



EMC TEST REPORT For VCCI

Test Report No. : KES-EM-21T0564-R1
Date of Issue : Feb. 24, 2023
Product name : NETWORK CAMERA
Model/Type No. : XNO-C7083R
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 : Jun. 03, 2021
Test date : Jun. 25, 2021 ~ Jun. 29, 2021
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dae Hyun, Kim
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

Tested by In Han, Kang
(Retired person)
Proxy signature : Dae Hyun, 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 |
|---------------|-------------------|--|
| Jul. 06, 2021 | KES-EM-21T0564 | Issued |
| Feb. 24, 2023 | KES-EM-21T0564-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" progressive CMOS |
| Resolution | 2592x1520, 2560x1440, 1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240 |
| Max. Framerate | H.265/H.264: Max. 60fps/50fps(60Hz/50Hz)(WDR off) Max. 30fps/25fps(60Hz/50Hz)(WDR on) MJPEG: Max. 30fps/25fps(60Hz/50Hz) |
| NETD | None |
| Pixel Size | None |
| Min. Illumination | Color: 0.038Lux(F1.4, 1/30sec, 30IRE) B/W : 0.0038Lux(F1.4, 1/30sec, 30IRE), 0Lux(IR LED on), 30/25fps Color: 0.076Lux(F1.4, 1/60sec, 30IRE) B/W : 0.0076Lux(F1.4, 1/60sec, 30IRE), 0Lux(IR LED on), 60/50fps |
| Video Out | USB: Micro USB Type B, 1280x720 for installation |
| Video Transmission Distance | None |
| Lens | |
| Focal Length (Zoom Ratio) | 2.8~10mm(3.6x) motorized varifocal |
| Max. Aperture Ratio | F1.4(Wide) ~ F3.0(Tele) |
| Angular Field of View | H: 109.7°(Wide) ~ 30.4°(Tele) V: 60.8°(Wide) ~ 17.8°(Tele) D: 131.3°(Wide) ~ 35.3°(Tele) |
| Min. Object Distance | 0.5m(1.64ft) |
| Focus Control | Simple focus, Manual |
| Lens Type | DC auto iris with hall sensor (IR corrected) |
| Mount Type | None |
| Optional Lens | None |
| Pan / Tilt / Rotate | |
| Pan / Tilt / Rotate Range | None |
| Pan Range | None |
| Pan Speed | None |
| Tilt Range | None |
| Tilt Speed | None |
| Rotate Range | None |
| Sequence | None |
| Preset Accuracy | None |
| Operational | |
| Camera Title | Displayed up to 85 characters |
| Direction Indicator | None |
| Day & Night | Auto(ICR) |
| Backlight Compensation | BLC, HLC, WDR, SSDR |
| Wide Dynamic Range | extremeWDR (120dB) |
| Digital Noise Reduction | WiseNR II (Based on AI engine), SSNR V |
| Digital Image Stabilization | Support(built-in gyro sensor) |
| Defog | Support |
| Motion Detection | 8ea, 8point Polygonal zones |

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| | |
|---------------------------|--|
| Privacy Masking | 32ea, Quadrangle zones - Color : Gray, Green, Red, Blue, Black, White - Mosaic |
| Gain Control | Support |
| White Balance | ATW / Narrow ATW / AWC / Manual / Indoor / Outdoor |
| LDC | Support (Fill/stretch mode) |
| Electronic Shutter Speed | Minimum / Maximum / Anti flicker (2~1/12,000sec) Auto prefer shutter control(Based on AI engine) |
| Digital PTZ | Support |
| Video Rotation | Flip, Mirror, Hallway view(90°/270°) |
| Analytics | - Analytics events based on AI engine(NPU) : Object detection (Person/Face/Vehicle(car/truck/bus/bicycle/motorcycle)/Licence plate), IVA (Virtual line/Area, Enter/Exit, Loitering, direction, intrusion) - Analytics events : Defocus detection, Motion detection, Tampering, Fog detection, Audio detection, Sound classification, Shock detection, Appear/Disappear |
| Business Intelligence | Based on AI engine(NPU) : People counting, Queue management, Heatmap |
| Serial Interface | None |
| Alarm I/O | 2 configurable I/O ports |
| Alarm Triggers | Analytics, Network disconnect, Alarm input, App event, Time schedule |
| Alarm Events | When alarm trigger occurred - File upload(image) : e-mail/FTP - Notification : e-mail - Recording : SD/SDHC/SDXC or NAS recording at event triggers - Alarm output - Handover(PTZ preset, Send message by HTTP/HTTPS/TCP) - Audio clip playback - PTZ preset |
| Audio In | Selectable(mic in/line in) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm |
| Audio Out | Line out, Max.output level: 1Vrms |
| IR Viewable Length | WiseIR 40m(131.23ft) |
| IR Illuminator (Optional) | None |
| Water Removal | None |
| Auto Tracking | None |
| Coaxial Protocol | None |
| Color Palettes | None |
| Radiometry | |
| Temperature Detect Range | None |
| Temperature Accuracy | None |
| Temperature Detection | None |
| Additional | None |
| Network | |
| Ethernet | Metal shielded RJ-45(10/100BASE-T) |
| Video Compression | H.265/H.264: Main/High, MJPEG |
| Audio Compression | G.711 u-law /G.726 Selectable G.726(ADPCM) 8KHz, G.711 8KHz G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC: 48Kbps at 16KHz |
| Smart Codec | Manual(5ea area), WiseStreamII, WiseStreamIII(Based on AI engine) |
| Video Quality Adjustment | H.264/H.265: Target bitrate level control MJPEG: Target bitrate level control |
| Bitrate Control | H.264/H.265: CBR or VBR MJPEG: VBR |
| Streaming | Unicast(20 users) / Multicast Multiple streaming(Up to 10 profiles, 3 virtual channel support) |

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| | |
|---------------------------------------|--|
| Protocol | IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP, SRTP (TCP, UDP Unicast) |
| Security | HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access log 802.1X Authentication(EAP-TLS, EAP-LEAP, EAP-PEAP MSCHAPv2) Device Certificate(Hanwha Techwin Root CA, pre-installed) Secure by default certificate HTPM (Hanwha Trusted platform module) Secure OS/Boot/Storage, Verify firmware forgery |
| Application Programming Interface | ONVIF Profile S/G/T SUNAPI(HTTP API) Wisenet open platform |
| General | |
| Webpage Language | English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish,, Portuguese, Czech, Polish, Turkish, Dutch, Greek, Hungarian |
| Web Viewer | None |
| Edge Storage | Micro SD/SDHC/SDXC 1slot 512GB |
| Memory | 2GB RAM, 512MB Flash |
| Environmental & Electrical | |
| Operating Temperature / Humidity | -40°C~+55°C(-40°F ~ +131°F) * Maximum temperature : +60°C (intermittent) NEMA TS-2 : 74°C * Start up should be done at above -20°C 0~95%RH(non-condensing)(TBD) Humidity control /w GORE vent |
| Storage Temperature / Humidity | -50°C ~ +60°C(-58°F ~ +140°F) / Less than 90% RH |
| Certification | IP66/IP67/NEMA4X, IK10 |
| Input Voltage | PoE(IEEE802.3af, Class3), 12VDC |
| Power Consumption | PoE: Max 12.95W, typical 10.8W 12VDC: Max 12.5W, typical 10.0W |
| Mechanical | |
| Color / Material | White / Aluminum + PC Hard-coated window |
| RAL Code | RAL9003 |
| Product Dimensions / Weight | Ø93.4x276.6mm(Ø3.68x10.89"), 1500g(3.30 lb) (TBD) |
| Compatible Conduit hole / Gangbox | single, double, 4" octagon, 4" square |
| Hanging Mount (Dome) | None |
| Skin Cover (Dome) | None |
| Weather Cap (Dome) | None |
| Power Module | None |
| Backbox | include |
| DORI (EN62676-4 standard) | |
| Detect (25PPM/ 8PPF) | Wide: 36.5m(119.76ft) / Tele: 183.8m(603.05ft) |
| Observe (63PPM/ 19PPF) | Wide: 14.6m(47.9ft) / Tele: 73.5m(241.22ft) |
| Recognize (125PPM/ 38PPF) | Wide: 7.3m(23.95ft) / Tele: 36.8m(120.61ft) |
| Identify (250PPM/ 76PPF) | Wide: 3.7m(11.98ft) / Tele: 18.4m(60.31ft) |

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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 | XNO-C7083R | - | HANWHA VISION VIETNAM COMPANY LIMITED | EUT |

1.5 Support Equipments

| Description | Model Number | Serial Number | Manufacturer | Remarks |
|------------------|-------------------------|-----------------------|---|---------|
| Adapter | SAWA-07-41612 | - | HUIZHOU SANHUA INDUSTRIAL CO.,LTD. | - |
| PoE INJECTOR | GS728TPP | - | NETGEAR | - |
| Notebook | LG15N54 | 506NZGK000615 | LG Electronics Inc. | - |
| Notebook Adapter | PA-1650-43(65W) | OF58U63849302 Y609 | LG Electronics Inc. | - |
| Alarm | - | - | - | - |
| Button alarm | - | - | - | - |
| Micro SD Card | - | - | SanDisk | 16 GB |
| Mic | MP1000 | - | - | - |
| Speaker | BR1000A Cuve Black 2 | - | DONGGUAN EDIFIER TECHNOLOGY Co., Ltd | - |
| iPhone | A1586 | - | Apple | - |



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 | Adapter | 2 Pin | 1.0 | U |
| | RJ-45 | Notebook | RJ-45 | 3.0 | U |
| | Alarm OUT | Alarm | Alarm IN | 3.0 | U |
| | Alarm IN | Button alarm | Alarm OUT | 3.0 | U |
| | SLOT | Micro SD Card | SLOT | - | - |
| | 3.5 mm | Mic | 3.5 mm | 1.4 | U |
| | 3.5 mm | Speaker | 3.5 mm | 1.4 | U |
| Notebook | 3.5 mm | iPhone | 3.5 mm | 0.9 | 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 INJECTOR | RJ-45 (PoE) | 3.0 | U |
| | Alarm OUT | Alarm | Alarm IN | 3.0 | U |
| | Alarm IN | Button alarm | Alarm OUT | 3.0 | U |
| | SLOT | Micro SD Card | SLOT | - | - |
| | 3.5 mm | Mic | 3.5 mm | 1.4 | U |
| | 3.5 mm | Speaker | 3.5 mm | 1.4 | U |
| Notebook | RJ-45 (LAN) | PoE INJECTOR | RJ-45 (LAN) | 3.0 | U |
| | 3.5 mm | iPhone | 3.5 mm | 0.9 | U |

* Unshielded=U, Shielded=S

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1.7 EUT Operating Mode(s)

| Test Mode | operating |
|-----------|--|
| DC Mode | the test was conducted while checking the camera video output from the laptop and making sure that they operate normally while performing a ping test. |
| PoE Mode | |

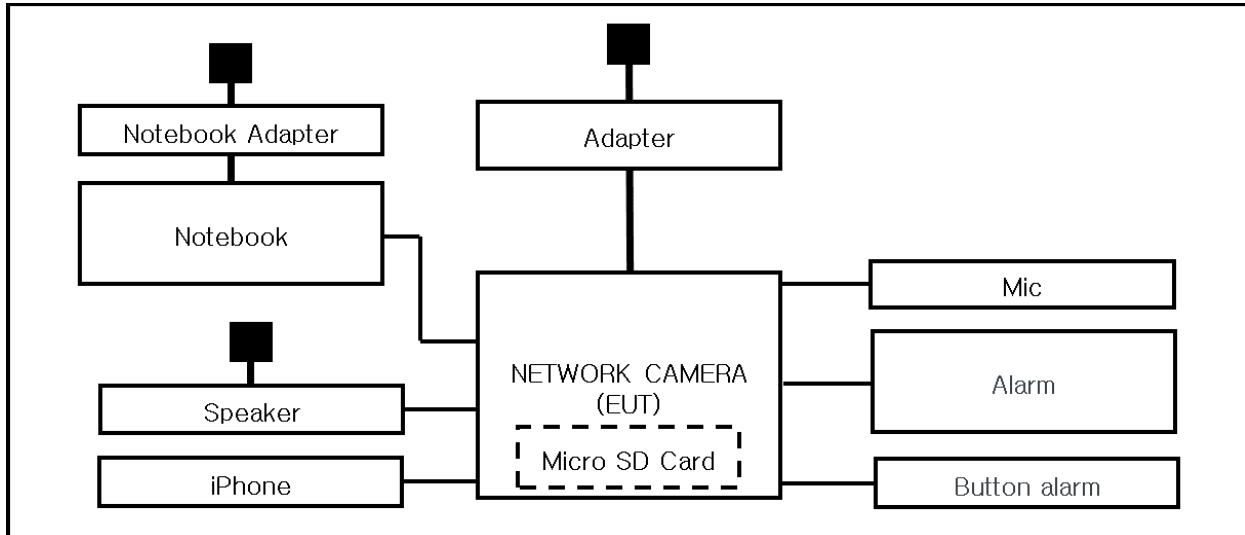
| EUT Test operating S/W | | |
|------------------------|---------|------------------------|
| Name | Version | Manufacture Company |
| Web Viewer | - | Hanwha Vision Co., Ltd |

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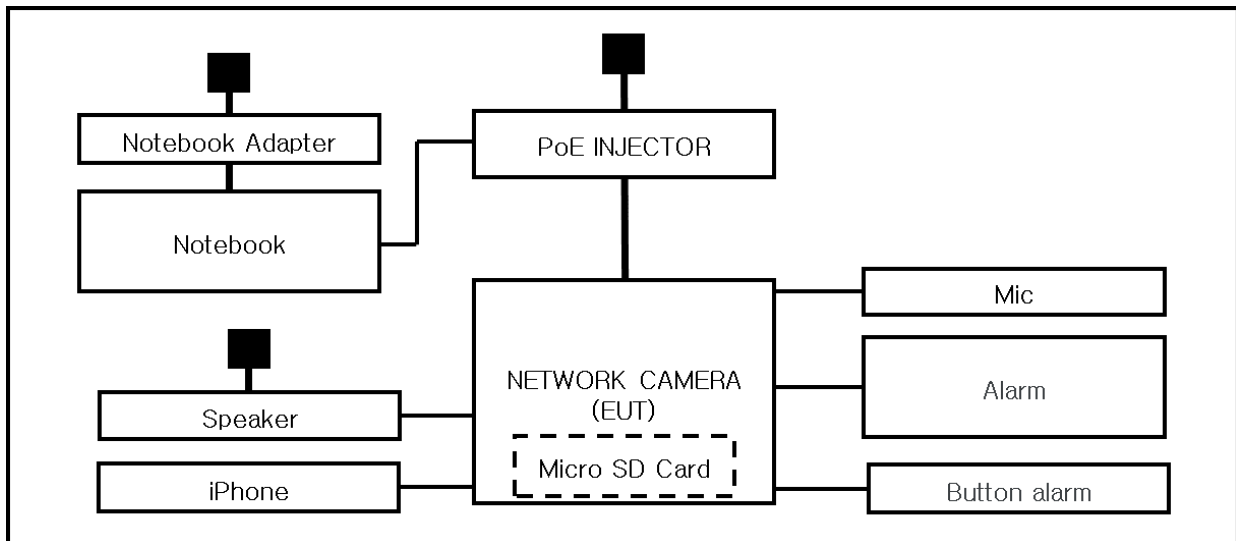
1.8 Configuration

■ AC Main
 □ DC Main

■ DC Mode



■ PoE Mode



1.9 Remarks when standards applied

USB port are for administrator use and are excluded from testing.







1.10 Calibration Details of Equipment Used for Measurement

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

1.11 Test Facility

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

1.12 Laboratory Accreditations and Listings

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



2.0 Test Regulations

The emissions tests were performed according to following regulations:

☐ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010

☐ Group 1
☐ Class A

☐ Group 2
☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 61547 :2009

☐ EN 55032:2015

☐ Class A

☐ Class B

☐ EN 55024:2010 +A1:2015

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013



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- | | | |
|---|---|----------------------------------|
| <input checked="" type="checkbox"/> VCCI-CISPR 32:2016 | <input checked="" type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> AS/NZS CISPR32:2015 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> 47 CFR Part 15, Subpart B | | |
| <input type="checkbox"/> CISPR 22:2009 +A1:2010 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> ANSI C63.4-2009 | | |
| <input type="checkbox"/> IC Regulation ICES-003 : 2016 | | |
| <input type="checkbox"/> CAN/CSA CISPR 22-10 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> ANSI C63.4-2014 | | |
| <input type="checkbox"/> RE- Directive 2014/53/EU | | |
| <input type="checkbox"/> EN 301 489-1 V1.9.2 | | |
| <input type="checkbox"/> Equipment for fixed use | | |
| <input type="checkbox"/> Equipment for vehicular use | | |
| <input type="checkbox"/> Equipment for portable use | | |
| <input type="checkbox"/> EN 301 489-3 V1.6.1 | | |
| <input type="checkbox"/> EN 301 489-17 V2.2.1 | | |
| <input type="checkbox"/> EN 60945:2002 | | |

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2.1 Conducted Emissions Mains Power Ports

Test Date

Jun. 25, 2021

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 | 01, 15, 2022 |
| <input checked="" type="checkbox"/> | LISN | ENV216 | R & S | 101787 | 12, 29, 2021 |
| <input checked="" type="checkbox"/> | LISN | ESH2-Z5 | R & S | 100450 | 12, 29, 2021 |
| <input checked="" type="checkbox"/> | PULSE LIMITER | ESH3-Z2 | R & S | 101915 | 12, 29, 2021 |

Test Conditions

Temperature: (24,8 ± 0,1) °C

Relative Humidity: (47,6 ± 0,3) % 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

Jun. 25, 2021

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 | 01, 15, 2022 |
| <input checked="" type="checkbox"/> | LISN | ENV216 | R & S | 101787 | 12, 29, 2021 |
| <input checked="" type="checkbox"/> | LISN | ESH2-Z5 | R & S | 100450 | 12, 29, 2021 |
| <input checked="" type="checkbox"/> | PULSE LIMITER | ESH3-Z2 | R & S | 101915 | 12, 29, 2021 |
| <input checked="" type="checkbox"/> | 8-WIRE ISN CAT3,5 | ENY81 | R & S | 100174 | 12, 30, 2021 |
| <input type="checkbox"/> | 8-WIRE ISN CAT6 | ENY81-CAT6 | R & S | 101665 | 12, 30, 2021 |
| <input type="checkbox"/> | ISN | ISN S8 | SCHWARZBECK | ISN-S8-0019 | 12, 29, 2021 |

Test Conditions

Temperature: (24,8 ± 0,1) °C

Relative Humidity: (47,6 ± 0,3) % 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

Jun. 29, 2021

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, 25, 2021 |
| <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: (24,4 ± 0,1) °C
Relative Humidity: (46,2 ± 0,2) % 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

Jun. 29, 2021

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, 05, 2021 |
| <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: (24,5 ± 0,1) °C

Relative Humidity: (46,4 ± 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.

APPENDIX A – TEST DATA

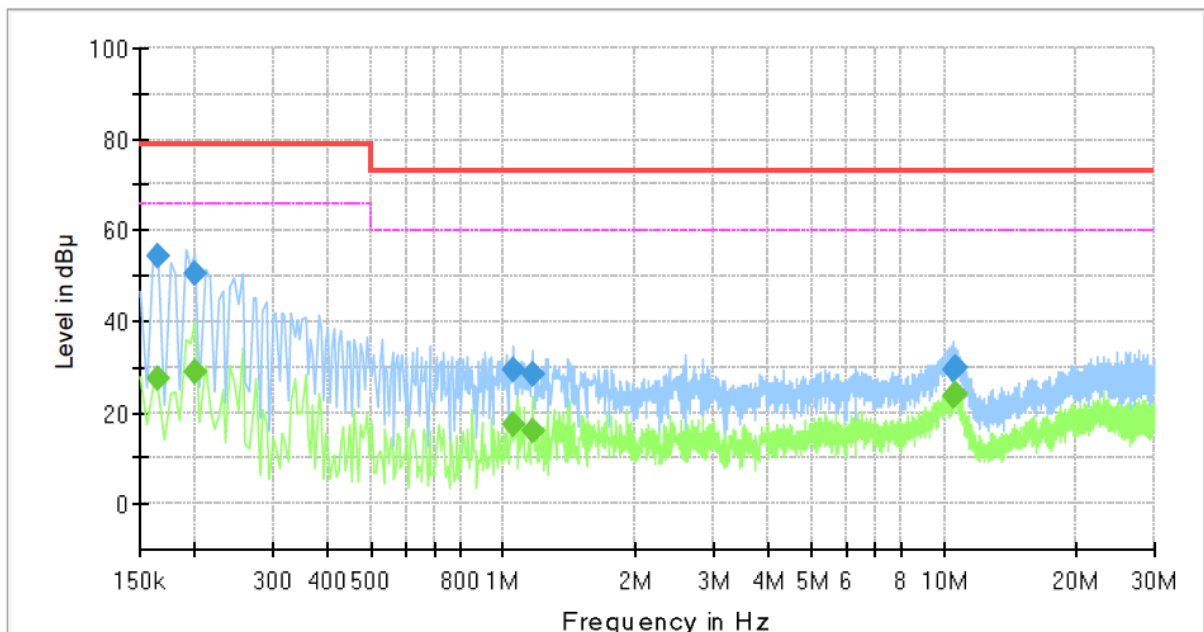
Conducted Emissions at Mains Power Ports

■ DC Mode

HOT LINE

Common Information

| | |
|-------------------|--------------------|
| Test Description: | Conducted Emission |
| Model No.: | XNO-C7083R |
| Phase: | L1 |
| Mode: | DC |
| Operator Name: | KES |



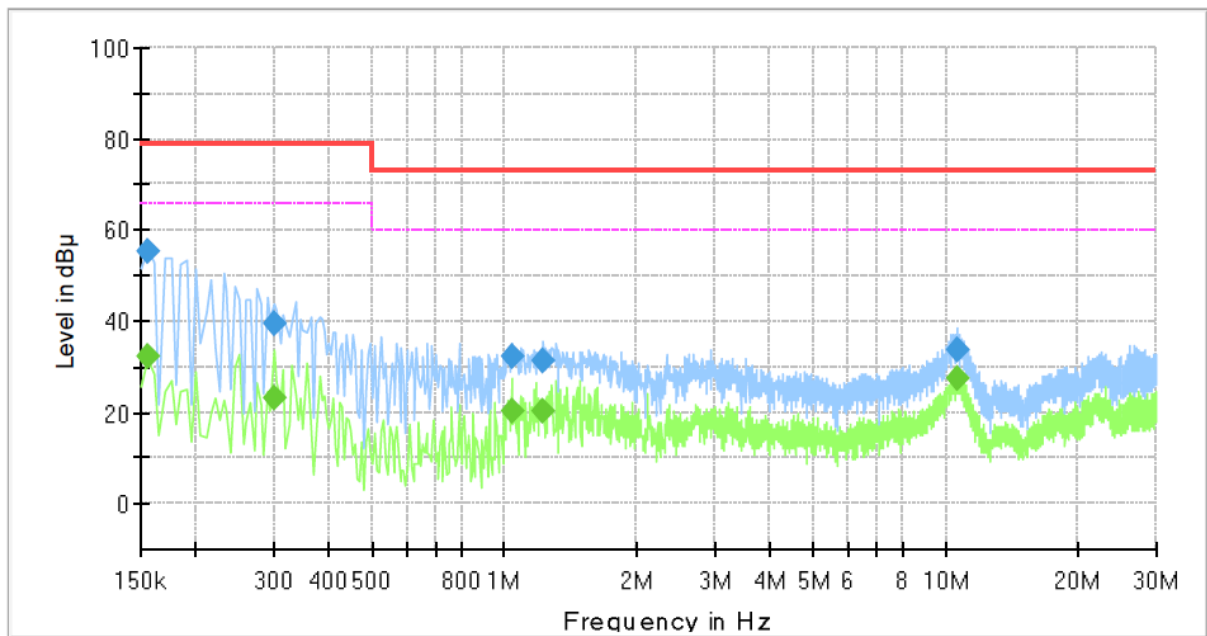
Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.165000 | --- | 27.56 | 66.00 | 38.44 | 1000.0 | 9.000 | L1 | 19.4 |
| 0.165000 | 54.37 | --- | 79.00 | 24.63 | 1000.0 | 9.000 | L1 | 19.4 |
| 0.200000 | --- | 28.69 | 66.00 | 37.31 | 1000.0 | 9.000 | L1 | 19.4 |
| 0.200000 | 50.35 | --- | 79.00 | 28.65 | 1000.0 | 9.000 | L1 | 19.4 |
| 1.055000 | --- | 17.33 | 60.00 | 42.67 | 1000.0 | 9.000 | L1 | 20.1 |
| 1.055000 | 29.24 | --- | 73.00 | 43.76 | 1000.0 | 9.000 | L1 | 20.1 |
| 1.160000 | --- | 16.14 | 60.00 | 43.86 | 1000.0 | 9.000 | L1 | 20.1 |
| 1.160000 | 28.50 | --- | 73.00 | 44.50 | 1000.0 | 9.000 | L1 | 20.1 |
| 10.570000 | --- | 23.65 | 60.00 | 36.35 | 1000.0 | 9.000 | L1 | 19.9 |
| 10.570000 | 29.57 | --- | 73.00 | 43.43 | 1000.0 | 9.000 | L1 | 19.9 |
| 10.645000 | --- | 23.97 | 60.00 | 36.03 | 1000.0 | 9.000 | L1 | 19.9 |
| 10.645000 | 29.72 | --- | 73.00 | 43.28 | 1000.0 | 9.000 | L1 | 19.9 |

NEUTRAL LINE

Common Information

| | |
|-------------------|--------------------|
| Test Description: | Conducted Emission |
| Model No.: | XNO-C7083R |
| 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) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.155000 | --- | 32.16 | 66.00 | 33.84 | 1000.0 | 9.000 | N | 19.4 |
| 0.155000 | 55.34 | --- | 79.00 | 23.66 | 1000.0 | 9.000 | N | 19.4 |
| 0.300000 | --- | 23.18 | 66.00 | 42.82 | 1000.0 | 9.000 | N | 19.5 |
| 0.300000 | 39.42 | --- | 79.00 | 39.58 | 1000.0 | 9.000 | N | 19.5 |
| 1.040000 | --- | 20.36 | 60.00 | 39.64 | 1000.0 | 9.000 | N | 20.0 |
| 1.040000 | 32.16 | --- | 73.00 | 40.84 | 1000.0 | 9.000 | N | 20.0 |
| 1.225000 | --- | 20.16 | 60.00 | 39.84 | 1000.0 | 9.000 | N | 20.1 |
| 1.225000 | 31.48 | --- | 73.00 | 41.52 | 1000.0 | 9.000 | N | 20.1 |
| 10.645000 | --- | 27.53 | 60.00 | 32.47 | 1000.0 | 9.000 | N | 19.9 |
| 10.645000 | 33.68 | --- | 73.00 | 39.32 | 1000.0 | 9.000 | N | 19.9 |

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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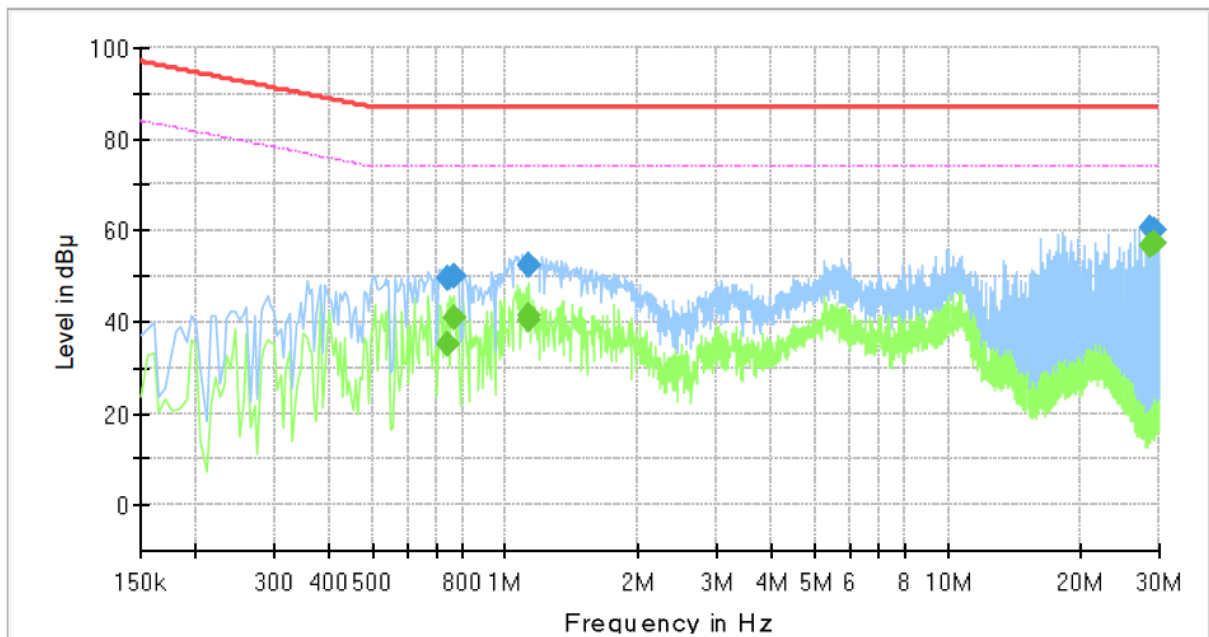
Conducted Emissions at Telecommunication Ports

■ DC Mode

[1 000 Mbps]

Common Information

| | |
|-------------------|----------------------------|
| Test Description: | Telecommunication Emission |
| Model No.: | XNO-C7083R |
| 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) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|-------------|------------|
| 0.740000 | --- | 35.22 | 74.00 | 38.78 | 1000.0 | 9.000 | Single Line | 20.0 |
| 0.740000 | 49.64 | --- | 87.00 | 37.36 | 1000.0 | 9.000 | Single Line | 20.0 |
| 0.765000 | --- | 40.72 | 74.00 | 33.28 | 1000.0 | 9.000 | Single Line | 20.0 |
| 0.765000 | 50.08 | --- | 87.00 | 36.92 | 1000.0 | 9.000 | Single Line | 20.0 |
| 1.125000 | --- | 41.30 | 74.00 | 32.70 | 1000.0 | 9.000 | Single Line | 20.0 |
| 1.125000 | 52.63 | --- | 87.00 | 34.37 | 1000.0 | 9.000 | Single Line | 20.0 |
| 1.130000 | --- | 40.35 | 74.00 | 33.65 | 1000.0 | 9.000 | Single Line | 20.0 |
| 1.130000 | 52.22 | --- | 87.00 | 34.78 | 1000.0 | 9.000 | Single Line | 20.0 |
| 28.685000 | --- | 56.99 | 74.00 | 17.01 | 1000.0 | 9.000 | Single Line | 20.5 |
| 28.685000 | 60.38 | --- | 87.00 | 26.62 | 1000.0 | 9.000 | Single Line | 20.5 |
| 29.235000 | --- | 57.02 | 74.00 | 16.98 | 1000.0 | 9.000 | Single Line | 20.5 |
| 29.235000 | 60.35 | --- | 87.00 | 26.65 | 1000.0 | 9.000 | Single Line | 20.5 |

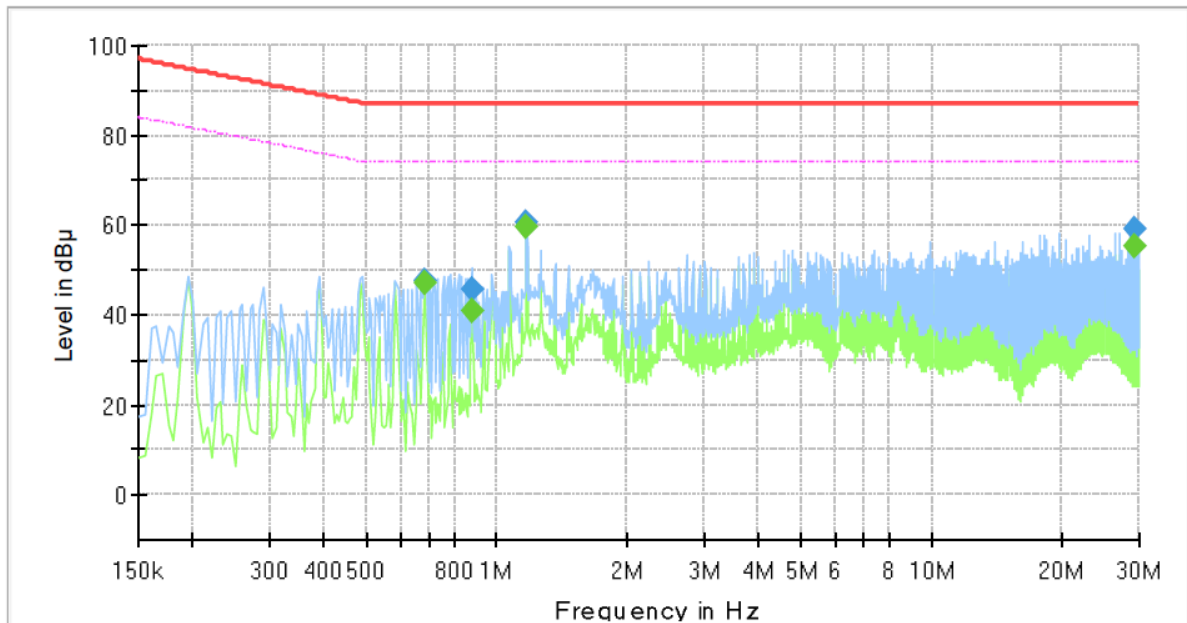
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PoE Mode
[1 000 Mbps]
Common Information

| | |
|-------------------|----------------------------|
| Test Description: | Telecommunication Emission |
| Model No.: | XNO-C7083R |
| 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) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|-------------|------------|
| 0.680000 | --- | 46.94 | 74.00 | 27.06 | 1000.0 | 9.000 | Single Line | 19.9 |
| 0.680000 | 47.74 | --- | 87.00 | 39.26 | 1000.0 | 9.000 | Single Line | 19.9 |
| 0.875000 | --- | 41.04 | 74.00 | 32.96 | 1000.0 | 9.000 | Single Line | 20.0 |
| 0.875000 | 45.96 | --- | 87.00 | 41.04 | 1000.0 | 9.000 | Single Line | 20.0 |
| 1.170000 | --- | 59.52 | 74.00 | 14.48 | 1000.0 | 9.000 | Single Line | 20.1 |
| 1.170000 | 60.38 | --- | 87.00 | 26.62 | 1000.0 | 9.000 | Single Line | 20.1 |
| 29.235000 | --- | 55.33 | 74.00 | 18.67 | 1000.0 | 9.000 | Single Line | 20.5 |
| 29.235000 | 58.99 | --- | 87.00 | 28.01 | 1000.0 | 9.000 | Single Line | 20.5 |

◆ 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))



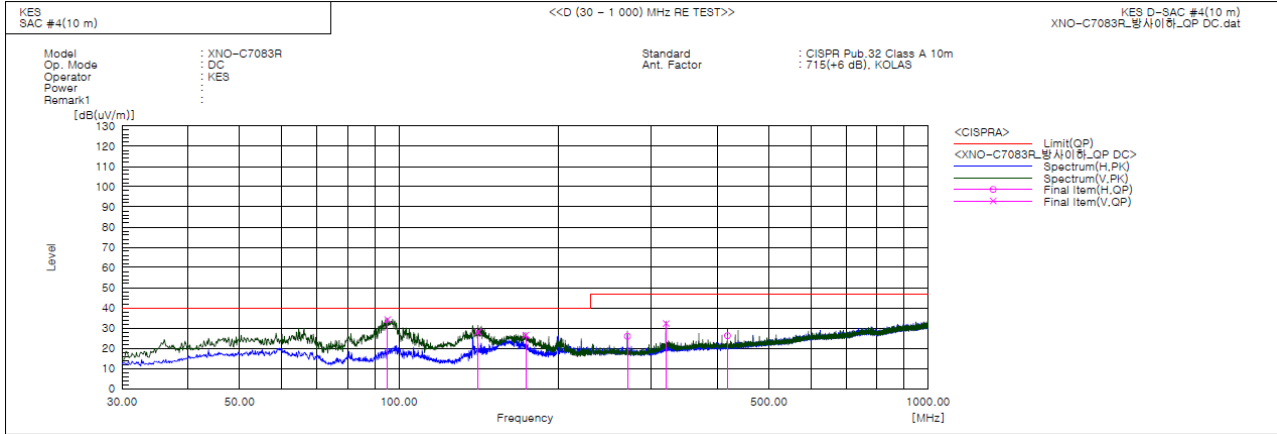
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Page (22) of (40)

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 | 95.233 | V | 57.8 | -23.5 | 34.3 | 40.0 | 5.7 | 102.0 | 80.0 | |
| 2 | 141.186 | V | 53.4 | -25.3 | 28.1 | 40.0 | 11.9 | 109.0 | 182.0 | |
| 3 | 173.681 | V | 50.5 | -23.9 | 26.6 | 40.0 | 13.4 | 114.0 | 189.0 | |
| 4 | 270.318 | H | 44.6 | -18.7 | 25.9 | 47.0 | 21.1 | 397.0 | 189.0 | |
| 5 | 319.545 | V | 49.1 | -16.8 | 32.3 | 47.0 | 14.7 | 107.0 | 167.0 | |
| 6 | 417.758 | H | 40.1 | -13.9 | 26.2 | 47.0 | 20.8 | 184.0 | 262.0 | |

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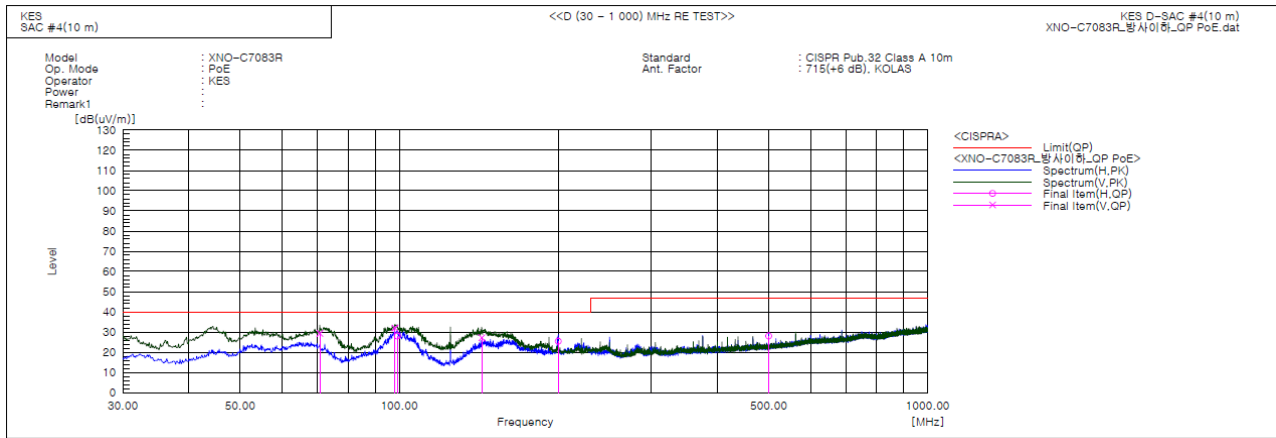


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KES-EM-21T0564-R1
Page (23) of (40)

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 | 70.740 | V | 54.5 | -25.2 | 29.3 | 40.0 | 10.7 | 109.0 | 236.0 | |
| 2 | 98.143 | V | 54.8 | -22.8 | 32.0 | 40.0 | 8.0 | 104.0 | 81.0 | |
| 3 | 99.113 | H | 50.6 | -22.6 | 28.0 | 40.0 | 12.0 | 395.0 | 155.0 | |
| 4 | 143.248 | V | 52.5 | -25.3 | 27.2 | 40.0 | 12.8 | 105.0 | 155.0 | |
| 5 | 199.871 | H | 46.3 | -20.8 | 25.5 | 40.0 | 14.5 | 398.0 | 11.0 | |
| 6 | 500.086 | H | 39.6 | -11.6 | 28.0 | 47.0 | 19.0 | 239.0 | 134.0 | |

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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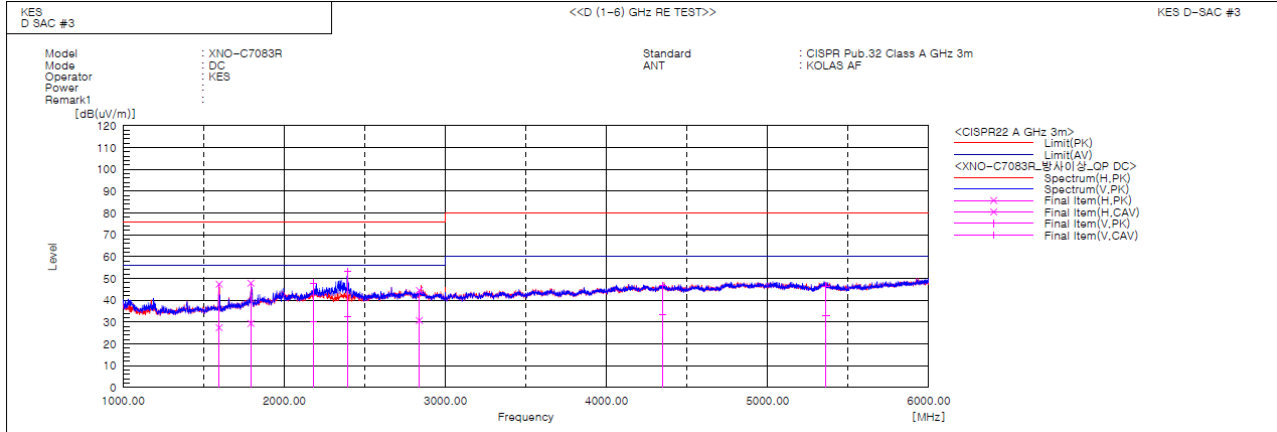
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Radiated Electric Field Emissions(Above 1 GHz)

■ 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 | 1596.461 | H | 52.6 | 32.7 | -5.2 | 47.4 | 27.5 | 76.0 | 56.0 | 28.6 | 28.5 | 100.0 | 46.6 | |
| 2 | 1793.030 | H | 50.9 | 32.4 | -3.0 | 47.9 | 29.4 | 76.0 | 56.0 | 28.1 | 26.6 | 100.0 | 66.0 | |
| 3 | 2182.843 | V | 48.5 | 31.0 | -0.6 | 47.9 | 30.4 | 76.0 | 56.0 | 28.1 | 25.6 | 100.0 | 128.7 | |
| 4 | 2393.539 | V | 52.9 | 32.3 | 0.2 | 53.1 | 32.5 | 76.0 | 56.0 | 22.9 | 23.5 | 100.0 | 203.2 | |
| 5 | 2838.462 | H | 42.2 | 28.3 | 2.4 | 44.6 | 30.7 | 76.0 | 56.0 | 31.4 | 25.3 | 100.0 | 86.0 | |
| 6 | 4346.853 | V | 39.9 | 26.5 | 7.0 | 46.9 | 33.5 | 80.0 | 60.0 | 33.1 | 26.5 | 100.0 | 250.0 | |
| 7 | 5363.108 | V | 38.2 | 24.8 | 8.3 | 46.5 | 33.1 | 80.0 | 60.0 | 33.5 | 26.9 | 100.0 | 288.7 | |

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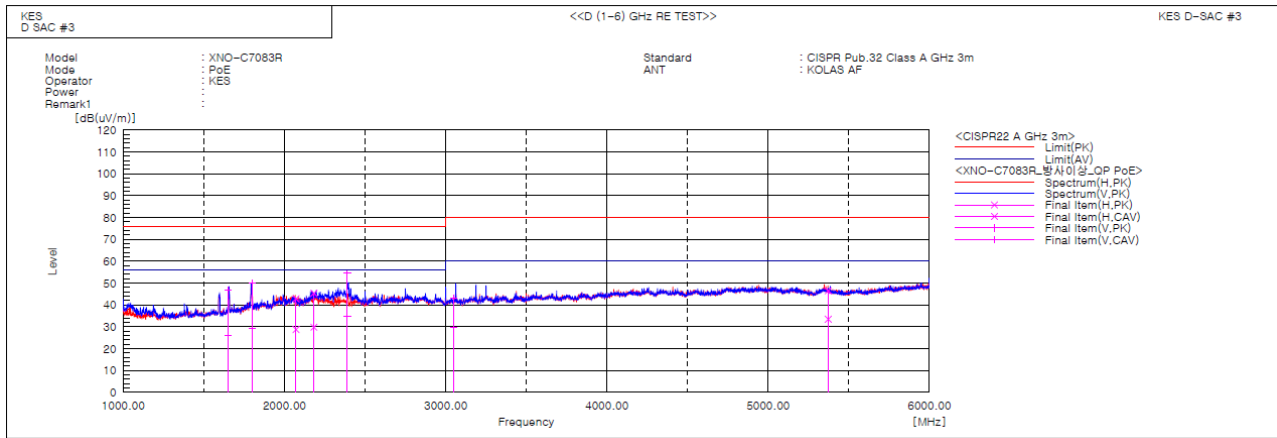
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■ PoE Mode



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 | 1652.591 | V | 51.3 | 30.4 | -4.6 | 46.7 | 25.8 | 76.0 | 56.0 | 29.3 | 30.2 | 100.0 | 126.6 | |
| 2 | 1799.209 | V | 52.8 | 31.9 | -2.9 | 49.9 | 29.0 | 76.0 | 56.0 | 26.1 | 27.0 | 100.0 | 184.2 | |
| 3 | 2072.089 | H | 43.5 | 29.4 | -0.6 | 42.9 | 28.8 | 76.0 | 56.0 | 33.1 | 27.2 | 100.0 | 111.2 | |
| 4 | 2182.906 | H | 46.0 | 30.4 | -0.6 | 45.4 | 29.8 | 76.0 | 56.0 | 30.6 | 26.2 | 100.0 | 91.0 | |
| 5 | 2390.002 | V | 54.6 | 34.8 | 0.2 | 54.8 | 35.0 | 76.0 | 56.0 | 21.2 | 21.0 | 100.0 | 188.4 | |
| 6 | 3050.203 | V | 41.1 | 28.0 | 1.9 | 43.0 | 29.9 | 80.0 | 60.0 | 37.0 | 30.1 | 100.0 | 226.8 | |
| 7 | 5372.265 | H | 38.2 | 25.2 | 8.3 | 46.5 | 33.5 | 80.0 | 60.0 | 33.5 | 26.5 | 100.0 | 303.1 | |

◆ Calculation

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

Margin(PK/CAV)[dB] = Limit[dB(μ V/m)] - Result(PK/CAV) [dB(μ 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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Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

■ DC Mode



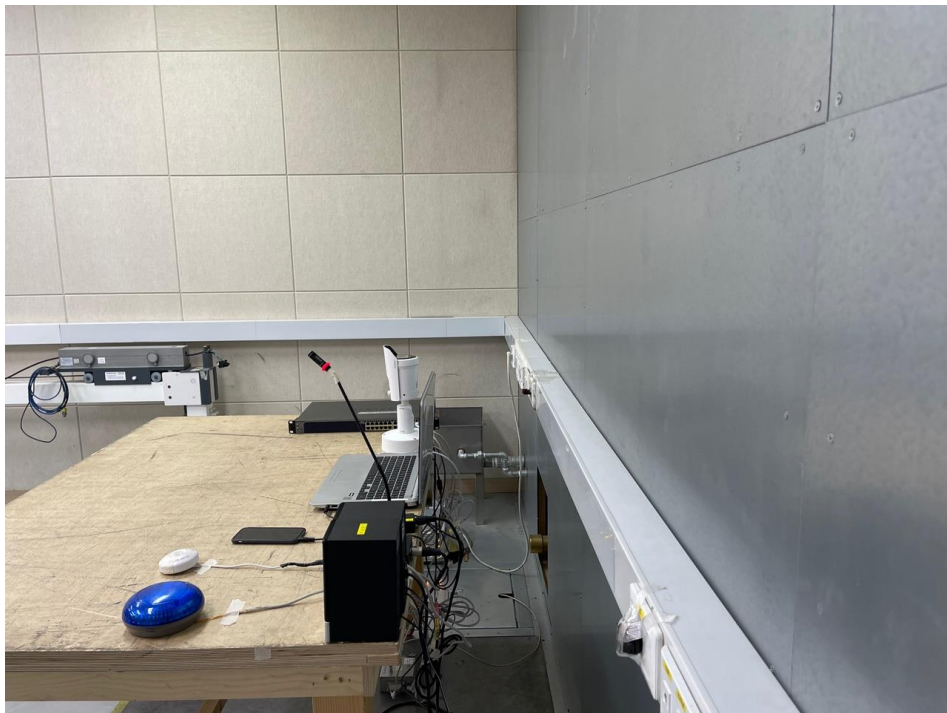
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Conducted Emissions at Telecommunication Ports

■ DC Mode

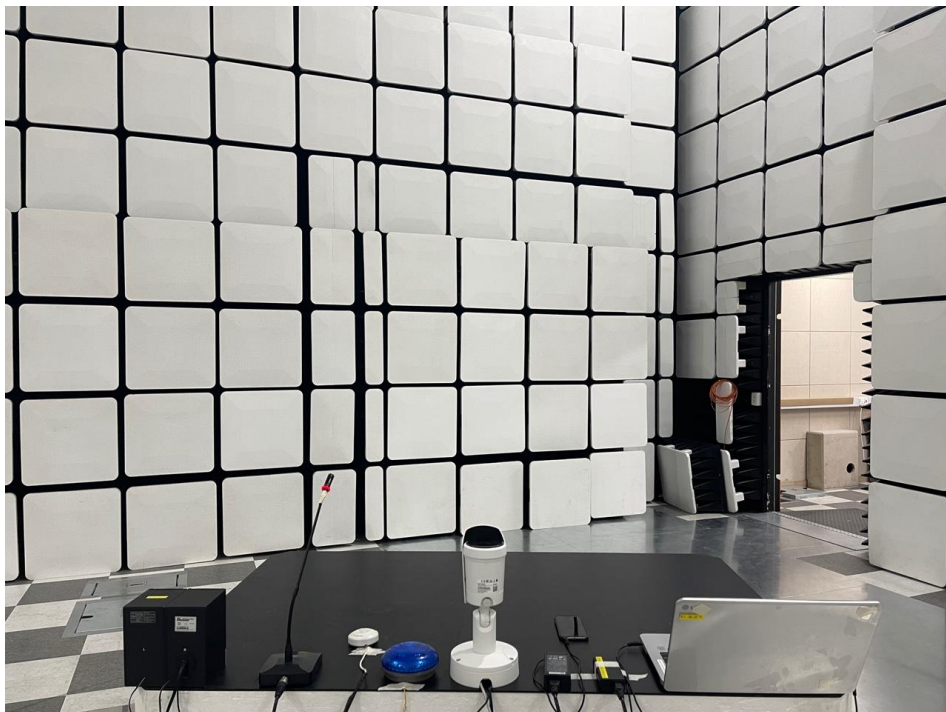
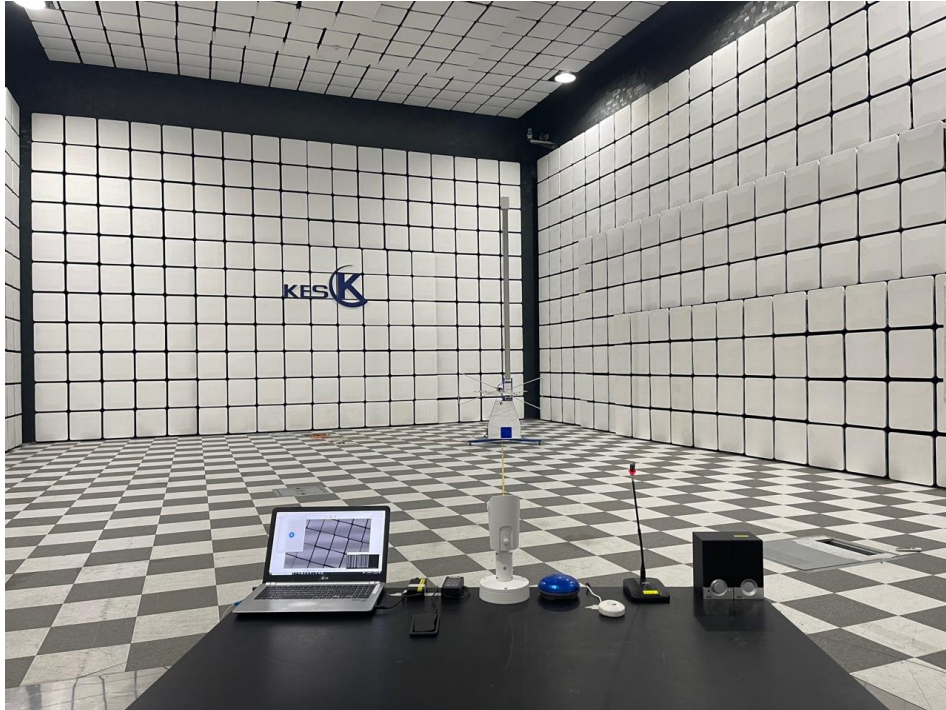


■ PoE Mode



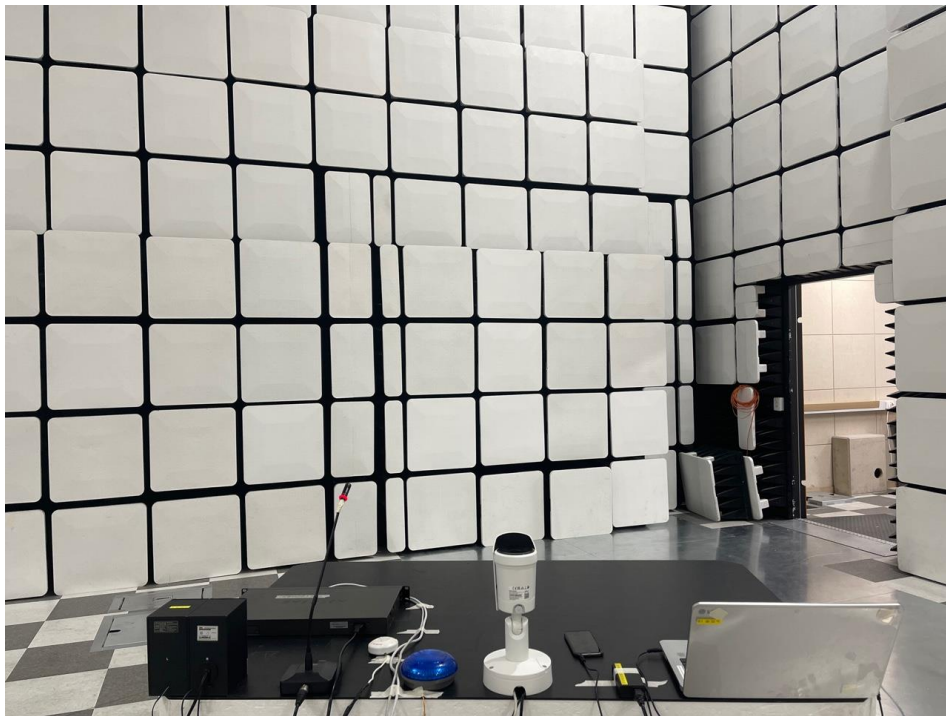
Radiated Electric Field Emissions(Below 1 GHz)

■ DC Mode



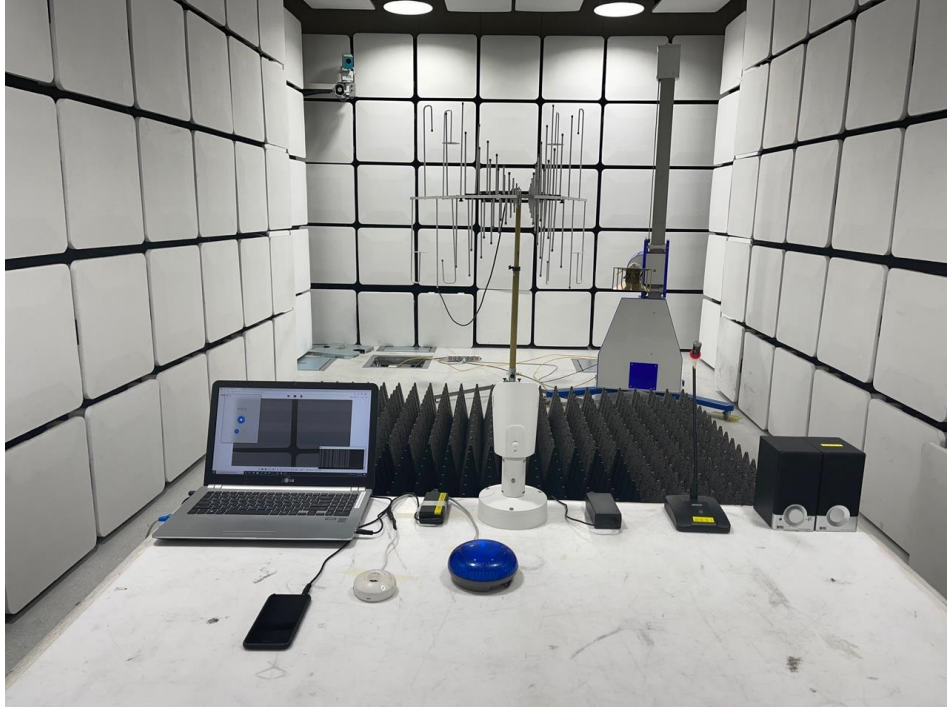
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■ PoE Mode



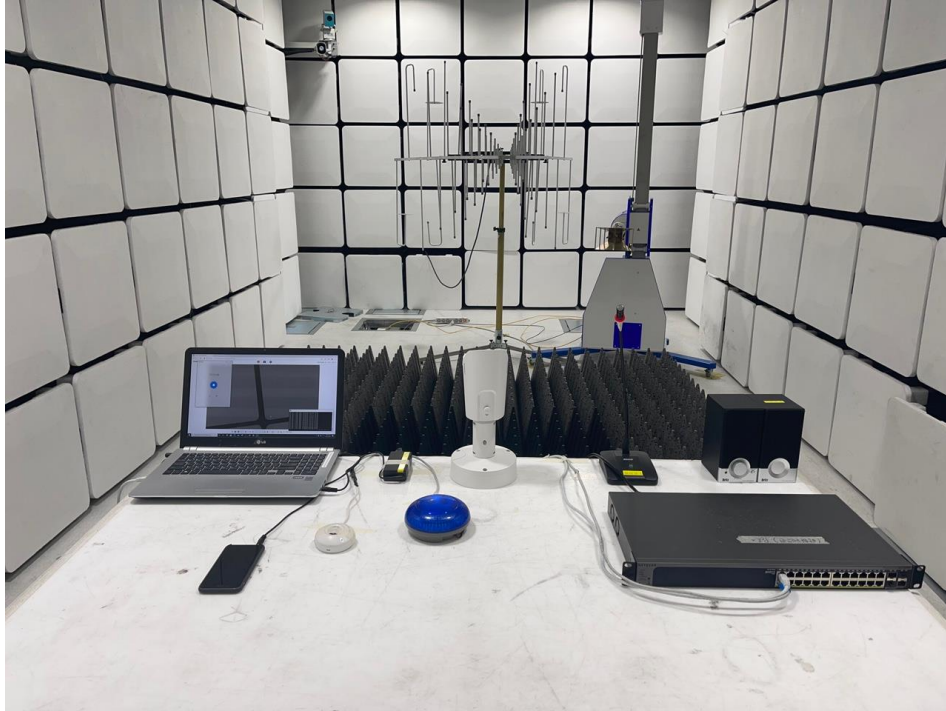
Radiated Electric Field Emissions(Above 1 GHz)

■ DC Mode



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■ PoE Mode



EUT External Photographs

(Top)



(Bottom)



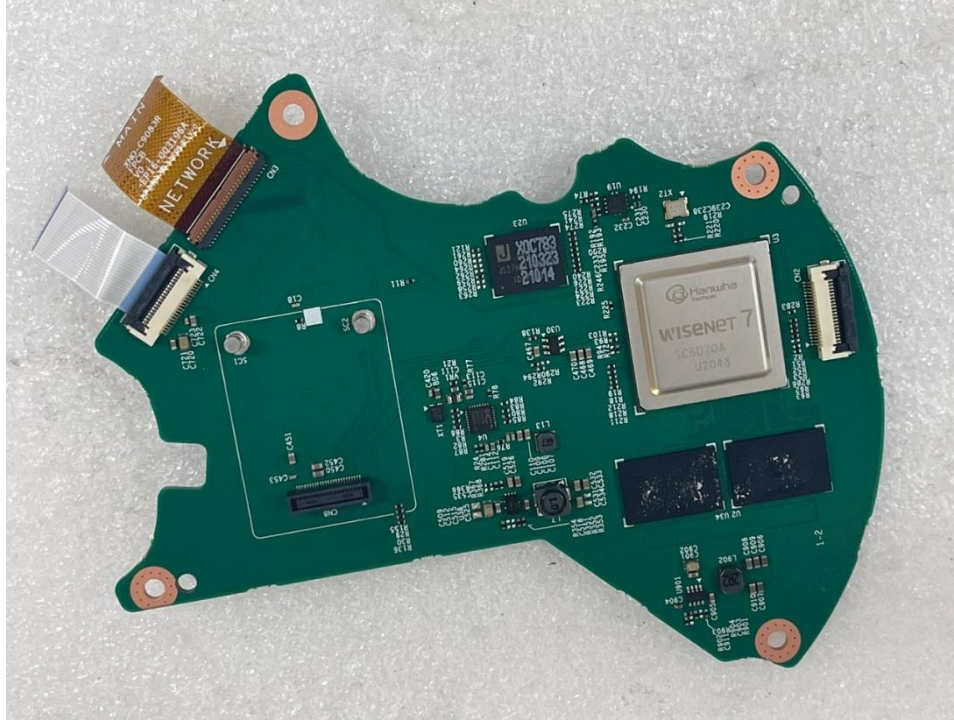
EUT Internal Photographs

(Internal View)

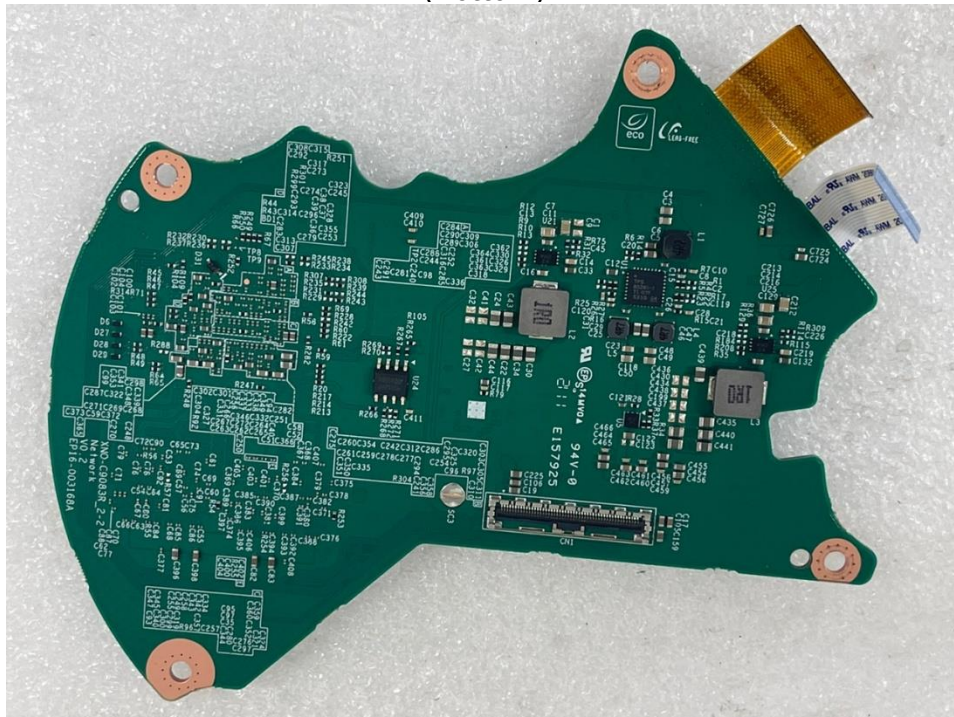


EUT Internal View – Board 1

(Top)



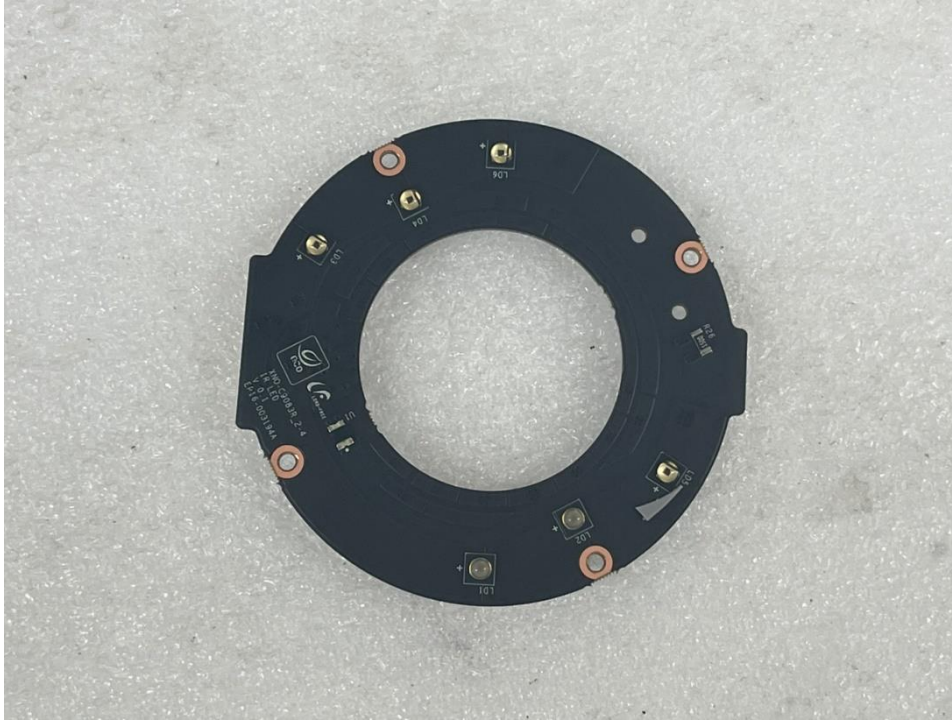
(Bottom)



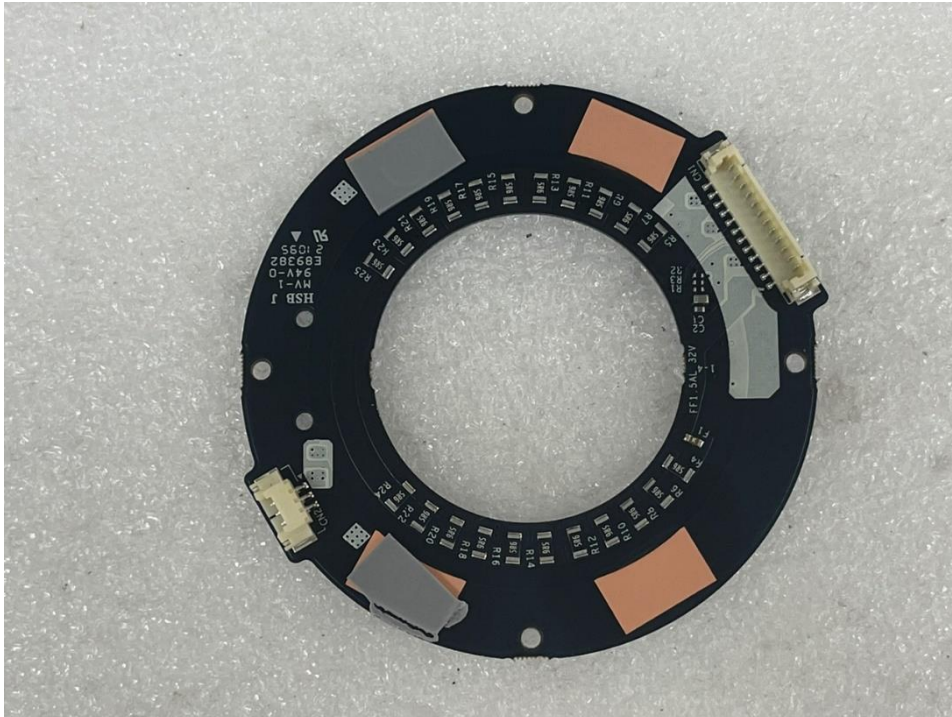
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EUT Internal View – Board 2

(Top)



(Bottom)

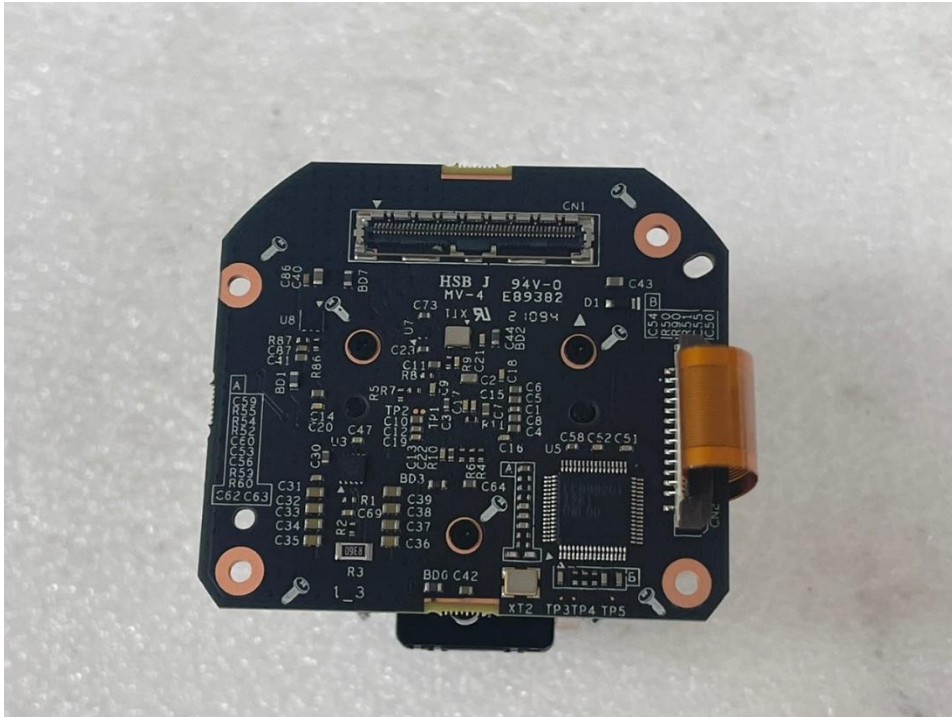


EUT Internal View – Board 3

(Top)



(Bottom)



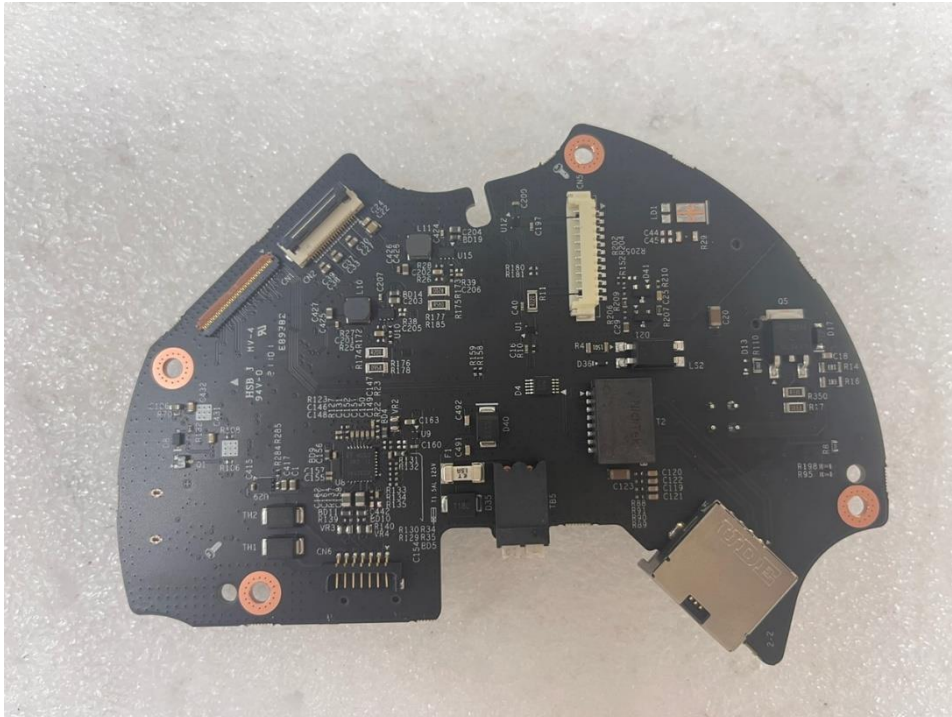
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EUT Internal View – Board 4

(Top)



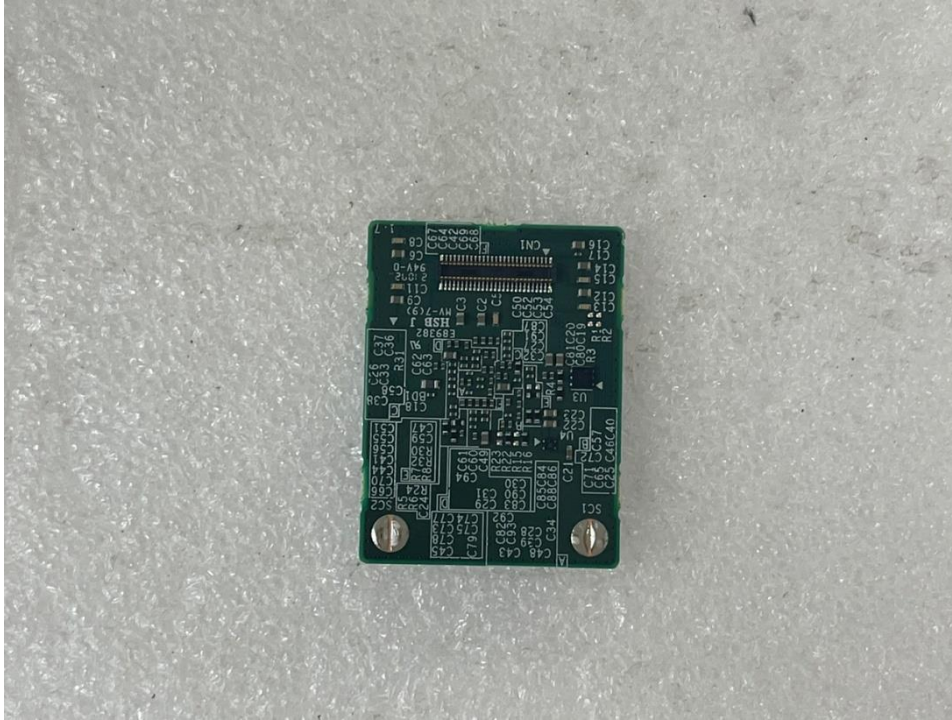
(Bottom)



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EUT Internal View – Board 5

(Top)

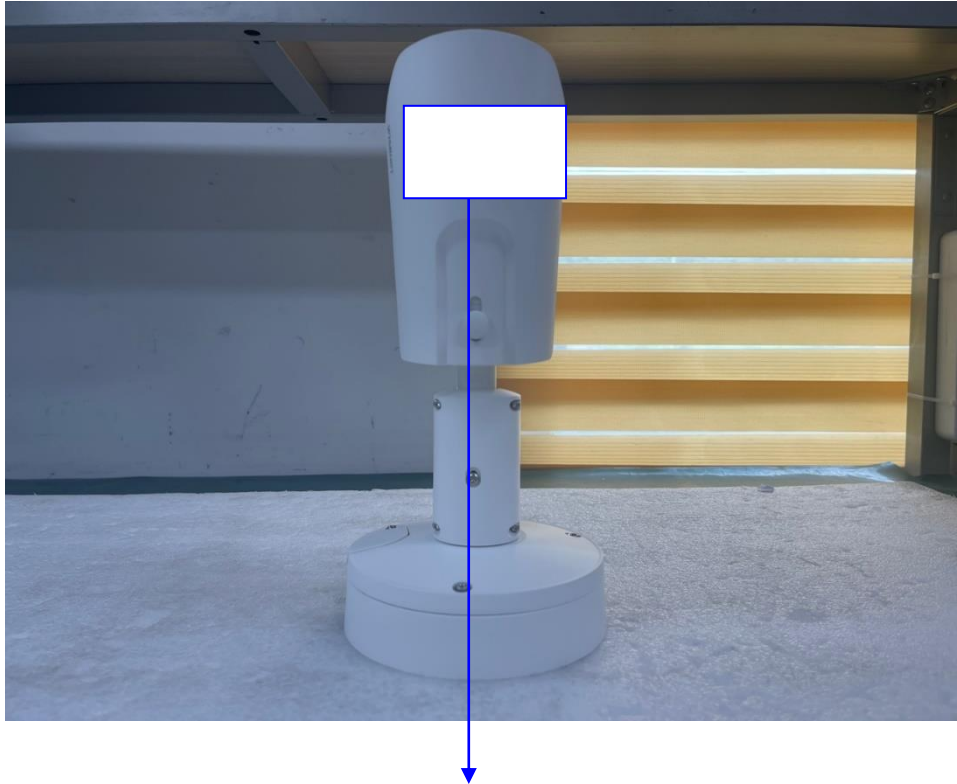


(Bottom)



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VCCI-A