



## EMC TEST REPORT For VCCI

Test Report No. : KES-EM-22T0116-R1  
Date of Issue : Feb. 24, 2023  
Product name : NETWORK CAMERA  
Model/Type No. : QNV-7082R  
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. 14, 2022  
Test date : Jan. 19, 2022 ~ Jan. 20, 2022  
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

김 세 현

Se Heon, Kim  
EMC Test Engineer

Reviewed by

Dong-Hun, Jang  
EMC Technical Manager

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



**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,  
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea  
Tel: +82-31-425-6200 / Fax: +82-31-424-0450  
www.kes.co.kr

Report No.:  
KES-EM-22T0116-R1  
Page (2) of (38)

## REPORT REVISION HISTORY

| Date          | Test Report No.   | Revision History                                                     |
|---------------|-------------------|----------------------------------------------------------------------|
| Jan. 26, 2022 | KES-EM-22T0116    | Issued                                                               |
| Feb. 24, 2023 | KES-EM-22T0116-R1 | Change the Applicant and manufacturer at the request of the customer |
|               |                   |                                                                      |
|               |                   |                                                                      |
|               |                   |                                                                      |
|               |                   |                                                                      |
|               |                   |                                                                      |
|               |                   |                                                                      |
|               |                   |                                                                      |
|               |                   |                                                                      |

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## TABLE OF CONTENTS

|                                                      |                                                             |    |
|------------------------------------------------------|-------------------------------------------------------------|----|
| 1.0                                                  | General Product Description.....                            | 4  |
| 1.1                                                  | Test Voltage & Frequency .....                              | 7  |
| 1.2                                                  | Variant Model Differences .....                             | 7  |
| 1.3                                                  | Device Modifications .....                                  | 7  |
| 1.4                                                  | Equipment Under Test.....                                   | 7  |
| 1.5                                                  | Support Equipments .....                                    | 7  |
| 1.6                                                  | External I/O Cabling .....                                  | 8  |
| 1.7                                                  | EUT Operating Mode(s) .....                                 | 9  |
| 1.8                                                  | Configuration.....                                          | 10 |
| 1.9                                                  | Remarks when standards applied .....                        | 11 |
| 1.10                                                 | Calibration Details of Equipment Used for Measurement ..... | 11 |
| 1.11                                                 | Test Facility .....                                         | 11 |
| 1.12                                                 | Laboratory Accreditations and Listings .....                | 11 |
| 2.0                                                  | Test Regulations.....                                       | 12 |
| 2.1                                                  | Conducted Emissions Mains Power Ports.....                  | 13 |
| 2.2                                                  | Conducted Emissions at Telecommunication Ports.....         | 14 |
| 2.3                                                  | Radiated Electric Field Emissions(Below 1 GHz) .....        | 15 |
| 2.4                                                  | Radiated Electric Field Emissions(Above 1 GHz) .....        | 16 |
| APPENDIX A – TEST DATA.....                          |                                                             | 17 |
| Conducted Emissions at Mains Power Ports.....        |                                                             | 17 |
| Conducted Emissions at Telecommunication Ports ..... |                                                             | 19 |
| Radiated Electric Field Emissions(Below 1 GHz) ..... |                                                             | 21 |
| Radiated Electric Field Emissions(Above 1 GHz).....  |                                                             | 23 |
| Test Setup Photos and Configuration .....            |                                                             | 25 |
| Conducted Emissions at Mains Power Ports.....        |                                                             | 25 |
| Conducted Emissions at Telecommunication Ports ..... |                                                             | 26 |
| Radiated Electric Field Emissions(Below 1 GHz) ..... |                                                             | 28 |
| Radiated Electric Field Emissions(Above 1 GHz).....  |                                                             | 30 |
| EUT External Photographs .....                       |                                                             | 32 |
| EUT Internal Photographs .....                       |                                                             | 33 |



## KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,  
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea  
Tel: +82-31-425-6200 / Fax: +82-31-424-0450  
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Report No.:  
KES-EM-22T0116-R1  
Page (4) of (38)

## 1.0 General Product Description

### Main Specifications of EUT are:

| Video                     |                                                                                                         |
|---------------------------|---------------------------------------------------------------------------------------------------------|
| Imaging Device            | 1/3" CMOS                                                                                               |
| Resolution                | 2560x1440, 1920x1080, 1280x960, 1280x720, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240 |
| Max. Framerate            | H.265/H.264 : Max. 30fps at 4M all resolutions, MJPEG : Max. 15fps                                      |
| Min. Illumination         | Color : 0.1Lux (F1.6, 1/30sec)<br>B/W : 0Lux (IR LED On)                                                |
| Video Out                 | CVBS : 1.0 Vpp/75Ω composite, 720x480(N), 720x576(P) for installation                                   |
| Lens                      |                                                                                                         |
| Focal Length (Zoom Ratio) | 3.2~10mm(3.1x) motorized varifocal                                                                      |
| Max. Aperture Ratio       | F1.6(Wide) ~ F2.9(Tele)                                                                                 |
| Angular Field of View     | H : 98.6(Wide) ~ 30.8(Tele),<br>V : 52.3(Wide) ~ 17.3(Tele),<br>D : 115.7(Wide) ~ 35.3(Tele)            |
| Focus Control             | Simple focus                                                                                            |
| Pan / Tilt / Rotate       |                                                                                                         |
| Pan / Tilt / Rotate Range | 0°~350° / 0°~67° / 0°~355°                                                                              |
| Operational               |                                                                                                         |
| Camera Title              | Displayed up to 85 characters                                                                           |
| Day & Night               | Auto(ICR)                                                                                               |
| Backlight Compensation    | BLC, WDR, SSDR                                                                                          |
| Wide Dynamic Range        | 120dB                                                                                                   |
| Digital Noise Reduction   | SSNR                                                                                                    |
| Motion Detection          | 4ea, polygonal zones                                                                                    |
| Privacy Masking           | 6ea, rectangular zones                                                                                  |

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Report No.:  
KES-EM-22T0116-R1  
Page (5) of (38)

|                          |                                                                                                                                                                                                            |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gain Control             | Low / Middle / High                                                                                                                                                                                        |
| White Balance            | ATW / AWC / Manual / Indoor / Outdoor                                                                                                                                                                      |
| LDC                      | Support                                                                                                                                                                                                    |
| Electronic Shutter Speed | Minimum/Maximum/Anti flicker (1/5~1/12,000sec)                                                                                                                                                             |
| Video Rotation           | Flip, Mirror, Hallway view(90/270)                                                                                                                                                                         |
| Analytics                | Defocus detection, Directional detection,<br>Motion detection, Enter/Exit, Tampering, Virtual line                                                                                                         |
| Alarm I/O                | Input 1ea / Output 1ea                                                                                                                                                                                     |
| Alarm Triggers           | Analytics, Network disconnect, Alarm input                                                                                                                                                                 |
| Alarm Events             | File upload via FTP and e-mail,<br>Notification via e-mail,<br>SD/SDHC/SDXC or NAS recording at event triggers,<br>Alarm output, Handover                                                                  |
| Audio In                 | Line in                                                                                                                                                                                                    |
| IR Viewable Length       | 30m(98.42ft)                                                                                                                                                                                               |
| <b>Network</b>           |                                                                                                                                                                                                            |
| Ethernet                 | RJ-45 (10/100BASE-T)                                                                                                                                                                                       |
| Video Compression        | H.265/H.264 : Main/High, MJPEG                                                                                                                                                                             |
| Audio Compression        | G.711 u-law / G.726 Selectable<br>G.726(ADPCM) 8KHz, G.711 8KHz,<br>G.726 16Kbps, 24Kbps, 32Kbps, 40Kbps                                                                                                   |
| Smart Codec              | Manual (5ea area), WiseStream II                                                                                                                                                                           |
| Bitrate Control          | H.264/H.265 : CBR or VBR<br>MJPEG : VBR                                                                                                                                                                    |
| Streaming                | Unicast (6 users) / Multicast<br>Multiple streaming (Up to 3 profiles)                                                                                                                                     |
| Protocol                 | IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS,<br>DHCP, PPPoE, FTP,<br>SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour,<br>LLDP |

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Report No.:

KES-EM-22T0116-R1

Page (6) of (38)

|                                       |                                                                                                                                                     |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Security                              | HTTPS(SSL) Login Authentication<br>Digest Login Authentication<br>IP Address Filtering<br>User access Log<br>802.1X Authentication                  |
| Application Programming Interface     | ONVIF Profile S/G/T, SUNAPI (HTTP API)                                                                                                              |
| <b>General</b>                        |                                                                                                                                                     |
| Webpage Language                      | English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek |
| Edge Storage                          | Micro SD/SDHC/SDXC 1slot 128GB                                                                                                                      |
| Memory                                | 512MB RAM, 256MB Flash                                                                                                                              |
| <b>Environmental &amp; Electrical</b> |                                                                                                                                                     |
| Operating Temperature / Humidity      | -40°C~+55°C (-40°F~+131°F) / Less than 95% RH<br>* Start up should be done at -30°C or above                                                        |
| Storage Temperature / Humidity        | -40°C~+60°C (-40°F~+140°F) / Less than 95% RH                                                                                                       |
| Certification                         | IP66, IK10                                                                                                                                          |
| Input Voltage                         | PoE(IEEE802.3af, Class3), 12VDC                                                                                                                     |
| Power Consumption                     | PoE: Max 11.4W, typical 8.5W<br>12VDC: Max 9.6W, typical 7.2W                                                                                       |
| <b>Mechanical</b>                     |                                                                                                                                                     |
| Color / Material                      | White / Aluminum                                                                                                                                    |
| RAL Code                              | RAL9003                                                                                                                                             |
| Product Dimensions / Weight           | Ø137.0 x 106.1mm (Ø5.39 x 4.18"), 710g (1.565 lb)                                                                                                   |
| <b>DORI (EN62676-4 standard)</b>      |                                                                                                                                                     |
| Detect (25PPM/ 8PPF)                  | Wide: 27m(89.86ft) / Tele: 129m(422.61ft)                                                                                                           |
| Observe (63PPM/ 19PPF)                | Wide: 11m(35.95ft) / Tele: 52m(169.04ft)                                                                                                            |
| Recognize (125PPM/ 38PPF)             | Wide: 6m(17.97ft) / Tele: 26m(84.52ft)                                                                                                              |
| Identify (250PPM/ 76PPF)              | Wide: 3m(8.99ft) / Tele: 13m(42.26ft)                                                                                                               |

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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 100 V, 60 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 | QNV-7082R    | -             | HANWHA VISION<br>VIETNAM COMPANY<br>LIMITED | EUT     |

## 1.5 Support Equipments

| Description      | Model Number  | Serial Number | Manufacturer                                       | Remarks |
|------------------|---------------|---------------|----------------------------------------------------|---------|
| AC/DC Adapter    | 2ACB022F      | -             | ChAnnel Well<br>Technology<br>(Guangzhou) Co.,Ltd. | -       |
| PoE Injector     | POE 36U-1AT-R | -             | PHIHONG                                            | -       |
| Notebook         | P98F004       | 21599158359   | DELL INC.                                          | -       |
| Notebook Adapter | LA240PM190    | -             | LITE-ON<br>TECHNOLOGY(CHANGZ<br>HOU)CO.,LTD.       | -       |
| Multimeter       | FLUKE 107     | -             | Fluke Corporation                                  | -       |
| MIC              | MP1000        | -             | -                                                  | -       |
| Button ALARM     | -             | -             | -                                                  | -       |
| Micro SD Card    | -             | -             | SanDisk                                            | 16 GB   |

## 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) | DC Jack   | AC/DC Adapter    | DC Jack   | 1.4         | U      |
|                      | RJ-45     | Notebook         | RJ-45     | 3.0         | U      |
|                      | ALARM OUT | Multimeter       | ALARM OUT | 3.0         | U      |
|                      | ALARM IN  | Button ALARM     | ALARM IN  | 3.0         | U      |
|                      | AUDIO IN  | MIC              | AUDIO IN  | 2.0         | U      |
|                      | SLOT      | Micro SD Card    | SLOT      | -           | -      |
| Notebook             | DC Jack   | Notebook Adapter | DC Jack   | 1.3         | 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) | AC/DC Adapter    | RJ-45 (PoE) | 3.0         | U      |
|                      | ALARM OUT   | Multimeter       | ALARM OUT   | 3.0         | U      |
|                      | ALARM IN    | Button ALARM     | ALARM IN    | 3.0         | U      |
|                      | AUDIO IN    | MIC              | AUDIO IN    | 2.0         | U      |
|                      | SLOT        | Micro SD Card    | SLOT        | -           | -      |
| Notebook             | RJ-45 (LAN) | PoE Injector     | RJ-45 (LAN) | 1.0         | U      |
|                      | DC Jack     | Notebook Adapter | DC Jack     | 1.3         | U      |

\* Unshielded=U, Shielded=S



## 1.7 EUT Operating Mode(s)

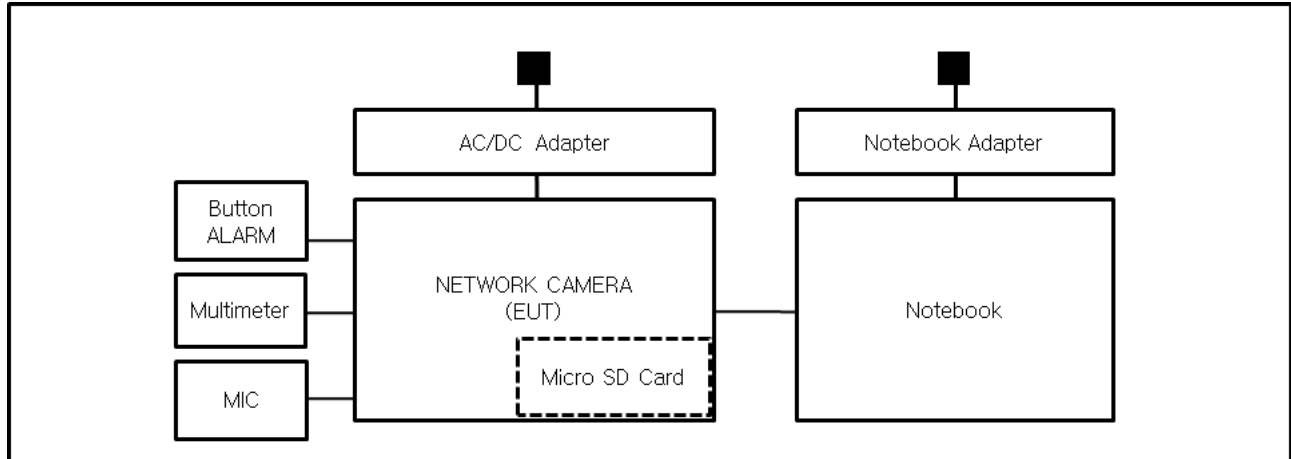
| Test Mode      | operating                                  |
|----------------|--------------------------------------------|
| Operation mode | Monitoring EUT Using Web Viewer, Ping Test |

| EUT Test operating S/W |         |                     |
|------------------------|---------|---------------------|
| Name                   | Version | Manufacture Company |
| Web Viewer             | -       | -                   |

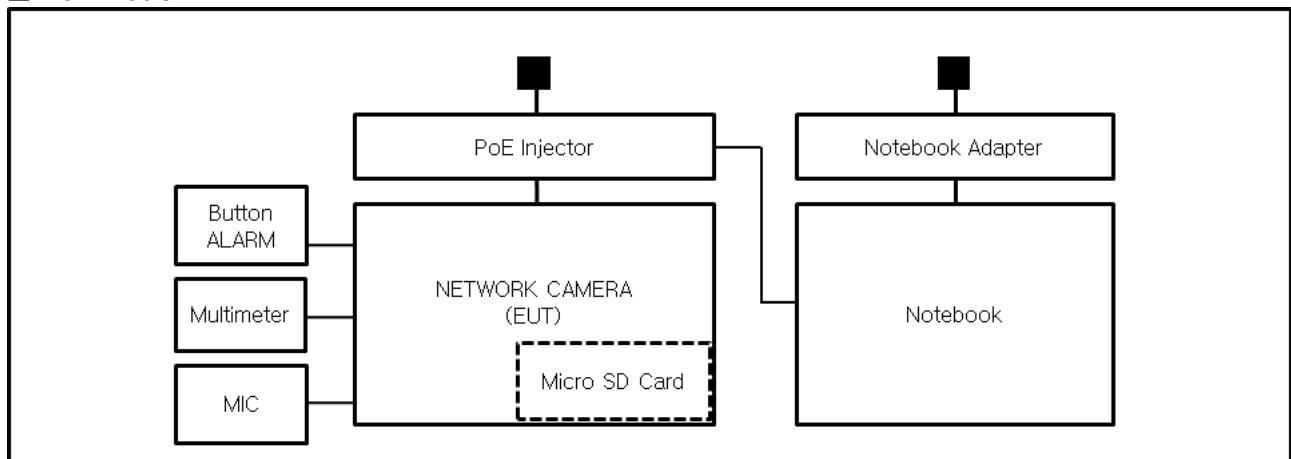
## 1.8 Configuration

■ AC Main  
 □ DC Main

### ■ DC Mode



### ■ PoE Mode



## 1.9 Remarks when standards applied

- VIDEO port is not used and is excluded from testing.
- In PoE mode, the LAN port is regarded as a wired communication network port and power-related ports are not tested.

## 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                     |

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Report No.:  
KES-EM-22T0116-R1  
Page (12) of (38)

## 2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **VCCI-CISPR 32:2016**

☒ Class A

☐ Class B

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## 2.1 Conducted Emissions Mains Power Ports

### Test Date

Jan. 19, 2022

### Test Location

Electro wave Shieldroom #6

### Test Equipment

| Used                                | Description       | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|-------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W      | EMC32        | R & S        | 9.12.00       | -            |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER | ESR3         | R & S        | 101783        | 12, 28, 2022 |
| <input checked="" type="checkbox"/> | LISN              | ENV216       | R & S        | 101787        | 12, 27, 2022 |
| <input checked="" type="checkbox"/> | LISN              | ESH2-Z5      | R & S        | 100450        | 12, 27, 2022 |
| <input checked="" type="checkbox"/> | PULSE LIMITER     | ESH3-Z2      | R & S        | 101915        | 12, 27, 2022 |

### Test Conditions

Temperature: (22,4 ± 0,0) °C

Relative Humidity: (42,5 ± 0,0) % 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. 19, 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: (22,4 ± 0,0) °C

Relative Humidity: (42,4 ± 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. 19, 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: (22,9 ± 0,1) °C  
Relative Humidity: (43,7 ± 0,1) % R.H.

### Frequency Range of Measurement

30 MHz to 1 GHz

### Instrument Settings

IF Band Width: 120 kHz

### Test Results

The requirements are:

☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.



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

### Test Date

Jan. 20, 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: (22,7 ± 0,1) °C

Relative Humidity: (43,2 ± 0,1) % R.H.

### Frequency Range of Measurement

1 GHz to 6 GHz

### Instrument Settings

IF Band Width: 1 MHz

### Test Results

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.

## APPENDIX A – TEST DATA

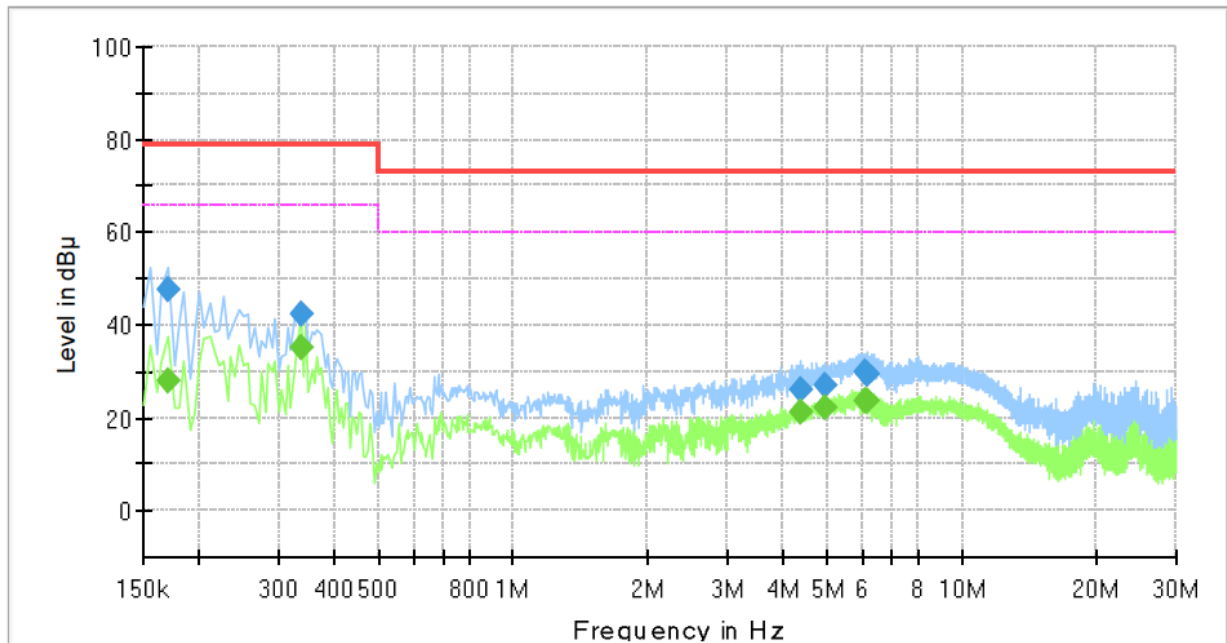
### Conducted Emissions at Mains Power Ports

■ DC Mode

HOT LINE

#### Common Information

|                   |                    |
|-------------------|--------------------|
| Test Description: | Conducted Emission |
| Model No.:        | QNV-7082R          |
| Phase:            | L1                 |
| Mode:             | DC                 |
| Operator Name:    | KES                |



#### Final Result

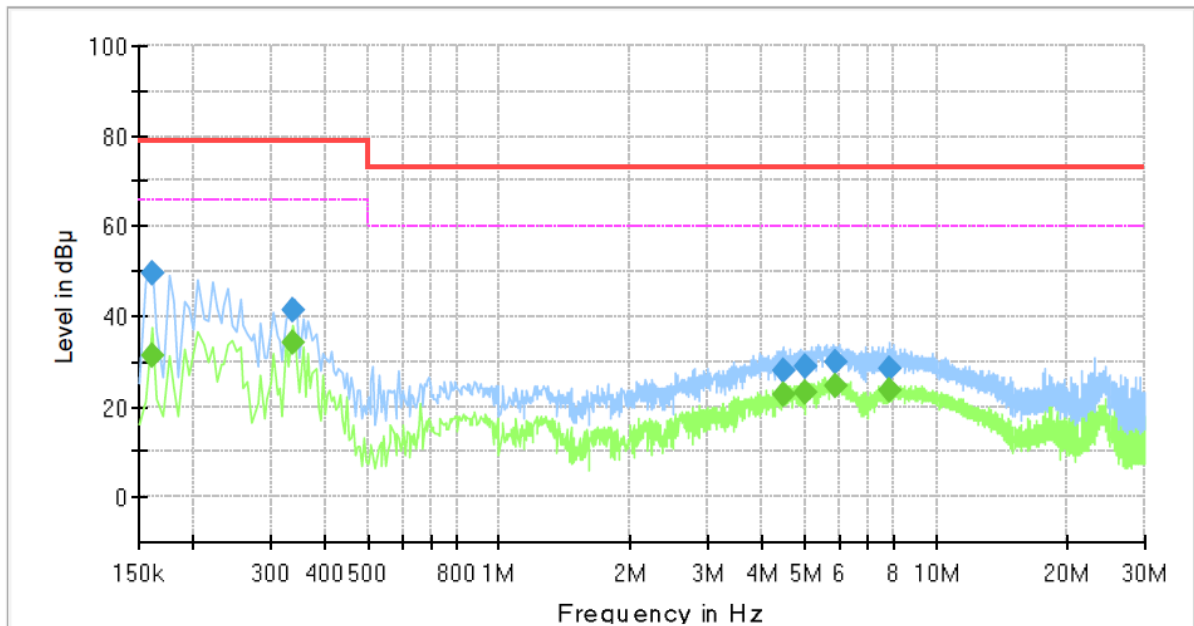
| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.170000        | ---              | 27.82           | 66.00        | 38.18       | 1000.0          | 9.000           | L1   | 19.5       |
| 0.170000        | 47.47            | ---             | 79.00        | 31.53       | 1000.0          | 9.000           | L1   | 19.5       |
| 0.335000        | ---              | 35.38           | 66.00        | 30.62       | 1000.0          | 9.000           | L1   | 19.6       |
| 0.335000        | 42.41            | ---             | 79.00        | 36.59       | 1000.0          | 9.000           | L1   | 19.6       |
| 4.365000        | ---              | 21.11           | 60.00        | 38.89       | 1000.0          | 9.000           | L1   | 19.8       |
| 4.365000        | 26.12            | ---             | 73.00        | 46.88       | 1000.0          | 9.000           | L1   | 19.8       |
| 4.960000        | ---              | 22.32           | 60.00        | 37.68       | 1000.0          | 9.000           | L1   | 19.7       |
| 4.960000        | 27.15            | ---             | 73.00        | 45.85       | 1000.0          | 9.000           | L1   | 19.7       |
| 6.065000        | ---              | 23.64           | 60.00        | 36.36       | 1000.0          | 9.000           | L1   | 19.5       |
| 6.065000        | 29.67            | ---             | 73.00        | 43.33       | 1000.0          | 9.000           | L1   | 19.5       |
| 6.180000        | ---              | 23.46           | 60.00        | 36.54       | 1000.0          | 9.000           | L1   | 19.5       |
| 6.180000        | 29.59            | ---             | 73.00        | 43.41       | 1000.0          | 9.000           | L1   | 19.5       |

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## NEUTRAL LINE

### Common Information

|                   |                    |
|-------------------|--------------------|
| Test Description: | Conducted Emission |
| Model No.:        | QNV-7082R          |
| 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        | ---              | 31.11           | 66.00        | 34.89       | 1000.0          | 9.000           | N    | 19.4       |
| 0.160000        | 49.53            | ---             | 79.00        | 29.47       | 1000.0          | 9.000           | N    | 19.4       |
| 0.335000        | ---              | 34.37           | 66.00        | 31.63       | 1000.0          | 9.000           | N    | 19.6       |
| 0.335000        | 41.48            | ---             | 79.00        | 37.52       | 1000.0          | 9.000           | N    | 19.6       |
| 4.450000        | ---              | 22.48           | 60.00        | 37.52       | 1000.0          | 9.000           | N    | 19.8       |
| 4.450000        | 28.15            | ---             | 73.00        | 44.85       | 1000.0          | 9.000           | N    | 19.8       |
| 5.010000        | ---              | 23.34           | 60.00        | 36.66       | 1000.0          | 9.000           | N    | 19.7       |
| 5.010000        | 28.86            | ---             | 73.00        | 44.14       | 1000.0          | 9.000           | N    | 19.7       |
| 5.900000        | ---              | 24.42           | 60.00        | 35.58       | 1000.0          | 9.000           | N    | 19.6       |
| 5.900000        | 29.79            | ---             | 73.00        | 43.21       | 1000.0          | 9.000           | N    | 19.6       |
| 7.850000        | ---              | 23.43           | 60.00        | 36.57       | 1000.0          | 9.000           | N    | 19.6       |
| 7.850000        | 28.63            | ---             | 73.00        | 44.37       | 1000.0          | 9.000           | N    | 19.6       |

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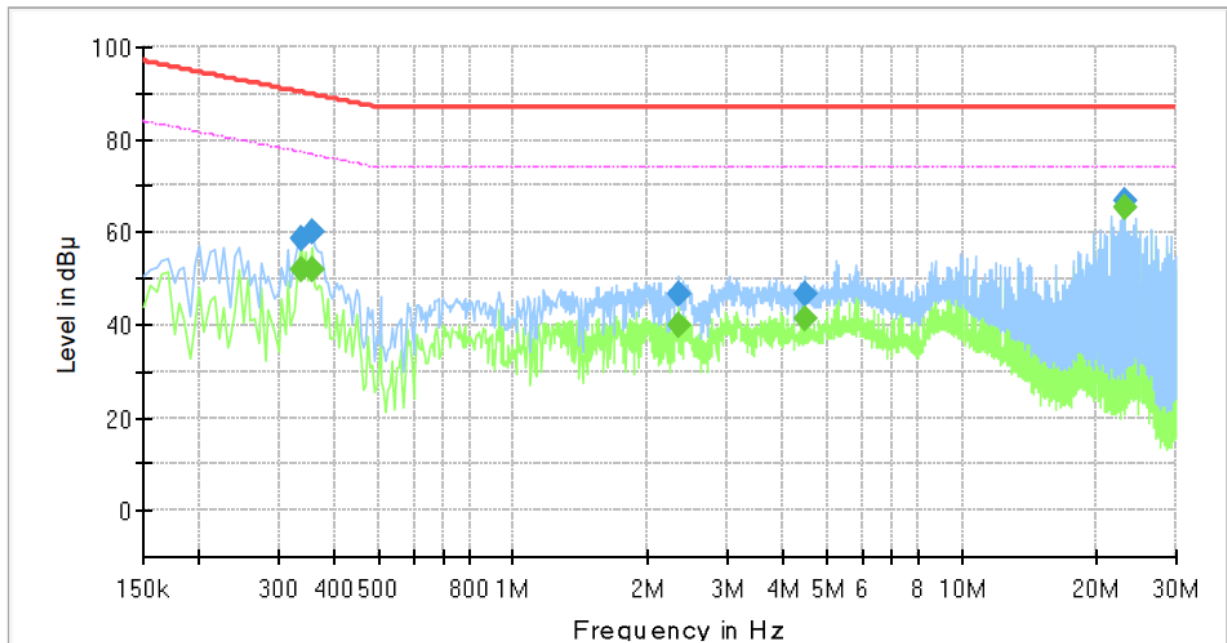
## Conducted Emissions at Telecommunication Ports

■ DC Mode

[100 Mbps]

### Common Information

|                   |                            |
|-------------------|----------------------------|
| Test Description: | Telecommunication Emission |
| Model No.:        | QNV-7082R                  |
| 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        | ---              | 52.15           | 77.33        | 25.18       | 1000.0          | 9.000           | Single Line | 19.7       |
| 0.335000        | 58.90            | ---             | 90.33        | 31.43       | 1000.0          | 9.000           | Single Line | 19.7       |
| 0.355000        | ---              | 52.14           | 76.84        | 24.70       | 1000.0          | 9.000           | Single Line | 19.7       |
| 0.355000        | 59.92            | ---             | 89.84        | 29.92       | 1000.0          | 9.000           | Single Line | 19.7       |
| 2.345000        | ---              | 40.17           | 74.00        | 33.83       | 1000.0          | 9.000           | Single Line | 20.1       |
| 2.345000        | 46.55            | ---             | 87.00        | 40.45       | 1000.0          | 9.000           | Single Line | 20.1       |
| 4.475000        | ---              | 41.50           | 74.00        | 32.50       | 1000.0          | 9.000           | Single Line | 19.6       |
| 4.475000        | 46.67            | ---             | 87.00        | 40.33       | 1000.0          | 9.000           | Single Line | 19.6       |
| 23.130000       | ---              | 65.63           | 74.00        | 8.37        | 1000.0          | 9.000           | Single Line | 20.1       |
| 23.130000       | 67.06            | ---             | 87.00        | 19.94       | 1000.0          | 9.000           | Single Line | 20.1       |

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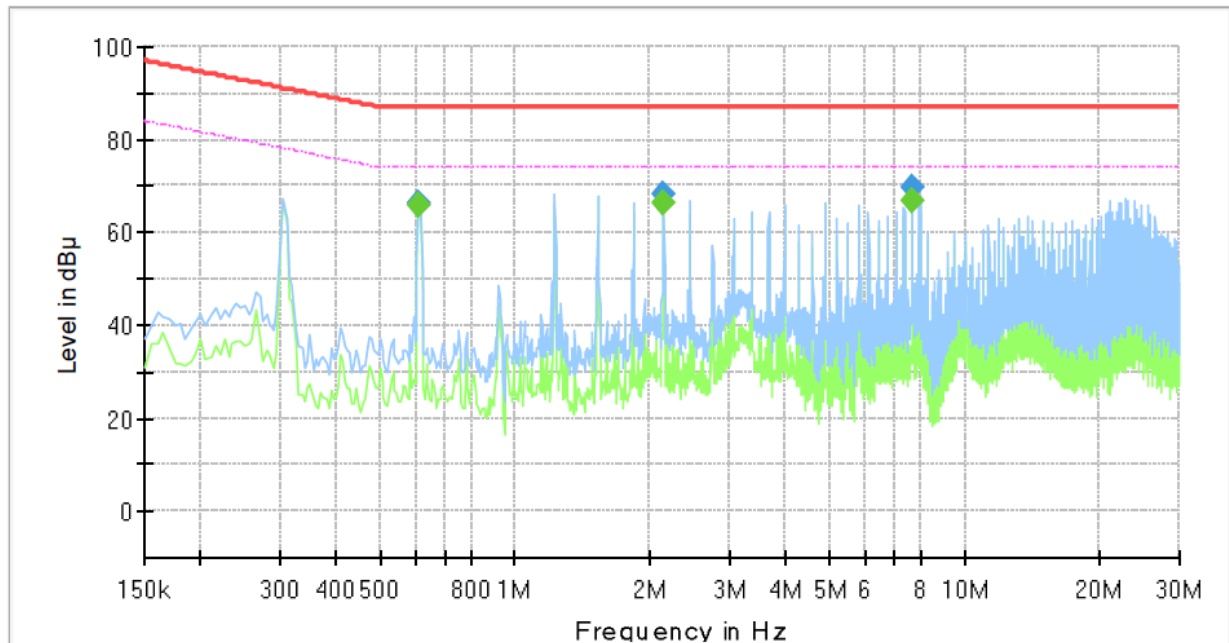
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■ PoE Mode

**[100 Mbps]**

**Common Information**

|                   |                            |
|-------------------|----------------------------|
| Test Description: | Telecommunication Emission |
| Model No.:        | QNV-7082R                  |
| 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) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|-------------|------------|
| 0.610000        | ---              | 66.08           | 74.00        | 7.92        | 1000.0          | 9.000           | Single Line | 19.9       |
| 0.610000        | 66.20            | ---             | 87.00        | 20.80       | 1000.0          | 9.000           | Single Line | 19.9       |
| 2.140000        | ---              | 66.44           | 74.00        | 7.56        | 1000.0          | 9.000           | Single Line | 20.2       |
| 2.140000        | 68.43            | ---             | 87.00        | 18.57       | 1000.0          | 9.000           | Single Line | 20.2       |
| 7.650000        | ---              | 66.89           | 74.00        | 7.11        | 1000.0          | 9.000           | Single Line | 19.4       |
| 7.650000        | 69.63            | ---             | 87.00        | 17.37       | 1000.0          | 9.000           | Single Line | 19.4       |

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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



## KES Co., Ltd.

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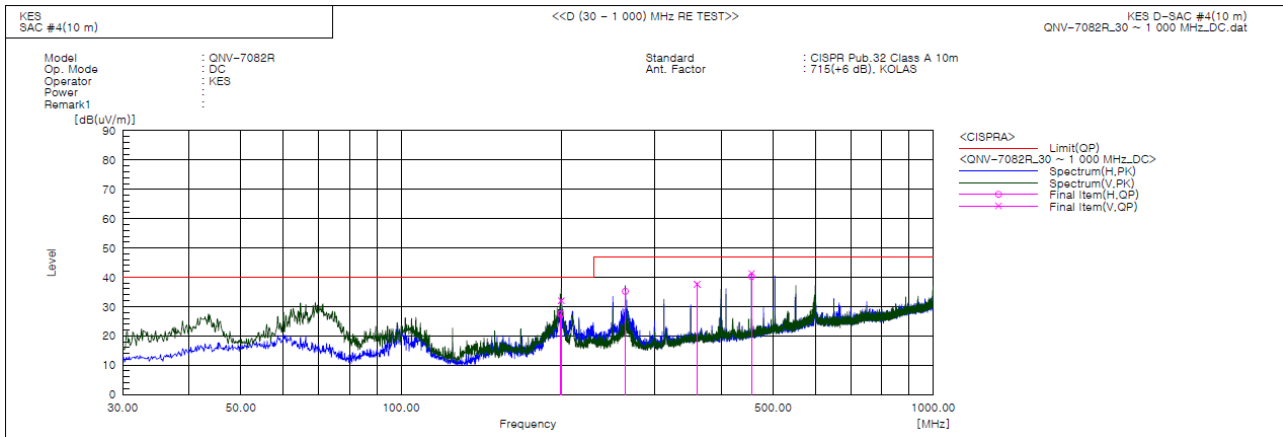
Report No.:

KES-EM-22T0116-R1

Page (21) of (38)

## Radiated Electric Field Emissions(Below 1 GHz)

### ■ DC Mode



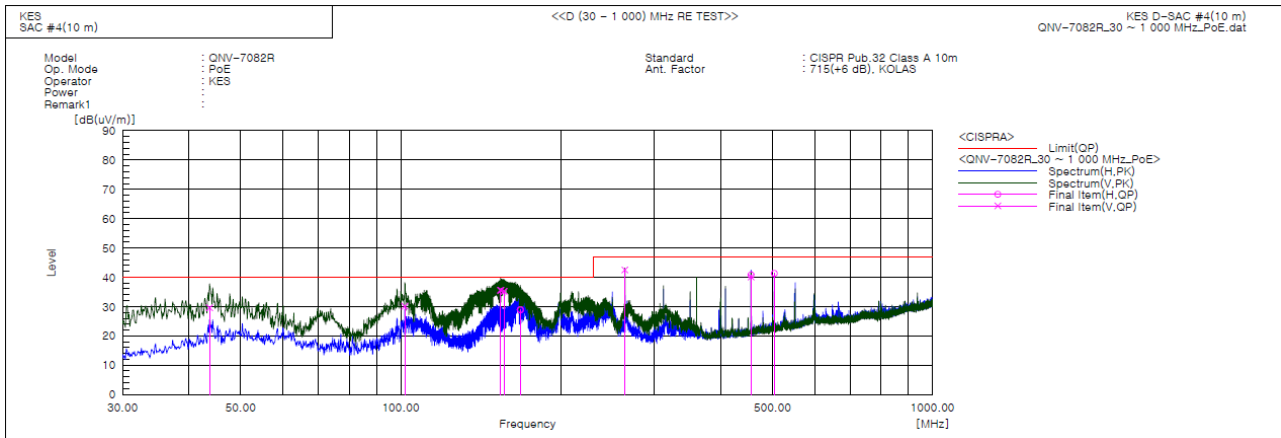
### Final Result

| No. | Frequency<br>[MHz] | (P) | Reading<br>QP<br>[dB(uV)] | c.f<br>[dB(1/m)] | Result<br>QP<br>[dB(uV/m)] | Limit<br>QP<br>[dB(uV/m)] | Margin<br>QP<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark |
|-----|--------------------|-----|---------------------------|------------------|----------------------------|---------------------------|----------------------|----------------|----------------|--------|
| 1   | 199.629            | H   | 48.3                      | -20.8            | 27.5                       | 40.0                      | 12.5                 | 372.0          | 139.0          |        |
| 2   | 199.993            | V   | 52.8                      | -20.8            | 32.0                       | 40.0                      | 8.0                  | 143.0          | 341.0          |        |
| 3   | 263.891            | H   | 54.0                      | -18.8            | 35.2                       | 47.0                      | 11.8                 | 393.0          | 147.0          |        |
| 4   | 359.921            | V   | 52.6                      | -15.0            | 37.6                       | 47.0                      | 9.4                  | 107.0          | 273.0          |        |
| 5   | 455.830            | V   | 54.0                      | -12.7            | 41.3                       | 47.0                      | 5.7                  | 141.0          | 348.0          |        |
| 6   | 455.830            | H   | 52.9                      | -12.7            | 40.2                       | 47.0                      | 6.8                  | 369.0          | 143.0          |        |

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## PoE Mode



## Final Result

| No. | Frequency<br>[MHz] | (P) | Reading<br>QP<br>[dB(uV)] | c.f<br>[dB(1/m)] | Result<br>QP<br>[dB(uV/m)] | Limit<br>QP<br>[dB(uV/m)] | Margin<br>QP<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark |
|-----|--------------------|-----|---------------------------|------------------|----------------------------|---------------------------|----------------------|----------------|----------------|--------|
| 1   | 43.701             | V   | 51.1                      | -21.5            | 29.6                       | 40.0                      | 10.4                 | 147.0          | 300.0          |        |
| 2   | 101.780            | V   | 52.5                      | -22.4            | 30.1                       | 40.0                      | 9.9                  | 109.0          | 300.0          |        |
| 3   | 154.160            | V   | 60.5                      | -24.9            | 35.6                       | 40.0                      | 4.4                  | 130.0          | 7.0            |        |
| 4   | 156.343            | V   | 60.0                      | -24.8            | 35.2                       | 40.0                      | 4.8                  | 114.0          | 7.0            |        |
| 5   | 167.861            | H   | 53.1                      | -24.2            | 28.9                       | 40.0                      | 11.1                 | 364.0          | 7.0            |        |
| 6   | 263.891            | V   | 61.3                      | -18.8            | 42.5                       | 47.0                      | 4.5                  | 128.0          | 188.0          |        |
| 7   | 455.830            | V   | 52.8                      | -12.7            | 40.1                       | 47.0                      | 6.9                  | 145.0          | 45.0           |        |
| 8   | 455.830            | H   | 53.5                      | -12.7            | 40.8                       | 47.0                      | 6.2                  | 395.0          | 91.0           |        |
| 9   | 503.845            | H   | 52.5                      | -11.2            | 41.3                       | 47.0                      | 5.7                  | 388.0          | 102.0          |        |

## ◆ Calculation

Corrected Amplitude [dBuV] = Amplitude[dBuV] + Correction Factor [dB]

Corrected Amplitude : The Final Value, Amplitude : Reading Value,

Correction Factor : ANT FACTOR + Cable loss



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3701, 40, Simin-daero 365beon-gil,  
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea  
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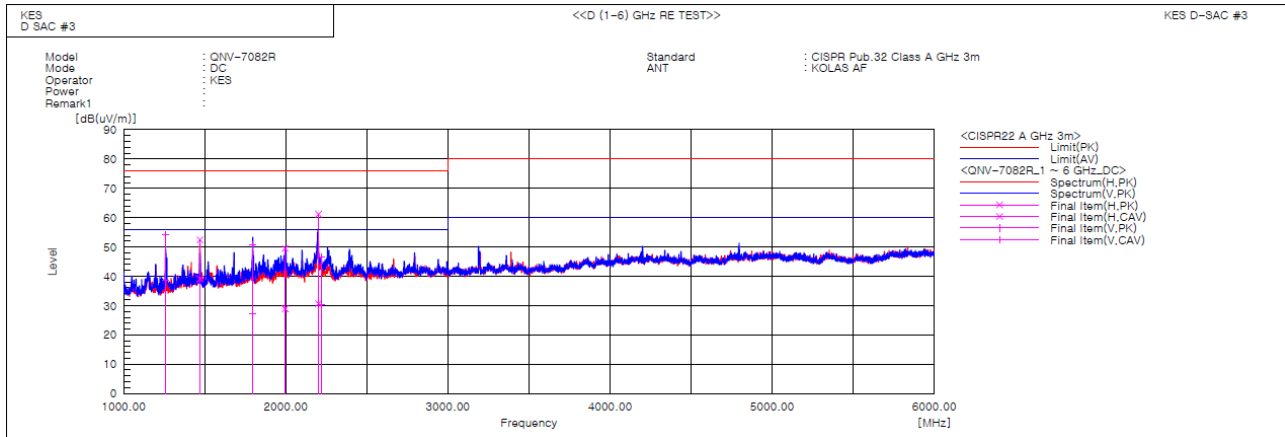
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Page (23) of (38)

## Radiated Electric Field Emissions(Above 1 GHz)

### ■ DC 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   | 1260.190        | V   | 62.0                | 46.7                 | -7.9          | 54.1                 | 38.8                  | 76.0                | 56.0                | 21.9           | 17.2            | 100.0       | 263.3       |        |
| 2   | 1469.850        | H   | 58.7                | 45.4                 | -6.3          | 52.4                 | 39.1                  | 76.0                | 56.0                | 23.6           | 16.9            | 100.0       | 6.6         |        |
| 3   | 1794.780        | V   | 53.7                | 30.4                 | -3.1          | 50.6                 | 27.3                  | 76.0                | 56.0                | 25.4           | 28.7            | 100.0       | 4.7         |        |
| 4   | 1995.161        | H   | 50.5                | 29.9                 | -1.0          | 49.5                 | 28.9                  | 76.0                | 56.0                | 26.5           | 27.1            | 100.0       | 128.2       |        |
| 5   | 2200.735        | H   | 61.6                | 31.1                 | -0.4          | 61.2                 | 30.7                  | 76.0                | 56.0                | 14.8           | 25.3            | 100.0       | 26.9        |        |
| 6   | 2219.446        | V   | 47.1                | 30.8                 | -0.4          | 46.7                 | 30.4                  | 76.0                | 56.0                | 29.3           | 25.6            | 100.0       | 84.1        |        |

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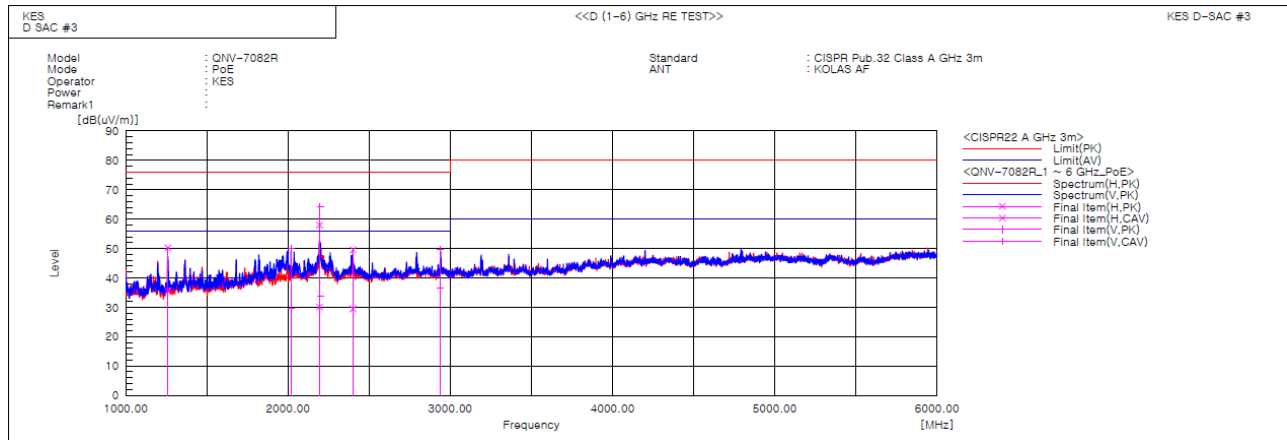
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Page (24) of (38)

### 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   | 1260.177        | H   | 58.1                | 43.5                 | -7.9          | 50.2                 | 35.6                  | 76.0                | 56.0                | 25.8           | 20.4            | 100.0       | 189.4       |        |
| 2   | 2018.943        | V   | 50.8                | 30.5                 | -0.9          | 49.9                 | 29.6                  | 76.0                | 56.0                | 26.1           | 26.4            | 100.0       | 222.4       |        |
| 3   | 2194.492        | H   | 58.4                | 30.5                 | -0.4          | 58.0                 | 30.1                  | 76.0                | 56.0                | 18.0           | 25.9            | 100.0       | 359.2       |        |
| 4   | 2198.180        | V   | 64.6                | 34.3                 | -0.4          | 64.2                 | 33.9                  | 76.0                | 56.0                | 11.8           | 22.1            | 100.0       | 255.3       |        |
| 5   | 2400.303        | H   | 49.4                | 29.3                 | 0.2           | 49.6                 | 29.5                  | 76.0                | 56.0                | 26.4           | 26.5            | 100.0       | 132.2       |        |
| 6   | 2940.501        | V   | 48.1                | 34.7                 | 1.7           | 49.8                 | 36.4                  | 76.0                | 56.0                | 26.2           | 19.6            | 100.0       | 356.1       |        |

#### ◆ Calculation

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

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

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

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

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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



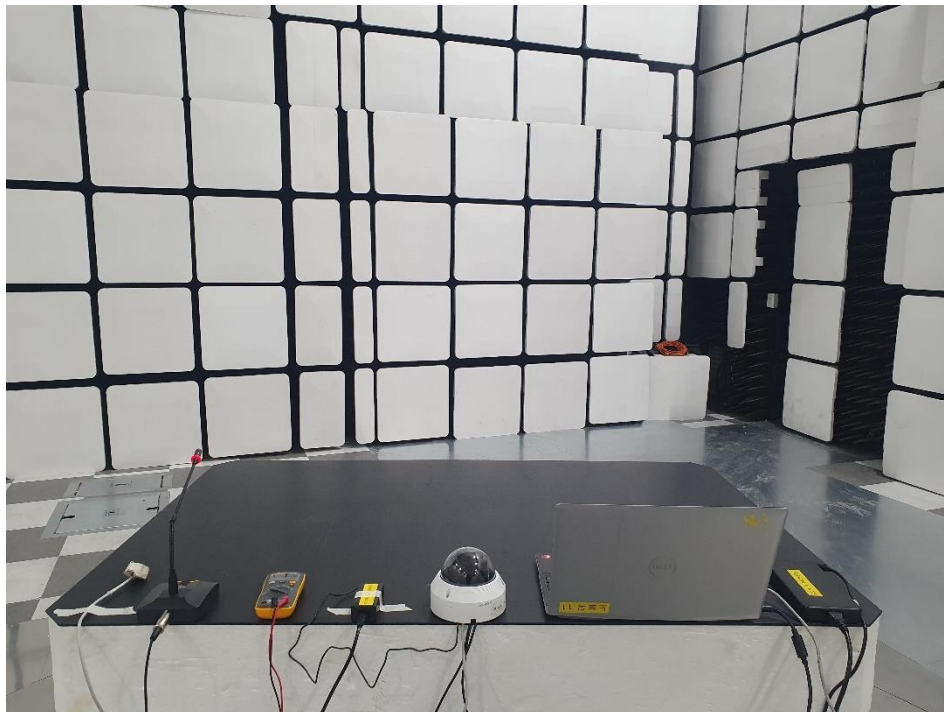
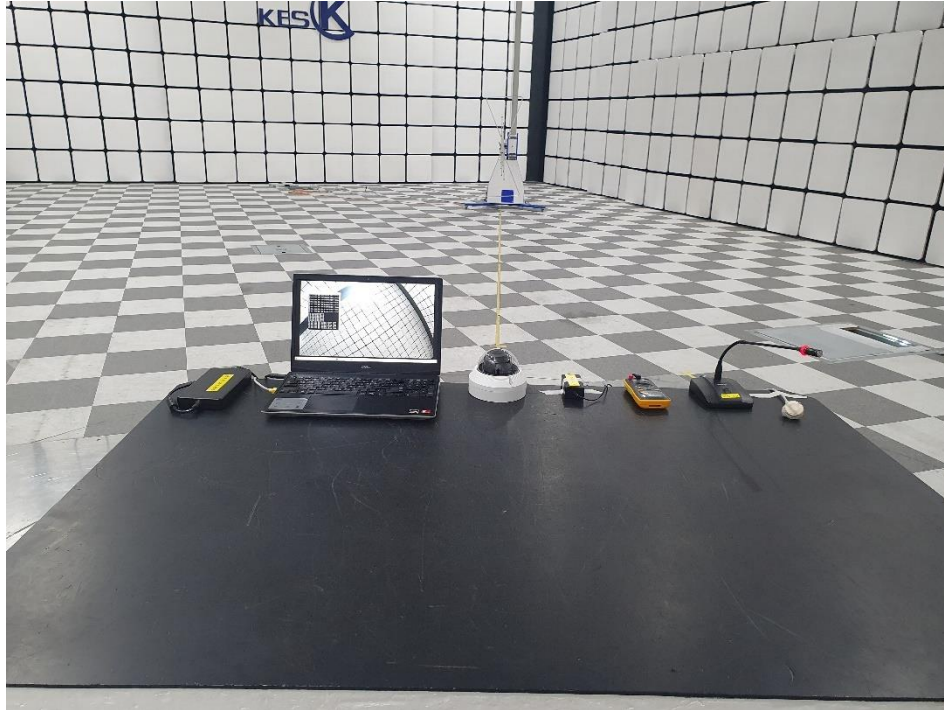
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## ■ PoE Mode



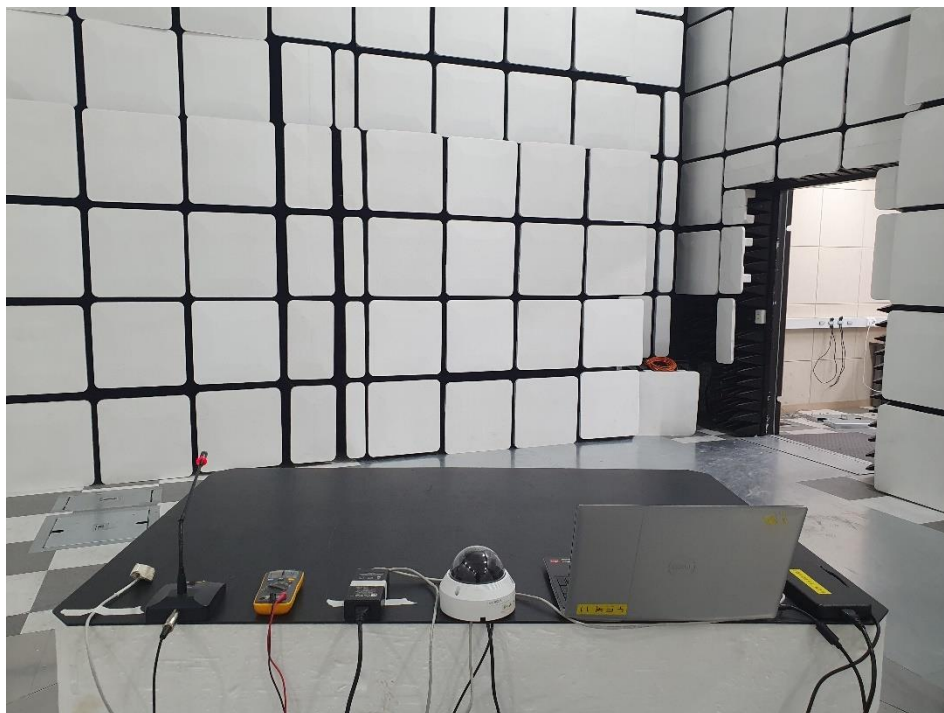
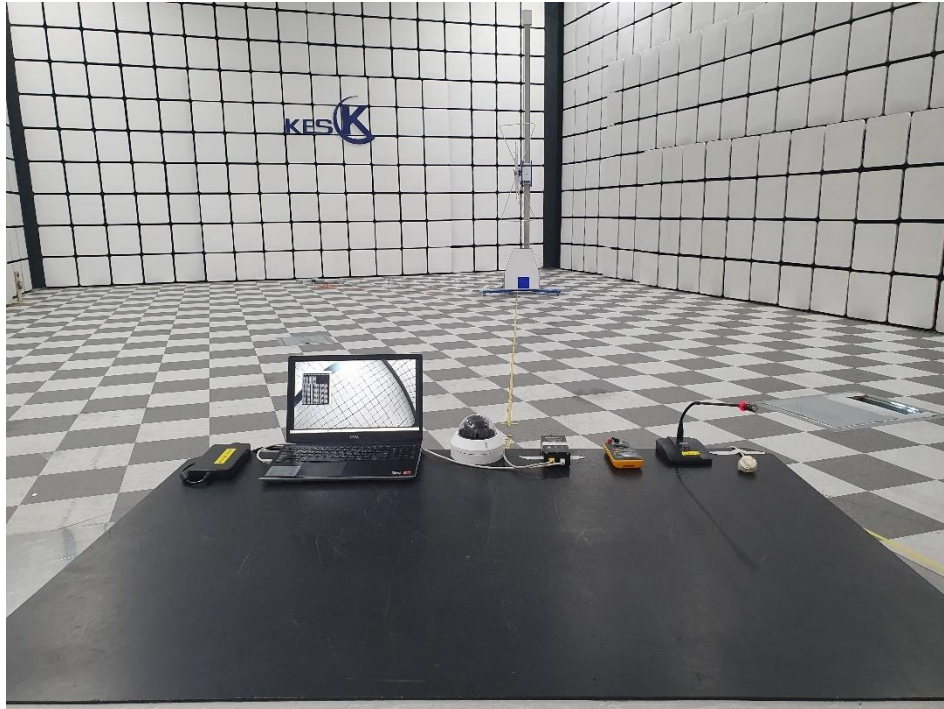
## Radiated Electric Field Emissions(Below 1 GHz)

### ■ DC Mode



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## ■ PoE Mode

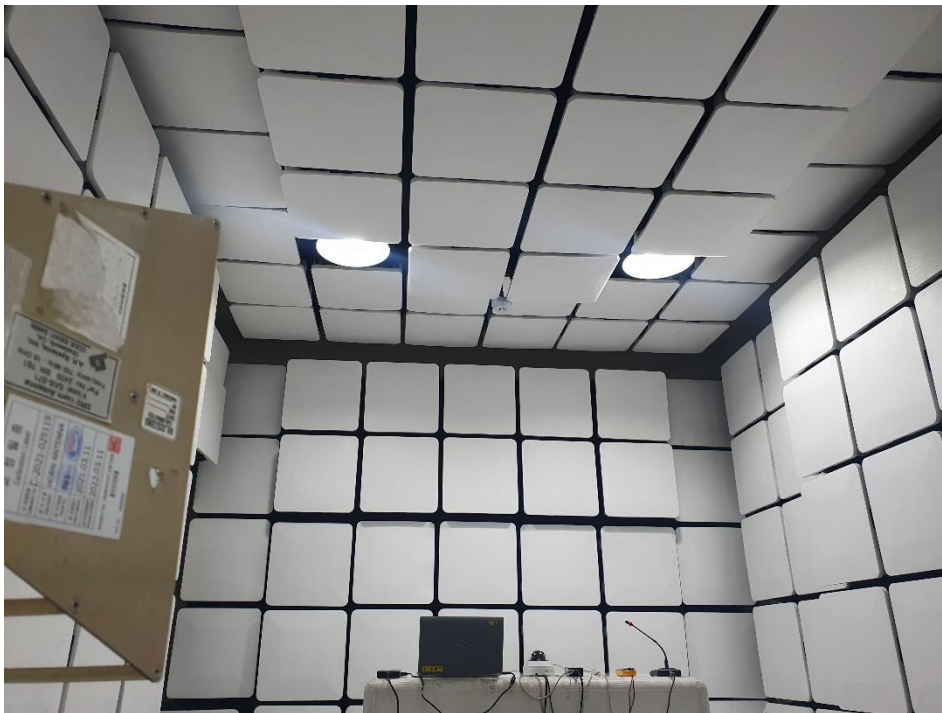


## Radiated Electric Field Emissions(Above 1 GHz)

### ■ DC Mode



## ■ PoE Mode



## EUT External Photographs

(Top)



(Bottom)



## EUT Internal Photographs

(Internal View)

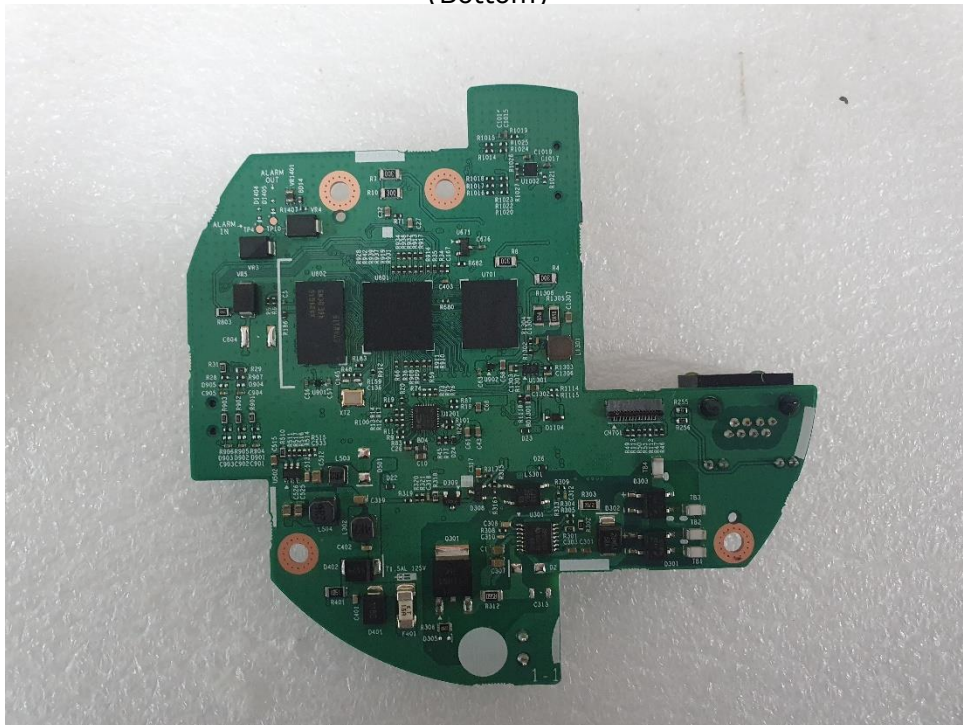


**EUT Internal View – Board 1**

(Top)



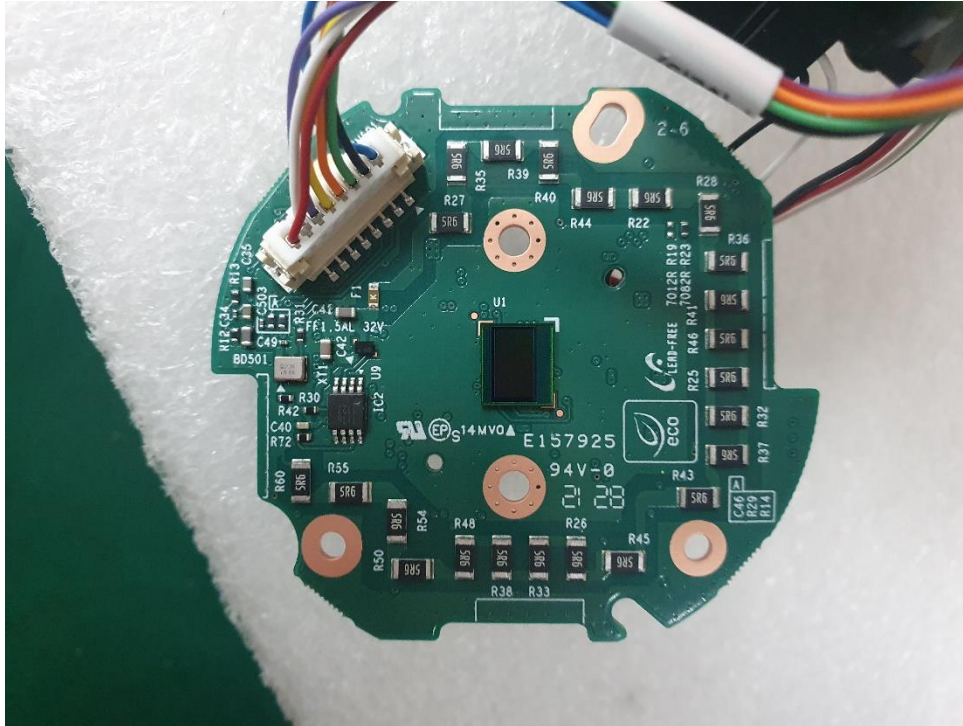
(Bottom)



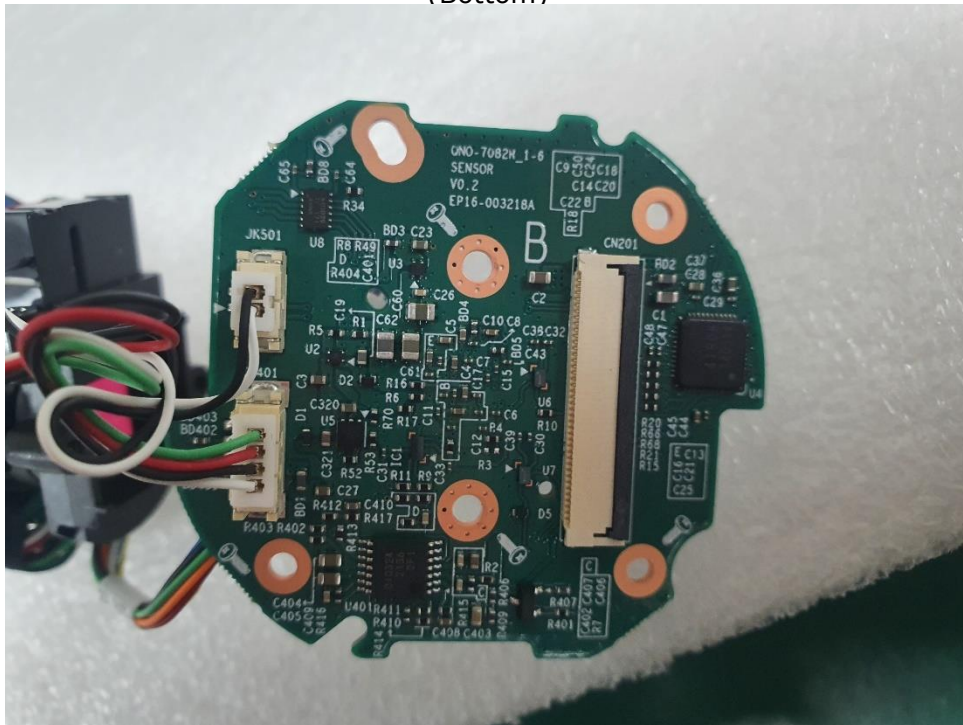
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## EUT Internal View – Board 2

(Top)



(Bottom)



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**EUT Internal View – Board 3**

(Top)



(Bottom)



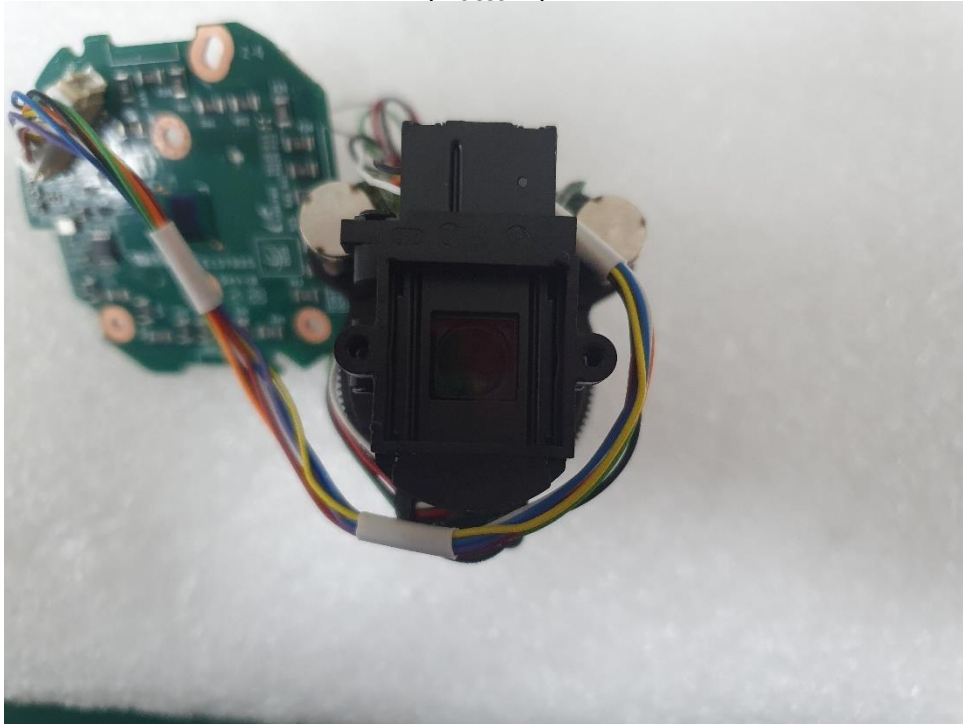
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## EUT Internal View – Lens

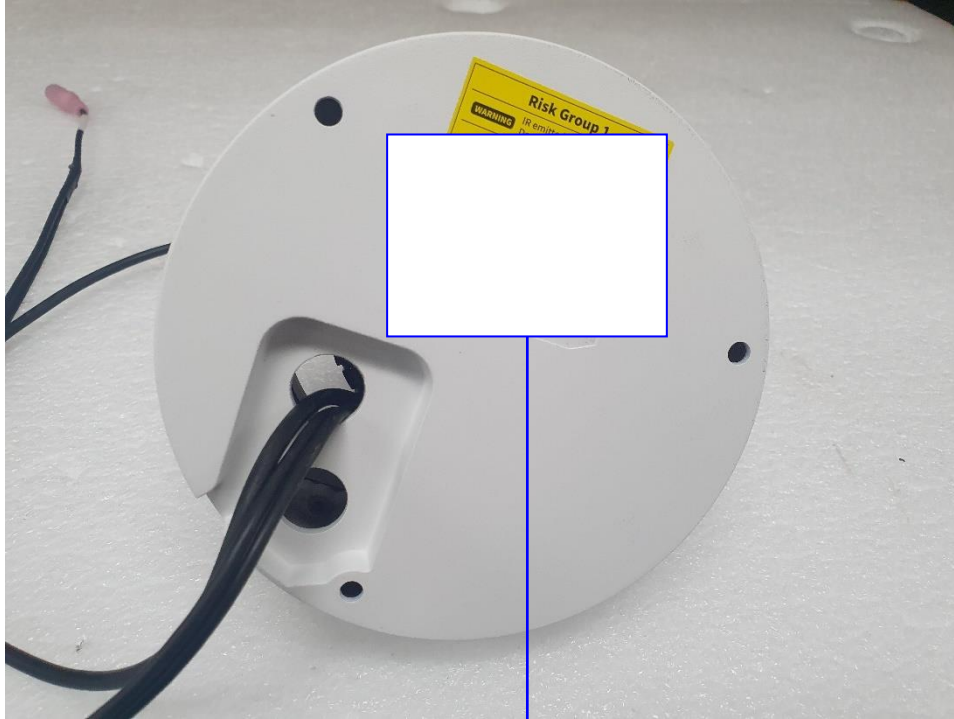
(Top)



(Bottom)



## Label Photographs



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