



**KES Co., Ltd.**

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Report No.:

KES-EM-22T0087-R1

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## EMC TEST REPORT For CE

Test Report No. : KES-EM-22T0087-R1  
Date of Issue : Feb. 24, 2023  
Product name : NETWORK CAMERA  
Model/Type No. : XNP-6120H  
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 : Jan. 03, 2022  
Test date : Jan. 05, 2022 ~ Jan. 10, 2022  
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Reviewed by

Min Seong, Kim  
EMC Test Engineer

Dong-Hun, Jang  
EMC Technical Manager

Tested by Ki Man, Kim  
(Retries person)  
Proxy signature : Min Seong, 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. 19, 2022 | KES-EM-22T0087    | Issued                                                               |
| Feb. 24, 2023 | KES-EM-22T0087-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" 2.16M CMOS                                                                                                                                                                                                                                                                     |
| Total Pixels                | 1,945(H) x 1,109(V), 2.16M                                                                                                                                                                                                                                                            |
| Effective Pixels            | 1,945(H) x 1,097(V), 2.13M                                                                                                                                                                                                                                                            |
| Scanning System             | Progressive                                                                                                                                                                                                                                                                           |
| Min. Illumination           | Color : 0.03 Lux (F1.6, 1/30sec), B/W : 0.003 Lux (F1.6, 1/30sec)                                                                                                                                                                                                                     |
| S / N Ratio                 | 50dB                                                                                                                                                                                                                                                                                  |
| Video Out                   | CVBS : 1.0 Vpp / 75Ω composite, 720 x 480(N), 720 x 576(P), for Installation<br>USB : Micro USB Type B, 1280 x 720 for Installation                                                                                                                                                   |
| LENS                        |                                                                                                                                                                                                                                                                                       |
| Focal Length (Zoom Ratio)   | 5.2 ~ 62.4mm (Optical 12X)                                                                                                                                                                                                                                                            |
| Max. Aperture Ratio         | F1.6 (Wide) ~ F3.0 (Tele)                                                                                                                                                                                                                                                             |
| Angular Field of View       | H : 54.58° (Wide) ~ 5.30° (Tele) / V : 32.19° (Wide) ~ 3.00° (Tele)                                                                                                                                                                                                                   |
| Min. Object Distance        | 1.5m (4.92ft) (Wide), 2.1m (6.89ft) (Tele)                                                                                                                                                                                                                                            |
| Focus Control               | Auto / Manual / One shot AF                                                                                                                                                                                                                                                           |
| Lens / Mount Type           | DC Auto Iris / Board-in Type                                                                                                                                                                                                                                                          |
| PAN/TILT/ROTATE             |                                                                                                                                                                                                                                                                                       |
| Pan / Tilt Range            | 360° Endless / 190° (-5° ~ 185°)                                                                                                                                                                                                                                                      |
| Pan Speed                   | Preset : 350°/sec, Manual : 0.024°/sec ~ 200°/sec                                                                                                                                                                                                                                     |
| Tilt Speed                  | Preset : 350°/sec, Manual : 0.024°/sec ~ 200°/sec                                                                                                                                                                                                                                     |
| Sequence / Preset Accuracy  | Preset (300 ea), Swing, Group (6 ea), Trace, Tour (1 ea), Auto Run, Schedule / ±0.2°                                                                                                                                                                                                  |
| Azimuth                     | Yes (E / W / S / N / NE / NW / SE / SW)                                                                                                                                                                                                                                               |
| Auto Tracking               | Support                                                                                                                                                                                                                                                                               |
| OPERATIONAL                 |                                                                                                                                                                                                                                                                                       |
| Camera Title                | Off / On (Displayed up to 85 Characters)<br>- W/W : English / Numeric / Special Characters<br>- China : English / Numeric / Special / Chinese Characters<br>- Common : Multi-line (Max. 5), Color (Grey / Green / Red / Blue / Black / White), Transparency, Auto scale by Resolution |
| Day & Night                 | Auto (ICR) / Color / B/W / Schedule                                                                                                                                                                                                                                                   |
| Backlight Compensation      | Off / BLC / HLC / WDR                                                                                                                                                                                                                                                                 |
| Wide Dynamic Range          | 150dB                                                                                                                                                                                                                                                                                 |
| Contrast Enhancement        | SSDR (Off / On)                                                                                                                                                                                                                                                                       |
| Digital Noise Reduction     | SSNRV (2D + 3D Noise filter) (Off / On)                                                                                                                                                                                                                                               |
| Digital Image Stabilization | Off / On (Built-in Gyro)                                                                                                                                                                                                                                                              |
| Defog                       | Auto / Manual / Off                                                                                                                                                                                                                                                                   |
| Motion Detection            | Off / On (8ea, Polygonal)                                                                                                                                                                                                                                                             |
| Privacy Masking             | Off / On (24 Zones of Rectangle zone) - Color: Grey / Green / Red / Blue / Black / White<br>- Zoom ratio option for mask mode - Mosaic option                                                                                                                                         |
| Gain Control                | Off / Low / Middle / High                                                                                                                                                                                                                                                             |
| White Balance               | ATW / AWC / Manual / Indoor / Outdoor (included Mercury & Sodium)                                                                                                                                                                                                                     |
| Electronic Shutter Speed    | Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)                                                                                                                                                                                                                                    |
| Digital Zoom                | 32x                                                                                                                                                                                                                                                                                   |
| Flip / Mirror               | Off / On                                                                                                                                                                                                                                                                              |
| Video & Audio Analytics     | Tampering, Loitering, Directional Detection, Fog Detection, Virtual Line, Enter/Exit, (Dis) Appear, Audio Detection, Face Detection, Motion Detection Sound Classification                                                                                                            |
| Serial Interface            | RS-485 - Samsung-T/E, Pelco-D/P, Panasonic, Bosch, AD, GE, Vicon, Honeywell                                                                                                                                                                                                           |
| Alarm I/O                   | Input 1ea / Output 1ea (Relay type)                                                                                                                                                                                                                                                   |
| Alarm Triggers              | Alarm Input, Motion Detection, Video & Audio Analytics, Network Disconnect                                                                                                                                                                                                            |
| Alarm Events                | File upload via FTP and E-Mail, Notification via E-Mail, TCP and HTTP, local storage (SD/SDHC/SDXC) or NAS recording at Alarm Triggers, External output, Preset                                                                                                                       |
| Pixel Counter               | Support                                                                                                                                                                                                                                                                               |

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|                                   |                                                                                                                                                                                                                                                                                                              |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NETWORK</b>                    |                                                                                                                                                                                                                                                                                                              |
| Ethernet                          | RJ-45 (10/100BASE-T)                                                                                                                                                                                                                                                                                         |
| Video Compression Format          | H.265 / H.264 (MPEG-4 part 10/AVC), Motion JPEG                                                                                                                                                                                                                                                              |
| Resolution                        | 1920 x 1080, 1280 x 1024, 1280 x 960, 1280 x 720, 1024 x 768, 800 x 600, 800 x 448, 720 x 576, 720 x 480, 640 x 480, 640 x 360, 320 x 240                                                                                                                                                                    |
| Max. Framerate                    | H.265 / H.264 : Max 60fps at all resolutions, Motion JPEG : Max. 30fps at all resolutions                                                                                                                                                                                                                    |
| Smart Codec                       | Manual mode (Area-Based : 5ea)                                                                                                                                                                                                                                                                               |
| WiseStreamII                      | Support                                                                                                                                                                                                                                                                                                      |
| Video Quality Adjustment          | H.265 / H.264 / MJPEG : Target Bitrate Level Control                                                                                                                                                                                                                                                         |
| Bitrate Control Method            | H.265 / H.264 : CBR or VBR, Motion JPEG : VBR                                                                                                                                                                                                                                                                |
| Streaming Capability              | Multiple Streaming (Up to 10 Profiles)                                                                                                                                                                                                                                                                       |
| Audio In                          | Selectable (Mic IN / Line IN)<br>Supply voltage : 2.5VDC (4mA), Input impedance: approx. 2K Ohm                                                                                                                                                                                                              |
| Audio Out                         | Line out (3.5mm mono jack), Max output level : 1 Vrms                                                                                                                                                                                                                                                        |
| Audio Compression Format          | G.711 u-law / G.726 Selectable, G.726 (ADPCM) 8KHz, G.711 8KHz<br>G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps, AAC-LC : 48Kbps at 16KHz                                                                                                                                                                           |
| Audio Communication               | Bi-directional (2-Way)                                                                                                                                                                                                                                                                                       |
| IP                                | IPv4, IPv6                                                                                                                                                                                                                                                                                                   |
| Protocol                          | TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour                                                                                                                              |
| Security                          | HTTPS(SSL) Login Authentication, Digest Login Authentication, IP Address Filtering, User access Log, 802.1X Authentication (EAP-TLS, EAP-LEAP)                                                                                                                                                               |
| Streaming Method                  | Unicast / Multicast                                                                                                                                                                                                                                                                                          |
| Max. User Access                  | 20 users at Unicast Mode                                                                                                                                                                                                                                                                                     |
| Edge Storage                      | Micro SD/SDHC/SDXC 2slot (up to 512 GB) - Continuous recording (1'st slot to 2'nd slot)<br>Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded.<br>NAS (Network Attached Storage), Local PC for Instant Recording                                                                       |
| Application Programming Interface | ONVIF profile S/G, SUNAPI 2.0 (HTTP API), Wisenet Open Platform                                                                                                                                                                                                                                              |
| Webpage Language                  | English, French, German, Spanish, Italian, Chinese, Russian, Japanese, Swedish, Portuguese, Turkish, Polish, Czech, Dutch, Hungary, Greek                                                                                                                                                                    |
| Web Viewer                        | Supported OS : Windows 7, 8.1, 10, Mac OS X 10.10, 10.11, 10.12<br>Plug-in Free Webviewer<br>- Supported Browser : Google Chrome, MS Edge, Mozilla Firefox (Window 64bit only), Apple Safari 10 (Mac OS X only)<br>Plug-in Webviewer<br>- Supported Browser : MS Explore 11, Apple Safari 10 (Mac OS X only) |
| Central Management Software       | SmartViewer, SSM                                                                                                                                                                                                                                                                                             |
| <b>ENVIRONMENTAL</b>              |                                                                                                                                                                                                                                                                                                              |
| Operating Temperature / Humidity  | -30°C ~ +55°C (-22°F ~ +131°F) / Less than 90% RH                                                                                                                                                                                                                                                            |
| Storage Temperature / Humidity    | -30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH                                                                                                                                                                                                                                                            |
| Ingress Protection                | IP66                                                                                                                                                                                                                                                                                                         |
| Vandal Resistance                 | IK10                                                                                                                                                                                                                                                                                                         |
| <b>ELECTRICAL</b>                 |                                                                                                                                                                                                                                                                                                              |
| Input Voltage / Current           | 12VDC, PoE                                                                                                                                                                                                                                                                                                   |
| Power Consumption                 | 12W                                                                                                                                                                                                                                                                                                          |
| <b>MECHANICAL</b>                 |                                                                                                                                                                                                                                                                                                              |
| Color / Material                  | Ivory / Aluminum                                                                                                                                                                                                                                                                                             |
| Dimensions (WxH)                  | Ø168.0 x 161.5mm (Ø6.61" x 6.36")                                                                                                                                                                                                                                                                            |
| Weight                            | 1.9 kg (4.19 lb)                                                                                                                                                                                                                                                                                             |

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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 230 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-6120H    | -             | HANWHA VISION<br>VIETNAM COMPANY<br>LIMITED | EUT     |

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## 1.5 Support Equipments

| Description        | Model Number      | Serial Number  | Manufacturer                                  | Remarks |
|--------------------|-------------------|----------------|-----------------------------------------------|---------|
| Adaptor            | 2ACB022F          | -              | Channel Well Technology (Guangzhou) Co., Ltd. | -       |
| PoE Adaptor        | PT-PSE106GBR-AH-S | -              | Dongguan PROCET Network Technology Co., Ltd   | -       |
| Notebook           | HSN-Q07C          | 5CD8367KND     | HP                                            | -       |
| Notebook Adaptor   | HSTNN-CA40        | WFTKU0ERLB4QCH | HP                                            | -       |
| Smartphone         | LG-SU760          | 108KPQJ0186212 | LG                                            | -       |
| Headset            | K550              | -              | Britz®                                        | -       |
| Alarm1             | -                 | -              | -                                             | -       |
| Alarm2             | -                 | -              | -                                             | -       |
| Controller         | SPC-1010          | -              | SamSung Techwin Co.,Ltd.                      | -       |
| Controller Adaptor | AP-12005A         | -              | A-power.                                      | -       |
| Micro SD Card1     | -                 | -              | SanDisk                                       | -       |
| Micro SD Card2     | -                 | -              | SanDisk                                       | -       |

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## 1.6 External I/O Cabling

### ■ DC Mode

| Start                |          | END                |          | Cable Spec. |        |
|----------------------|----------|--------------------|----------|-------------|--------|
| Description          | I/O Port | Description        | I/O Port | Length      | Shield |
| NETWORK CAMERA (EUT) | 2 Pin    | Adaptor            | 2 Pin    | 1.2         | U      |
|                      | RJ-45    | Notebook           | RJ-45    | 3.0         | U      |
|                      | 3.5 mm   | Headset            | 3.5 mm   | 1.7         | U      |
|                      | 3.5 mm   |                    | 3.5 mm   | 1.7         | U      |
|                      | RS-485   | Controller         | RS-485   | 3.0         | U      |
|                      | SLOT     | Micro SD Card1     | SLOT     | -           | -      |
|                      | SLOT     | Micro SD Card2     | SLOT     | -           | -      |
|                      | 2 Pin    | Alarm1             | 2 Pin    | 3.0         | U      |
|                      | 2 Pin    | Alarm2             | 2 Pin    | 3.0         | U      |
| Notebook             | DC Jack  | Notebook Adaptor   | DC Jack  | 1.2         | U      |
|                      | 3.5 mm   | Smartphone         | 3.5 mm   | 1.0         | U      |
| Controller           | DC Jack  | Controller Adaptor | DC Jack  | 1.6         | U      |

\* Unshielded=U, Shielded=S



■ PoE Mode

| Start                |             | END                |             | Cable Spec. |        |
|----------------------|-------------|--------------------|-------------|-------------|--------|
| Description          | I/O Port    | Description        | I/O Port    | Length      | Shield |
| NETWORK CAMERA (EUT) | RJ-45 (PoE) | PoE Adaptor        | RJ-45 (PoE) | 3.0         | U      |
|                      | 3.5 mm      | Headset            | 3.5 mm      | 1.7         | U      |
|                      | 3.5 mm      |                    | 3.5 mm      | 1.7         | U      |
|                      | RS-485      | Controller         | RS-485      | 3.0         | U      |
|                      | SLOT        | Micro SD Card1     | SLOT        | -           | -      |
|                      | SLOT        | Micro SD Card2     | SLOT        | -           | -      |
|                      | 2 Pin       | Alarm1             | 2 Pin       | 3.0         | U      |
|                      | 2 Pin       | Alarm2             | 2 Pin       | 3.0         | U      |
| Notebook             | DC Jack     | Notebook Adaptor   | DC Jack     | 1.2         | U      |
|                      | 3.5 mm      | Smartphone         | 3.5 mm      | 1.0         | U      |
|                      | RJ-45 (LAN) | PoE Adaptor        | RJ-45 (LAN) | 3.0         | U      |
| Controller           | DC Jack     | Controller Adaptor | DC Jack     | 1.6         | U      |

\* Unshielded=U, Shielded=S

## 1.7 EUT Operating Mode(s)

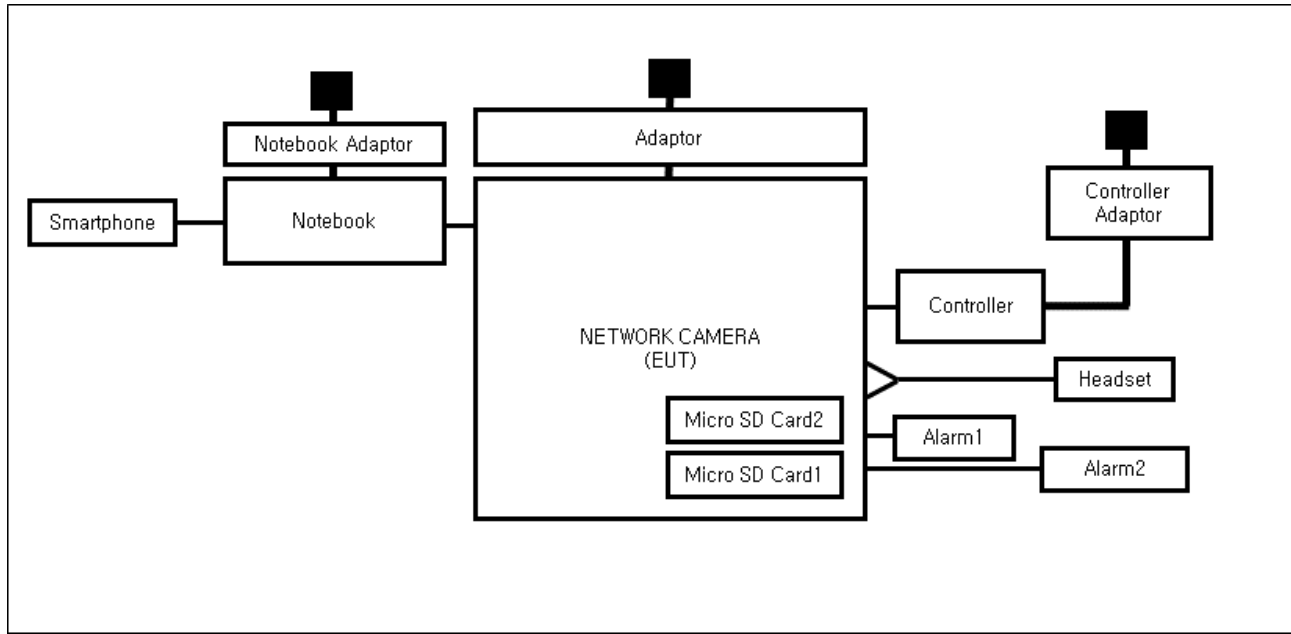
| Test Mode | operating                                                                                                          |
|-----------|--------------------------------------------------------------------------------------------------------------------|
| DC Mode   | - EUT Monitoring, Ping Test<br>- After the test, the Micro SD Card was checked to see if it was recorded normally. |
| PoE Mode  |                                                                                                                    |

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

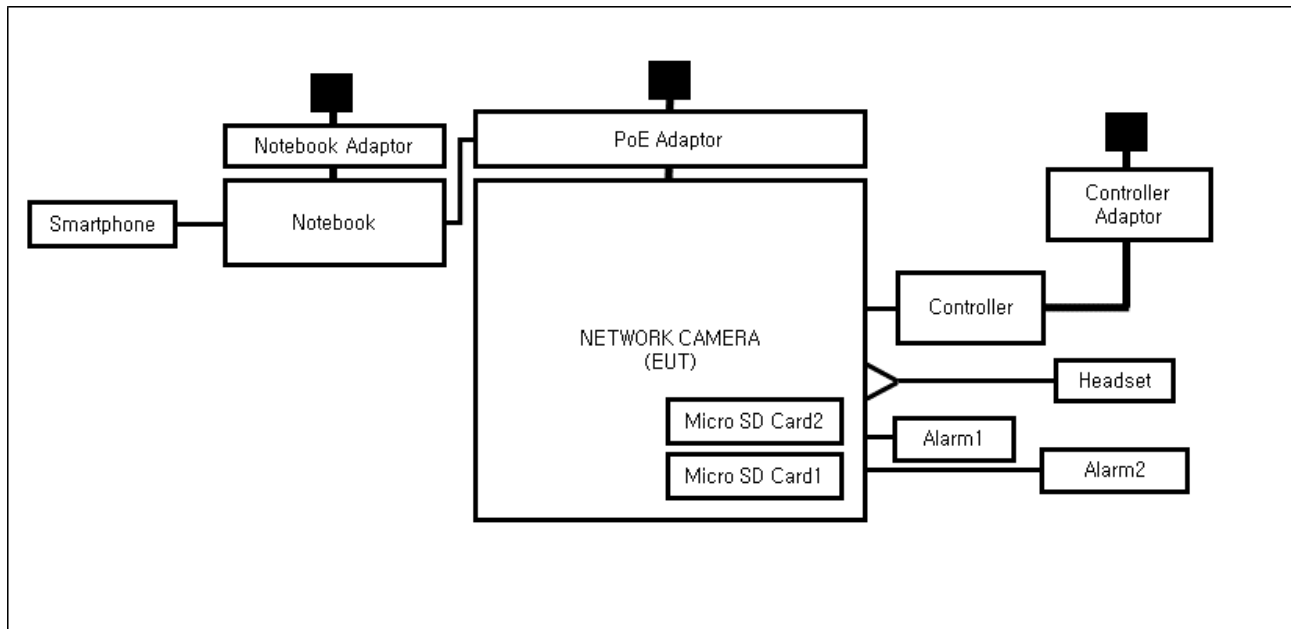
## 1.8 Configuration

■ AC Main  
 □ DC Main

### ■ DC Mode



### ■ PoE Mode



## 1.9 Remarks when standards applied

USB, VIDEO port is not tested because it is an unused port.

## 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:

☒ **EMC – Directive 2014/30/EU**

☒ EN 55032:2015/A11:2020

☒ Class A

☐ Class B

☒ EN 50130-4:2011

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013

☒ **EMC – Regulations 2016**

☒ EN 55032:2015/A11:2020

☒ Class A

☐ Class B

☒ EN 50130-4:2011

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013



## 2.1 Conducted Emissions at Mains Power Ports

### Test Date

Jan. 05, 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: (23,1 ± 0,2) °C

Relative Humidity: (44,0 ± 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 Conducted Emissions at Telecommunication Ports

### Test Date

Jan. 05, 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 |
| <input checked="" type="checkbox"/> | 8-WIRE ISN CAT3,5 | ENY81        | R & S        | 100174        | 12, 28, 2022 |
| <input type="checkbox"/>            | 8-WIRE ISN CAT6   | ENY81-CAT6   | R & S        | 101665        | 12, 28, 2022 |
| <input type="checkbox"/>            | CDN               | CDNS502A     | TESEQ        | 40431         | 12, 27, 2022 |

### Test Conditions

Temperature: (23,1 ± 0,1) °C

Relative Humidity: (44,0 ± 0,1) % R.H.

### Frequency Range of Measurement

150 kHz to 30 MHz

### Instrument Settings

IF Band Width: 9 kHz

### Test Results

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

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

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

**Test Date**

Jan. 05, 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: (43,1 ± 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.

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

### Test Date

Jan. 06, 2022

### Test Location

SEMI ANECHOIC CHAMBER #3

### Test Equipment

| Used                                | Description                | Model Number | Manufacturer     | Serial Number | Cal. Due     |
|-------------------------------------|----------------------------|--------------|------------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W               | EP5/RE       | TOYO Corporation | 6.0.0         | -            |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER          | ESR7         | R & S            | 101190        | 08, 03, 2022 |
| <input checked="" type="checkbox"/> | PREAMPLIFIER               | 8449B        | AGILENT          | 3008A01967    | 04, 07, 2022 |
| <input type="checkbox"/>            | ATTENUATOR                 | 8491A        | HP               | 35496         | 03, 10, 2022 |
| <input checked="" type="checkbox"/> | DOUBLE RIDGED HORN ANTENNA | SAS-571      | A.H.SYSTEM,INC   | 781           | 03, 11, 2022 |

### Test Conditions

Temperature: (22,1 ± 0,3) °C

Relative Humidity: (43,1 ± 0,3) % R.H.

### Frequency Range of Measurement

1 GHz to 6 GHz

### Instrument Settings

IF Band Width: 1 MHz

### Test Results

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.



## 2.5 Harmonic Current Emissions

### Test Date

Jan. 07, 2022

### Test Location

Electro wave Shieldroom #3

### Test Equipment

| Used                                | Description            | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W           | net.control  | EM TEST      | 2.1.4         | -            |
| <input checked="" type="checkbox"/> | DIGITAL POWER ANALYZER | DPA 500N     | EM TEST      | V1024106759   | 04, 06, 2022 |
| <input checked="" type="checkbox"/> | POWER SOURCE           | ACS 500N6    | EM TEST      | V1024106760   | -            |

### Test Conditions

Temperature: (22,7 ± 0,1) °C  
Relative Humidity: (43,2 ± 0,1) % R.H.

### Classification of Equipment for Harmonic Current Emissions

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

### Test Results

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.



## 2.6 Voltage Fluctuations and Flicker

### Test Date

Jan. 07, 2022

### Test Location

Electro wave Shieldroom #3

### Test Equipment

| Used                                | Description            | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W           | net.control  | EM TEST      | 2.1.4         | -            |
| <input checked="" type="checkbox"/> | DIGITAL POWER ANALYZER | DPA 500N     | EM TEST      | V1024106759   | 04, 06, 2022 |
| <input checked="" type="checkbox"/> | POWER SOURCE           | ACS 500N6    | EM TEST      | V1024106760   | -            |

### Test Conditions

Temperature: (22,7 ± 0,3) °C  
Relative Humidity: (43,2 ± 0,3) % R.H.

### Test Results

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.

### 3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:

EN 50130-4:2011 / BS EN 50130-4:2011/A1:2014 Alarm systems-Part 4: Electromagnetic compatibility Product family standard: Immunity requirements for components of fire, intruder and social alarm systems

**The variety and the diversity of the apparatus within the scope of this document makes it difficult to define precise criteria for the evaluation of the immunity test results.**

**If as a result of the application of the tests defined in this standard, the apparatus becomes dangerous or unsafe then the apparatus shall be deemed to have failed the test.**

**A functional description and a definition of performance by the manufacture and noted in the test**

**report, based on the following criteria:**

#### **Electrostatic discharge**

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing that is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

#### **Radiated electromagnetic fields**

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing which could be interpreted by associated equipment as a change, and no such

Flickering of indicators occurs at a field strength of 3 V/m.

For components of CCTV systems, where the picture is allowed at 10 V/m, providing.

(a) there is no permanent damage or change to EUT

(e.g. no corruption of memory or changes to programmable setting etc.)

(b) at 3 V/m, any deterioration of the picture is so minor that the system could still be used; and

(c) there is no observable deterioration of the picture at 1 V/m.

---

### **Fast transient burst / slow high energy voltage surge**

There shall be no damage, malfunction or change of status due to the conditioning.  
Flickering of an indicator during the application of discharge is permissible, providing  
That there is no residual is permissible, providing that there is no residual change in the EUT or  
any  
change in outputs, which could be interpreted by associated equipment as a change.

### **Conducted RF immunity**

There shall be no damage, malfunction or change of status due to the conditioning.  
Flickering of an indicator during the application of discharge is permissible, providing  
That there is no residual is permissible, providing that there is no residual change in the EUT or  
any  
change in outputs, which could be interpreted by associated equipment as a change,  
and no such flickering of indicators oeuvres at  $U = 130 \text{ dB}\mu\text{V}$ .  
For component of CCTV systems, where the status is monitored by observing the TV picture,  
then deterioration of the picture is allowed at  $U = 140 \text{ dB}\mu\text{V}$ , providing:  
(a) there is no permanent damage or change to the EUT  
(e.g. no corruption of memory or changes to programmable settings etc.)  
(b) at  $U = 130 \text{ dB}\mu\text{V}$ , any deterioration of the picture is so minor that the system could  
still be used; and  
(c) there in no observable deterioration of the picture at  $U = 120 \text{ dB}\mu\text{V}$ .

### **Voltage dip/interruption / Voltage variation**

There shall be no damage, malfunction or change of status due to the conditioning.  
Flickering of an indicator during the conditioning is permissible, providing that there is no  
residual  
change in the EUT or any change in outputs, which could be interpreted by associated  
equipment  
as a change. The EUT shall meet the acceptance criteria for the functional test, after the  
conditioning.

### 3.1 Electrostatic Discharge

#### Reference Standard

EN 61000-4-2:2009  
BS EN 61000-4-2:2009

#### Test Date

Jan. 10, 2022

#### Test Location

EMS-ESD: Electro wave Shieldroom #7

#### Test Equipment

| Used                                | Description   | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|---------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | ESD SIMULATOR | ESS-2000     | Noise Ken    | ESS01Z0454    | 02, 01, 2022 |
| <input checked="" type="checkbox"/> | HCP           | -            | KES          | -             | -            |
| <input checked="" type="checkbox"/> | VCP           | -            | Noise Ken    | -             | -            |

#### Test Conditions

Temperature: (22,5 ± 0,1) °C  
Relative Humidity: (43,7 ± 0,1) % R.H.  
Atmospheric Pressure: (100,7 ± 0,6) kPa

#### Test Specifications

Discharge Factor: ≥ 1 s

Discharge Impedance: 330 ohm / 150 pF

Kind of Discharge: Air, Contact (direct and indirect)

Polarity: Positive and Negative

Number of Discharge: 10 at all locations for Air discharge  
10 at all locations for Contact discharge

|                    |                                                                                                                                                                                                 |                                                                                                                                                                                                                   |                                                                                                                                                                                             |                                                                                                                                                                                             |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Discharge Voltage: | <b>Contact</b><br><input type="checkbox"/> 2 kV<br><input type="checkbox"/> 4 kV<br><input checked="" type="checkbox"/> 6 kV<br><input type="checkbox"/> 8 kV<br><input type="checkbox"/> 15 kV | <b>Air</b><br><input checked="" type="checkbox"/> 2 kV<br><input checked="" type="checkbox"/> 4 kV<br><input type="checkbox"/> 6 kV<br><input checked="" type="checkbox"/> 8 kV<br><input type="checkbox"/> 15 kV | <b>HCP</b><br><input type="checkbox"/> 2 kV<br><input type="checkbox"/> 4 kV<br><input checked="" type="checkbox"/> 6 kV<br><input type="checkbox"/> 8 kV<br><input type="checkbox"/> 15 kV | <b>VCP</b><br><input type="checkbox"/> 2 kV<br><input type="checkbox"/> 4 kV<br><input checked="" type="checkbox"/> 6 kV<br><input type="checkbox"/> 8 kV<br><input type="checkbox"/> 15 kV |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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

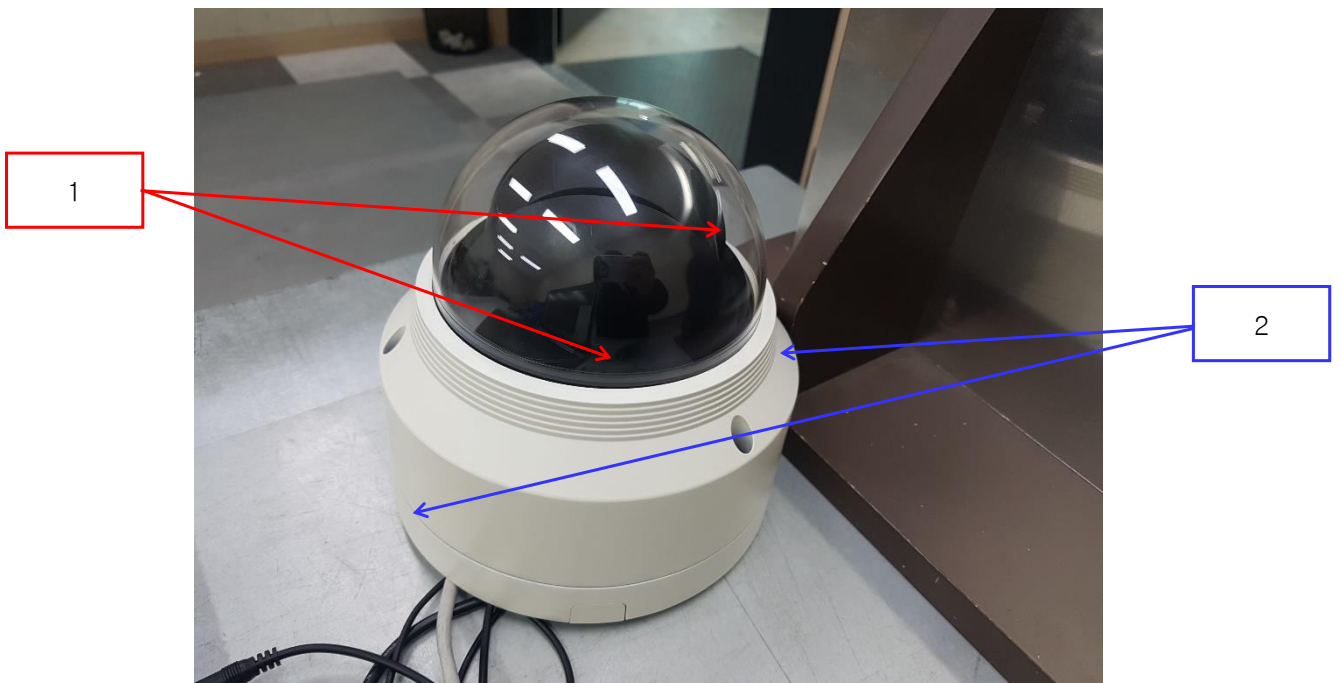
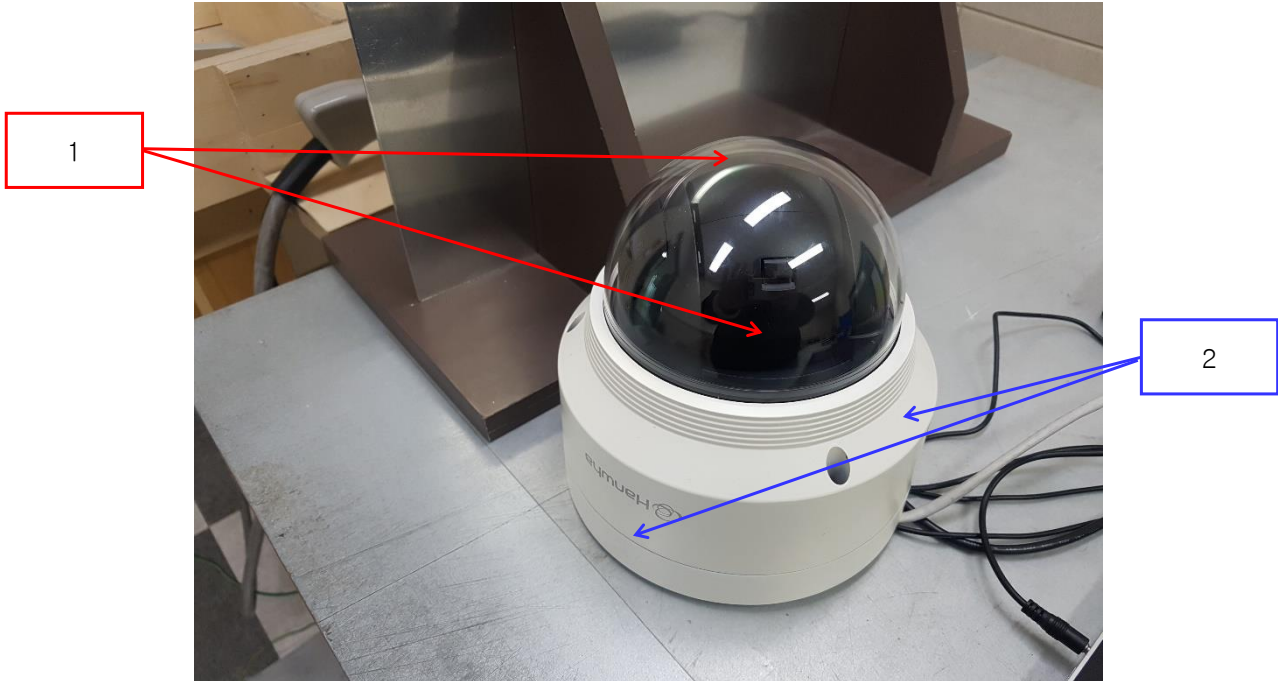
Required Performance Criteria: ☒ Complied

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## Location of Discharge:

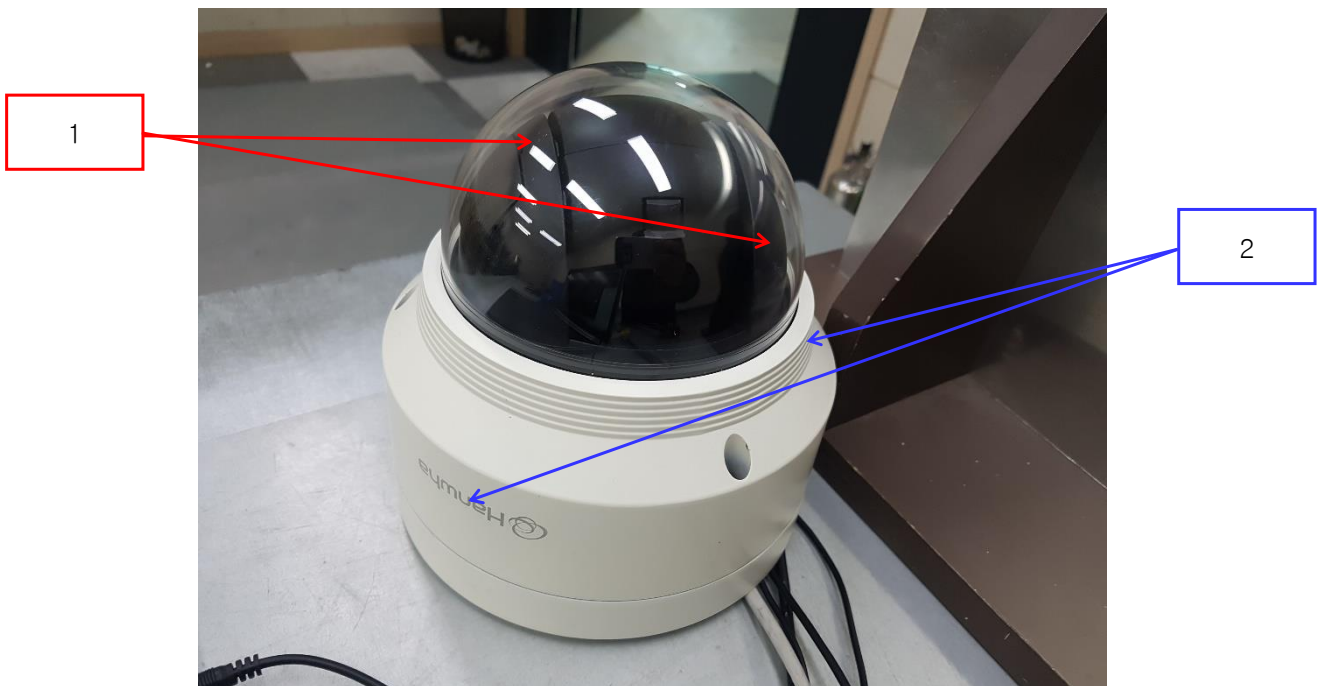
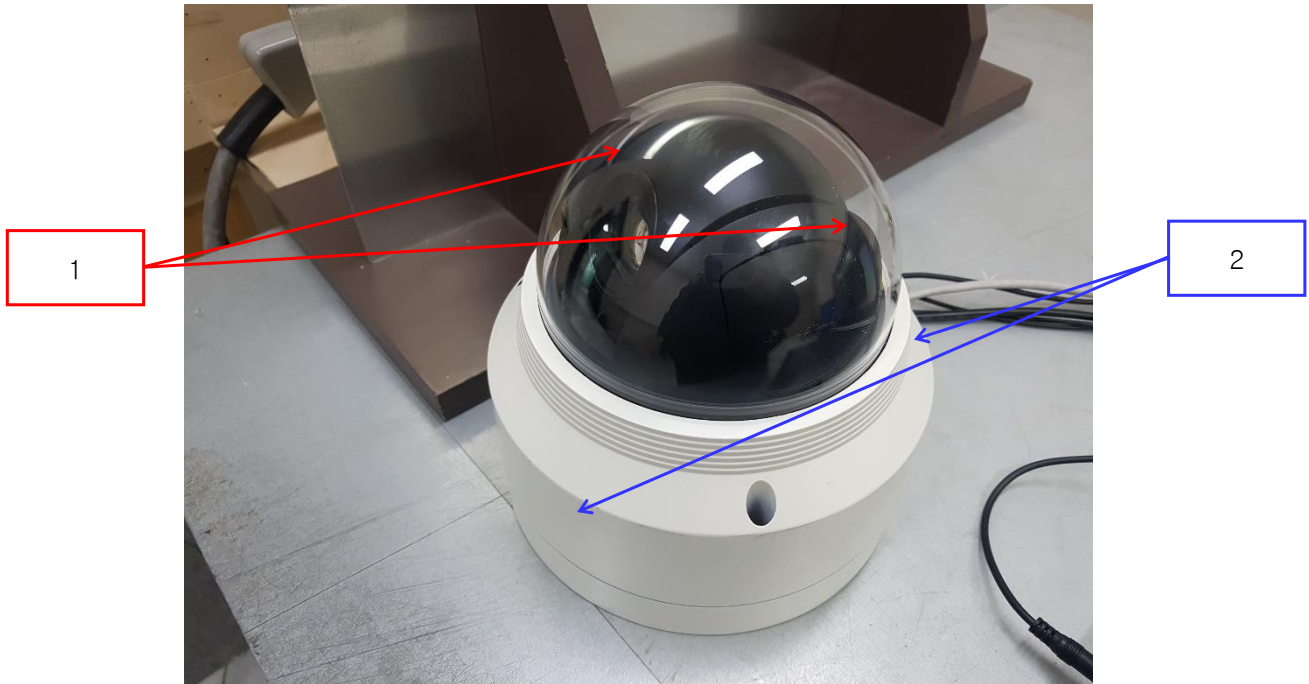
■ DC Mode

|         |
|---------|
| Air     |
| Contact |



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## ■ PoE Mode



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**Test Data**

## ■ DC Mode

| No. | Test Point  | Discharge Method  | Observations | Remarks |
|-----|-------------|-------------------|--------------|---------|
| 1   | HCP Contact | Contact Discharge | Complied     | -       |
| 2   | VCP Contact | Contact Discharge | Complied     | -       |

## Direct Discharge

| No. | Test Point  | Discharge Method  | Observations | Remarks |
|-----|-------------|-------------------|--------------|---------|
| 1   | Enclosure 1 | Air Discharge     | Complied     | -       |
| 2   | Enclosure 2 | Contact Discharge | Complied     | -       |

## ■ PoE Mode

## Indirect Discharge

| No. | Test Point  | Discharge Method  | Observations | Remarks |
|-----|-------------|-------------------|--------------|---------|
| 1   | HCP Contact | Contact Discharge | Complied     | -       |
| 2   | VCP Contact | Contact Discharge | Complied     | -       |

## Direct Discharge

| No. | Test Point  | Discharge Method  | Observations | Remarks |
|-----|-------------|-------------------|--------------|---------|
| 1   | Enclosure 1 | Air Discharge     | Complied     | -       |
| 2   | Enclosure 2 | Contact Discharge | Complied     | -       |

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

**Test Results**

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

**Remarks**PASS Required Performance Criteria

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## 3.2 Radiated Electric Field Immunity

**Reference Standard**

EN 61000-4-3:2006 +A2:2010

BS EN 61000-4-3:2006 +A2:2010

**Test Date**

Jan. 06, 2022

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

| Used                                | Description                     | Model Number | Manufacturer    | Serial Number | Cal. Due     |
|-------------------------------------|---------------------------------|--------------|-----------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W                    | EMC32        | R & S           | 10.10.02      | -            |
| <input checked="" type="checkbox"/> | SIGNAL GENERATOR                | SMB 100A     | Rohde & Schwarz | 108252        | 08, 03, 2022 |
| <input checked="" type="checkbox"/> | HIGH POWER DUAL AMP             | SSA532       | SUNGSAN         | SSA532-001    | -            |
| <input checked="" type="checkbox"/> | POWER METER                     | E4419B       | Agilent         | GB40203000    | 04, 01, 2022 |
| <input checked="" type="checkbox"/> | CW POWER SENSOR                 | E4412A       | Agilent         | US38488240    | 04, 01, 2022 |
| <input checked="" type="checkbox"/> | CW POWER SENSOR                 | E4412A       | Agilent         | MY41501662    | 04, 01, 2022 |
| <input checked="" type="checkbox"/> | STACKED DOUBLE LOG-PER- ANTENNA | STPL9128 E   | Schwarzbeck     | 9128ES-121    | -            |
| <input checked="" type="checkbox"/> | DOUBLE RIDGED HORN ANTENNA      | SAS-571      | A.H.SYSTEM,INC  | 781           | 03, 11, 2022 |

**Test Conditions**

Temperature: (22,1 ± 0,3) °C

Relative Humidity: (43,1 ± 0,4) % R.H.

Atmospheric Pressure: (100,9 ± 0,0) kPa

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### Test Specifications

Antenna Polarization: Horizontal & vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

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

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

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

Frequency step: ☒ 1 % step

Dwell Time: ☐ 1 s ☒ 3 s

# of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ Complied

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**Test Data**

## ■ DC Mode

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

## ■ PoE Mode

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

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

**Test Results**

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

**Remarks**PASS Required Performance Criteria

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### 3.3 Electrical Fast Transients/Bursts

#### Reference Standard

EN 61000-4-4:2012  
BS EN 61000-4-4:2012

#### Test Date

Jan. 10, 2022

#### Test Location

EMS-EFT: Electro wave Shieldroom #7

#### Test Equipment

| Used                                | Description               | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|---------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W              | iec.control  | EM TEST      | 5.4.8         | -            |
| <input checked="" type="checkbox"/> | ULTRA COMPACT SIMULATOR   | UCS 500N7    | EM TEST      | P1608172950   | 12, 03, 2022 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC              | MV2616       | EM TEST      | P1552169719   | 04, 01, 2022 |
| <input checked="" type="checkbox"/> | CAPACITIVE COUPLING CLAMP | HFK          | EM TEST      | P1633183115   | 12, 03, 2022 |

#### Test Conditions

Temperature: (22,5 ± 0,1) °C  
Relative Humidity: (43,7 ± 0,2) % R.H.  
Atmospheric Pressure: (100,7 ± 0,0) kPa

#### Test Specifications

Pulse Amplitude & Polarity:  
(AC Power Lines) ☐ ± 1.0 kV ☒ ± 2.0 kV  
☐ ± 4.0 kV

Pulse Amplitude & Polarity:  
(Other supply / Signal Lines) ☐ ± 0.5 kV ☒ ± 1.0 kV  
☐ ± 2.0 kV

Burst Period: ☒ 300 ms ☐ 2 s

Repetition Rate: ☐ 5 kHz ☒ 100 kHz

Duration of Test Voltage: ☒ ≥ 1 min

Required Performance Criteria: ☒ Complied

### Test Data

■ DC Mode

☒ Input a.c. power ports – Coupling/Decoupling Network used

| Mode of Application | Observations   |                |
|---------------------|----------------|----------------|
|                     | (+) Burst (kV) | (-) Burst (kV) |
| L                   | Complied       | Complied       |
| N                   | Complied       | Complied       |
| PE                  | -              | -              |
| L – N               | Complied       | Complied       |
| L – PE              | -              | -              |
| N – PE              | -              | -              |
| L – N – PE          | -              | -              |

☐ Input d.c. power ports – Coupling/Decoupling Network used

| Mode of Application | Observations   |                |
|---------------------|----------------|----------------|
|                     | (+) Burst (kV) | (-) Burst (kV) |
| -                   | -              | -              |

☒ Signal ports and telecommunication ports – Coupling Clamp used

| Mode of Application | Observations   |                |
|---------------------|----------------|----------------|
|                     | (+) Burst (kV) | (-) Burst (kV) |
| RJ-45               | Complied       | Complied       |
| Alarm 1             | Complied       | Complied       |
| Alarm 2             | Complied       | Complied       |
| RS-485              | Complied       | Complied       |

☒ PoE Mode

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

| Mode of Application | Observations   |                |
|---------------------|----------------|----------------|
|                     | (+) Burst (kV) | (-) Burst (kV) |
| L                   | -              | -              |
| N                   | -              | -              |
| PE                  | -              | -              |
| L – N               | -              | -              |
| L – PE              | -              | -              |
| N – PE              | -              | -              |
| L – N – PE          | -              | -              |

☐ Input d.c. power ports – Coupling/Decoupling Network used

| Mode of Application | Observations   |                |
|---------------------|----------------|----------------|
|                     | (+) Burst (kV) | (-) Burst (kV) |
| -                   | -              | -              |

☒ Signal ports and telecommunication ports – Coupling Clamp used

| Mode of Application | Observations   |                |
|---------------------|----------------|----------------|
|                     | (+) Burst (kV) | (-) Burst (kV) |
| RJ-45 (PoE)         | Complied       | Complied       |
| Alarm 1             | Complied       | Complied       |
| Alarm 2             | Complied       | Complied       |
| RS-485              | Complied       | Complied       |

Note: “Blank” = Not performed

Observations:

Complied – No degradation of function

### Test Results

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

### Remarks

PASS Required Performance Criteria

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### 3.4 Surge Transients

**Reference Standard**

EN 61000-4-5:2014

BS EN 61000-4-5:2014

**Test Date**

Jan. 10, 2022

**Test Location**

EMS-Surge: Electro wave Shieldroom #7

**Test Equipment**

| Used                                | Description             | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|-------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W            | iec.control  | EM TEST      | 5.4.8         | -            |
| <input checked="" type="checkbox"/> | ULTRA COMPACT SIMULATOR | UCS 500N7    | EM TEST      | P1608172950   | 12, 03, 2022 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC            | MV2616       | EM TEST      | P1552169719   | 04, 01, 2022 |
| <input checked="" type="checkbox"/> | CDN                     | CNV 508N1    | EM TEST      | P1610176296   | 12, 03, 2022 |

**Test Conditions**

Temperature: (22,5 ± 0,3) °C  
Relative Humidity: (43,7 ± 0,4) % R.H.  
Atmospheric Pressure: (100,7 ± 0,0) kPa

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### Test Specifications

#### AC Power Lines

Source Impedance: 12 ohm for common Mode and 2 ohm for differential Mode

Surge Amplitude :

Common Mode

☐ (0,5 / 1,0 / 2,0) kV

Differential Mode

☒ (0,5 / 1,0) kV

Number of Surges:

☒ 5 surges per angle

Angle:

☒ 0°, 90°, 180°, 270° (input a.c. power port)

Polarity:

☒ Positive & Negative

Repetition Rate:

☐ 1 surge per min    ☒ 1 surge per 30 sec.

Required Performance Criteria: ☒ Complied

#### Other supply / Signal Lines

Source Impedance:

42 ohm for common Mode

Surge Amplitude:

Common Mode

☒ (0,5 / 1,0) kV

Number of Surges:

☒ 5 Surges

Polarity:

☒ Positive & Negative

Repetition Rate:

☒ 1 surge per min    ☐ 1 surge per 30 sec.

Required Performance Criteria: ☒ Complied

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**Test Data**☒ DC Mode☒ Line to Line – Differential Mode

| Mode of Application | Observations   |                |
|---------------------|----------------|----------------|
|                     | (+) Surge (kV) | (-) Surge (kV) |
| L – N               | Complied       | Complied       |

☐ Line to Earth – Common Mode

| Mode of Application | Observations   |                |
|---------------------|----------------|----------------|
|                     | (+) Surge (kV) | (-) Surge (kV) |
| L – PE              | -              | -              |
| N – PE              | -              | -              |

**Signal Lines**☒ Line to Earth – Common Mode

| Mode of Application | Coupling Method | Observations   |                |
|---------------------|-----------------|----------------|----------------|
|                     |                 | (+) Surge (kV) | (-) Surge (kV) |
| RJ-45               | CDN             | Complied       | Complied       |
|                     | LINE            | Complied       | Complied       |

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☒ PoE Mode☐ Line to Line – Differential Mode

| Mode of Application | Observations   |                |
|---------------------|----------------|----------------|
|                     | (+) Surge (kV) | (-) Surge (kV) |
| L – N               | -              | -              |

☐ Line to Earth – Common Mode

| Mode of Application | Observations   |                |
|---------------------|----------------|----------------|
|                     | (+) Surge (kV) | (-) Surge (kV) |
| L – PE              | -              | -              |
| N – PE              | -              | -              |

**Signal Lines**☒ Line to Earth – Common Mode

| Mode of Application | Coupling Method | Observations   |                |
|---------------------|-----------------|----------------|----------------|
|                     |                 | (+) Surge (kV) | (-) Surge (kV) |
| RJ-45 (PoE)         | CDN             | Complied       | Complied       |
|                     | LINE            | Complied       | Complied       |

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

**Test Results**☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria☐ NOT APPLICABLE**Remarks**PASS Required Performance Criteria

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### 3.5 Conducted Disturbance

**Reference Standard**

EN 61000-4-6:2014

BS EN 61000-4-6:2014

**Test Date**

Jan. 05, 2022

**Test Location**

EMS-CS: Electro wave Shieldroom #6

**Test Equipment**

| Used                                | Description               | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|---------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W              | icd.control  | EM TEST      | 5.3.12        | -            |
| <input checked="" type="checkbox"/> | CONTINUOUS WAVE SIMULATOR | CWS 500N1.4  | EM TEST      | P1602169880   | 11, 24, 2022 |
| <input checked="" type="checkbox"/> | ATTENUATOR                | ATT 6/80     | EM TEST      | P1614178148   | 11, 24, 2022 |
| <input checked="" type="checkbox"/> | CDN                       | CDN M016     | TESEQ        | 43694         | 11, 24, 2022 |
| <input checked="" type="checkbox"/> | CDN                       | CDN M016     | TESEQ        | 43697         | 11, 24, 2022 |
| <input checked="" type="checkbox"/> | CDN                       | CDN T8RJ45   | EM TEST      | 0909-09       | 08, 03, 2022 |
| <input checked="" type="checkbox"/> | EM CLAMP                  | KEMZ 801A    | TESEQ        | 44099         | 11, 25, 2022 |

**Test Conditions**

Temperature: (23,1 ± 0,3) °C

Relative Humidity: (44,0 ± 0,4) % R.H.

Atmospheric Pressure: (101,3 ± 0,0) kPa

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### Test Specifications

Frequency range:

☒ 150 kHz to 100 MHz

☐ 150 kHz to 80 MHz

Voltage Level:

☐ 1 Vrms

☐ 3 Vrms

☒ 10 Vrms

Modulation:

☒ AM, 80 %, 1 kHz sine wave

☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step:

☒ 1 % step

Dwell Time:

☐ 1 s

☒ 3 s

Required Performance Criteria: ☒ Complied

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**Test Data****■ DC Mode**☒ Input a.c. power ports

| Coupling Location<br>(Line Stressed) | Coupling Method | Observations |
|--------------------------------------|-----------------|--------------|
| L – N                                | CDN             | Complied     |

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

| Coupling Location<br>(Line Stressed) | Coupling Method | Observations |
|--------------------------------------|-----------------|--------------|
| RJ-45                                | CDN             | Complied     |
| Alarm 1                              | Clamp           | Complied     |
| Alarm 2                              | Clamp           | Complied     |
| RS-485                               | Clamp           | Complied     |

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**■ PoE Mode**☐ Input a.c. power ports

| Coupling Location<br>(Line Stressed) | Coupling Method | Observations |
|--------------------------------------|-----------------|--------------|
| L – N                                | CDN             | -            |

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

| Coupling Location<br>(Line Stressed) | Coupling Method | Observations |
|--------------------------------------|-----------------|--------------|
| RJ-45                                | CDN             | Complied     |
| Alarm 1                              | Clamp           | Complied     |
| Alarm 2                              | Clamp           | Complied     |
| RS-485                               | Clamp           | Complied     |

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

Observations:

Complied – No degradation of function

**Test Results**

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

**Remarks**PASS Required Performance Criteria

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### 3.6 Voltage Dips and Short Interruptions

**Reference Standard**

EN 61000-4-11:2004

BS EN 61000-4-11:2004

**Test Date**

Jan. 10, 2022

**Test Location**

EMS-Voltage dip: Electro wave Shieldroom #7

**Test Equipment**

| Used                                | Description             | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|-------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W            | iec.control  | EM TEST      | 5.4.8         | -            |
| <input checked="" type="checkbox"/> | ULTRA COMPACT SIMULATOR | UCS 500N7    | EM TEST      | P1608172950   | 04, 01, 2022 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC            | MV2616       | EM TEST      | P1552169719   | 04, 01, 2022 |

**Test Conditions**

Temperature: (22,5 ± 0,2) °C  
Relative Humidity: (43,7 ± 0,2) % R.H.  
Atmospheric Pressure: (100,7 ± 0,0) kPa

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### Test Specifications & Observations/Remarks

#### ■ DC Mode

##### - Voltage Dips and Short Interruptions

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

##### - Voltage variations

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

#### Observations:

Complied – No degradation of function

Degradation - See "Remarks "

### Test Results

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

### Remarks

During the test(100%, 250cycle), EUT was turned off but after the test, it was recovered by no operator's intervention.

## APPENDIX A – TEST DATA

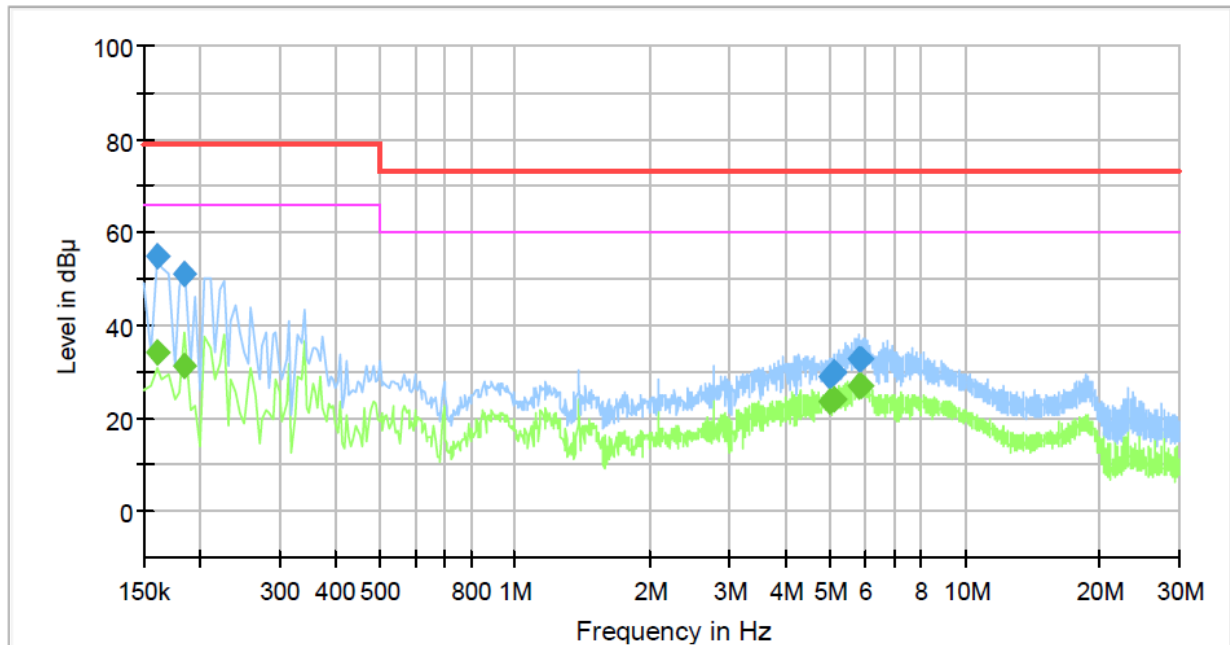
### Conducted Emissions at Mains Power Ports

■ DC Mode

[HOT]

### Common Information

|                   |                    |
|-------------------|--------------------|
| Test Description: | Conducted Emission |
| Model No.:        | XNP-6120H          |
| Phase:            | L1                 |
| Mode:             | DC                 |
| Operator Name:    | KES                |



### Final Result

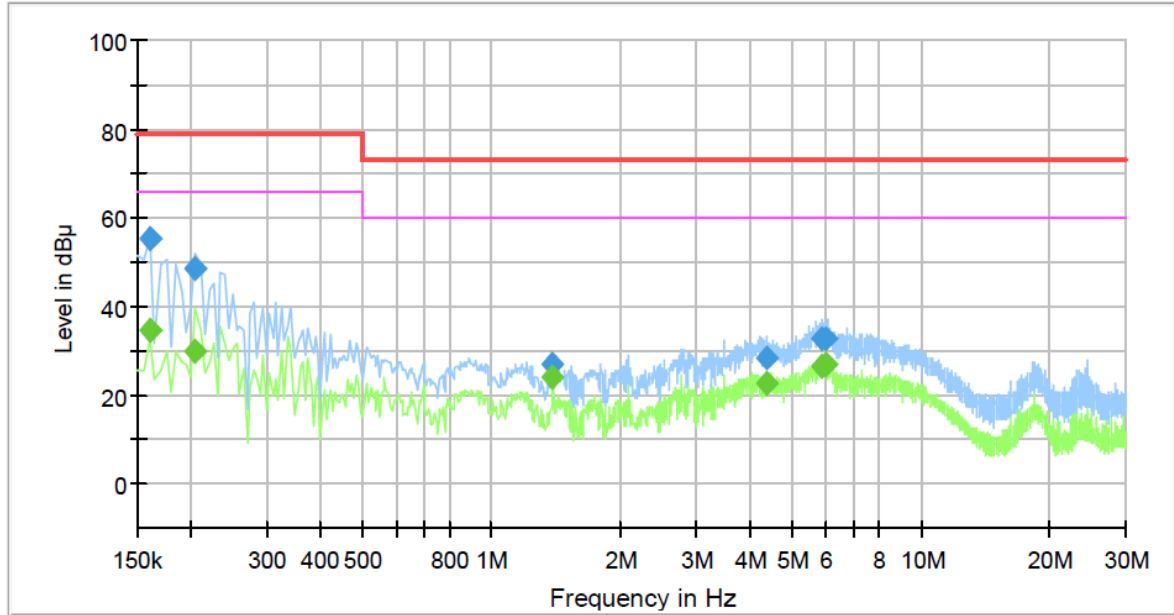
| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.160000        | ---              | 34.36           | 66.00        | 31.64       | 1000.0          | 9.000           | L1   | 19.5       |
| 0.160000        | 54.70            | ---             | 79.00        | 24.30       | 1000.0          | 9.000           | L1   | 19.5       |
| 0.185000        | ---              | 31.53           | 66.00        | 34.47       | 1000.0          | 9.000           | L1   | 19.5       |
| 0.185000        | 50.78            | ---             | 79.00        | 28.22       | 1000.0          | 9.000           | L1   | 19.5       |
| 4.995000        | ---              | 23.40           | 60.00        | 36.60       | 1000.0          | 9.000           | L1   | 19.7       |
| 4.995000        | 28.97            | ---             | 73.00        | 44.03       | 1000.0          | 9.000           | L1   | 19.7       |
| 5.110000        | ---              | 23.94           | 60.00        | 36.06       | 1000.0          | 9.000           | L1   | 19.7       |
| 5.110000        | 29.70            | ---             | 73.00        | 43.30       | 1000.0          | 9.000           | L1   | 19.7       |
| 5.825000        | ---              | 26.89           | 60.00        | 33.11       | 1000.0          | 9.000           | L1   | 19.6       |
| 5.825000        | 32.77            | ---             | 73.00        | 40.23       | 1000.0          | 9.000           | L1   | 19.6       |
| 5.885000        | ---              | 26.88           | 60.00        | 33.12       | 1000.0          | 9.000           | L1   | 19.6       |
| 5.885000        | 32.65            | ---             | 73.00        | 40.35       | 1000.0          | 9.000           | L1   | 19.6       |

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## [NEUTRAL]

### Common Information

|                   |                    |
|-------------------|--------------------|
| Test Description: | Conducted Emission |
| Model No.:        | XNP-6120H          |
| Phase:            | N                  |
| Mode:             | DC                 |
| Operator Name:    | KES                |



### Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.160000        | ---              | 34.84           | 66.00        | 31.16       | 1000.0          | 9.000           | N    | 19.4       |
| 0.160000        | 55.14            | ---             | 79.00        | 23.86       | 1000.0          | 9.000           | N    | 19.4       |
| 0.205000        | ---              | 29.88           | 66.00        | 36.12       | 1000.0          | 9.000           | N    | 19.5       |
| 0.205000        | 48.38            | ---             | 79.00        | 30.62       | 1000.0          | 9.000           | N    | 19.5       |
| 1.390000        | ---              | 24.05           | 60.00        | 35.95       | 1000.0          | 9.000           | N    | 20.2       |
| 1.390000        | 27.00            | ---             | 73.00        | 46.00       | 1000.0          | 9.000           | N    | 20.2       |
| 4.355000        | ---              | 22.79           | 60.00        | 37.21       | 1000.0          | 9.000           | N    | 19.8       |
| 4.355000        | 28.29            | ---             | 73.00        | 44.71       | 1000.0          | 9.000           | N    | 19.8       |
| 5.905000        | ---              | 26.74           | 60.00        | 33.26       | 1000.0          | 9.000           | N    | 19.6       |
| 5.905000        | 32.68            | ---             | 73.00        | 40.32       | 1000.0          | 9.000           | N    | 19.6       |
| 6.020000        | ---              | 26.76           | 60.00        | 33.24       | 1000.0          | 9.000           | N    | 19.5       |
| 6.020000        | 32.75            | ---             | 73.00        | 40.25       | 1000.0          | 9.000           | N    | 19.5       |

#### ◆ 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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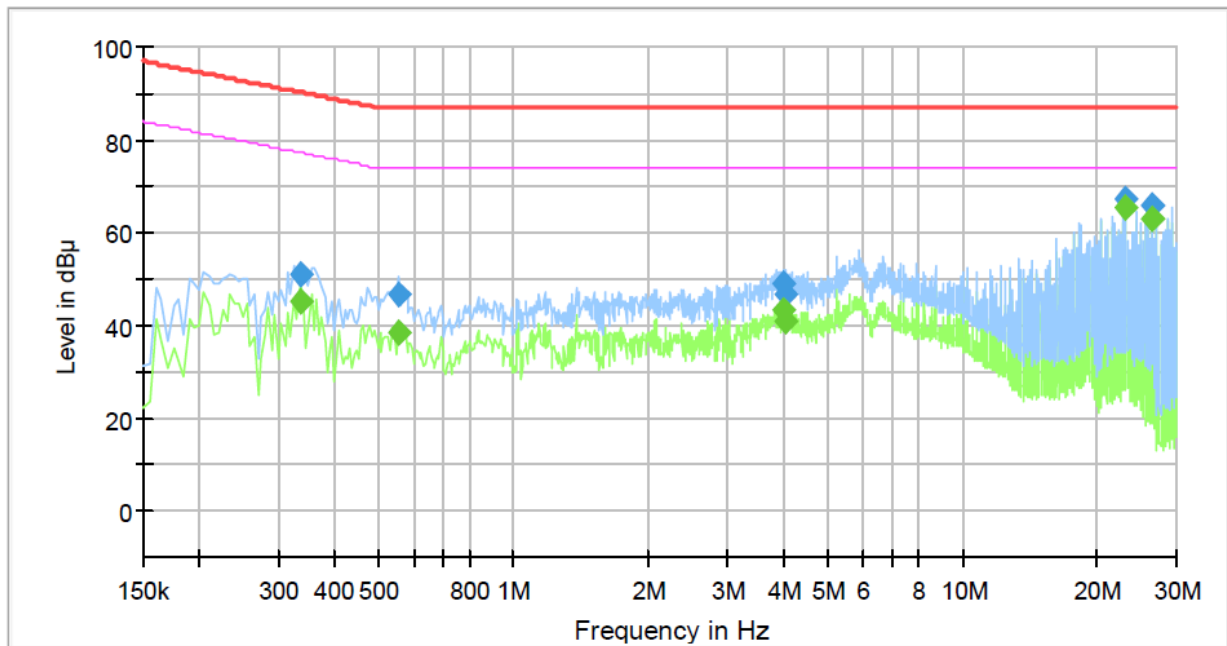
## Conducted Emissions at Telecommunication Ports

■ DC Mode

[100 Mbps]

### Common Information

|                   |                            |
|-------------------|----------------------------|
| Test Description: | Telecommunication Emission |
| Model No.:        | XNP-6120H                  |
| Mode :            | DC                         |
| 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) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|-------------|------------|
| 0.335000        | ---              | 45.47           | 77.33        | 31.86       | 1000.0          | 9.000           | Single Line | 19.7       |
| 0.335000        | 51.09            | ---             | 90.33        | 39.24       | 1000.0          | 9.000           | Single Line | 19.7       |
| 0.555000        | ---              | 38.33           | 74.00        | 35.67       | 1000.0          | 9.000           | Single Line | 19.8       |
| 0.555000        | 46.49            | ---             | 87.00        | 40.51       | 1000.0          | 9.000           | Single Line | 19.8       |
| 4.015000        | ---              | 43.53           | 74.00        | 30.47       | 1000.0          | 9.000           | Single Line | 19.7       |
| 4.015000        | 49.04            | ---             | 87.00        | 37.96       | 1000.0          | 9.000           | Single Line | 19.7       |
| 4.055000        | ---              | 41.05           | 74.00        | 32.95       | 1000.0          | 9.000           | Single Line | 19.7       |
| 4.055000        | 46.80            | ---             | 87.00        | 40.20       | 1000.0          | 9.000           | Single Line | 19.7       |
| 23.130000       | ---              | 65.34           | 74.00        | 8.66        | 1000.0          | 9.000           | Single Line | 20.1       |
| 23.130000       | 67.35            | ---             | 87.00        | 19.65       | 1000.0          | 9.000           | Single Line | 20.1       |
| 26.610000       | ---              | 62.84           | 74.00        | 11.16       | 1000.0          | 9.000           | Single Line | 20.2       |
| 26.610000       | 65.67            | ---             | 87.00        | 21.33       | 1000.0          | 9.000           | Single Line | 20.2       |

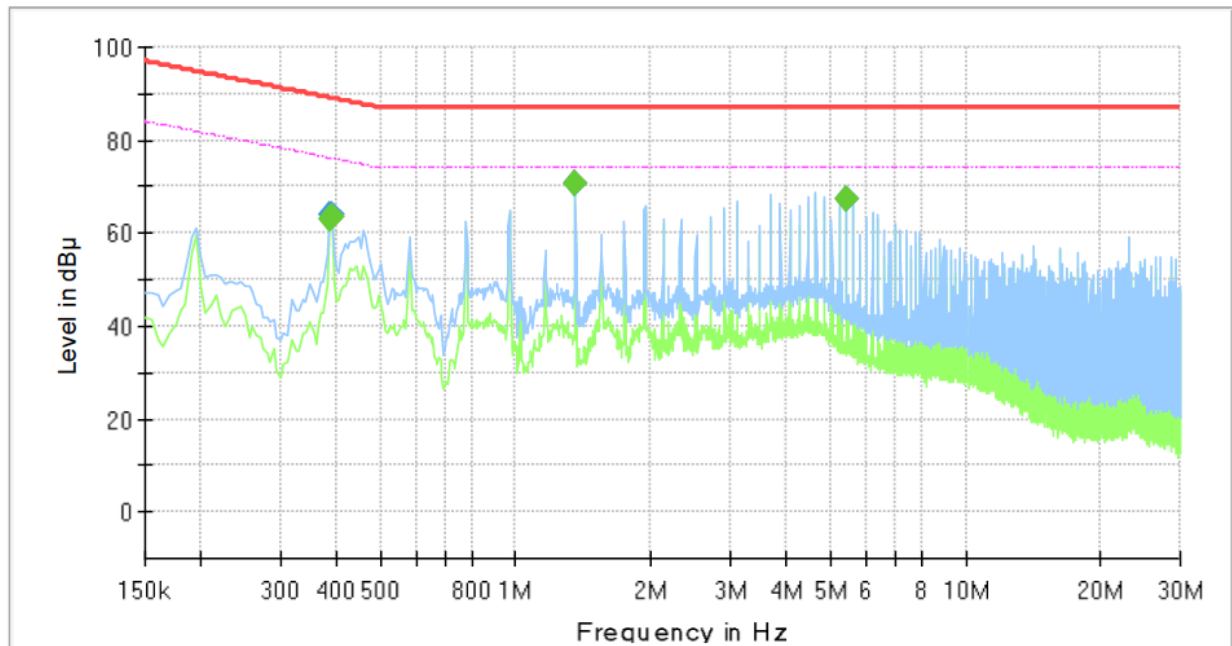
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**PoE Mode**
**[100 Mbps]**
**Common Information**

|                   |                            |
|-------------------|----------------------------|
| Test Description: | Telecommunication Emission |
| Model No.:        | XNP-6120H                  |
| Mode :            | PoE                        |
| 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) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|-------------|------------|
| 0.385000        | ---              | 63.12           | 76.17        | 13.05       | 1000.0          | 9.000           | Single Line | 19.7       |
| 0.385000        | 63.83            | ---             | 89.17        | 25.34       | 1000.0          | 9.000           | Single Line | 19.7       |
| 0.390000        | ---              | 63.41           | 76.06        | 12.65       | 1000.0          | 9.000           | Single Line | 19.7       |
| 0.390000        | 64.08            | ---             | 89.06        | 24.98       | 1000.0          | 9.000           | Single Line | 19.7       |
| 1.355000        | ---              | 70.68           | 74.00        | 3.32        | 1000.0          | 9.000           | Single Line | 20.1       |
| 1.355000        | 70.78            | ---             | 87.00        | 16.22       | 1000.0          | 9.000           | Single Line | 20.1       |
| 5.425000        | ---              | 67.13           | 74.00        | 6.87        | 1000.0          | 9.000           | Single Line | 19.4       |
| 5.425000        | 67.50            | ---             | 87.00        | 19.50       | 1000.0          | 9.000           | Single Line | 19.4       |

**◆ 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 (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))



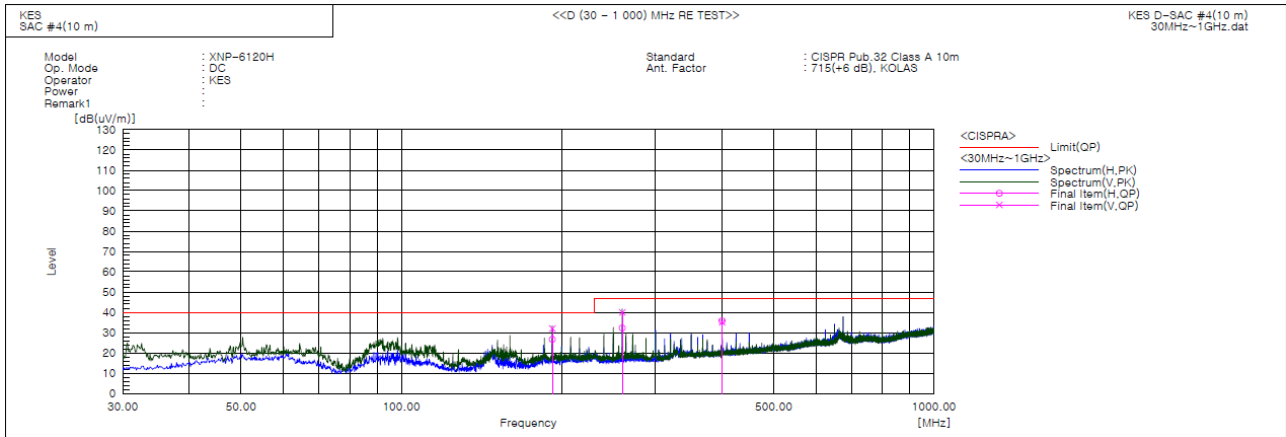
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## Radiated Electric Field Emissions(Below 1 GHz)

### ■ DC Mode



### 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   | 191.982         | H   | 48.4                | -21.7         | 26.7                 | 40.0                | 13.3           | 346.0       | 162.0       |        |
| 2   | 191.990         | V   | 53.7                | -21.7         | 32.0                 | 40.0                | 8.0            | 107.0       | 356.0       |        |
| 3   | 259.890         | V   | 58.9                | -18.9         | 40.0                 | 47.0                | 7.0            | 100.0       | 356.0       |        |
| 4   | 259.899         | H   | 51.2                | -18.9         | 32.3                 | 47.0                | 14.7           | 400.0       | 199.0       |        |
| 5   | 399.934         | H   | 49.9                | -14.1         | 35.8                 | 47.0                | 11.2           | 223.0       | 256.0       |        |
| 6   | 400.055         | V   | 49.1                | -14.0         | 35.1                 | 47.0                | 11.9           | 117.0       | 16.0        |        |

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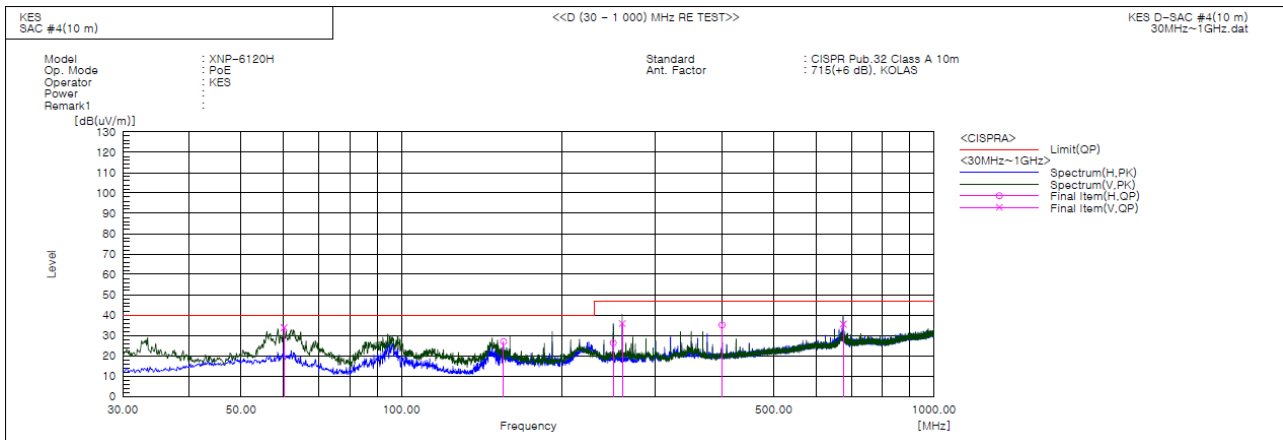


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### PoE Mode



### 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   | 60.191          | V   | 55.7                | -21.9         | 33.8                 | 40.0                | 6.2            | 112.0       | 72.0        |        |
| 2   | 155.615         | H   | 51.7                | -24.8         | 26.9                 | 40.0                | 13.1           | 356.0       | 177.0       |        |
| 3   | 249.948         | H   | 45.4                | -19.1         | 26.3                 | 47.0                | 20.7           | 400.0       | 94.0        |        |
| 4   | 259.890         | V   | 54.8                | -18.9         | 35.9                 | 47.0                | 11.1           | 109.0       | 199.0       |        |
| 5   | 400.055         | H   | 49.1                | -14.0         | 35.1                 | 47.0                | 11.9           | 400.0       | 8.0         |        |
| 6   | 675.050         | V   | 43.4                | -7.8          | 35.6                 | 47.0                | 11.4           | 142.0       | 239.0       |        |

### ◆ Calculation – SEMI ANECHOIC CHAMBER #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



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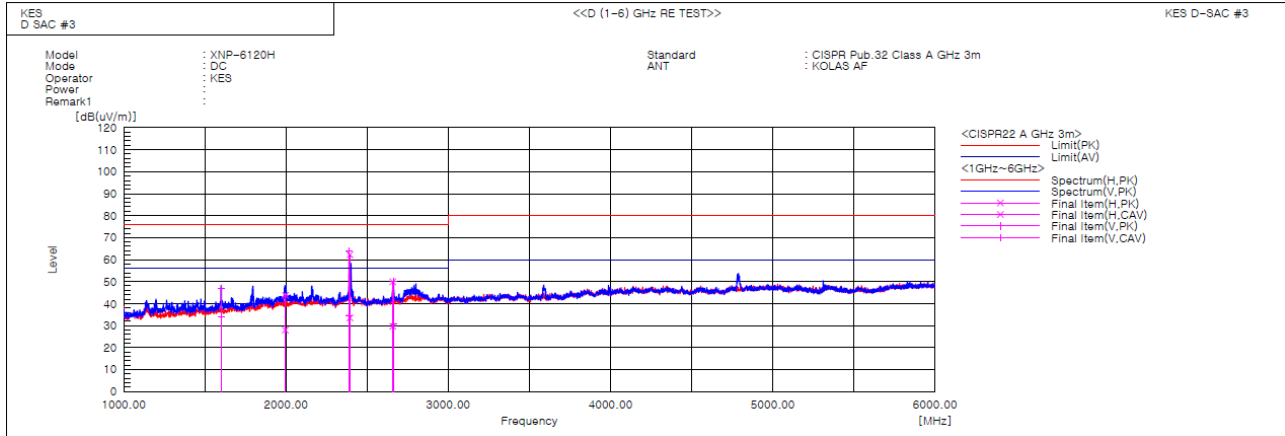
Report No.:

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## Radiated Electric Field Emissions(Above 1 GHz)

### ■ DC Mode



### 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   | 1600.511           | V   | 52.3                      | 39.2                       | -5.3             | 47.0                       | 33.9                        | 76.0                      | 56.0                      | 29.0                 | 22.1                  | 100.0          | 50.4           |        |
| 2   | 1995.030           | H   | 44.8                      | 29.0                       | -1.0             | 43.8                       | 28.0                        | 76.0                      | 56.0                      | 32.2                 | 28.0                  | 100.0          | 294.4          |        |
| 3   | 2390.024           | V   | 64.0                      | 34.4                       | 0.2              | 64.2                       | 34.6                        | 76.0                      | 56.0                      | 11.8                 | 21.4                  | 100.0          | 50.4           |        |
| 4   | 2393.000           | H   | 62.0                      | 33.3                       | 0.2              | 62.2                       | 33.5                        | 76.0                      | 56.0                      | 13.8                 | 22.5                  | 100.0          | 348.5          |        |
| 5   | 2657.013           | H   | 49.4                      | 29.2                       | 0.5              | 49.9                       | 29.7                        | 76.0                      | 56.0                      | 26.1                 | 26.3                  | 100.0          | 353.8          |        |
| 6   | 2663.050           | V   | 49.3                      | 30.2                       | 0.6              | 49.9                       | 30.8                        | 76.0                      | 56.0                      | 26.1                 | 25.2                  | 100.0          | 332.1          |        |

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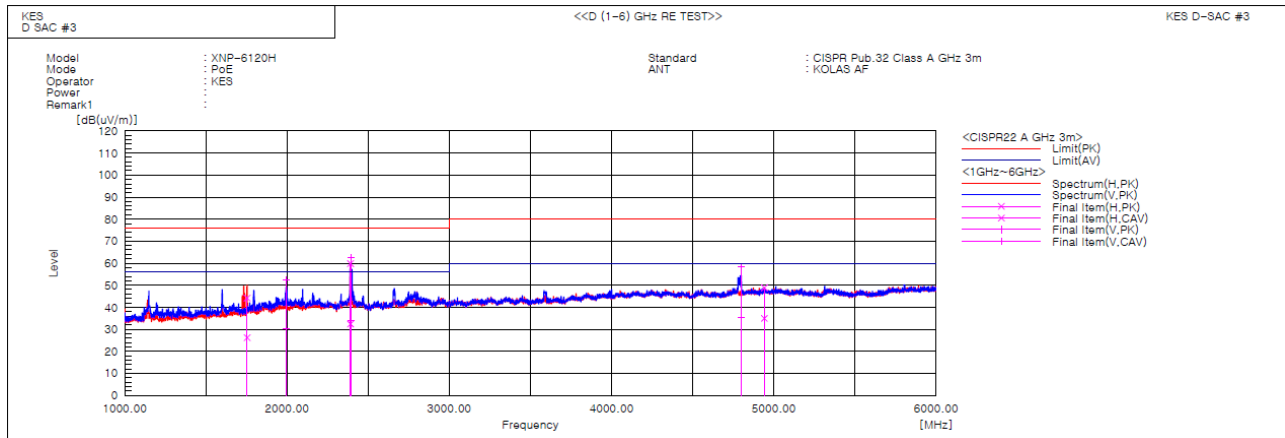


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### ■ PoE Mode



#### Final Result

| No. | Frequency [MHz] | (P) | Reading PK [dB(uV)] | Reading CAV [dB(uV)] | c.f [dB(1/m)] | Result PK [dB(uV/m)] | Result CAV [dB(uV/m)] | Limit PK [dB(uV/m)] | Limit AV [dB(uV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] | Remark |
|-----|-----------------|-----|---------------------|----------------------|---------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|--------|
| 1   | 1754.000        | H   | 47.8                | 29.8                 | -3.6          | 44.2                 | 26.2                  | 76.0                | 56.0                | 31.8           | 29.8            | 100.0       | 29.6        |        |
| 2   | 1994.000        | V   | 53.5                | 31.4                 | -1.1          | 52.4                 | 30.3                  | 76.0                | 56.0                | 23.6           | 25.7            | 100.0       | 237.1       |        |
| 3   | 2391.002        | H   | 59.6                | 32.2                 | 0.2           | 59.8                 | 32.4                  | 76.0                | 56.0                | 16.2           | 23.6            | 100.0       | 345.6       |        |
| 4   | 2392.050        | V   | 62.3                | 33.9                 | 0.2           | 62.5                 | 34.1                  | 76.0                | 56.0                | 13.5           | 21.9            | 100.0       | 145.9       |        |
| 5   | 4798.031        | V   | 50.5                | 27.2                 | 7.9           | 58.4                 | 35.1                  | 80.0                | 60.0                | 21.6           | 24.9            | 100.0       | 182.8       |        |
| 6   | 4941.076        | H   | 40.2                | 26.3                 | 8.7           | 48.9                 | 35.0                  | 80.0                | 60.0                | 31.1           | 25.0            | 100.0       | 352.6       |        |

### ◆ Calculation

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

Margin(PK/CAV)[dB] = Limit[dB( $\mu$ V/m)] - Result(PK/CAV) [dB( $\mu$ V/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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## Harmonic Current Emissions and Voltage Fluctuations and Flicker

■ DC Mode

### Average harmonic current results

| Hn | I <sub>eff</sub> [A] | % of Limit | Limit [A] | Result |
|----|----------------------|------------|-----------|--------|
| 1  | 0.038                |            |           |        |
| 2  | 0.002                | 0.142      | 1.080     | n/a    |
| 3  | 0.031                | 1.364      | 2.300     | PASS   |
| 4  | 0.002                | 0.403      | 0.430     | n/a    |
| 5  | 0.032                | 2.812      | 1.140     | PASS   |
| 6  | 0.001                | 0.458      | 0.300     | n/a    |
| 7  | 0.032                | 4.121      | 0.770     | PASS   |
| 8  | 0.001                | 0.607      | 0.230     | n/a    |
| 9  | 0.029                | 7.341      | 0.400     | PASS   |
| 10 | 0.001                | 0.772      | 0.184     | n/a    |
| 11 | 0.028                | 8.449      | 0.330     | PASS   |
| 12 | 0.001                | 0.860      | 0.153     | n/a    |
| 13 | 0.026                | 12.563     | 0.210     | PASS   |
| 14 | 0.001                | 1.135      | 0.131     | n/a    |
| 15 | 0.024                | 16.246     | 0.150     | PASS   |
| 16 | 0.001                | 1.130      | 0.115     | n/a    |
| 17 | 0.023                | 17.070     | 0.132     | PASS   |
| 18 | 0.001                | 1.242      | 0.102     | n/a    |
| 19 | 0.021                | 17.451     | 0.118     | PASS   |
| 20 | 0.001                | 1.404      | 0.092     | n/a    |
| 21 | 0.019                | 11.603     | 0.161     | PASS   |
| 22 | 0.001                | 1.509      | 0.084     | n/a    |
| 23 | 0.017                | 11.302     | 0.147     | PASS   |
| 24 | 0.001                | 1.664      | 0.077     | n/a    |
| 25 | 0.015                | 10.861     | 0.135     | PASS   |
| 26 | 0.001                | 1.638      | 0.071     | n/a    |
| 27 | 0.013                | 10.336     | 0.125     | PASS   |
| 28 | 0.001                | 1.843      | 0.066     | n/a    |
| 29 | 0.011                | 9.294      | 0.116     | PASS   |
| 30 | 0.001                | 1.790      | 0.061     | n/a    |
| 31 | 0.009                | 8.456      | 0.109     | PASS   |
| 32 | 0.001                | 1.875      | 0.058     | n/a    |
| 33 | 0.008                | 7.514      | 0.102     | PASS   |
| 34 | 0.001                | 2.018      | 0.054     | n/a    |
| 35 | 0.006                | 6.356      | 0.096     | PASS   |
| 36 | 0.001                | 1.972      | 0.051     | n/a    |
| 37 | 0.005                | 5.653      | 0.091     | PASS   |
| 38 | 0.001                | 2.145      | 0.048     | n/a    |
| 39 | 0.004                | 4.786      | 0.087     | n/a    |
| 40 | 0.001                | 2.038      | 0.046     | n/a    |

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

\* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.



Test Data - Harmonics (continued)

**Maximum harmonic current results**

| Hn | I <sub>eff</sub> [A] | % of Limit | Limit [A] | Result |
|----|----------------------|------------|-----------|--------|
| 1  | 0.044                |            |           |        |
| 2  | 0.002                | 0.126      | 1.620     | n/a    |
| 3  | 0.037                | 1.071      | 3.450     | PASS   |
| 4  | 0.002                | 0.317      | 0.645     | n/a    |
| 5  | 0.038                | 2.197      | 1.710     | PASS   |
| 6  | 0.002                | 0.371      | 0.450     | n/a    |
| 7  | 0.037                | 3.205      | 1.155     | PASS   |
| 8  | 0.002                | 0.456      | 0.345     | n/a    |
| 9  | 0.034                | 5.695      | 0.600     | PASS   |
| 10 | 0.002                | 0.574      | 0.276     | n/a    |
| 11 | 0.032                | 6.517      | 0.495     | PASS   |
| 12 | 0.001                | 0.648      | 0.230     | n/a    |
| 13 | 0.030                | 9.624      | 0.315     | PASS   |
| 14 | 0.002                | 0.860      | 0.197     | n/a    |
| 15 | 0.028                | 12.369     | 0.225     | PASS   |
| 16 | 0.001                | 0.854      | 0.173     | n/a    |
| 17 | 0.025                | 12.818     | 0.199     | PASS   |
| 18 | 0.001                | 0.948      | 0.153     | n/a    |
| 19 | 0.023                | 12.956     | 0.178     | PASS   |
| 20 | 0.001                | 1.075      | 0.138     | n/a    |
| 21 | 0.021                | 12.770     | 0.161     | PASS   |
| 22 | 0.001                | 1.154      | 0.125     | n/a    |
| 23 | 0.018                | 12.196     | 0.147     | PASS   |
| 24 | 0.002                | 1.328      | 0.115     | n/a    |
| 25 | 0.016                | 11.510     | 0.135     | PASS   |
| 26 | 0.001                | 1.332      | 0.106     | n/a    |
| 27 | 0.013                | 10.762     | 0.125     | PASS   |
| 28 | 0.001                | 1.514      | 0.099     | n/a    |
| 29 | 0.011                | 9.587      | 0.116     | PASS   |
| 30 | 0.001                | 1.429      | 0.092     | n/a    |
| 31 | 0.010                | 8.750      | 0.109     | PASS   |
| 32 | 0.001                | 1.501      | 0.086     | n/a    |
| 33 | 0.008                | 7.780      | 0.102     | PASS   |
| 34 | 0.001                | 1.625      | 0.081     | n/a    |
| 35 | 0.006                | 6.610      | 0.096     | PASS   |
| 36 | 0.001                | 1.522      | 0.077     | n/a    |
| 37 | 0.005                | 5.833      | 0.091     | PASS   |
| 38 | 0.001                | 1.682      | 0.073     | n/a    |
| 39 | 0.005                | 5.499      | 0.087     | n/a    |
| 40 | 0.001                | 1.601      | 0.069     | n/a    |

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

\* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.

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Test Data - Voltage Fluctuations

**Maximum Flicker results**

## ■ DC Mode

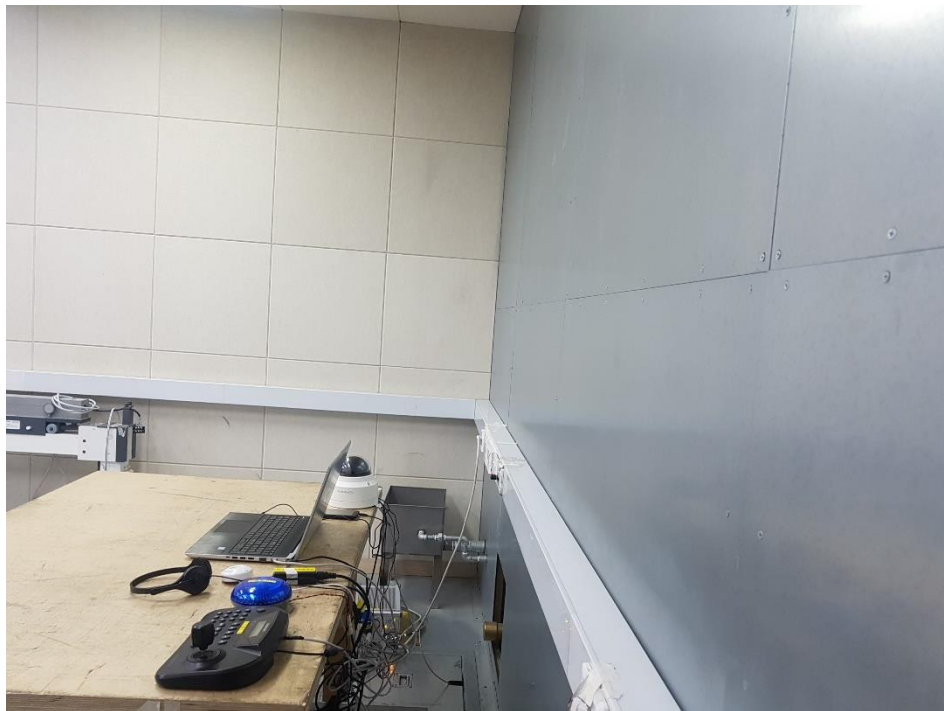
| Flicker Measurements |       |         |        |          |          |
|----------------------|-------|---------|--------|----------|----------|
|                      | Plt   | Max Pst | Max Dc | Max Dmax | Max Tmax |
| Line 1:              | 0.028 | 0.028   | 0      | < 0.2    | 0        |
| Limits:              | 0.65  | 1       | 3.3    | 4        | 0.5      |
| Results:             | PASS  | PASS    | PASS   | PASS     | PASS     |

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## Test Setup Photos and Configuration

### Conducted Emissions at Mains Power Ports

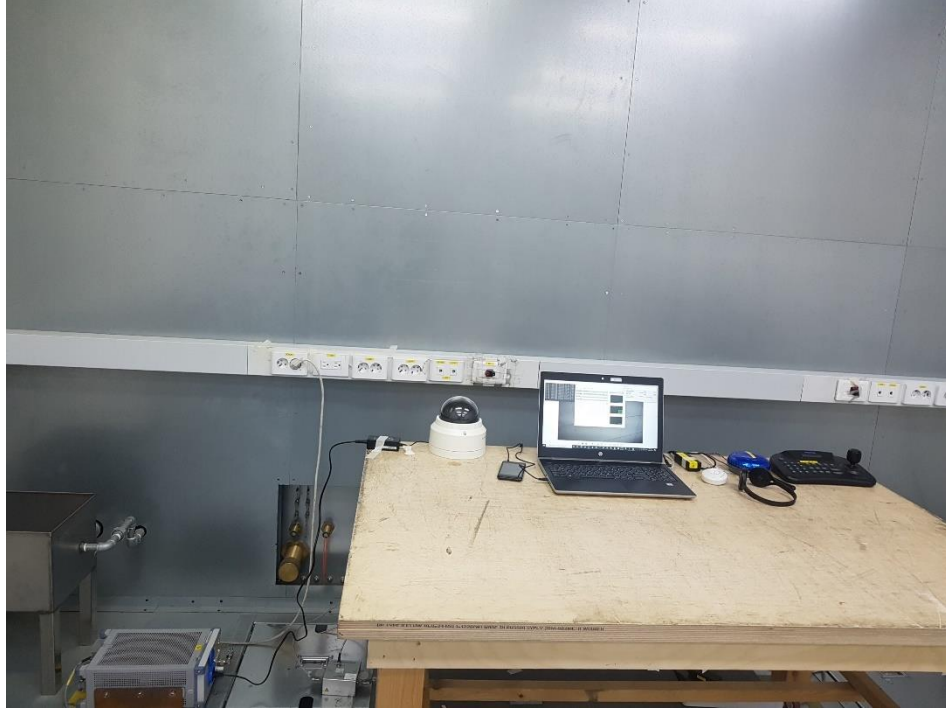
#### ■ DC Mode



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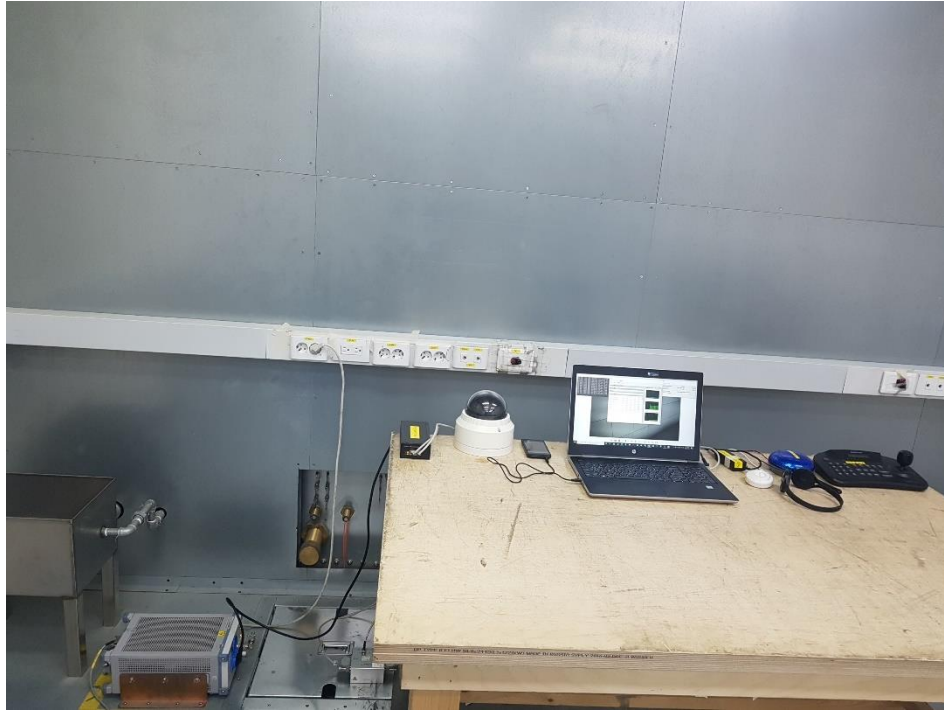
## Conducted Emissions at Telecommunication Ports

### ■ DC Mode



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## ■ PoE Mode



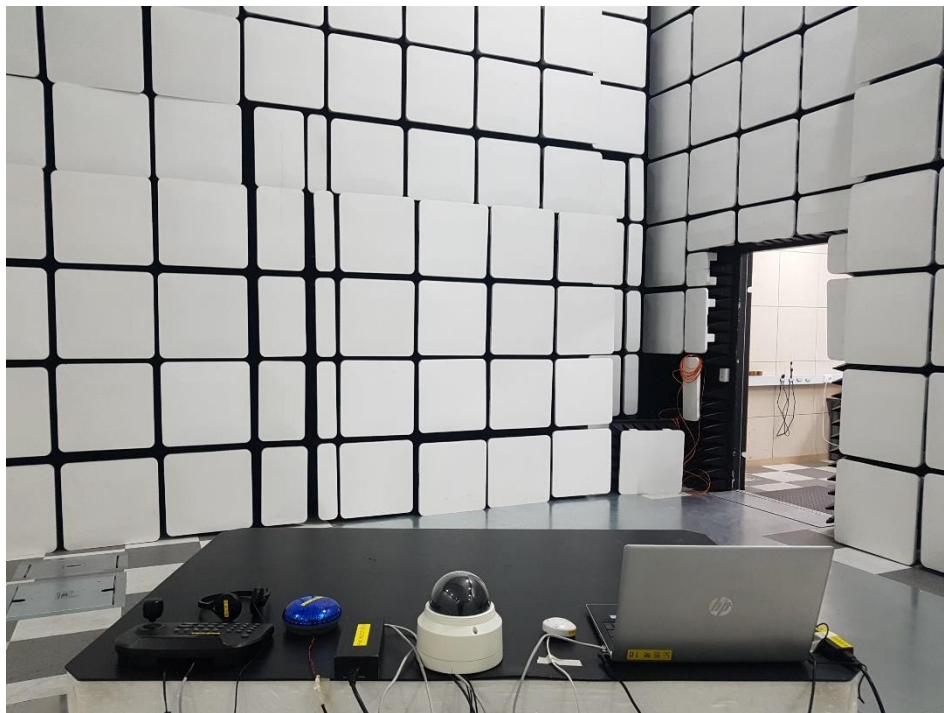
## Radiated Electric Field Emissions(Below 1 GHz)

### ■ DC Mode



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## ■ PoE Mode



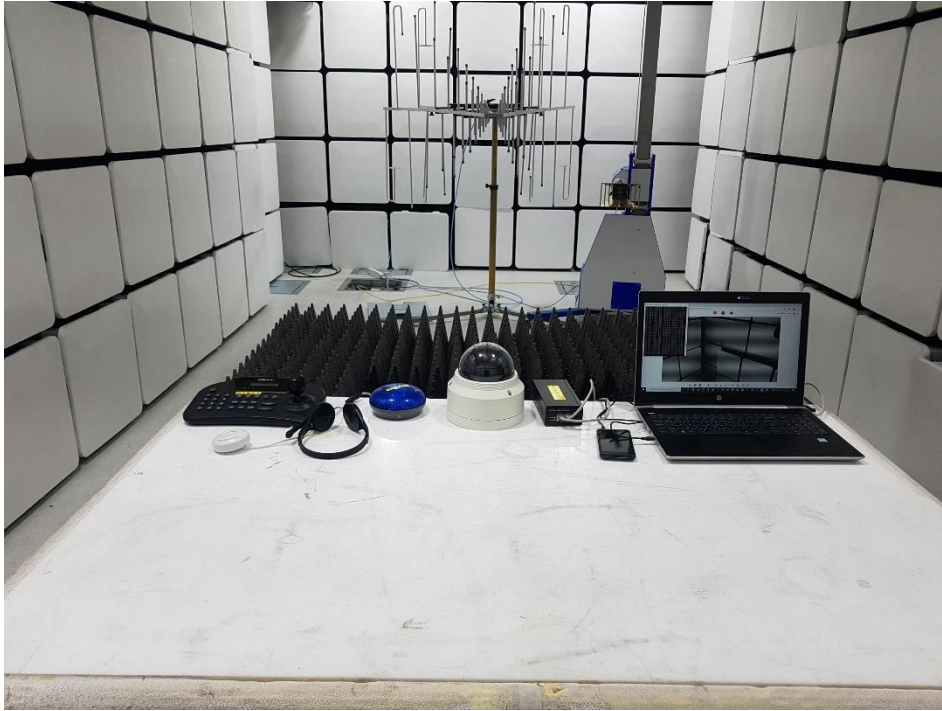
## Radiated Electric Field Emissions(Above 1 GHz)

### ■ DC Mode



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## ■ PoE Mode



## Harmonic Current Emissions and Voltage Fluctuations and Flicker

■ DC Mode



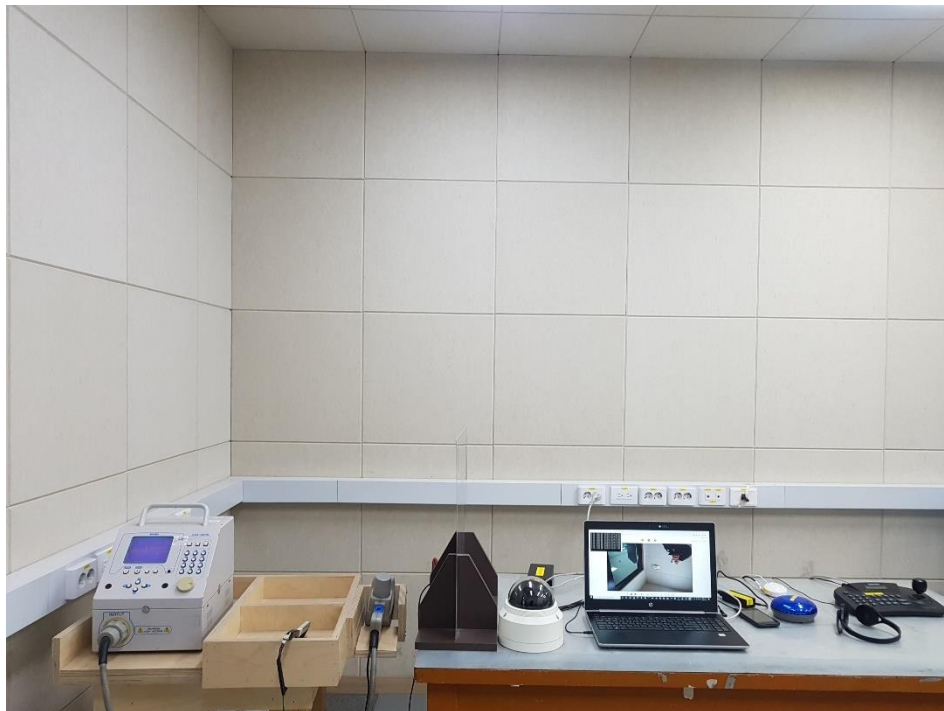
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## Electrostatic Discharge

### ■ DC Mode



### ■ PoE Mode



## Radiated Electric Field Immunity

### ■ DC Mode



### ■ PoE Mode



## Electrical Fast Transients/Bursts

### ■ DC Mode



### ■ PoE Mode



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## Surge Transients

### ■ DC Mode



### ■ PoE Mode



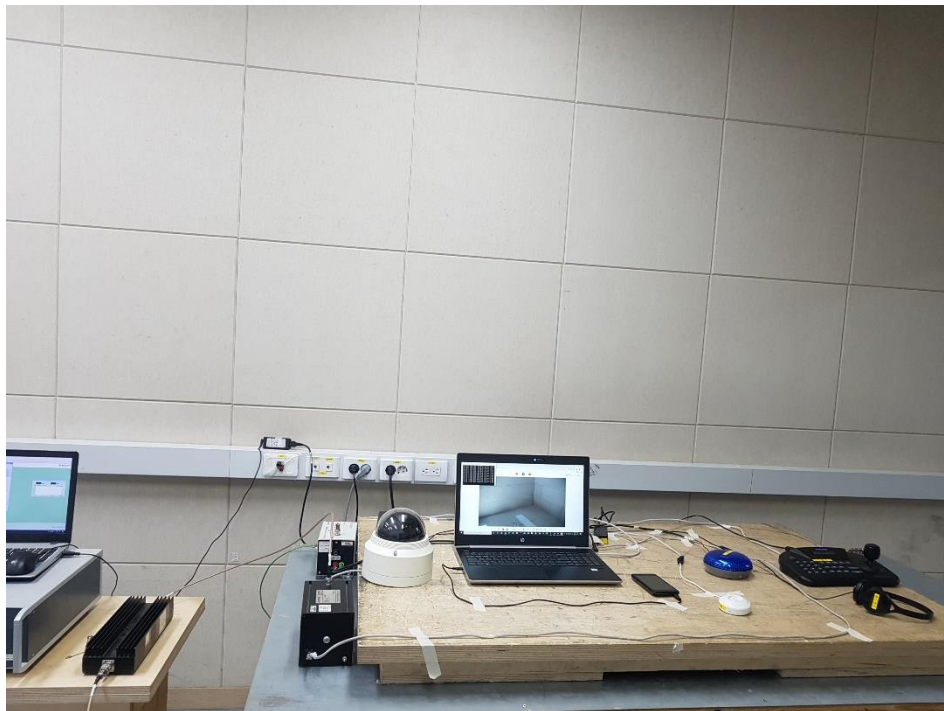
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## Conducted Disturbance

### ■ DC Mode



### ■ PoE Mode



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## Voltage Dips and Short Interruptions

■ DC Mode



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## EUT External Photographs

(Top)



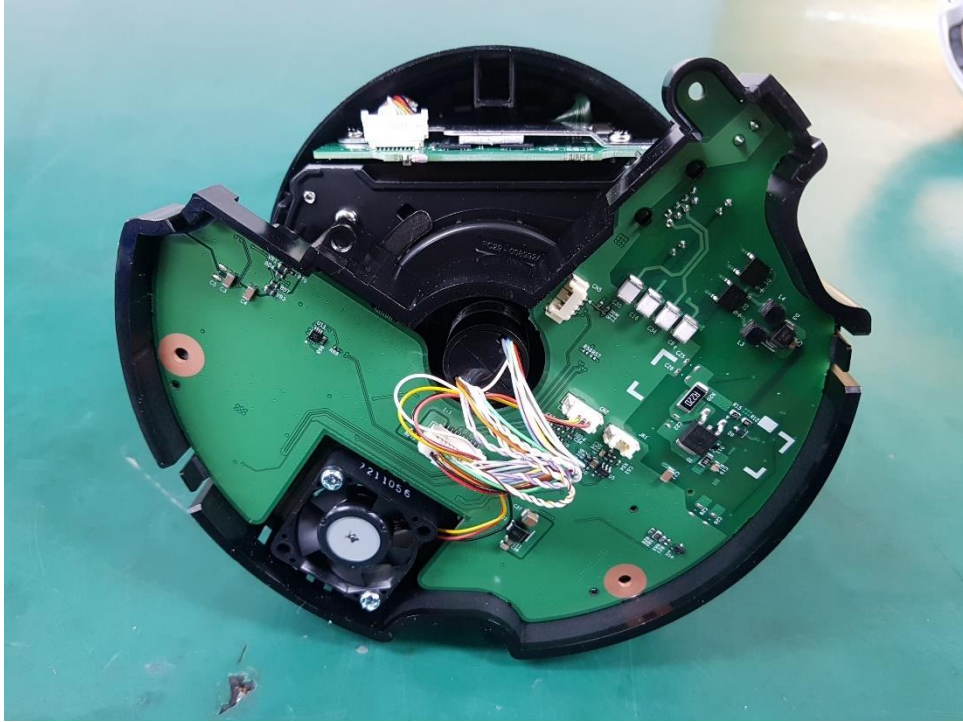
(Bottom)



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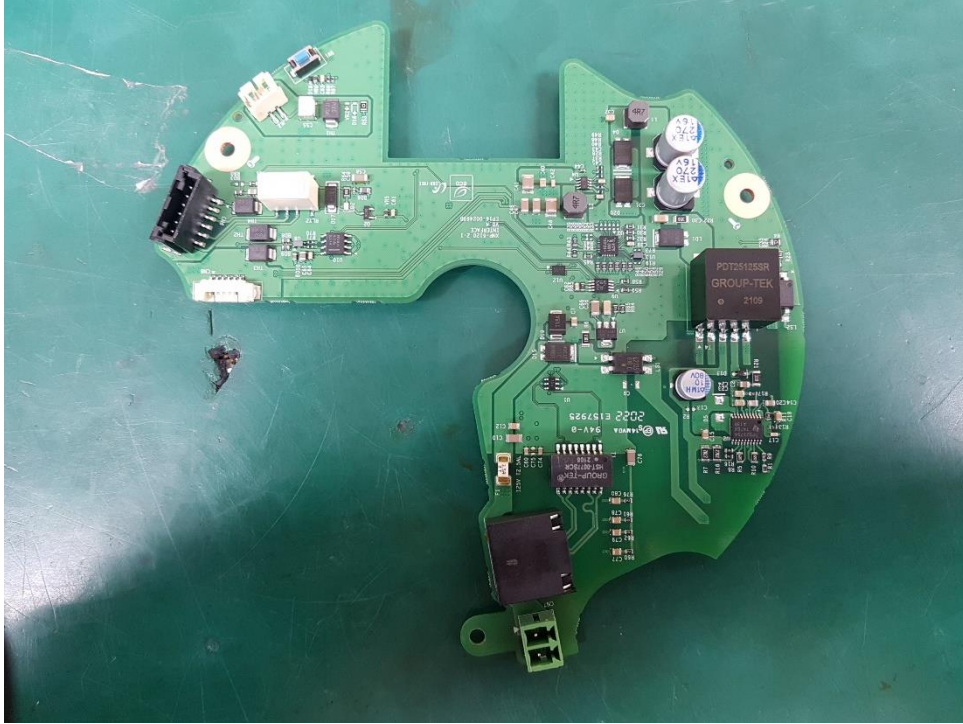
## EUT Internal Photographs

(Internal View)



**EUT Internal View – Board 1**

(Top)



(Bottom)



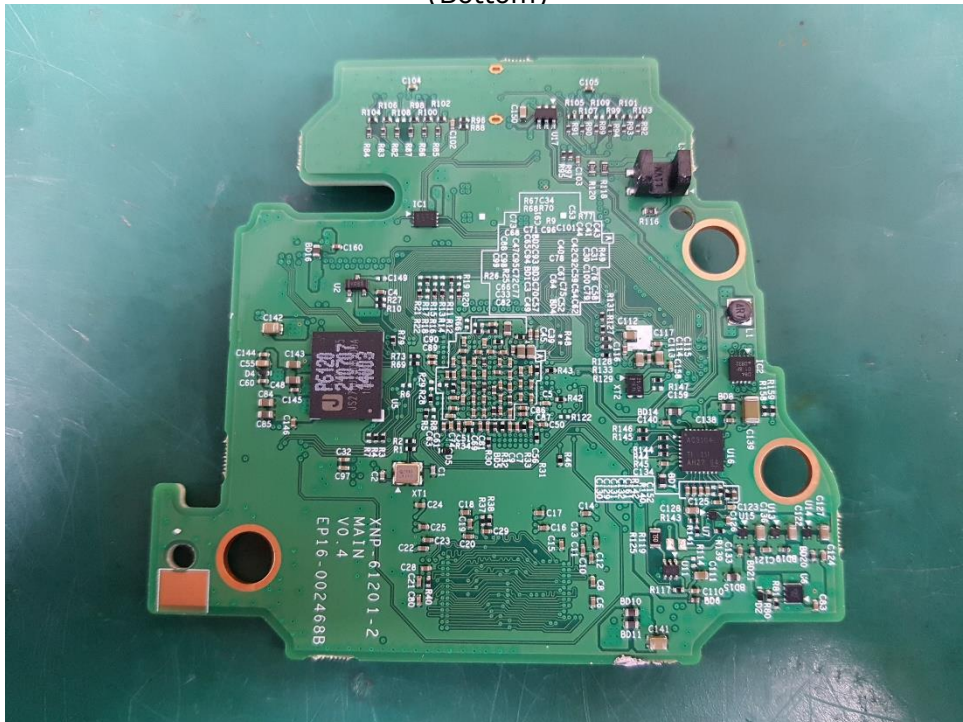
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## EUT Internal View – Board 2

(Top)



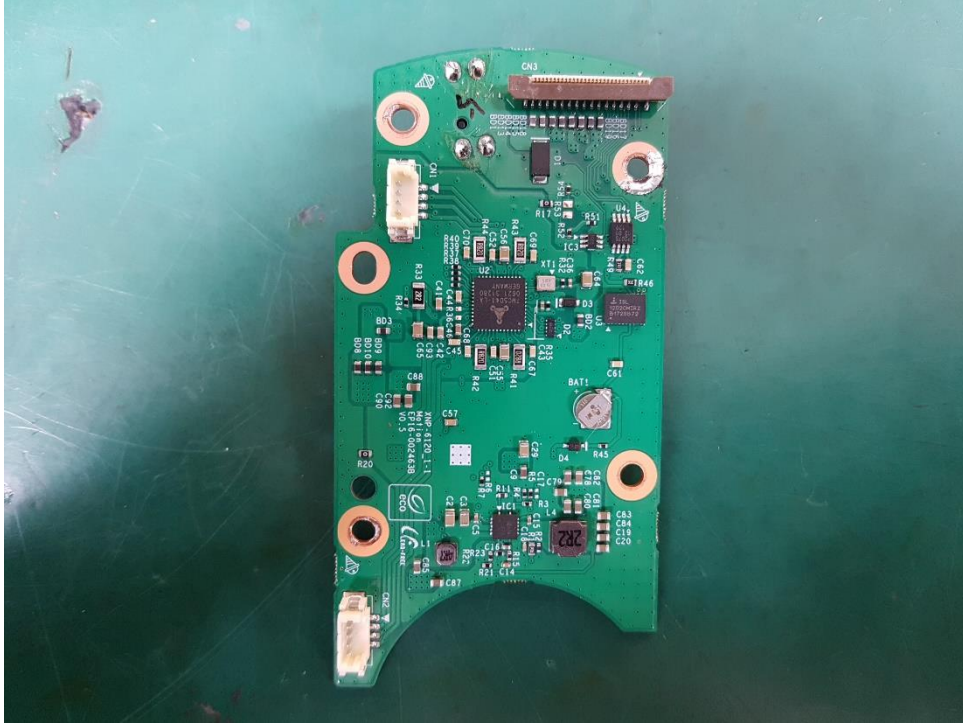
(Bottom)



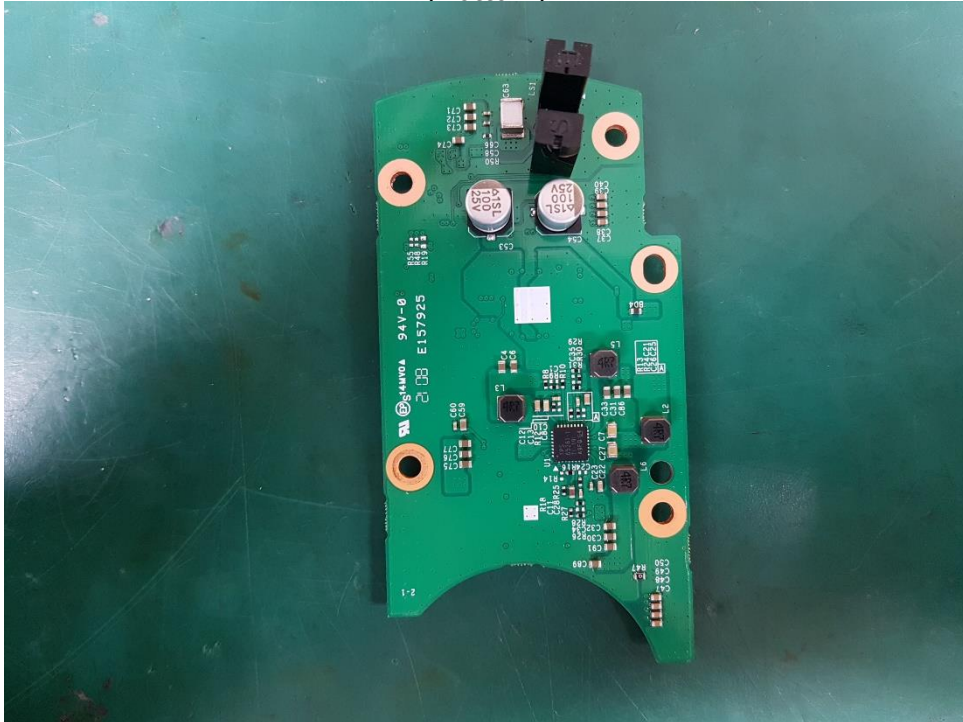
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## EUT Internal View – Board 3

(Top)



(Bottom)



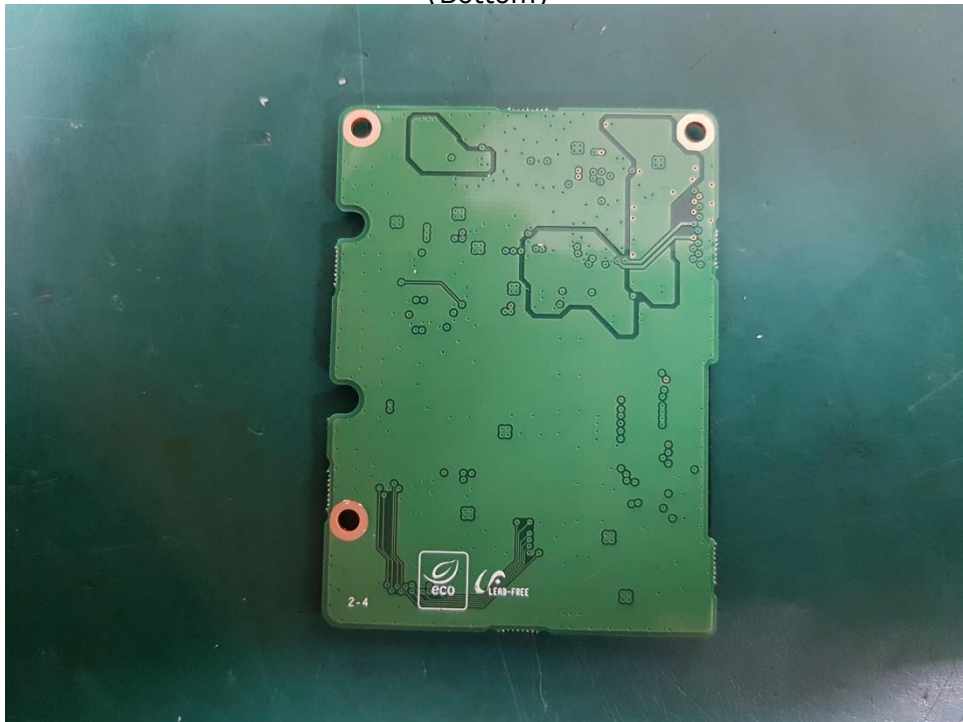
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## EUT Internal View – Board 4

(Top)



(Bottom)



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## EUT Internal View – Board 5

(Top)

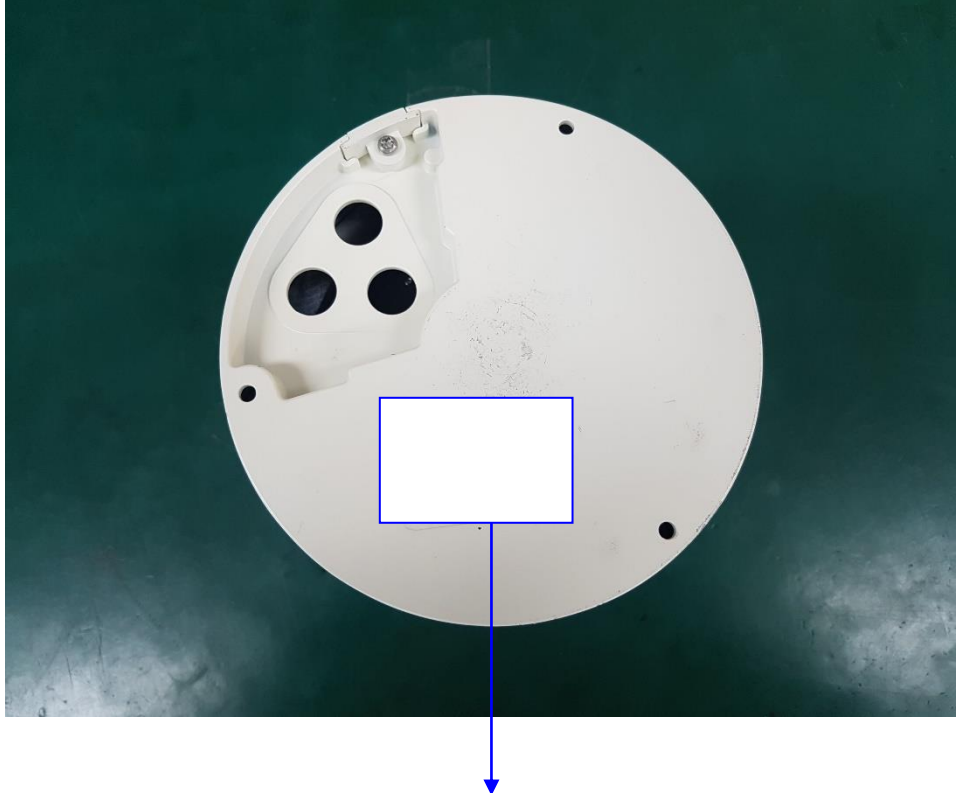


(Bottom)



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## Label and Location



### **NETWORK CAMERA**

Model No : XNP-6120H

Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED

Made in Vietnam

