | SFP             | optical module1    | SFP             | -           | -      |
|                          | external ground | Grounding          | external ground | 1.7         | -      |
| Notebook1                | DC Jack         | Notebook1 Adapter  | DC Jack         | 1.1         | U      |
| Converter                | DC Jack         | Converter Adapter  | DC Jack         | 1.2         | U      |
|                          | SFP             | optical module2    | SFP             | -           | -      |
|                          | RJ-45           | Notebook2          | RJ-45           | 1.0         | U      |
| Notebook2                | DC Jack         | Notebook2 Adapter  | DC Jack         | 1.5         | U      |
| optical module1          | Optical         | optical module2    | Optical         | 3.5         | U      |

\* Unshielded=U, Shielded=S

## 1.7 EUT Operating Mode(s)

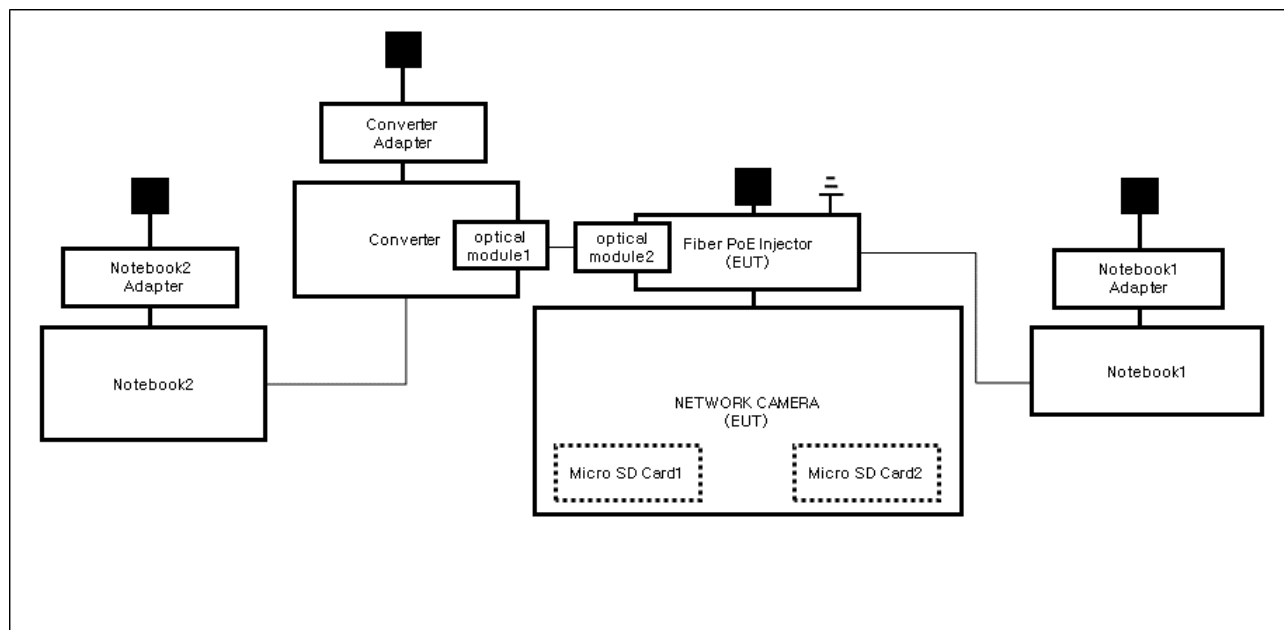
| Test Mode      | operating                                                                                                                                                                                                                     |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation mode | Check if the camera video output works properly in the web viewer, check if the network operation is working properly through the ping test, and check if the recording is normally done on the Micro SD card after the test. |

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

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## 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:

☒ **47 CFR Part 15, Subpart B**

☐ CISPR 22:2009 +A1:2010

☐ Class A

☐ Class B

☒ ANSI C63.4a-2017

☒ Class A

☐ Class B

☒ **IC Regulation ICES-003 Issue 7**

☐ CAN/CSA-CISPR 32:17

☐ Class A

☐ Class B

☒ ANSI C63.4a-2017

☒ Class A

☐ Class B



## 2.1 Conducted Emissions at Mains Power Ports

### Test Date

Jan. 14, 2022

### 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        | 12, 28, 2022 |
| <input checked="" type="checkbox"/> | LISN              | ENV216       | R & S        | 101787        | 12, 27, 2022 |
| <input checked="" type="checkbox"/> | LISN              | ESH2-Z5      | R & S        | 100450        | 12, 27, 2022 |
| <input checked="" type="checkbox"/> | PULSE LIMITER     | ESH3-Z2      | R & S        | 101915        | 12, 27, 2022 |

### Test Conditions

Temperature: (22,7 ± 0,2) °C

Relative Humidity: (43,6 ± 0,2) % 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 Radiated Electric Field Emissions(Below 1 GHz)

### Test Date

Jan. 14, 2022

### 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        | 04, 01, 2022 |
| <input checked="" type="checkbox"/> | AMPLIFIER                | SCU 01       | R & S            | 100603        | 11, 24, 2022 |
| <input checked="" type="checkbox"/> | TRILOG-BROADBAND ANTENNA | VULB9163     | Schwarzbeck      | 715           | 12, 08, 2022 |
| <input checked="" type="checkbox"/> | ATTENUATOR               | 8491A        | HP               | 32173         | 03, 10, 2022 |

### Test Conditions

Temperature: (23,0 ± 0,2) °C

Relative Humidity: (44,0 ± 0,3) % 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.



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

### Test Date

Jan. 15, 2022

### 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      | EP5/RE       | TOYO Corporation | 6.0.120       | -            |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER | ESU26        | Rohde & Schwarz  | 100552        | 04, 01, 2022 |
| <input checked="" type="checkbox"/> | HORN ANTENNA      | BBHA 9120D   | SCHWARZBECK      | 9120D-1802    | 12, 16, 2022 |
| <input checked="" type="checkbox"/> | PREAMPLIFIER      | 8449B        | HP               | 3008A00538    | 06, 21, 2022 |

### Test Conditions

Temperature: (22,7 ± 0,2) °C

Relative Humidity: (42,6 ± 0,3) % R.H.

### Frequency Range of Measurement

1 GHz to 5 GHz

### Instrument Settings

IF Band Width: 1 MHz

### Test Results

The requirements are:

☒ PASS

☐ NOT PASS

☐ NOT APPLICABLE

### Remarks

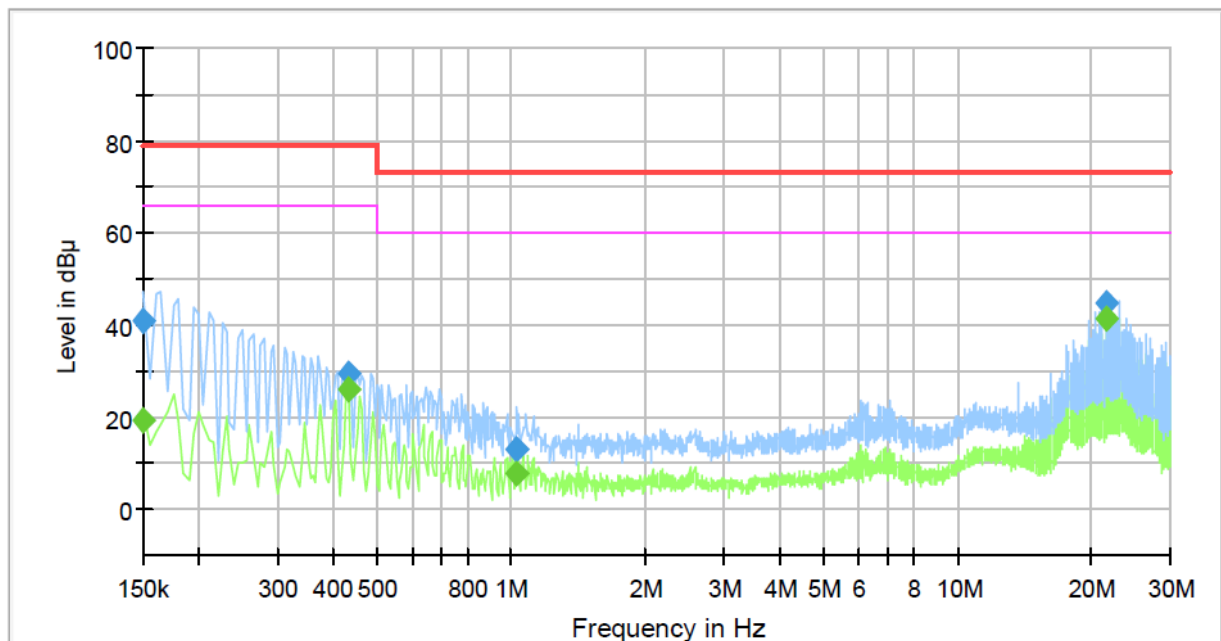
See Appendix A for test data.

## APPENDIX A – TEST DATA

### Conducted Emissions at Mains Power Ports HOT LINE

#### Common Information

Test Description: Conducted Emission  
 Model No.: XNP-6400RW  
 Phase: L1  
 Mode:  
 Operator Name: KES



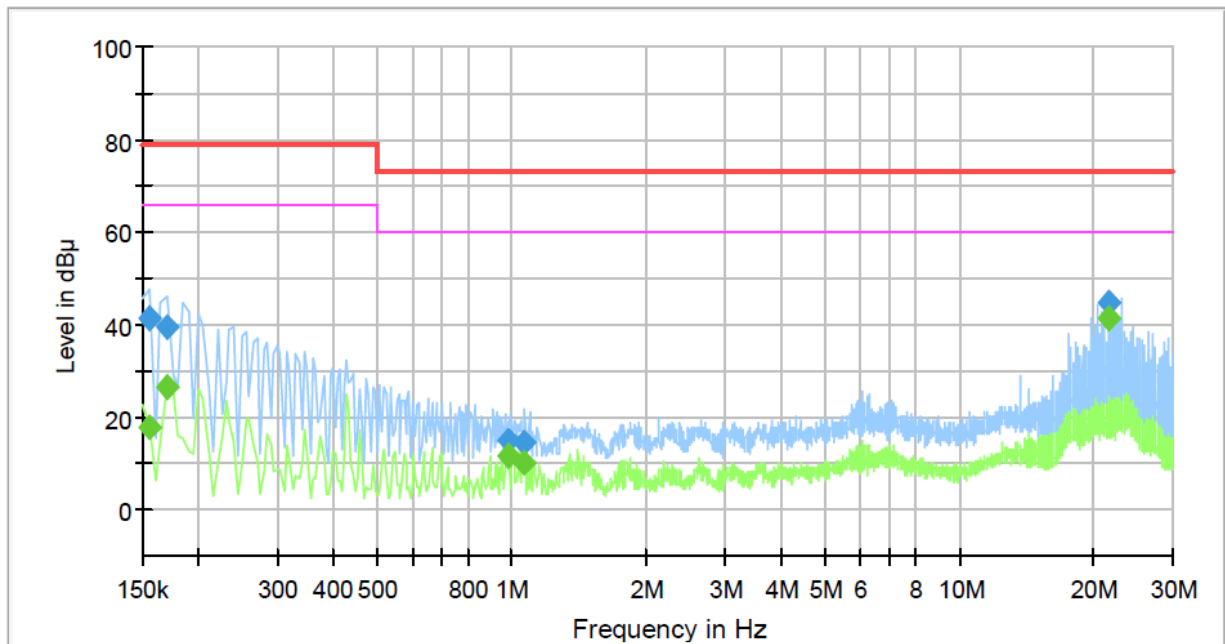
#### Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.150000        | ---              | 19.43           | 66.00        | 46.57       | 1000.0          | 9.000           | L1   | 19.5       |
| 0.150000        | 41.06            | ---             | 79.00        | 37.94       | 1000.0          | 9.000           | L1   | 19.5       |
| 0.435000        | ---              | 25.87           | 66.00        | 40.13       | 1000.0          | 9.000           | L1   | 19.7       |
| 0.435000        | 29.51            | ---             | 79.00        | 49.49       | 1000.0          | 9.000           | L1   | 19.7       |
| 1.030000        | ---              | 7.86            | 60.00        | 52.14       | 1000.0          | 9.000           | L1   | 20.1       |
| 1.030000        | 13.06            | ---             | 73.00        | 59.94       | 1000.0          | 9.000           | L1   | 20.1       |
| 21.665000       | ---              | 41.39           | 60.00        | 18.61       | 1000.0          | 9.000           | L1   | 20.2       |
| 21.665000       | 44.64            | ---             | 73.00        | 28.36       | 1000.0          | 9.000           | L1   | 20.2       |

## NEUTRAL LINE

### Common Information

Test Description: Conducted Emission  
Model No.: XNP-6400RW  
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        | ---              | 17.67           | 66.00        | 48.33       | 1000.0          | 9.000           | N    | 19.4       |
| 0.155000        | 41.31            | ---             | 79.00        | 37.69       | 1000.0          | 9.000           | N    | 19.4       |
| 0.170000        | ---              | 26.43           | 66.00        | 39.57       | 1000.0          | 9.000           | N    | 19.4       |
| 0.170000        | 39.59            | ---             | 79.00        | 39.41       | 1000.0          | 9.000           | N    | 19.4       |
| 0.980000        | ---              | 11.72           | 60.00        | 48.28       | 1000.0          | 9.000           | N    | 20.1       |
| 0.980000        | 14.91            | ---             | 73.00        | 58.09       | 1000.0          | 9.000           | N    | 20.1       |
| 1.070000        | ---              | 10.18           | 60.00        | 49.82       | 1000.0          | 9.000           | N    | 20.1       |
| 1.070000        | 14.41            | ---             | 73.00        | 58.59       | 1000.0          | 9.000           | N    | 20.1       |
| 21.665000       | ---              | 41.49           | 60.00        | 18.51       | 1000.0          | 9.000           | N    | 20.2       |
| 21.665000       | 44.80            | ---             | 73.00        | 28.20       | 1000.0          | 9.000           | N    | 20.2       |

#### ◆ 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))

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# KES Co., Ltd.

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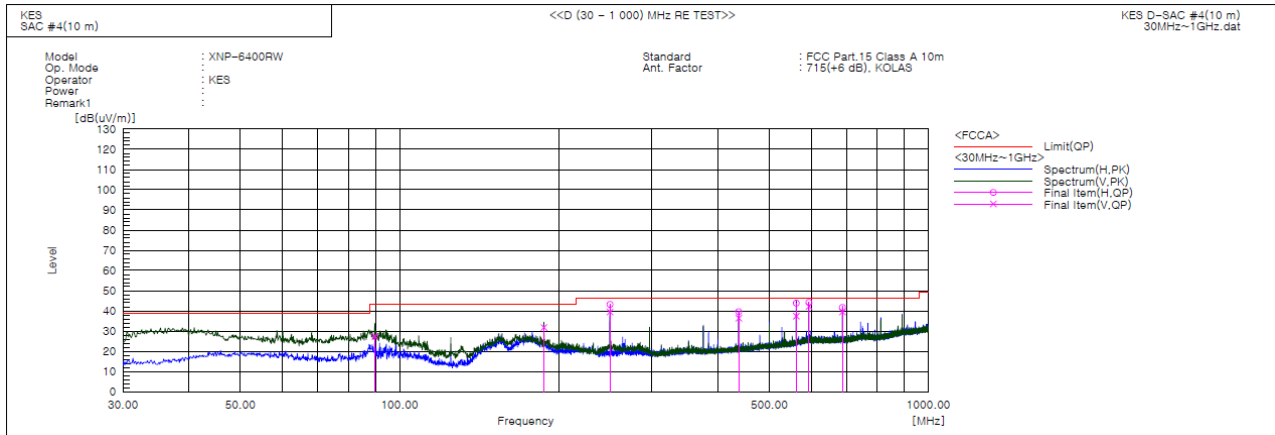
Report No.:

KES-EM-22T0162-R1

Page (19) of (40)

## Radiated Electric Field Emissions(Below 1 GHz)

- 47 CFR Part 15, Subpart B



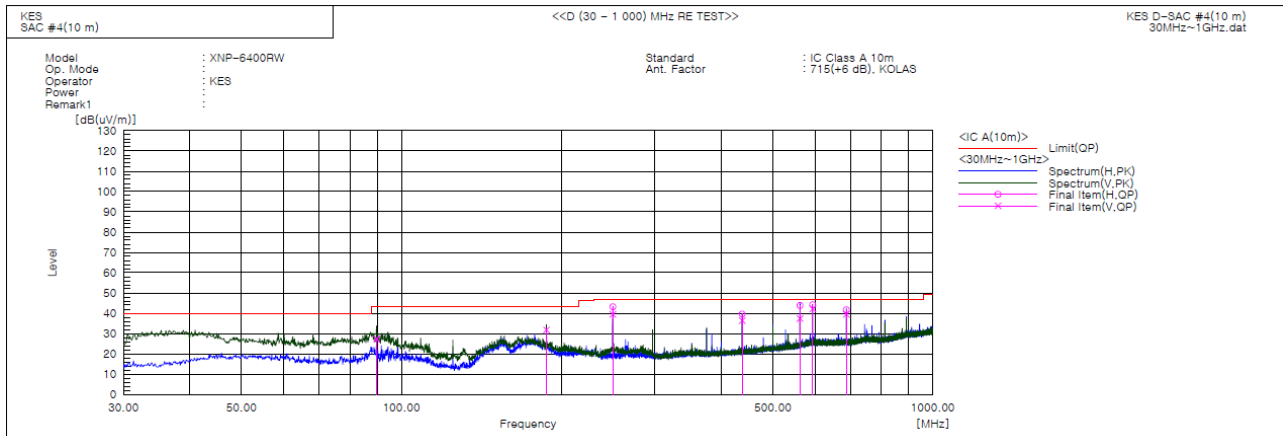
### Final Result

| 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   | 89.776          | V   | 51.5                | -24.1         | 27.4                 | 43.5                | 16.1           | 400.0       | 359.0       |        |
| 2   | 187.504         | V   | 54.2                | -22.4         | 31.8                 | 43.5                | 11.7           | 150.0       | 169.0       |        |
| 3   | 249.948         | H   | 62.3                | -19.1         | 43.2                 | 46.5                | 3.3            | 400.0       | 175.0       |        |
| 4   | 249.948         | V   | 58.6                | -19.1         | 39.5                 | 46.5                | 7.0            | 144.0       | 231.0       |        |
| 5   | 437.521         | H   | 52.8                | -13.2         | 39.6                 | 46.5                | 6.9            | 241.0       | 329.0       |        |
| 6   | 437.527         | V   | 49.6                | -13.2         | 36.4                 | 46.5                | 10.1           | 100.0       | 12.0        |        |
| 7   | 562.526         | V   | 47.0                | -9.6          | 37.4                 | 46.5                | 9.1            | 112.0       | 8.0         |        |
| 8   | 562.530         | H   | 53.5                | -9.6          | 43.9                 | 46.5                | 2.6            | 367.0       | 33.0        |        |
| 9   | 594.051         | V   | 50.7                | -8.4          | 42.3                 | 46.5                | 4.2            | 400.0       | 194.0       |        |
| 10  | 594.055         | H   | 52.6                | -8.4          | 44.2                 | 46.5                | 2.3            | 132.0       | 234.0       |        |
| 11  | 687.660         | H   | 49.3                | -7.6          | 41.7                 | 46.5                | 4.8            | 100.0       | 21.0        |        |
| 12  | 687.664         | V   | 47.1                | -7.6          | 39.5                 | 46.5                | 7.0            | 100.0       | 260.0       |        |

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- IC Regulation ICES-003 Issue 7



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   | 89.776          | V   | 51.5                | -24.1         | 27.4                 | 43.5                | 16.1           | 400.0       | 359.0       |        |
| 2   | 187.504         | V   | 54.2                | -22.4         | 31.8                 | 43.5                | 11.7           | 150.0       | 169.0       |        |
| 3   | 249.948         | H   | 62.3                | -19.1         | 43.2                 | 47.0                | 3.8            | 400.0       | 175.0       |        |
| 4   | 249.948         | V   | 58.6                | -19.1         | 39.5                 | 47.0                | 7.5            | 144.0       | 231.0       |        |
| 5   | 437.521         | H   | 52.8                | -13.2         | 39.6                 | 47.0                | 7.4            | 241.0       | 329.0       |        |
| 6   | 437.527         | V   | 49.6                | -13.2         | 36.4                 | 47.0                | 10.6           | 100.0       | 12.0        |        |
| 7   | 562.526         | V   | 47.0                | -9.6          | 37.4                 | 47.0                | 9.6            | 112.0       | 8.0         |        |
| 8   | 562.530         | H   | 53.5                | -9.6          | 43.9                 | 47.0                | 3.1            | 367.0       | 33.0        |        |
| 9   | 594.051         | V   | 50.7                | -8.4          | 42.3                 | 47.0                | 4.7            | 400.0       | 194.0       |        |
| 10  | 594.055         | H   | 52.6                | -8.4          | 44.2                 | 47.0                | 2.8            | 132.0       | 234.0       |        |
| 11  | 687.660         | H   | 49.3                | -7.6          | 41.7                 | 47.0                | 5.3            | 100.0       | 21.0        |        |
| 12  | 687.664         | V   | 47.1                | -7.6          | 39.5                 | 47.0                | 7.5            | 100.0       | 260.0       |        |

◆ Calculation - SAC #4(10 m)

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

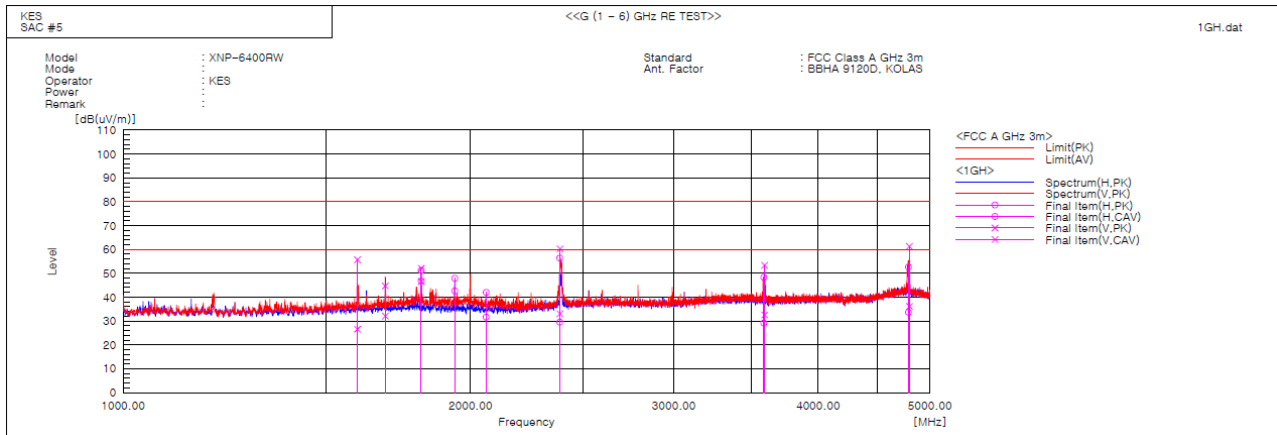
Margin(QP)[dB] = Limit[dB(μV/m)] - Result(QP) [dB(μV/m)]

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

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



## Radiated Electric Field Emissions(Above 1 GHz)



### Final Result

| No. | Frequency<br>[MHz] | (P) | Reading<br>PK<br>[dB(uV)] | Reading<br>CAV<br>[dB(uV)] | c.f<br>[dB(1/m)] | Result<br>PK<br>[dB(uV/m)] | Result<br>CAV<br>[dB(uV/m)] | Limit<br>PK<br>[dB(uV/m)] | Limit<br>AV<br>[dB(uV/m)] | Margin<br>PK<br>[dB] | Margin<br>CAV<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark |
|-----|--------------------|-----|---------------------------|----------------------------|------------------|----------------------------|-----------------------------|---------------------------|---------------------------|----------------------|-----------------------|----------------|----------------|--------|
| 1   | 1595.625           | V   | 60.7                      | 31.6                       | -5.0             | 55.7                       | 26.6                        | 80.0                      | 60.0                      | 24.3                 | 33.4                  | 112.0          | 202.8          |        |
| 2   | 1686.875           | V   | 49.3                      | 36.7                       | -4.6             | 44.7                       | 32.1                        | 80.0                      | 60.0                      | 35.3                 | 27.9                  | 100.0          | 359.8          |        |
| 3   | 1812.500           | V   | 56.2                      | 50.7                       | -4.1             | 52.1                       | 46.6                        | 80.0                      | 60.0                      | 27.9                 | 13.4                  | 167.0          | 8.7            |        |
| 4   | 1812.524           | H   | 55.3                      | 50.9                       | -4.1             | 51.2                       | 46.8                        | 80.0                      | 60.0                      | 28.8                 | 13.2                  | 355.0          | 121.8          |        |
| 5   | 1937.500           | H   | 51.6                      | 46.3                       | -3.7             | 47.9                       | 42.6                        | 80.0                      | 60.0                      | 32.1                 | 17.4                  | 341.0          | 22.8           |        |
| 6   | 2062.500           | H   | 45.3                      | 35.0                       | -3.3             | 42.0                       | 31.7                        | 80.0                      | 60.0                      | 38.0                 | 28.3                  | 224.0          | 322.4          |        |
| 7   | 2388.750           | H   | 58.4                      | 31.6                       | -2.0             | 56.4                       | 29.6                        | 80.0                      | 60.0                      | 23.6                 | 30.4                  | 400.0          | 337.1          |        |
| 8   | 2390.000           | V   | 62.3                      | 35.1                       | -2.0             | 60.3                       | 33.1                        | 80.0                      | 60.0                      | 19.7                 | 26.9                  | 221.0          | 195.9          |        |
| 9   | 3589.375           | H   | 47.4                      | 28.3                       | 0.9              | 48.3                       | 29.2                        | 80.0                      | 60.0                      | 31.7                 | 30.8                  | 146.0          | 111.4          |        |
| 10  | 3594.375           | V   | 52.5                      | 31.7                       | 0.9              | 53.4                       | 32.6                        | 80.0                      | 60.0                      | 26.6                 | 27.4                  | 400.0          | 143.5          |        |
| 11  | 4789.375           | H   | 47.5                      | 28.5                       | 5.2              | 52.7                       | 33.7                        | 80.0                      | 60.0                      | 27.3                 | 26.3                  | 108.0          | 195.7          |        |
| 12  | 4799.375           | V   | 56.1                      | 31.0                       | 5.2              | 61.3                       | 36.2                        | 80.0                      | 60.0                      | 18.7                 | 23.8                  | 257.0          | 147.3          |        |

### ◆ Calculation

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

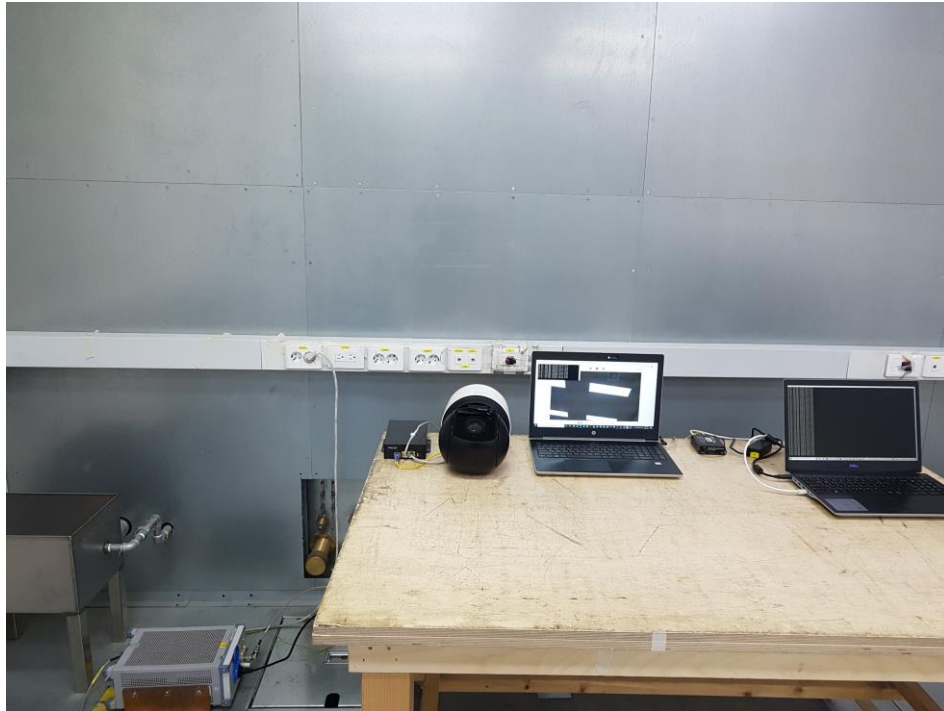
Margin(PK/CAV)[dB] = Limit[dB(uV/m)] - Result(PK/CAV) [dB(uV/m)]

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

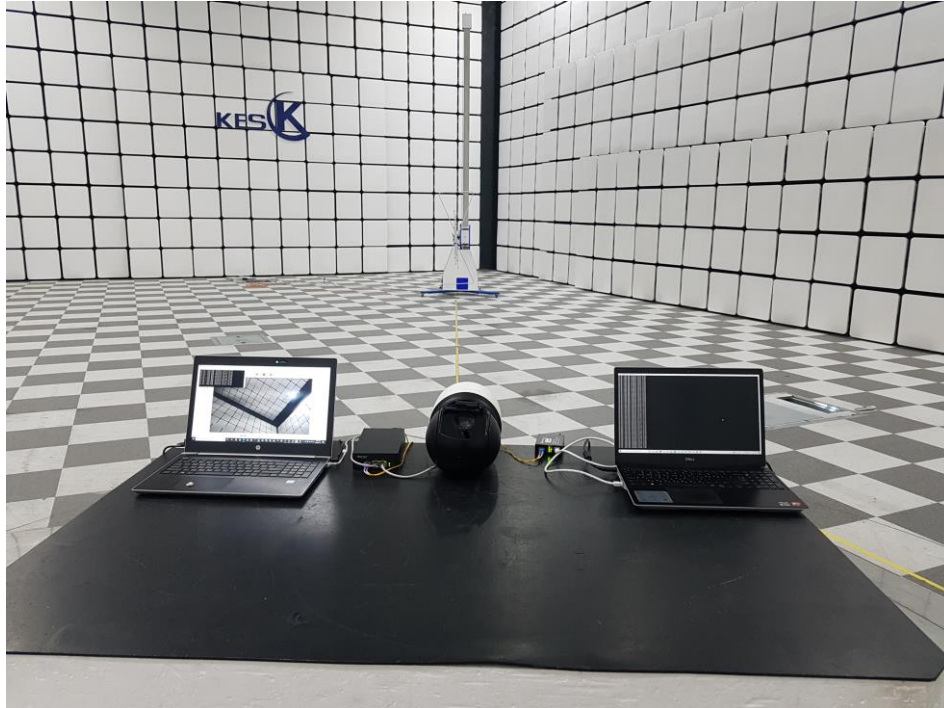
## Test Setup Photos and Configuration

### Conducted Emissions at Mains Power Ports



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## Radiated Electric Field Emissions(Below 1 GHz)



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## Radiated Electric Field Emissions(Above 1 GHz)



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## EUT External Photographs

(Top)



(Bottom)



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## EUT Internal Photographs

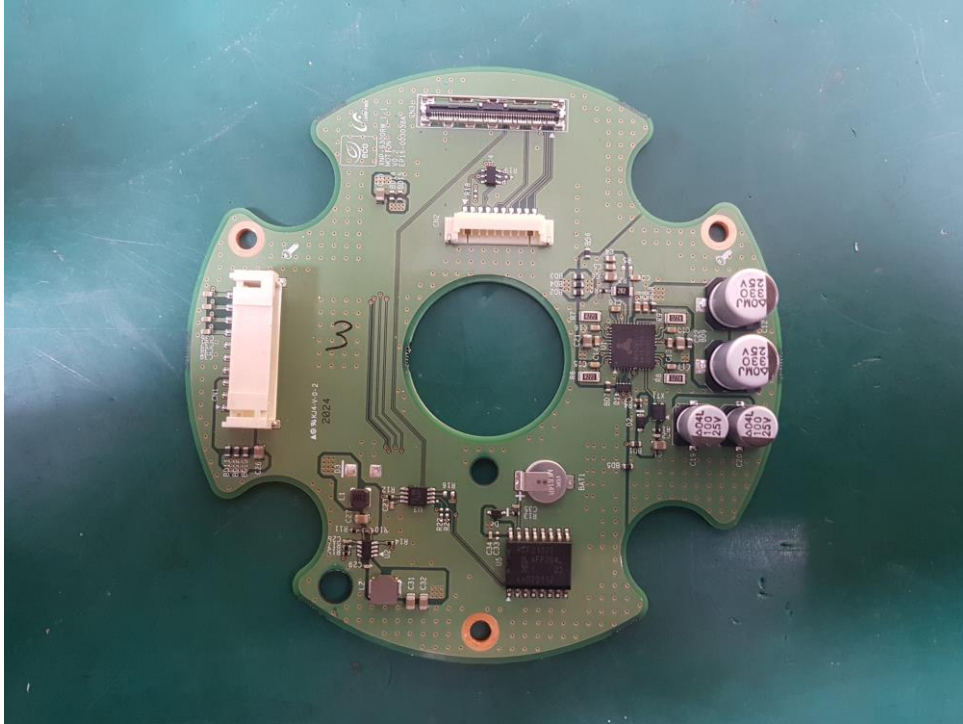
(Internal View)



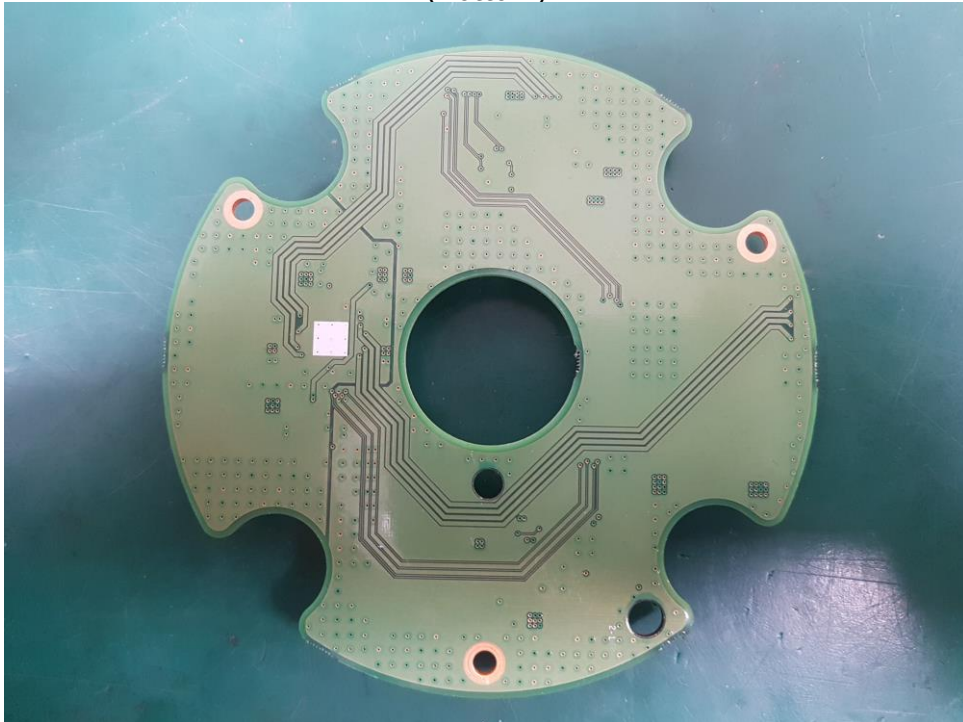
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## EUT Internal View – Board 1

(Top)



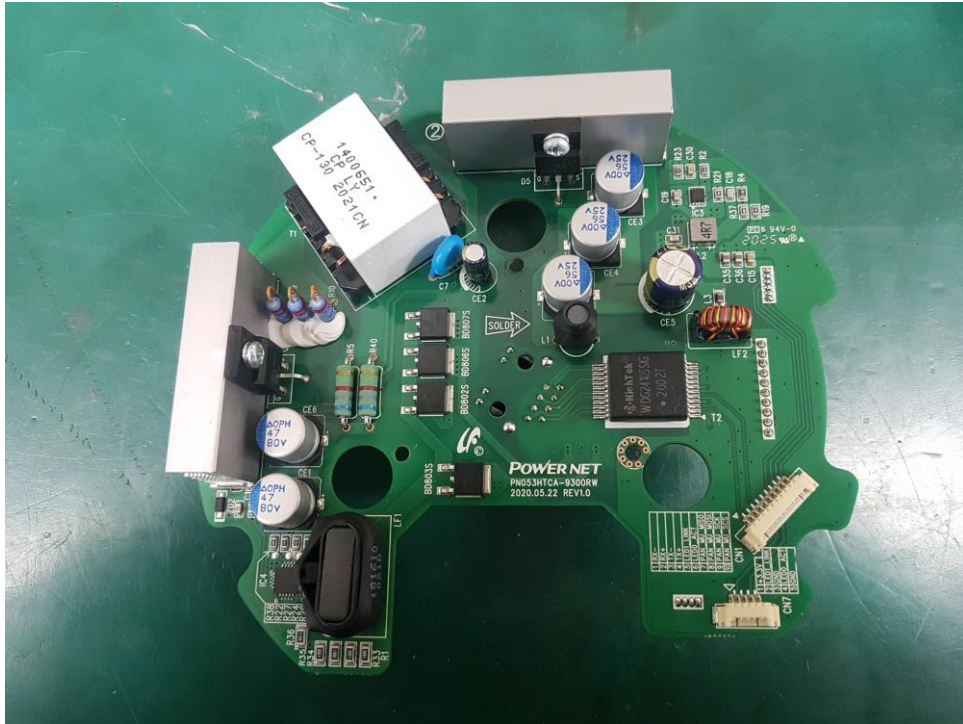
(Bottom)



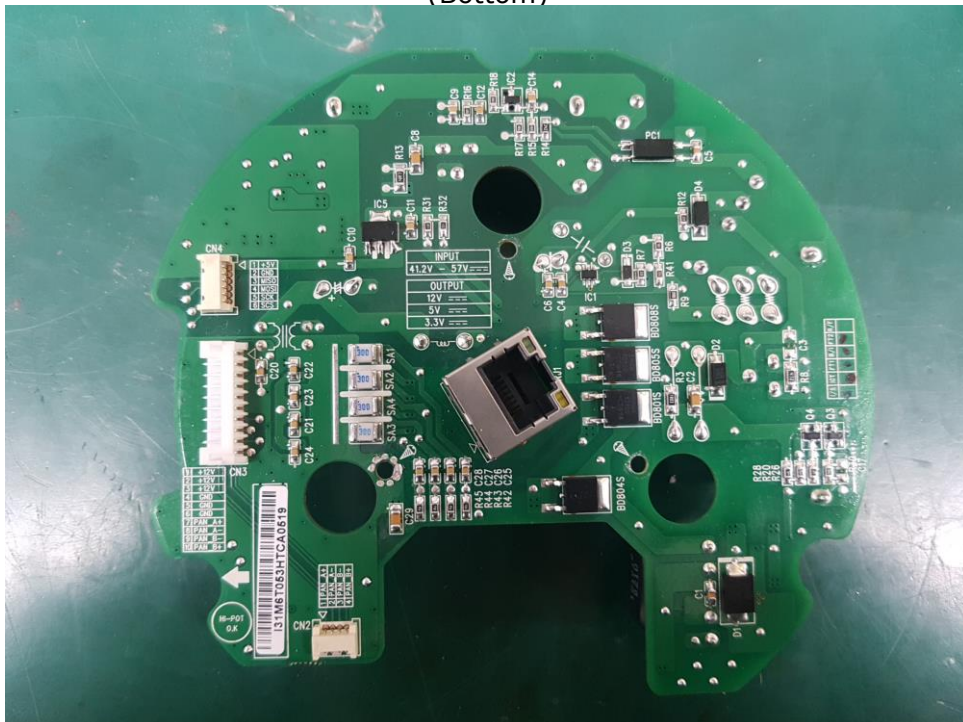
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## EUT Internal View – Board 2

(Top)



(Bottom)



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## EUT Internal View – Board 3

(Top)



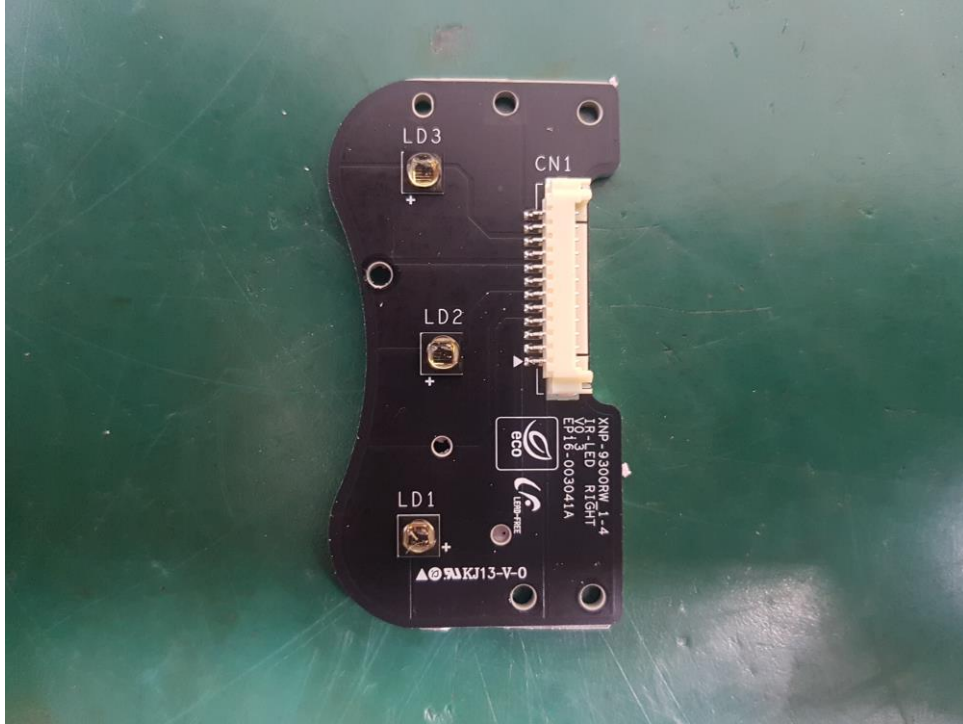
(Bottom)



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## EUT Internal View – Board 4

(Top)



(Bottom)



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## EUT Internal View – Board 5

(Top)



(Bottom)

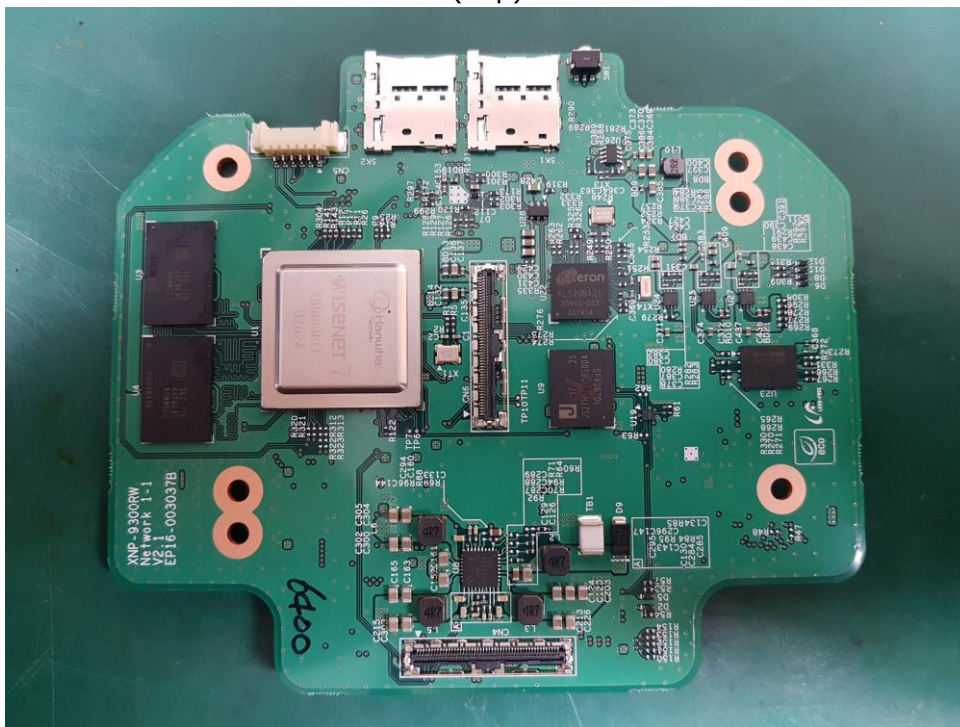


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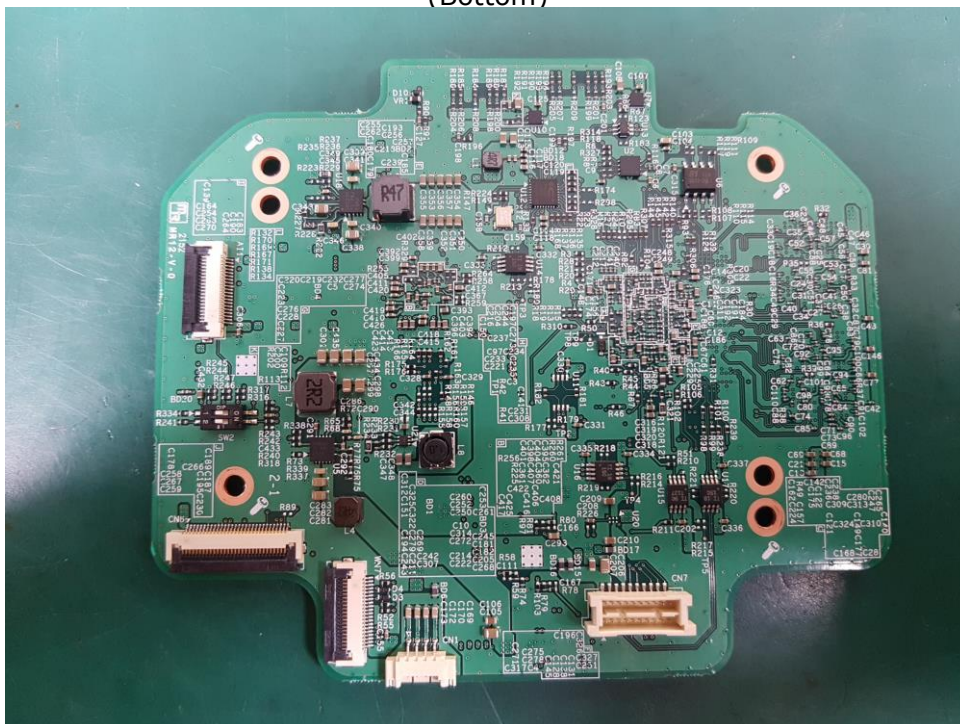


## EUT Internal View – Board 7

(Top)



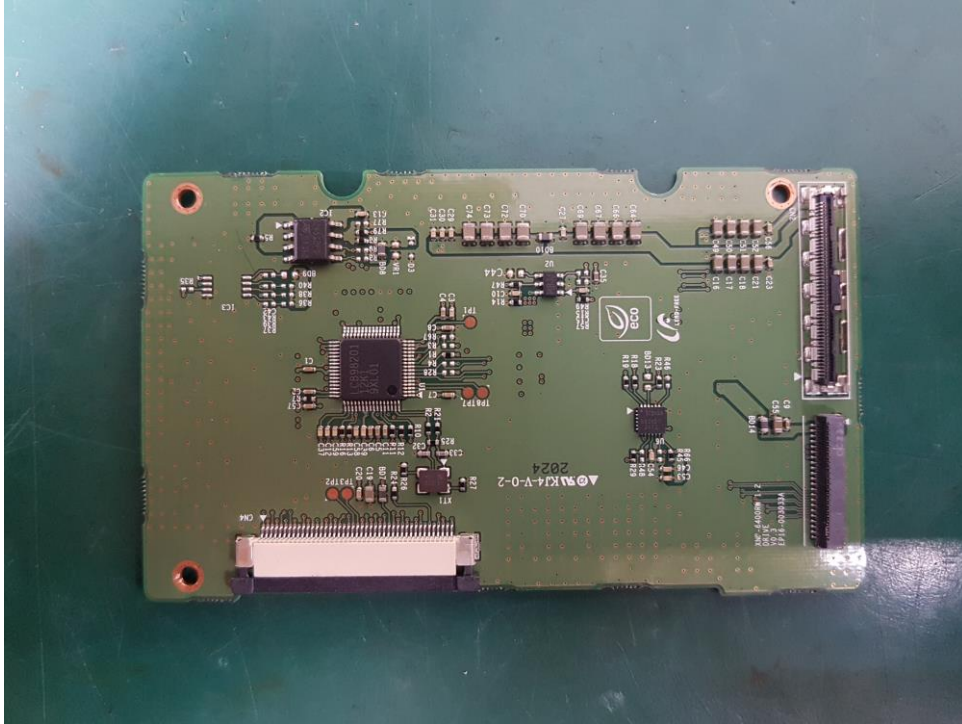
(Bottom)



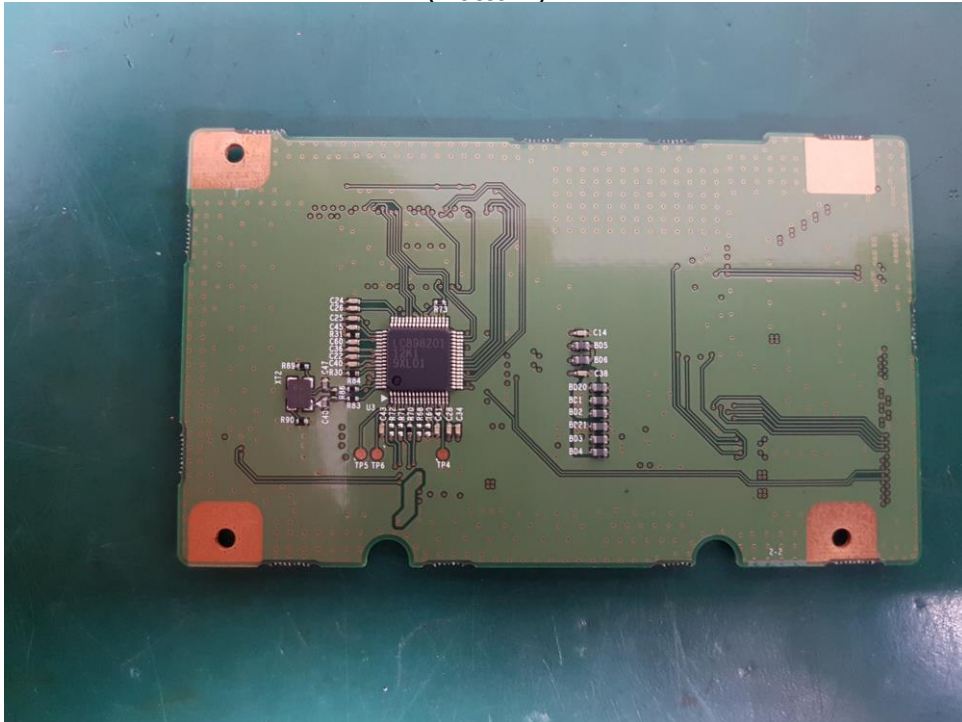
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**EUT Internal View – Board 8**

(Top)



(Bottom)



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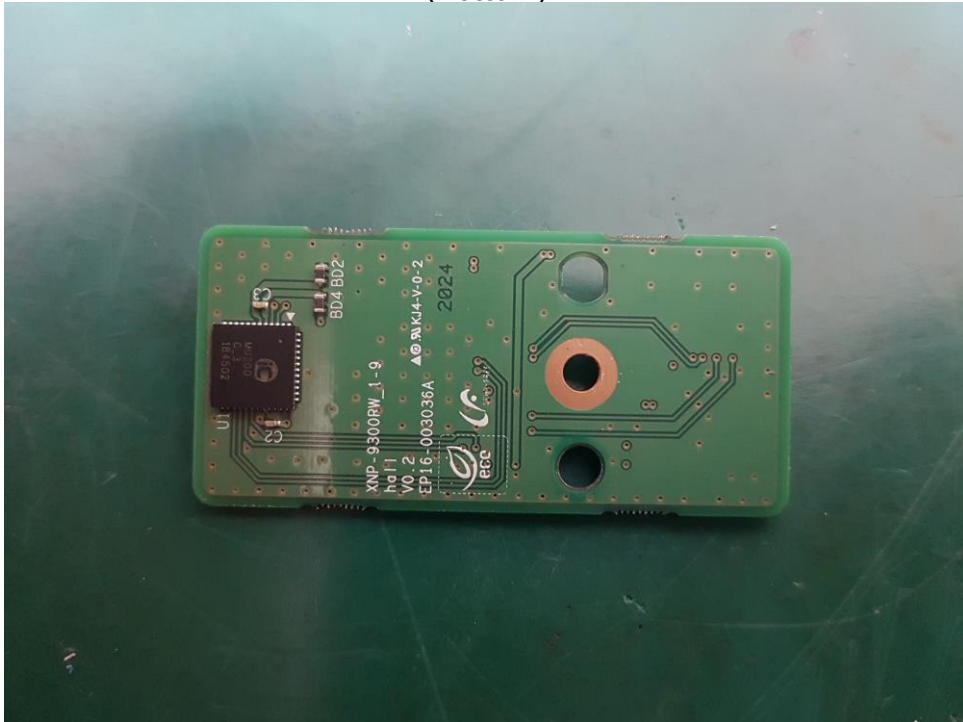


## EUT Internal View – Board 10

(Top)



(Bottom)



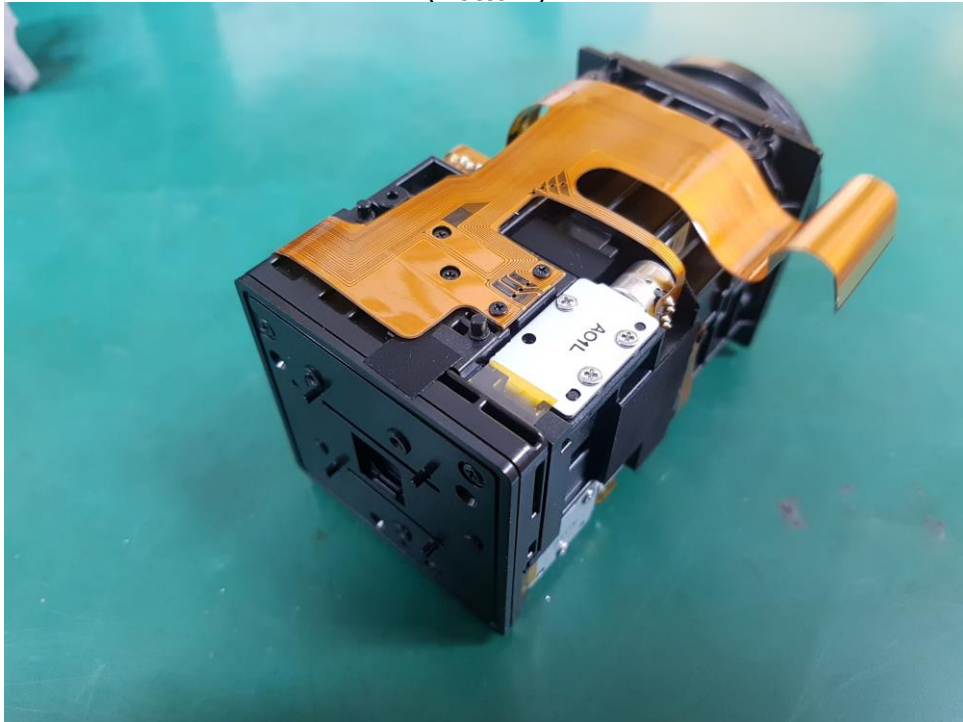
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## EUT Internal View – Lens

(Top)



(Bottom)



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## EUT Internal View – PoE Adapter

(Top)



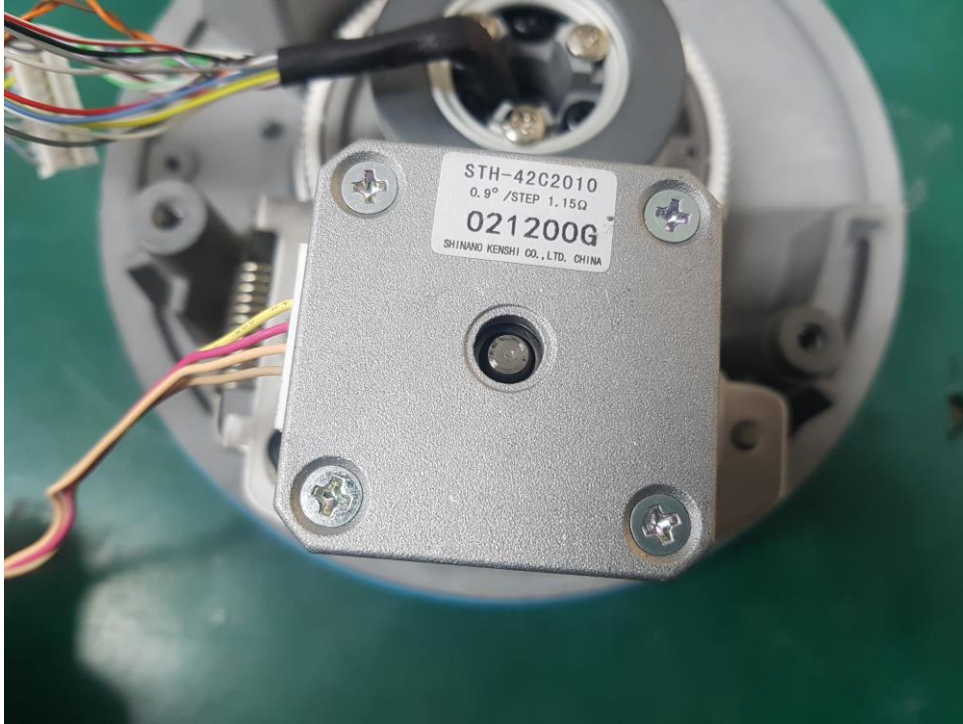
(Bottom)



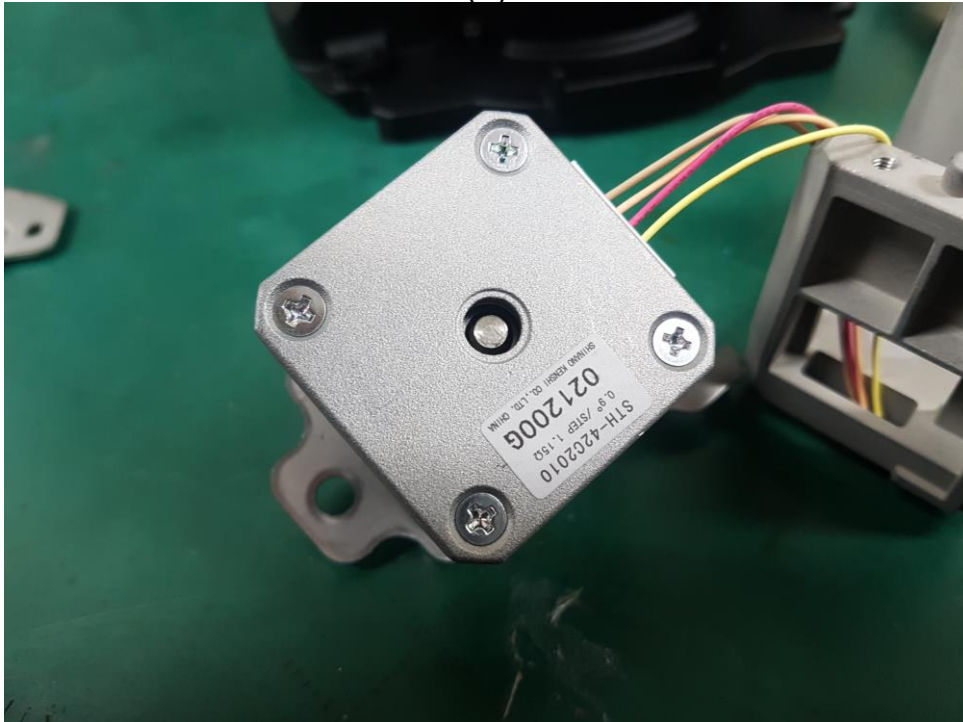
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## EUT Internal View – Motor

(1)



(2)



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## Label Photographs



CAN ICES-3(A) / NMB-3(A)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.