



# EMC TEST REPORT

Test Report No. : KES-EM-20T0434  
Date of Issue : Jul 10, 2020  
Product Name : NETWORK CAMERA  
Model/Type No. : XNF-9010RVM  
Variant Model : -  
Applicant : Hanwha Techwin Co., Ltd.  
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,  
Gyeonggi-do, Republic of Korea  
Manufacturer : 1. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.  
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 22, 2020  
Test Date : Jun 29, 2020 ~ Jul 03, 2020  
Test Results : ☒ In Compliance ☐ Not in Compliance

Tested by

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EMC Test Engineer

Reviewed by

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EMC Technical Manager

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

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**REPORT REVISION HISTORY**

| Date         | Test Report No. | Revision History |
|--------------|-----------------|------------------|
| Jul 10, 2020 | KES-EM-20T0434  | Issued           |
|              |                 |                  |
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## 1.0 General Product Description

### Main Specifications of EUT are:

|                            |                                                                                                                                  |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Imaging Device             | 1/2.3" 12M CMOS                                                                                                                  |
| Effective Pixels           | 3008(H) x 3008(V)                                                                                                                |
| NETD                       | None                                                                                                                             |
| Pixel Size                 | None                                                                                                                             |
| Min. Illumination          | Color: 0.39 Lux (F2.2, 1/30sec), BW : 0Lux(IR LED on)                                                                            |
| Video Out                  | CVBS : 1.0 Vp-p / 75Ω composite, 720x480(N),<br>720x576(P), for Installation<br>USB: Micro USB Type B, 1280x720 for installation |
| <b>Lens</b>                |                                                                                                                                  |
| Focal Length (Zoom Ratio)  | 1.08mm fixed focal                                                                                                               |
| Max. Aperture Ratio        | F2.2                                                                                                                             |
| Angular Field of View      | H: 187° / V: 187° / D: 187°                                                                                                      |
| Min. Object Distance       | 0.5m(1.64ft)                                                                                                                     |
| Focus Control              | Simple focus                                                                                                                     |
| Lens Type                  | None                                                                                                                             |
| Mount Type                 | None                                                                                                                             |
| Optional Lens              | None                                                                                                                             |
| <b>Pan / Tilt / Rotate</b> |                                                                                                                                  |
| 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                                                                                                                             |
| Azimuth                    | None                                                                                                                             |
| Auto Tracking              | None                                                                                                                             |
| <b>Operational</b>         |                                                                                                                                  |
| IR Viewable Length         | 10m(32.8ft)                                                                                                                      |

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|                             |                                                                                                                                                                     |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Camera Title                | Displayed up to 85 characters                                                                                                                                       |
| Day & Night                 | Auto(ICR)                                                                                                                                                           |
| Backlight Compensation      | BLC, HLC, WDR, SSDR                                                                                                                                                 |
| Wide Dynamic Range          | 120dB                                                                                                                                                               |
| Digital Noise Reduction     | SSNR V                                                                                                                                                              |
| Digital Image Stabilization | None                                                                                                                                                                |
| Defog                       | None                                                                                                                                                                |
| Motion Detection            | 8ea, 8point polygonal zones                                                                                                                                         |
| Privacy Masking             | 32ea, polygonal zones<br>- Color: Grey/Green/Red/Blue/Black/White<br>- Mosaic                                                                                       |
| Gain Control                | Low / Middle / High                                                                                                                                                 |
| White Balance               | ATW / AWC / Manual / Indoor / Outdoor                                                                                                                               |
| LDC                         | None                                                                                                                                                                |
| Electronic Shutter Speed    | (TBD)Minimum / Maximum / Anti flicker<br>(2~1/12,000sec)                                                                                                            |
| Digital PTZ                 | Support(Preset, Group)                                                                                                                                              |
| Video Rotation              | Flip, Mirror                                                                                                                                                        |
| Analytics                   | Defocus detection, Directional detection, Motion detection, Appear/Disappear, Enter/Exit, Loitering, Tampering, Virtual line, Audio detection, Sound classification |
| Business Intelligence       | People counting, Queue management, Heatmap                                                                                                                          |
| Serial Interface            | None                                                                                                                                                                |
| Alarm I/O                   | 2 configured I/O                                                                                                                                                    |
| Alarm Triggers              | Analytics, Network disconnect                                                                                                                                       |
| 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<br>Audio playback                      |
| Audio In                    | Selectable(mic in/line in/built-in mic)<br>Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm                                                                     |

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|                             |                                                                                                                                                                                                                        |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Audio Out                   | Line out, Max. output level: 1Vrms                                                                                                                                                                                     |
| IR Illuminator (Optional)   | None                                                                                                                                                                                                                   |
| Wiper                       | None                                                                                                                                                                                                                   |
| Coaxial Protocol            | None                                                                                                                                                                                                                   |
| Video Transmission Distance | None                                                                                                                                                                                                                   |
| <b>Radiometry</b>           |                                                                                                                                                                                                                        |
| Temperature detect range    | None                                                                                                                                                                                                                   |
| Temperature accuracy        | None                                                                                                                                                                                                                   |
| Temperature detection       | None                                                                                                                                                                                                                   |
| Additional                  | None                                                                                                                                                                                                                   |
| <b>Network</b>              |                                                                                                                                                                                                                        |
| Ethernet                    | RJ-45(10/100BASE-T)                                                                                                                                                                                                    |
| Video Compression           | H.265/H.264: Main/Baseline/High, MJPEG                                                                                                                                                                                 |
| Resolution                  | . Original view(1:1): 3008x3008~480x480<br>. Double panorama(2:1): 3584x1792~640x320<br>. Single panorama(4:1): 3584x896~640x160<br>. Quad view: 3584x2688~640x480<br>. Q1/Q2/Q3/Q4(4:3): 1792x1344~640x480            |
| Max. Framerate              | H.265/H.264:<br>Overview-Max. 30fps/25fps@3008x3008(60Hz/50Hz),<br>Double panorama-Max.<br>30fps/25fps@3584x1792(60Hz/50Hz)<br>Single panorama-Max.<br>30fps/25fps@3584x896(60Hz/50Hz)<br>MJPEG: Max. 15fps(60Hz/50Hz) |
| Smart Codec                 | Manual(5ea area), WiseStream II                                                                                                                                                                                        |
| Video Quality Adjustment    | H.264/H.265: Target bitrate level control<br>MJPEG: Quality level control                                                                                                                                              |
| Bitrate Control             | H.264/H.265: CBR or VBR<br>MJPEG: VBR                                                                                                                                                                                  |
| Streaming                   | Unicast(20 users) / Multicast<br>Multiple streaming(Up to 10 profiles)                                                                                                                                                 |
| Audio Compression           | G.711 u-law /G.726 Selectable<br>G.726(ADPCM) 8KHz, G.711 8KHz                                                                                                                                                         |

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|                                   |                                                                                                                                                                                                                             |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   | G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps<br>AAC-LC: 48Kbps at 16KHz                                                                                                                                                            |
| Protocol                          | IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,<br>RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP,<br>ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS,<br>DDNS, QoS, UPnP, Bonjour                                       |
| Security                          | HTTPS(SSL) Login Authentication<br>Digest Login Authentication<br>IP Address Filtering<br>User access log<br>802.1X Authentication(EAP-TLS, EAP-LEAP)<br>Device Certificate(Hanwha Techwin Root CA)                         |
| Edge Storage                      | Micro SD/SDHC/SDXC 2slot 2TB                                                                                                                                                                                                |
| Application Programming Interface | ONVIF Profile S/G/T<br>SUNAPI(HTTP API)<br>Wisenet open platform                                                                                                                                                            |
| Webpage Language                  | English, French, German, Spanish, Italian, Chinese,<br>Korean, Russian, Japanese,<br>Swedish, Portuguese, Czech, Polish, Turkish, Dutch,<br>Hungarian, Greek                                                                |
| Web Viewer                        | Supported OS: Windows 7, 8.1, 10, Mac OS X 10.12,<br>10.13, 10.14<br>Recommended Browser: Google Chrome<br>Supported Browser : MS Explore11, MS Edge,<br>Mozilla Firefox(Window 64bit only), Apple Safari(Mac<br>OS X only) |
| Memory                            | TBD                                                                                                                                                                                                                         |
| <b>Environmental</b>              |                                                                                                                                                                                                                             |
| Operating Temperature / Humidity  | (TBD)'-40°C ~ +60°C (-40°F ~ +131°F) / Less than<br>95% RH                                                                                                                                                                  |
| Storage Temperature / Humidity    | -50°C ~ +60°C(-58°F ~ +140°F) / Less than 95% RH                                                                                                                                                                            |
| Certification                     | IP66, IK10, NEMA4X                                                                                                                                                                                                          |
| <b>Electrical</b>                 |                                                                                                                                                                                                                             |
| Input Voltage                     | PoE(IEEE802.3af, Class3), 12VDC                                                                                                                                                                                             |

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|                             |                                               |
|-----------------------------|-----------------------------------------------|
| Power Consumption           | PoE: Max 12.95W (TBD)<br>12VDC: Max 12W (TBD) |
| <b>Mechanical</b>           |                                               |
| Color / Material            | White / Plastic                               |
| RAL Code                    | RAL9003                                       |
| Product dimensions / weight | TBD                                           |
| Conduit hole                |                                               |
| Hanging mount(Dome)         |                                               |
| Skin cover(Dome)            |                                               |
| Weather cap(Dome)           |                                               |
| Power module                |                                               |
| Backbox                     |                                               |
| <b>DORI</b>                 |                                               |
| Detect (25PPM/ 8PPF)        |                                               |
| Observe (63PPM/ 19PPF)      |                                               |
| Recognize (125PPM/ 38PPF)   |                                               |
| Identify (250PPM/ 76PPF)    |                                               |

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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.

Voltage ☒ 230 Vac ☐ 100 Vac ☐ 24 Vac ☐ 12 Vdc ☒ PoE  
Frequency ☒ 50 Hz ☐ 60 Hz ☐ Hz

## 1.2 Variant Model Differences

Not applicable

## 1.3 Device Modifications

Not applicable

## 1.4 Equipment Under Test

| Description    | Model Number | Serial Number | Manufacturer                                   | Remarks |
|----------------|--------------|---------------|------------------------------------------------|---------|
| NETWORK CAMERA | XNF-9010RVM  | -             | HANWHA TECHWIN<br>SECURITY VIETNAM<br>CO.,LTD. | EUT     |



## 1.5 System Configuration

| Description | Model Number | Serial Number | Manufacturer | Remarks |
|-------------|--------------|---------------|--------------|---------|
| -           | -            | -             | -            | -       |

## 1.6 Support Equipments

| Description      | Model Number         | Serial Number  | Manufacturer                                 | Remarks |
|------------------|----------------------|----------------|----------------------------------------------|---------|
| Notebook         | ProBook4430s         | -              | HP                                           | -       |
| Notebook Adaptor | SeriesPPP0009H       | -              | CHICONY POWER TECHNOLOGY (SUZHOU) CO.,LTD,   | -       |
| Micro SD Card    | -                    | -              | SanDisk                                      | 8 GB    |
| PoE Adaptor      | PT-PSE109GBRO-AH     | PT1850221049   | Dongguan PROCET Network Technology Co.,Ltd   | -       |
| DC Adaptor       | 2ACB022F             | -              | Channel Well Technology (Guangzhou) Co.,Ltd. | -       |
| Alarm1           | -                    | -              | -                                            | -       |
| Alarm2           | -                    | -              | -                                            | -       |
| Speaker          | BR1000A Cuve Black 2 | -              | DONGGUAN EDIFIER TECHNOLOGY Co., Ltd         | -       |
| MIC              | MP1000               | -              | -                                            | -       |
| Smart Phone      | LG-SU760             | 108KPQJ0186212 | LG                                           | -       |



## 1.7 External I/O Cabling

– DC Mode

| Start                |           | END           |           | Cable Spec. |        |
|----------------------|-----------|---------------|-----------|-------------|--------|
| Description          | I/O Port  | Description   | I/O Port  | Length      | Shield |
| NETWORK CAMERA (EUT) | RJ-45     | Notebook      | RJ-45     | 3.0         | U      |
|                      | SLOT      | Micro SD Card | SLOT      | -           | -      |
|                      | 3.5 mm    | Speaker       | 3.5 mm    | 1.4         | U      |
|                      | 3.5 mm    | MIC           | 3.5 mm    | 1.6         | U      |
|                      | Alarm in  | Alarm1        | Alarm out | 3.0         | U      |
|                      | Alarm out | Alarm2        | Alarm in  | 3.0         | U      |
| Notebook             | 3.5 mm    | Smart Phone   | 3.5 mm    | 1.0         | 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     | Notebook      | RJ-45     | 3.0         | U      |
|                      | SLOT      | Micro SD Card | SLOT      | -           | -      |
|                      | 3.5 mm    | Speaker       | 3.5 mm    | 1.4         | U      |
|                      | 3.5 mm    | MIC           | 3.5 mm    | 1.6         | U      |
|                      | Alarm in  | Alarm1        | Alarm out | 3.0         | U      |
|                      | Alarm out | Alarm2        | Alarm in  | 3.0         | U      |
| Notebook             | 3.5 mm    | Smart Phone   | 3.5 mm    | 1.0         | U      |
|                      | RJ-45     | PoE Adaptor   | RJ-45     | 1.0         | U      |

\* Unshielded=U, Shielded=S



## 1.7 EUT Operating Mode(s)

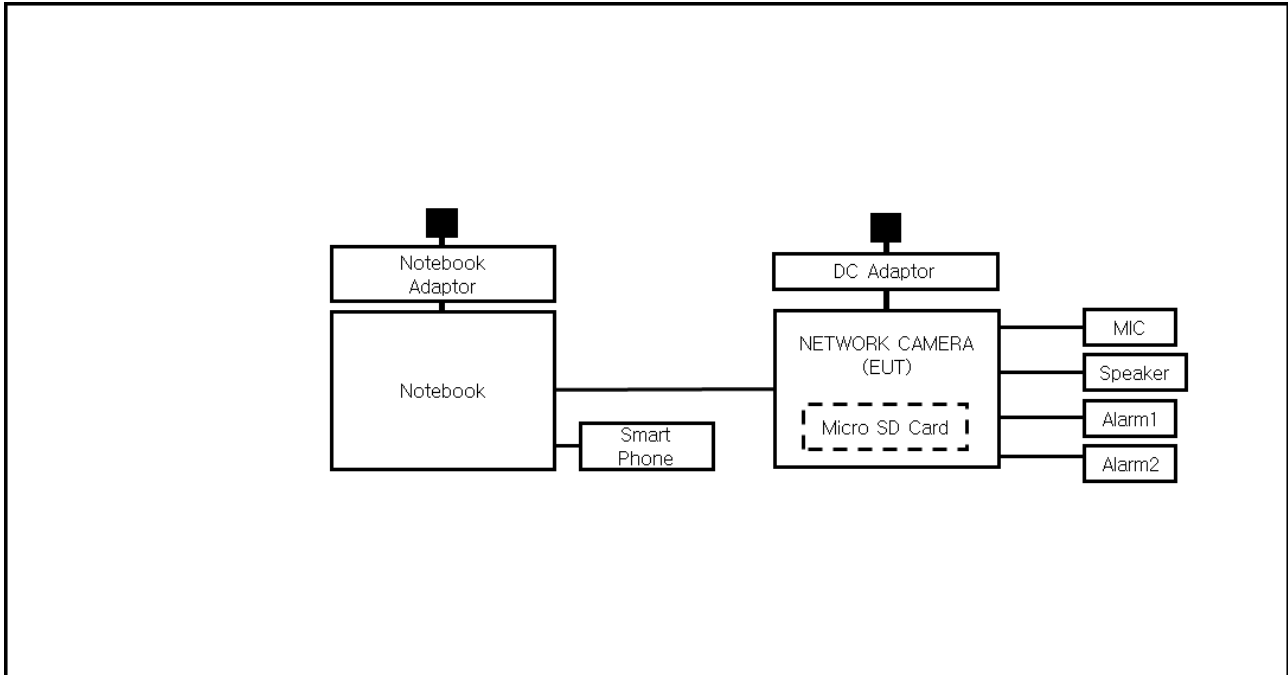
| Test mode      | operating                                  |
|----------------|--------------------------------------------|
| Operation mode | Monitoring EUT Using Web Viewer, Ping Test |

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

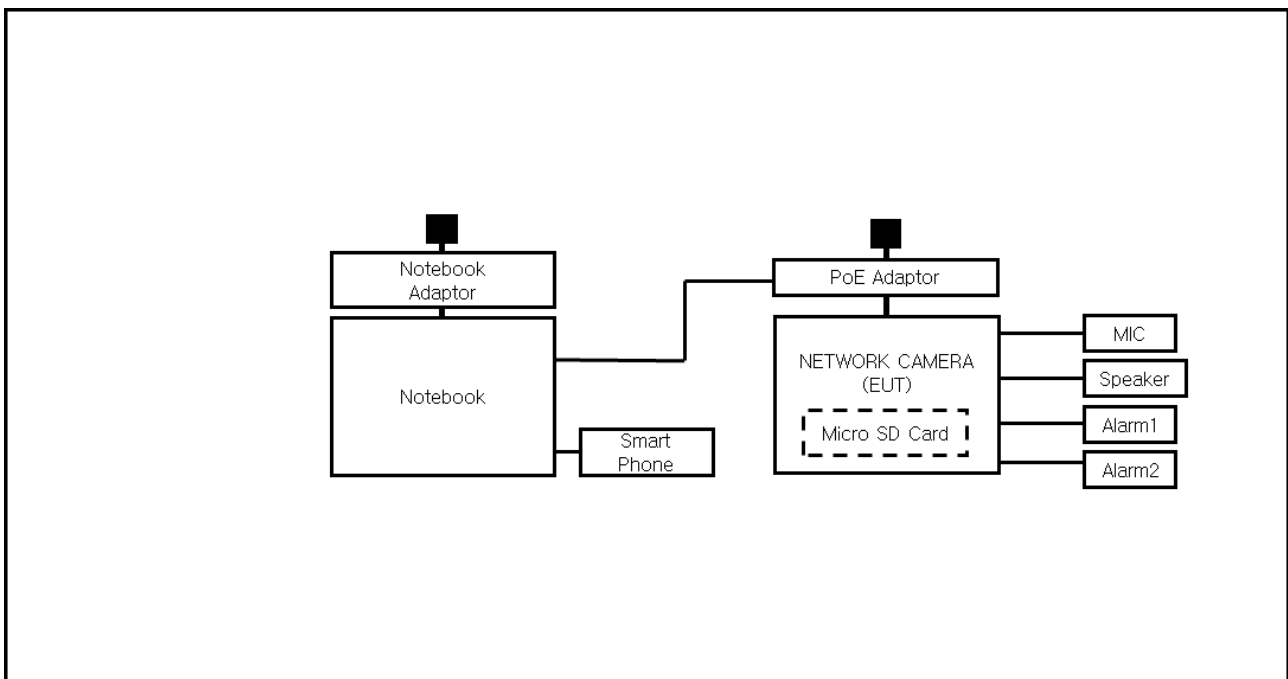
## 1.8 Configuration

■ AC Main  
 □ DC Main

- DC Mode



- PoE Mode



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## 1.9 Remarks When Standards Applied

N/A

## 1.10 Calibration Details of Equipment Used for Measurement

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

## 1.11 Test Facility

The measurement facility is located at 473-21 Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4:2014 and CISPR 16-1-4:2012

## 1.12 Laboratory Accreditations and Listings

| Country       | Agency    | Scope of Accreditation                                                                                                                                                                         | Logo                                                                                                                           |
|---------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| KOREA         | RRA       | EMI (3 m & 10 m Semi-Anechoic Chamber ,<br>10 m Open Area and conducted test site)<br>EMS (ESD, RS, EFT/Burst, Surge, CS,<br>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,<br>Magnetic, Dips and interruptions)                                                   | <br>KT489                                 |
| USA           | FCC       | 3 m & 10 m Semi-Anechoic Chamber, 10 m Open Area and 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>23298-1                               |
| JAPAN         | VCCI      | Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz | <br>R-20056, C-20036,<br>T-20040, G-20057 |
| Europe        | TÜ V SÜ D | EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site)<br>EMS (ESD, RS, EFT/Burst, Surge, CS,<br>Magnetic, Dips and interruptions)                                    | <br>CARAT 001633 0003                     |



## 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 55032:2012/AC:2013

☐ Class A

☐ Class B

☐ EN 55024:2010 +A1:2015

☐ EN 50130-4:2011

☐ EN 50121-3-2:2016

☒ EN 50121-4:2016

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013

☐ EN 61326-1:2013



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

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## 2.1 Conducted Emissions at Mains Power Ports

### Test Date

Jul 01, 2020

### 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        | Jan 20, 2021 |
| <input checked="" type="checkbox"/> | LISN              | ENV216       | R & S        | 101787        | Jan 02, 2021 |
| <input checked="" type="checkbox"/> | LISN              | ESH2-Z5      | R & S        | 100450        | Jan 02, 2021 |
| <input checked="" type="checkbox"/> | PULSE LIMITER     | ESH3-Z2      | R & S        | 101915        | Jan 02, 2021 |

### Test Conditions

Temperature: 23,5 °C  
Relative Humidity: 52,0 % 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

Jul 01, 2020

### 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 | ESU26        | R & S        | 100552        | Apr 01, 2021 |
| <input checked="" type="checkbox"/> | LISN              | ENV216       | R & S        | 101787        | Jan 02, 2021 |
| <input checked="" type="checkbox"/> | LISN              | ESH2-Z5      | R & S        | 100450        | Jan 02, 2021 |
| <input checked="" type="checkbox"/> | PULSE LIMITER     | ESH3-Z2      | R & S        | 101915        | Jan 02, 2021 |
| <input checked="" type="checkbox"/> | 8-WIRE ISN CAT3,5 | ENY81        | R & S        | 100174        | Jan 07, 2021 |
| <input type="checkbox"/>            | 8-WIRE ISN CAT6   | ENY81-CAT6   | R & S        | 101665        | Jan 07, 2021 |
| <input type="checkbox"/>            | ISN               | ISN S8       | SCHWARZBECK  | ISN-S8-0019   | Mar 10, 2021 |

### Test Conditions

Temperature: 23,5 °C  
Relative Humidity: 52,0 % 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.



## 2.3 Impulse Noise (click)

### Test Date

N/A

### Test Location

Electro wave Shieldroom #6

### Test Equipment

| Used                     | Description  | Model Number    | Manufacturer       | Serial Number | Cal. Due     |
|--------------------------|--------------|-----------------|--------------------|---------------|--------------|
| <input type="checkbox"/> | EMI Test S/W | AFJ Click Meter | AFJ                | 6.05          | -            |
| <input type="checkbox"/> | CLICK METER  | CL55C           | AFJ<br>INSTRUMENTS | 55041222168   | Aug 06, 2020 |
| <input type="checkbox"/> | LISN         | ENV216          | R & S              | 101787        | Jan 02, 2021 |

### Test Conditions

Temperature:

°C

Relative Humidity:

% 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

N/A



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

### Test Date

Jun 29, 2020

### Test Location

☐ OPEN AREA TEST SITE #2 ☒ SEMI ANECHOIC CHAMBER #4(10 m)

### Test Equipment

| Used                                | Description              | Model Number | Manufacturer     | Serial Number | Cal. Due     |
|-------------------------------------|--------------------------|--------------|------------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W             | EP5/RE       | TOYO Corporation | 6.0.0         | -            |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER        | ESU26        | R & S            | 100551        | Apr 01, 2021 |
| <input checked="" type="checkbox"/> | AMPLIFIER                | SCU 01       | R & S            | 100603        | Nov 25, 2020 |
| <input checked="" type="checkbox"/> | TRILOG-BROADBAND ANTENNA | VULB9163     | Schwarzbeck      | 715           | Nov 29, 2020 |
| <input checked="" type="checkbox"/> | ATTENUATOR               | 8491A        | HP               | 32173         | Mar 10, 2021 |

### Test Conditions

Temperature: 23,2 °C  
Relative Humidity: 51,4 % 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.



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

### Test Date

Jun 29, 2020

### Test Location

SEMI ANECHOIC CHAMBER #4(10 m)

### Test Equipment

| Used                                | Description                | Model Number | Manufacturer     | Serial Number | Cal. Due     |
|-------------------------------------|----------------------------|--------------|------------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W               | EP5/RE       | TOYO Corporation | 6.0.0         | -            |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER          | ESR7         | R & S            | 101190        | Aug 06, 2020 |
| <input checked="" type="checkbox"/> | PREAMPLIFIER               | 8449B        | AGILENT          | 3008A01967    | Apr 20, 2021 |
| <input type="checkbox"/>            | ATTENUATOR                 | 8491A        | HP               | 35496         | Mar 10, 2021 |
| <input checked="" type="checkbox"/> | DOUBLE RIDGED HORN ANTENNA | SAS-571      | A.H.SYSTEM,INC   | 781           | Mar 11, 2021 |

### Test Conditions

Temperature: 23,6 °C  
Relative Humidity: 50,9 % R.H.

### Frequency Range of Measurement

1 GHz to 6 GHz

### Instrument Settings

IF Band Width: 1 MHz

### Test Results

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.



## 2.6 Harmonic Current Emissions

### Test Date

Jul 03, 2020

### Test Location

Electro wave Shieldroom #3

### Test Equipment

| Used                                | Description            | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W           | net.control  | EM TEST      | 2.1.4         | -            |
| <input checked="" type="checkbox"/> | DIGITAL POWER ANALYZER | DPA 500N     | EM TEST      | V1024106759   | Apr 06, 2021 |
| <input checked="" type="checkbox"/> | POWER SOURCE           | ACS 500N6    | EM TEST      | V1024106760   | -            |

### Test Conditions

Temperature: 22,7 °C  
Relative Humidity: 50,6 % R.H.

### Classification of Equipment for Harmonic Current Emissions

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

### Test Results

The requirements are:

- ☒ PASS
- ☐ NOT PASS
- ☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.



## 2.7 Voltage Fluctuations and Flicker

### Test Date

Jul 03, 2020

### Test Location

Electro wave Shieldroom #3

### Test Equipment

| Used                                | Description            | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W           | net.control  | EM TEST      | 2.1.4         | -            |
| <input checked="" type="checkbox"/> | DIGITAL POWER ANALYZER | DPA 500N     | EM TEST      | V1024106759   | Apr 06, 2021 |
| <input checked="" type="checkbox"/> | POWER SOURCE           | ACS 500N6    | EM TEST      | V1024106760   | -            |

### Test Conditions

Temperature: 22,7 °C  
Relative Humidity: 50,6 % R.H.

### Test Results

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.

### 3.0 Criteria for Compliance

Criteria for compliance was based on the following guidelines:

#### General performance criteria

The general principles (performance criteria) for the evaluation of the immunity test results are the following.

#### Performance criterion A

The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

#### Performance criterion B

The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

#### Performance criterion C

Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.



### 3.1 Electrostatic Discharge

#### Reference Standard

EN 61000-4-2:2009

#### Test Date

Jul 03, 2020

#### Test Location

EMS-ESD: Electro wave Shieldroom #7

#### Test Equipment

| Used                                | Description   | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|---------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | ESD SIMULATOR | ESS-2000     | Noise Ken    | ESS05X4620    | Jan 28, 2021 |
| <input checked="" type="checkbox"/> | HCP           | -            | KES          | -             | -            |
| <input checked="" type="checkbox"/> | VCP           | -            | Noise Ken    | -             | -            |

#### Test Conditions

Temperature: 23,4 °C  
Relative Humidity: 50,9 % R.H.  
Atmospheric Pressure: 99,7 kPa

#### Test Specifications

Discharge Factor:  $\geq 1$  s

Discharge Impedance: 330 ohm / 150 pF

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

Polarity: Positive and Negative

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

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

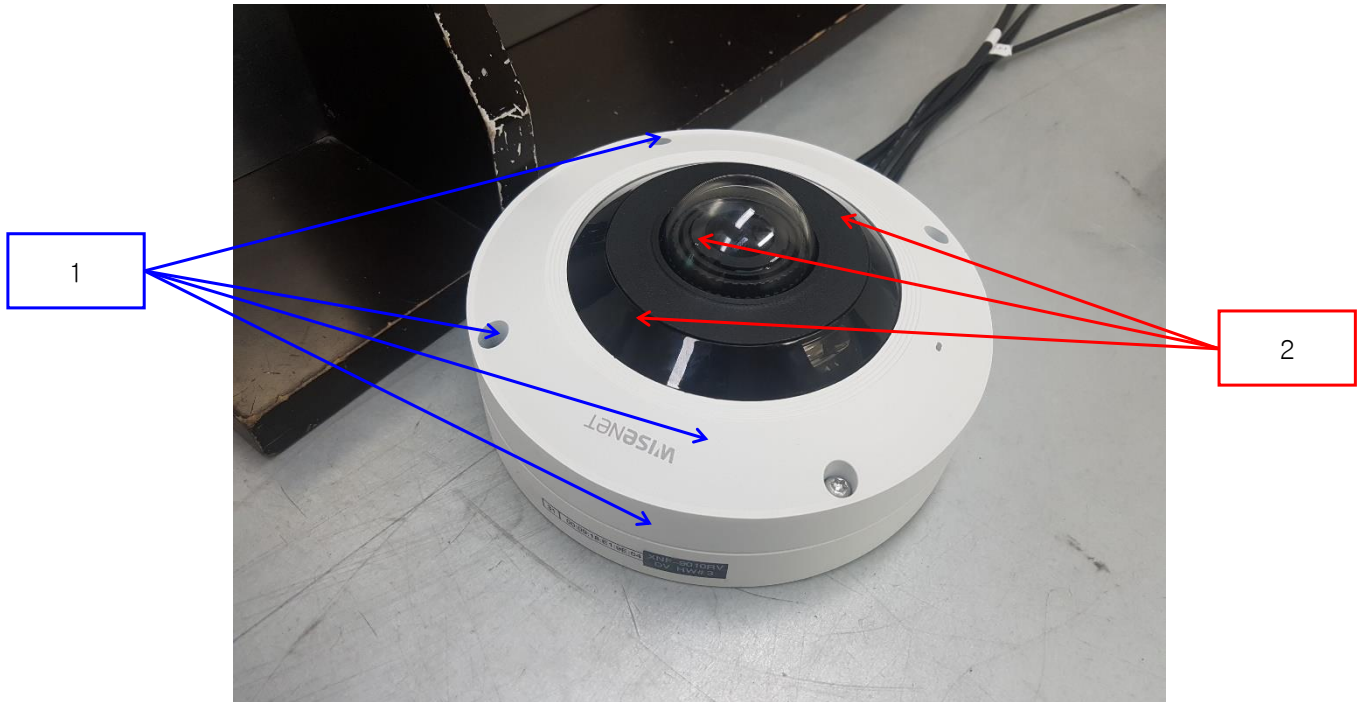
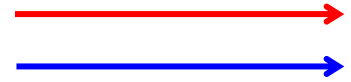
Notes: HCP: Horizontal Coupling Plane

VCP: Vertical Coupling Plane

Required Performance Criteria: ☒ B

**Location of Discharge:**

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





## Test Data

### - DC Mode

#### Indirect Discharge

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

#### Direct Discharge

| No. | Test Point            | Discharge Method  | Observations | Remarks |
|-----|-----------------------|-------------------|--------------|---------|
| 1   | Enclosure1,<br>Screws | Contact Discharge | A            | -       |
| 2   | Enclosure2            | Air Discharge     | A            | -       |

### - PoE Mode

#### Indirect Discharge

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

#### Direct Discharge

| No. | Test Point            | Discharge Method  | Observations | Remarks |
|-----|-----------------------|-------------------|--------------|---------|
| 1   | Enclosure1,<br>Screws | Contact Discharge | A            | -       |
| 2   | Enclosure2            | Air Discharge     | A            | -       |

Note: "Blank" = Not performed

#### Observations:

- A – No response observed from E.U.T
- B – Unit shuts down then automatically restarts when full voltage is restored.
- C – Unit shuts down then manually restarts when full voltage is restored or Loss of function.

## Test Results

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

## Remarks

PASS Required Performance Criteria.



## 3.2 Radio-frequency Electromagnetic Field

### Reference Standard

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

### Test Date

Jun 30, 2020

### Test Location

EMS-RS: ☒ SEMI ANECHOIC CHAMBER #3 ☐ SEMI ANECHOIC CHAMBER #4(10 m)

### Test Equipment

| Used                                | Description                     | Model Number | Manufacturer    | Serial Number | Cal. Due     |
|-------------------------------------|---------------------------------|--------------|-----------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W                    | EMC32        | R & S           | 9.12.00       | -            |
| <input checked="" type="checkbox"/> | SIGNAL GENERATOR                | SMB 100A     | Rohde & Schwarz | 108252        | Aug 06, 2020 |
| <input checked="" type="checkbox"/> | HIGH POWER DUAL AMP             | SSA532       | SUNGSAN         | SSA532-001    | -            |
| <input checked="" type="checkbox"/> | POWER METER                     | E4419B       | Agilent         | GB40203000    | Apr 20, 2021 |
| <input checked="" type="checkbox"/> | CW POWER SENSOR                 | E4412A       | Agilent         | US38488240    | Apr 20, 2021 |
| <input checked="" type="checkbox"/> | CW POWER SENSOR                 | E4412A       | Agilent         | MY41501662    | Apr 20, 2021 |
| <input checked="" type="checkbox"/> | STACKED DOUBLE LOG-PER- ANTENNA | STPL9128 E   | Schwarzbeck     | 9128ES-121    | -            |
| <input checked="" type="checkbox"/> | DOUBLE RIDGED HORN ANTENNA      | SAS-571      | A.H.SYSTEM, INC | 781           | Mar 11, 2021 |

### Test Conditions

Temperature: 23,1 °C  
Relative Humidity: 51,3 % R.H.  
Atmospheric Pressure: 97,9 kPa



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### Test Specifications

Antenna Polarization: Horizontal & Vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

Frequency Range: ☒ 80 MHz to 800 MHz [10V/m]  
[Field Strength] ☒ 800 MHz to 1 GHz [20 V/m]  
☒ 1,4 GHz to 2,0 GHz [10 V/m]  
☒ 2,0 GHz to 2,7 GHz [5 V/m]  
☒ 5,1 GHz to 6,0 GHz [3 V/m]

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

Frequency Step: ☒ 1 % step

Dwell Time: ☐ 1 s ☒ 3 s

# of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ A

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**Test Data****- DC Mode**

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

**- PoE Mode**

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

Note: "Blank" = Not performed

**Observations:**

- A – No response observed from E.U.T
- B – Unit shuts down then automatically restarts when full voltage is restored.
- C – Unit shuts down then manually restarts when full voltage is restored or Loss of function.

**Test Results**

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

**Remarks**

PASS Required Performance Criteria.

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### 3.3 Fast Transients

#### Reference Standard

EN 61000-4-4:2012

#### Test Date

Jul 02, 2020

#### Test Location

EMS-EFT: Electro wave Shieldroom #7

#### Test Equipment

| Used                                | Description               | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|---------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W              | iec.control  | EM TEST      | 5.4.7         | -            |
| <input checked="" type="checkbox"/> | ULTRA COMPACT SIMULATOR   | UCS 500N7    | EM TEST      | P1608172950   | Nov 27, 2020 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC              | MV2616       | EM TEST      | P1552169719   | Nov 27, 2020 |
| <input checked="" type="checkbox"/> | CAPACITIVE COUPLING CLAMP | HFK          | EM TEST      | P1633183115   | Nov 27, 2020 |

#### Test Conditions

Temperature: 23,3 °C  
Relative Humidity: 50,5 % R.H.  
Atmospheric Pressure: 99,5 kPa

#### Test Specifications

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

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

Burst Period: ☒ 300 ms ☐ 2 s

Repetition Rate: ☒ 5 kHz ☐ 100 kHz

Duration of Test Voltage: ☒ ≥ 1 min

Required Performance Criteria: ☒ A

## Test Data

- DC Mode

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

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

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

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

☒ Signal ports and telecommunication ports – Coupling Clamp used

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

- PoE Mode

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

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

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

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

☒ Signal ports and telecommunication ports – Coupling Clamp used

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

Note: "Blank" = Not performed

Observations:

- A – No response observed from E.U.T
- B – Unit shuts down then automatically restarts when full voltage is restored.
- C – Unit shuts down then manually restarts when full voltage is restored or Loss of function.

**Test Results**

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

**Remarks**

PASS Required Performance Criteria.



## 3.4 Surges

### Reference Standard

EN 61000-4-5:2014

### Test Date

Jul 02, 2020

### Test Location

EMS-Surge: Electro wave Shieldroom #7

### Test Equipment

| Used                                | Description             | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|-------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W            | iec.control  | EM TEST      | 5.4.7         | -            |
| <input checked="" type="checkbox"/> | ULTRA COMPACT SIMULATOR | UCS 500N7    | EM TEST      | P1608172950   | Nov 27, 2020 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC            | MV2616       | EM TEST      | P1552169719   | Nov 27, 2020 |
| <input checked="" type="checkbox"/> | CDN                     | CNV 508N1    | EM TEST      | P1610176296   | Nov 27, 2020 |
| <input type="checkbox"/>            | CDN                     | CNV 504N7.3  | EM TEST      | P1744207079   | Nov 27, 2020 |

### Test Conditions

Temperature: 23,3 °C  
Relative Humidity: 50,5 % R.H.  
Atmospheric Pressure: 99,5 kPa

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**Test Specifications****Power Lines**

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

Surge Amplitude :

Common Mode

☐ (2,0) kV

Differential Mode

☒ (1,0) kV

Number of Surges:

☒ 5 surges per angle

Angle:

☒ 0°, 90°, 180°, 270° (input AC power port)

Polarity:

☒ Positive & Negative

Repetition Rate:

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

Required Performance Criteria: ☒ B

**Signal Lines**

Source Impedance:

42 ohm

Surge Amplitude:

Common Mode

☐ (2,0) kV

Differential Mode

☒ (1,0) kV

Number of Surges:

☒ 5 Surges

Polarity:

☒ Positive & Negative

Repetition Rate:

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

Required Performance Criteria: ☒ B

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**Test Data**

- DC Mode

☒ Line to Line – Differential Mode

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

☐ Line to Earth – Common Mode

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

**Signal Lines**

☒ Line to Line – Differential Mode

| Mode of Application | Observations   |                |
|---------------------|----------------|----------------|
|                     | (+) Surge (kV) | (-) Surge (kV) |
| RJ-45               | A              | A              |
| Alarm 1             | A              | A              |
| Alarm 2             | A              | A              |

☐ Line to Earth – Common Mode

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

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- PoE Mode

☐ Line to Line – Differential Mode

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

☐ Line to Earth – Common Mode

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

**Signal Lines**

☒ Line to Line – Differential Mode

| Mode of Application | Observations   |                |
|---------------------|----------------|----------------|
|                     | (+) Surge (kV) | (-) Surge (kV) |
| RJ-45 (PoE)         | A              | A              |
| Alarm 1             | A              | A              |
| Alarm 2             | A              | A              |

☐ Line to Earth – Common Mode

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

Note: "Blank" = Not performed

Observations:

- A – No response observed from E.U.T
- B – Unit shuts down then automatically restarts when full voltage is restored.
- C – Unit shuts down then manually restarts when full voltage is restored or Loss of function.

**Test Results**

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

**Remarks**

PASS Required Performance Criteria.

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### 3.5 Conducted Disturbance

#### Reference Standard

EN 61000-4-6:2014

#### Test Date

Jul 01, 2020

#### Test Location

EMS-CS: Electro wave Shieldroom #3

#### Test Equipment

| Used                                | Description               | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|---------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W              | icd.control  | EM TEST      | 5.3.7         | -            |
| <input checked="" type="checkbox"/> | CONTINUOUS WAVE SIMULATOR | CWS 500N1    | EM TEST      | V0936105119   | Aug 06, 2020 |
| <input checked="" type="checkbox"/> | ATTENUATOR                | ATT6         | EM TEST      | 1208-34       | Aug 06, 2020 |
| <input checked="" type="checkbox"/> | CDN                       | CDN-M2/M3N   | EM TEST      | 0909-06       | Aug 06, 2020 |
| <input checked="" type="checkbox"/> | CDN                       | CDN T8RJ45   | EM TEST      | 0909-09       | Aug 06, 2020 |
| <input checked="" type="checkbox"/> | EM INJECTION CLAMP        | EM 101       | Liithi       | 35943         | Jan 20, 2021 |

#### Test Conditions

Temperature: 22,9 °C  
Relative Humidity: 51,2 % R.H.  
Atmospheric Pressure: 99,5 kPa

#### Test Specifications

Frequency Range: ☐ 150 kHz to 100 MHz ☒ 150 kHz to 80 MHz

Voltage Level: ☐ 1 Vrms ☐ 3 Vrms  
☒ 10 Vrms

Modulation: ☒ AM, 80 %, 1 kHz sine wave

Frequency Step: ☒ 1 % step

Dwell Time: ☐ 1 s ☒ 3 s

Required Performance Criteria: ☒ A

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**Test Data**

- DC Mode

☒ Input a.c. power ports

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

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

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

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

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

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

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

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

**Observations:**

- A – No response observed from E.U.T  
B – Unit shuts down then automatically restarts when full voltage is restored.  
C – Unit shuts down then manually restarts when full voltage is restored or Loss of function.

**Test Results**

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

**Remarks**

PASS Required Performance Criteria.



### 3.6 Power Frequency Magnetic Field Immunity

#### Reference Standard

EN 61000-4-8:2010

#### Test Date

N/A

#### Test Location

EMS-Magnetic: Electro wave Shieldroom #7

#### Test Equipment

| Used                     | Description                      | Model Number           | Manufacturer | Serial Number | Cal. Due     |
|--------------------------|----------------------------------|------------------------|--------------|---------------|--------------|
| <input type="checkbox"/> | EMS Test S/W                     | iec.control            | EM TEST      | 5.4.7         | -            |
| <input type="checkbox"/> | EMS Test S/W                     | NET.CONTROL            | EM TEST      | 1.1.3         | -            |
| <input type="checkbox"/> | ULTRA COMPACT SIMULATOR          | UCS 500N7              | EM TEST      | P1608172950   | Nov 27, 2020 |
| <input type="checkbox"/> | MOTOR VARIAC                     | MV2616                 | EM TEST      | P1552169719   | Nov 27, 2020 |
| <input type="checkbox"/> | MAGNETIC FIELD COIL              | MS 100N                | EM TEST      | P1536163691   | Nov 27, 2020 |
| <input type="checkbox"/> | CURRENT TRANSFORMER              | MC 2630                | EM TEST      | P1629182219   | Nov 27, 2020 |
| <input type="checkbox"/> | CURRENT TRANSFORMER              | MC 26100<br>(100 A 교정) | EM TEST      | P1550168963   | Apr 01, 2021 |
| <input type="checkbox"/> | MULTIFUNCTION AC/DC POWER SOURCE | NETWAVE 7-400          | EM TEST      | P1614178393   | Nov 27, 2020 |
| <input type="checkbox"/> | MAGNETICFIELD COIL               | INA 703                | Teseq AG     | 3006          | Apr 01, 2021 |

#### Test Conditions

Temperature: °C  
Relative Humidity: % R.H.  
Atmospheric Pressure: kPa



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### Test Specifications

Field Strength(Power Source): ☐ 1 A/m ☐ 100 A/m (ac)

☐ 300 A/m (dc)

Frequency (ac): ☐ 16.7 Hz ☐ 50 Hz ☐ 60 Hz

Frequency (dc): ☐ 0 Hz

Required Performance Criteria: ☐ A

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## Test Data

☐ Immersion method

| Coil orientation | Result |
|------------------|--------|
| X                | -      |
| Y                | -      |
| Z                | -      |

☐ Proximity method

| Coil orientation | Result |
|------------------|--------|
| X                | -      |
| Y                | -      |
| Z                | -      |

Note: "blank" = Not performed

### Observations:

- A – No response observed from E.U.T
- B – Unit shuts down then automatically restarts when full voltage is restored.
- C – Unit shuts down then manually restarts when full voltage is restored or Loss of function.

## Test Results

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

## Remarks

N/A



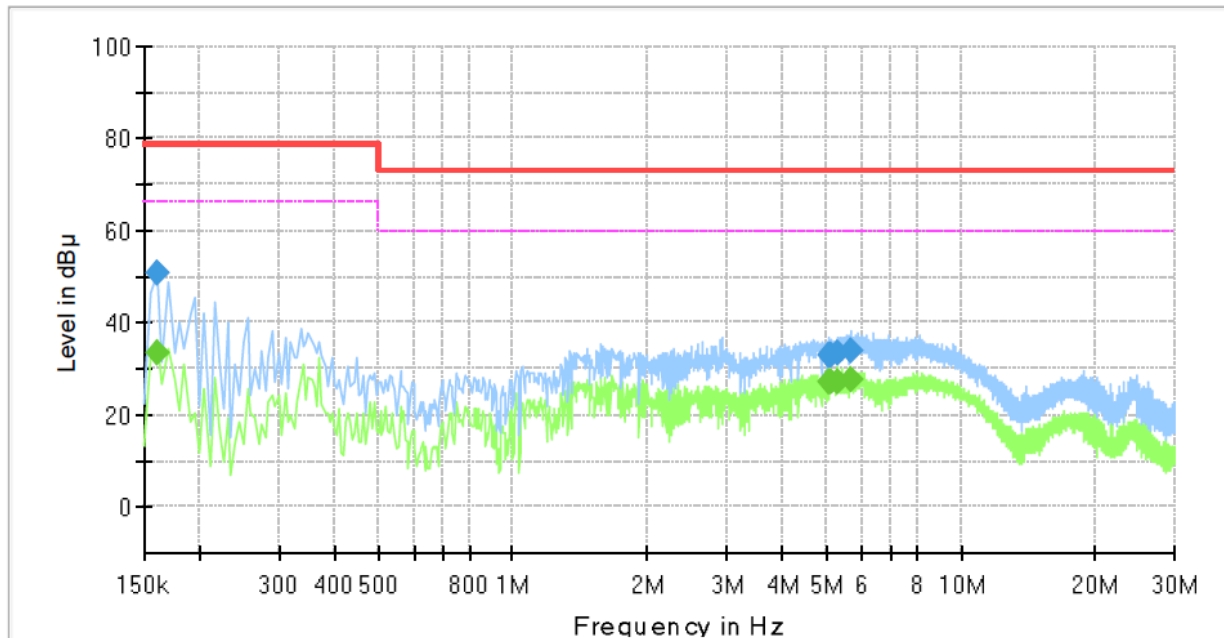
## APPENDIX A – TEST DATA

### Conducted Emissions at Mains Power Ports

- DC Mode  
[HOT]

### Common Information

Test Description: Conducted Emission  
Model No.: XNF-9010RVM  
Phase: L1  
Mode: DC  
Operator Name: KES



### Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.160000        | ---              | 33.54           | 66.00        | 32.46       | 1000.0          | 9.000           | L1   | 19.5       |
| 0.160000        | 50.74            | ---             | 79.00        | 28.26       | 1000.0          | 9.000           | L1   | 19.5       |
| 5.065000        | ---              | 27.23           | 60.00        | 32.77       | 1000.0          | 9.000           | L1   | 19.7       |
| 5.065000        | 33.09            | ---             | 73.00        | 39.91       | 1000.0          | 9.000           | L1   | 19.7       |
| 5.105000        | ---              | 27.10           | 60.00        | 32.90       | 1000.0          | 9.000           | L1   | 19.7       |
| 5.105000        | 33.04            | ---             | 73.00        | 39.96       | 1000.0          | 9.000           | L1   | 19.7       |
| 5.290000        | ---              | 27.20           | 60.00        | 32.80       | 1000.0          | 9.000           | L1   | 19.7       |
| 5.290000        | 33.37            | ---             | 73.00        | 39.63       | 1000.0          | 9.000           | L1   | 19.7       |
| 5.670000        | ---              | 27.81           | 60.00        | 32.19       | 1000.0          | 9.000           | L1   | 19.8       |
| 5.670000        | 33.99            | ---             | 73.00        | 39.01       | 1000.0          | 9.000           | L1   | 19.8       |



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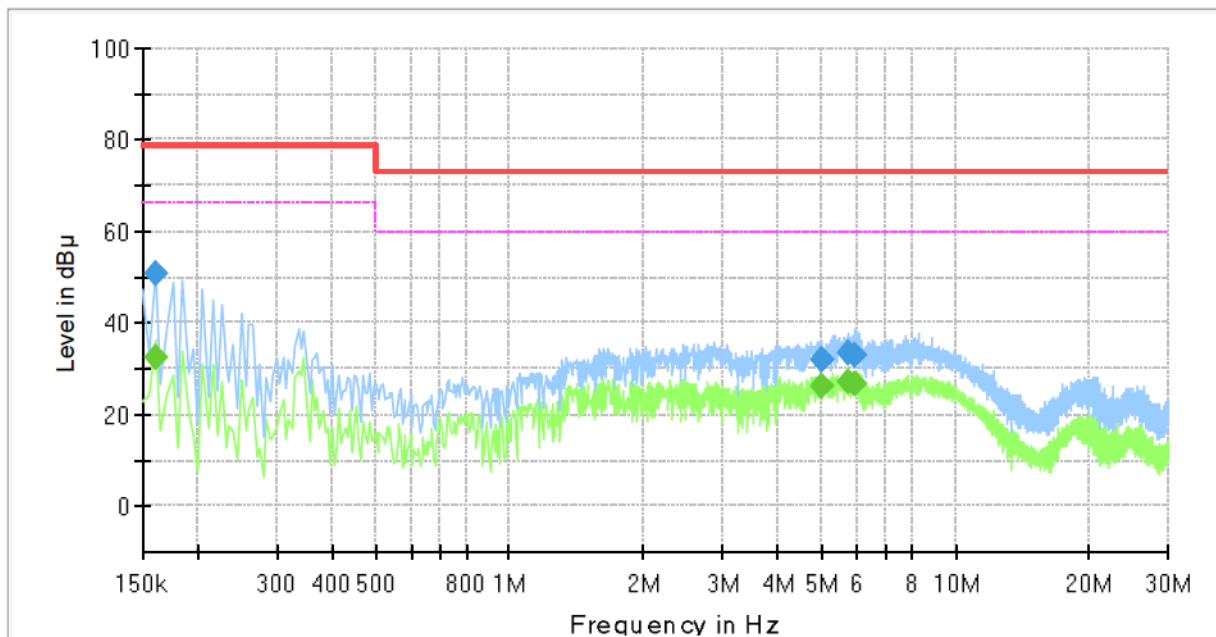
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[ NEUTRAL ]

## Common Information

Test Description: Conducted Emission  
Model No.: XNF-9010RVM  
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        | ---              | 32.30           | 66.00        | 33.70       | 1000.0          | 9.000           | N    | 19.5       |
| 0.160000        | 50.80            | ---             | 79.00        | 28.20       | 1000.0          | 9.000           | N    | 19.5       |
| 4.995000        | ---              | 26.10           | 60.00        | 33.90       | 1000.0          | 9.000           | N    | 19.7       |
| 4.995000        | 31.90            | ---             | 73.00        | 41.10       | 1000.0          | 9.000           | N    | 19.7       |
| 5.030000        | ---              | 26.33           | 60.00        | 33.67       | 1000.0          | 9.000           | N    | 19.7       |
| 5.030000        | 32.03            | ---             | 73.00        | 40.97       | 1000.0          | 9.000           | N    | 19.7       |
| 5.755000        | ---              | 27.23           | 60.00        | 32.77       | 1000.0          | 9.000           | N    | 19.8       |
| 5.755000        | 33.44            | ---             | 73.00        | 39.56       | 1000.0          | 9.000           | N    | 19.8       |
| 5.980000        | ---              | 26.57           | 60.00        | 33.43       | 1000.0          | 9.000           | N    | 19.8       |
| 5.980000        | 32.90            | ---             | 73.00        | 40.10       | 1000.0          | 9.000           | N    | 19.8       |

### ◆ 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))

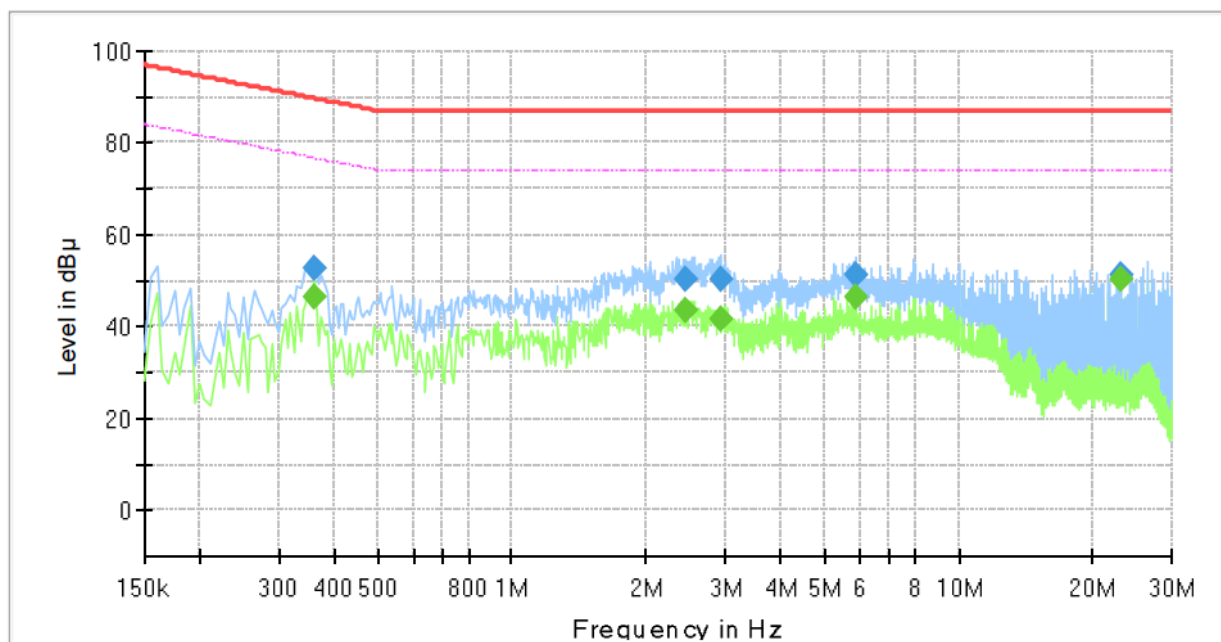
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## Conducted Emissions at Telecommunication Ports

- DC Mode  
 [100 Mbps]

### Common Information

|                   |                            |
|-------------------|----------------------------|
| Test Description: | Telecommunication Emission |
| Model No.:        | XNF-9010RVM                |
| 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) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|-------------|------------|
| 0.360000        | ---              | 46.31           | 76.73        | 30.42       | 1000.0          | 9.000           | Single Line | 19.7       |
| 0.360000        | 52.96            | ---             | 89.73        | 36.77       | 1000.0          | 9.000           | Single Line | 19.7       |
| 2.460000        | ---              | 43.60           | 74.00        | 30.40       | 1000.0          | 9.000           | Single Line | 19.4       |
| 2.460000        | 50.24            | ---             | 87.00        | 36.76       | 1000.0          | 9.000           | Single Line | 19.4       |
| 2.920000        | ---              | 41.46           | 74.00        | 32.54       | 1000.0          | 9.000           | Single Line | 19.4       |
| 2.920000        | 50.18            | ---             | 87.00        | 36.82       | 1000.0          | 9.000           | Single Line | 19.4       |
| 5.905000        | ---              | 46.65           | 74.00        | 27.35       | 1000.0          | 9.000           | Single Line | 19.6       |
| 5.905000        | 51.19            | ---             | 87.00        | 35.81       | 1000.0          | 9.000           | Single Line | 19.6       |
| 23.130000       | ---              | 50.35           | 74.00        | 23.65       | 1000.0          | 9.000           | Single Line | 20.2       |
| 23.130000       | 51.11            | ---             | 87.00        | 35.89       | 1000.0          | 9.000           | Single Line | 20.2       |



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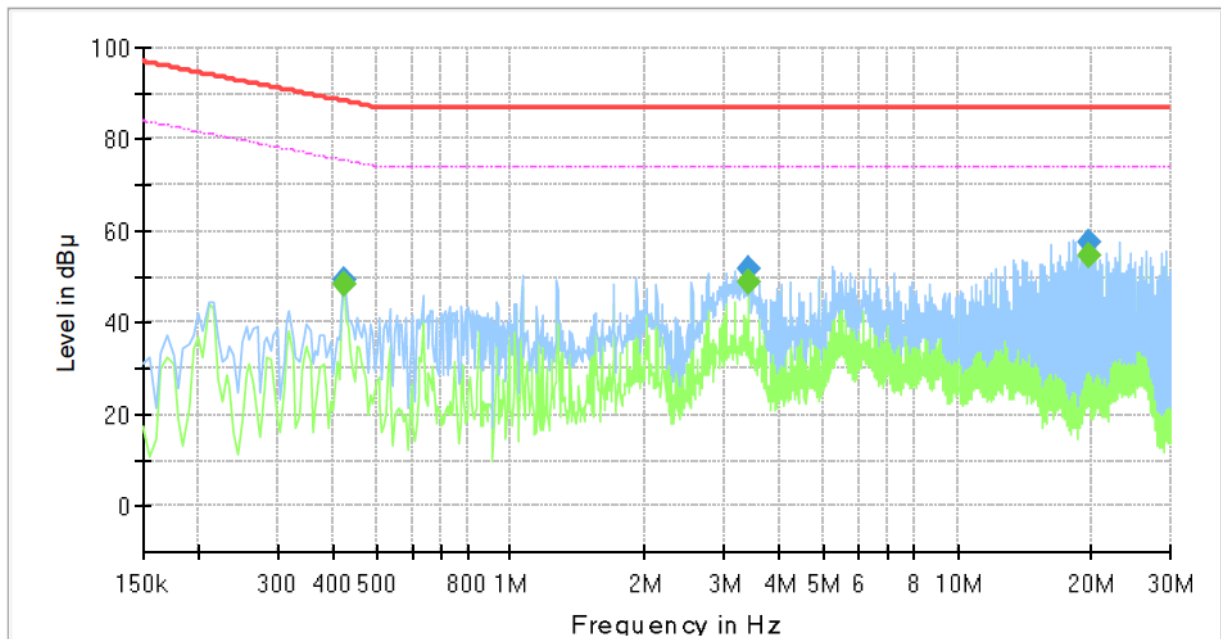
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- PoE Mode  
[100 Mbps]

### Common Information

|                   |                            |
|-------------------|----------------------------|
| Test Description: | Telecommunication Emission |
| Model No.:        | XNF-9010RVM                |
| 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) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|-------------|------------|
| 0.425000        | ---              | 48.14           | 75.35        | 27.21       | 1000.0          | 9.000           | Single Line | 19.6       |
| 0.425000        | 49.24            | ---             | 88.35        | 39.11       | 1000.0          | 9.000           | Single Line | 19.6       |
| 3.395000        | ---              | 48.96           | 74.00        | 25.04       | 1000.0          | 9.000           | Single Line | 19.5       |
| 3.395000        | 51.62            | ---             | 87.00        | 35.38       | 1000.0          | 9.000           | Single Line | 19.5       |
| 19.710000       | ---              | 54.53           | 74.00        | 19.47       | 1000.0          | 9.000           | Single Line | 20.1       |
| 19.710000       | 57.49            | ---             | 87.00        | 29.51       | 1000.0          | 9.000           | Single Line | 20.1       |

#### ◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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**Impulse Noise (click)**

N/A

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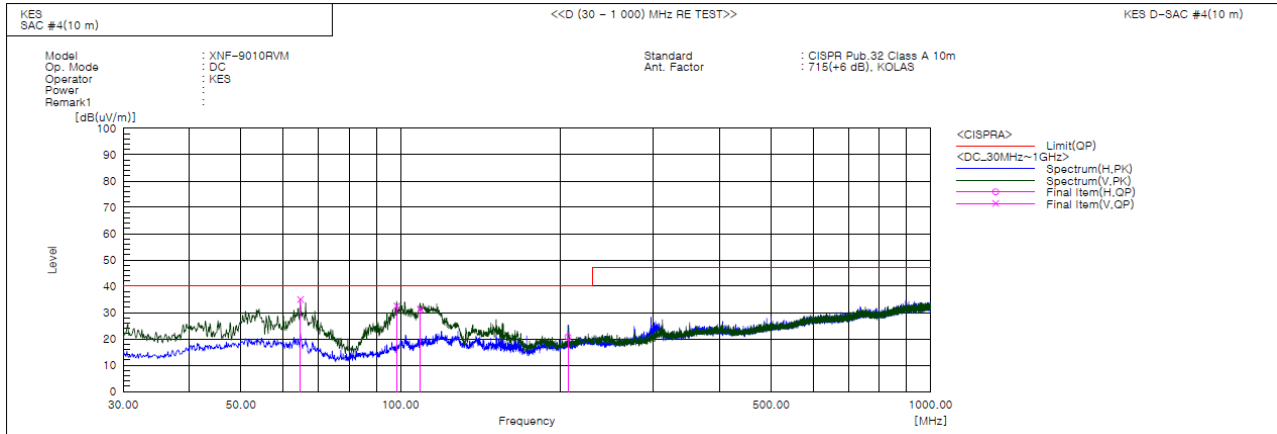
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### Radiated Electric Field Emissions(Below 1 GHz)

- DC Mode



#### Final Result

| No. | Frequency [MHz] | (P) | Reading QP [dB(uV)] | c.f [dB(1/m)] | Result QP [dB(uV/m)] | Limit QP [dB(uV/m)] | Margin QP [dB] | Height [cm] | Angle [deg] | Remark |
|-----|-----------------|-----|---------------------|---------------|----------------------|---------------------|----------------|-------------|-------------|--------|
| 1   | 64.799          | V   | 58.6                | -23.6         | 35.0                 | 40.0                | 5.0            | 100.0       | 146.0       |        |
| 2   | 98.385          | V   | 55.2                | -22.7         | 32.5                 | 40.0                | 7.5            | 113.0       | 290.0       |        |
| 3   | 108.934         | V   | 54.0                | -22.7         | 31.3                 | 40.0                | 8.7            | 141.0       | 290.0       |        |
| 4   | 207.025         | H   | 42.2                | -21.4         | 20.8                 | 40.0                | 19.2           | 400.0       | 227.0       |        |

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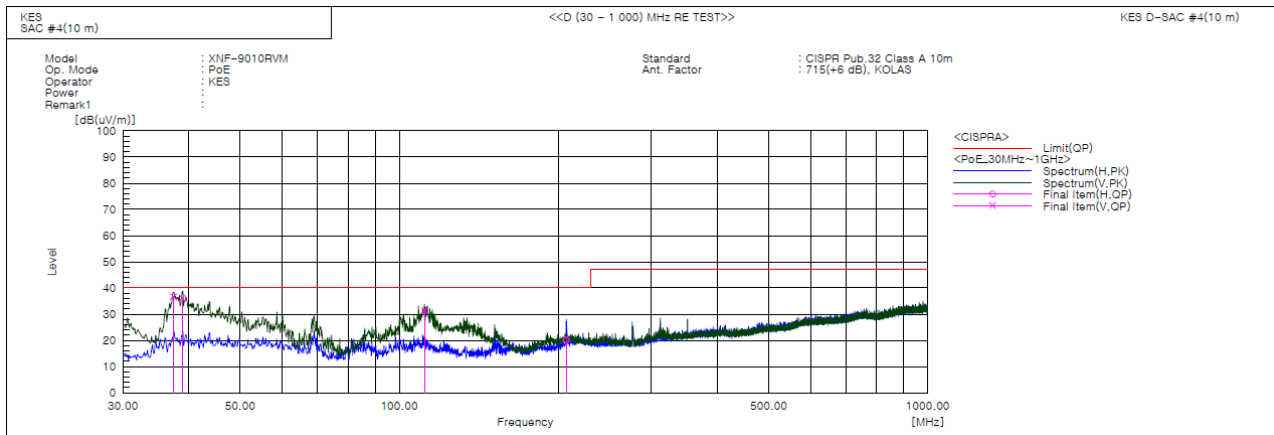


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### - PoE Mode



### 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   | 37.396             | V   | 61.0                      | -24.3            | 36.7                       | 40.0                      | 3.3                  | 142.0          | 343.0          |        |
| 2   | 38.851             | V   | 59.8                      | -23.6            | 36.2                       | 40.0                      | 3.8                  | 132.0          | 320.0          |        |
| 3   | 111.601            | V   | 54.4                      | -22.9            | 31.5                       | 40.0                      | 8.5                  | 100.0          | 165.0          |        |
| 4   | 206.904            | H   | 41.5                      | -21.4            | 20.1                       | 40.0                      | 19.9                 | 376.0          | 105.0          |        |

### ◆ Calculation – SAC #4(10 m)

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

Margin(QP)[dB] = Limit[dB( $\mu$ V/m)] - Result(QP) [dB( $\mu$ V/m)]

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

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



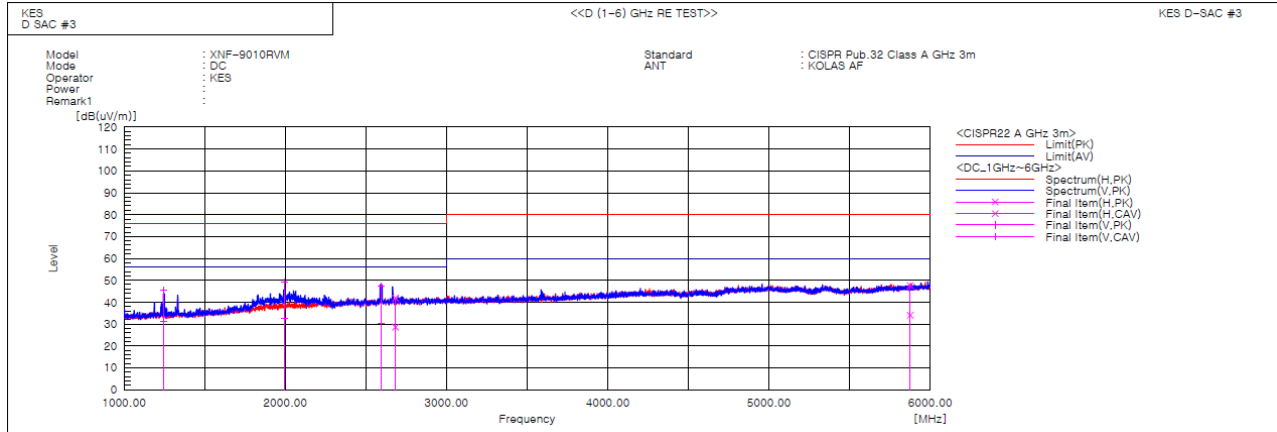
## KES Co., Ltd.

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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KES-EM-20T0434  
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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   | 1246.150        | V   | 53.6                | 39.1                 | -8.1          | 45.5                 | 31.0                  | 76.0                | 56.0                | 30.5           | 25.0            | 100.0       | 224.4       |        |
| 2   | 1994.101        | V   | 51.1                | 34.5                 | -2.0          | 49.1                 | 32.5                  | 76.0                | 56.0                | 26.9           | 23.5            | 100.0       | 351.7       |        |
| 3   | 2592.340        | V   | 46.8                | 29.7                 | 0.4           | 47.2                 | 30.1                  | 76.0                | 56.0                | 28.8           | 25.9            | 100.0       | 355.5       |        |
| 4   | 2682.767        | H   | 41.3                | 28.0                 | 0.6           | 41.9                 | 28.6                  | 76.0                | 56.0                | 34.1           | 27.4            | 100.0       | 130.3       |        |
| 5   | 5876.040        | H   | 37.8                | 24.2                 | 9.8           | 47.6                 | 34.0                  | 80.0                | 60.0                | 32.4           | 26.0            | 100.0       | 323.4       |        |

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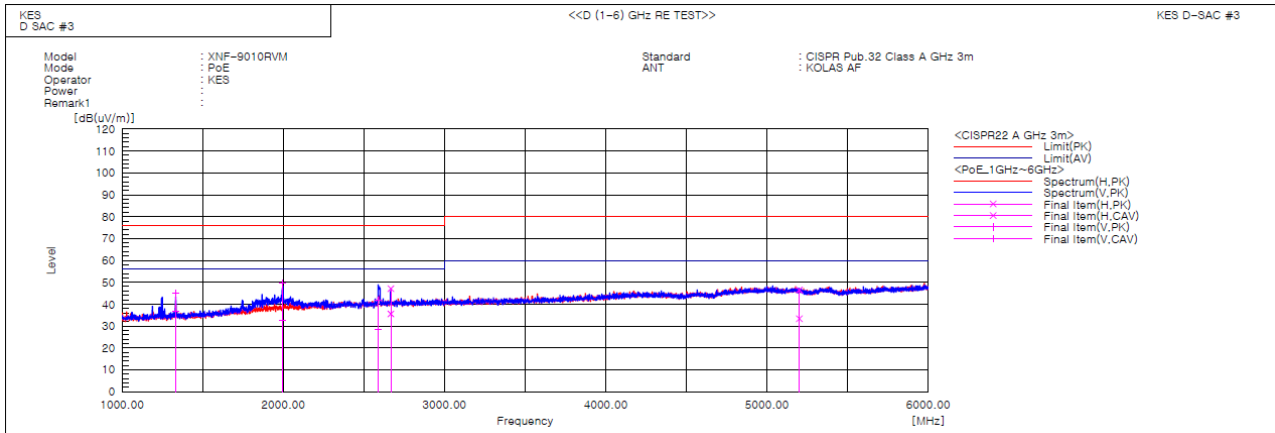
3701, 40, Simin-daero 365beon-gil,  
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea  
Tel: +82-31-425-6200 / Fax: +82-31-424-0450  
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Report No.:

KES-EM-20T0434

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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   | 1333.240        | V   | 52.4                | 44.1                 | -7.5          | 44.9                 | 36.6                  | 76.0                | 56.0                | 31.1           | 19.4            | 100.0       | 169.4       |        |
| 2   | 1996.850        | V   | 51.7                | 34.6                 | -2.0          | 49.7                 | 32.6                  | 76.0                | 56.0                | 26.3           | 23.4            | 100.0       | 14.5        |        |
| 3   | 2586.281        | V   | 41.6                | 28.2                 | 0.4           | 42.0                 | 28.6                  | 76.0                | 56.0                | 34.0           | 27.4            | 100.0       | 290.3       |        |
| 4   | 2686.510        | H   | 46.5                | 34.9                 | 0.6           | 47.1                 | 35.5                  | 76.0                | 56.0                | 28.9           | 20.5            | 100.0       | 124.1       |        |
| 5   | 5199.655        | H   | 37.9                | 24.7                 | 8.6           | 46.5                 | 33.3                  | 80.0                | 60.0                | 33.5           | 26.7            | 100.0       | 3.6         |        |

### ◆ Calculation

Over Limit [dB] = (Read Level[dB $\mu$ V] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dB $\mu$ V]

Over Limit : Marjin, Read Level : Reading value, Ant Factor : ANT Factor,  
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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**Harmonic Current Emissions and Voltage Fluctuations and Flicker**  
- DC Mode

**Average harmonic current results**

| Hn | I <sub>eff</sub> [A] | % of Limit | Limit [A] | Result |
|----|----------------------|------------|-----------|--------|
| 1  | 0.036                |            |           |        |
| 2  | 0.002                | 0.182      | 1.080     | n/a    |
| 3  | 0.029                | 1.249      | 2.300     | PASS   |
| 4  | 0.003                | 0.620      | 0.430     | n/a    |
| 5  | 0.029                | 2.577      | 1.140     | PASS   |
| 6  | 0.002                | 0.784      | 0.300     | n/a    |
| 7  | 0.030                | 3.838      | 0.770     | PASS   |
| 8  | 0.002                | 1.047      | 0.230     | n/a    |
| 9  | 0.028                | 6.898      | 0.400     | PASS   |
| 10 | 0.002                | 1.309      | 0.184     | n/a    |
| 11 | 0.026                | 7.988      | 0.330     | PASS   |
| 12 | 0.002                | 1.526      | 0.153     | n/a    |
| 13 | 0.025                | 12.037     | 0.210     | PASS   |
| 14 | 0.002                | 1.834      | 0.131     | n/a    |
| 15 | 0.024                | 15.863     | 0.150     | PASS   |
| 16 | 0.002                | 2.026      | 0.115     | n/a    |
| 17 | 0.022                | 16.916     | 0.132     | PASS   |
| 18 | 0.002                | 2.229      | 0.102     | n/a    |
| 19 | 0.021                | 17.634     | 0.118     | PASS   |
| 20 | 0.002                | 2.468      | 0.092     | n/a    |
| 21 | 0.019                | 11.984     | 0.161     | PASS   |
| 22 | 0.002                | 2.666      | 0.084     | n/a    |
| 23 | 0.018                | 11.971     | 0.147     | PASS   |
| 24 | 0.002                | 2.890      | 0.077     | n/a    |
| 25 | 0.016                | 11.861     | 0.135     | PASS   |
| 26 | 0.002                | 2.972      | 0.071     | n/a    |
| 27 | 0.014                | 11.588     | 0.125     | PASS   |
| 28 | 0.002                | 3.158      | 0.066     | n/a    |
| 29 | 0.013                | 10.867     | 0.116     | PASS   |
| 30 | 0.002                | 3.206      | 0.061     | n/a    |
| 31 | 0.011                | 10.296     | 0.109     | PASS   |
| 32 | 0.002                | 3.351      | 0.058     | n/a    |
| 33 | 0.010                | 9.484      | 0.102     | PASS   |
| 34 | 0.002                | 3.478      | 0.054     | n/a    |
| 35 | 0.008                | 8.396      | 0.096     | PASS   |
| 36 | 0.002                | 3.457      | 0.051     | n/a    |
| 37 | 0.007                | 7.616      | 0.091     | PASS   |
| 38 | 0.002                | 3.639      | 0.048     | n/a    |
| 39 | 0.006                | 6.442      | 0.087     | PASS   |
| 40 | 0.002                | 3.572      | 0.046     | n/a    |

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



Test Data - Harmonics (continued)

| <b>Maximum harmonic current results</b> |                      |            |           |        |
|-----------------------------------------|----------------------|------------|-----------|--------|
| Hn                                      | I <sub>eff</sub> [A] | % of Limit | Limit [A] | Result |
| 1                                       | 0.036                |            |           |        |
| 2                                       | 0.002                | 0.148      | 1.620     | n/a    |
| 3                                       | 0.029                | 0.850      | 3.450     | PASS   |
| 4                                       | 0.003                | 0.460      | 0.645     | n/a    |
| 5                                       | 0.030                | 1.730      | 1.710     | PASS   |
| 6                                       | 0.003                | 0.563      | 0.450     | n/a    |
| 7                                       | 0.030                | 2.575      | 1.155     | PASS   |
| 8                                       | 0.003                | 0.770      | 0.345     | n/a    |
| 9                                       | 0.028                | 4.639      | 0.600     | PASS   |
| 10                                      | 0.003                | 0.943      | 0.276     | n/a    |
| 11                                      | 0.027                | 5.394      | 0.495     | PASS   |
| 12                                      | 0.003                | 1.105      | 0.230     | n/a    |
| 13                                      | 0.025                | 8.069      | 0.315     | PASS   |
| 14                                      | 0.003                | 1.316      | 0.197     | n/a    |
| 15                                      | 0.024                | 10.622     | 0.225     | PASS   |
| 16                                      | 0.003                | 1.471      | 0.173     | n/a    |
| 17                                      | 0.022                | 11.331     | 0.199     | PASS   |
| 18                                      | 0.003                | 1.635      | 0.153     | n/a    |
| 19                                      | 0.021                | 11.802     | 0.178     | PASS   |
| 20                                      | 0.002                | 1.788      | 0.138     | n/a    |
| 21                                      | 0.019                | 12.062     | 0.161     | PASS   |
| 22                                      | 0.002                | 1.948      | 0.125     | n/a    |
| 23                                      | 0.018                | 12.037     | 0.147     | PASS   |
| 24                                      | 0.002                | 2.113      | 0.115     | n/a    |
| 25                                      | 0.016                | 11.935     | 0.135     | PASS   |
| 26                                      | 0.002                | 2.134      | 0.106     | n/a    |
| 27                                      | 0.015                | 11.696     | 0.125     | PASS   |
| 28                                      | 0.002                | 2.324      | 0.099     | n/a    |
| 29                                      | 0.013                | 10.982     | 0.116     | PASS   |
| 30                                      | 0.002                | 2.365      | 0.092     | n/a    |
| 31                                      | 0.011                | 10.425     | 0.109     | PASS   |
| 32                                      | 0.002                | 2.415      | 0.086     | n/a    |
| 33                                      | 0.010                | 9.606      | 0.102     | PASS   |
| 34                                      | 0.002                | 2.544      | 0.081     | n/a    |
| 35                                      | 0.008                | 8.524      | 0.096     | PASS   |
| 36                                      | 0.002                | 2.620      | 0.077     | n/a    |
| 37                                      | 0.007                | 7.708      | 0.091     | PASS   |
| 38                                      | 0.002                | 2.659      | 0.073     | n/a    |
| 39                                      | 0.006                | 6.642      | 0.087     | PASS   |
| 40                                      | 0.002                | 2.557      | 0.069     | n/a    |

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

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Report No.:  
KES-EM-20T0434  
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Test Data - Voltage Fluctuations

## Maximum Flicker results

- DC Mode

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

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## Test Setup Photos and Configuration

### Conducted Emissions at Mains Power Ports

- DC Mode



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## Conducted Emissions at Telecommunication Ports

- DC Mode



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- PoE Mode



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## Radiated Electric Field Emissions(Below 1 GHz)

- DC Mode



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**- PoE Mode**

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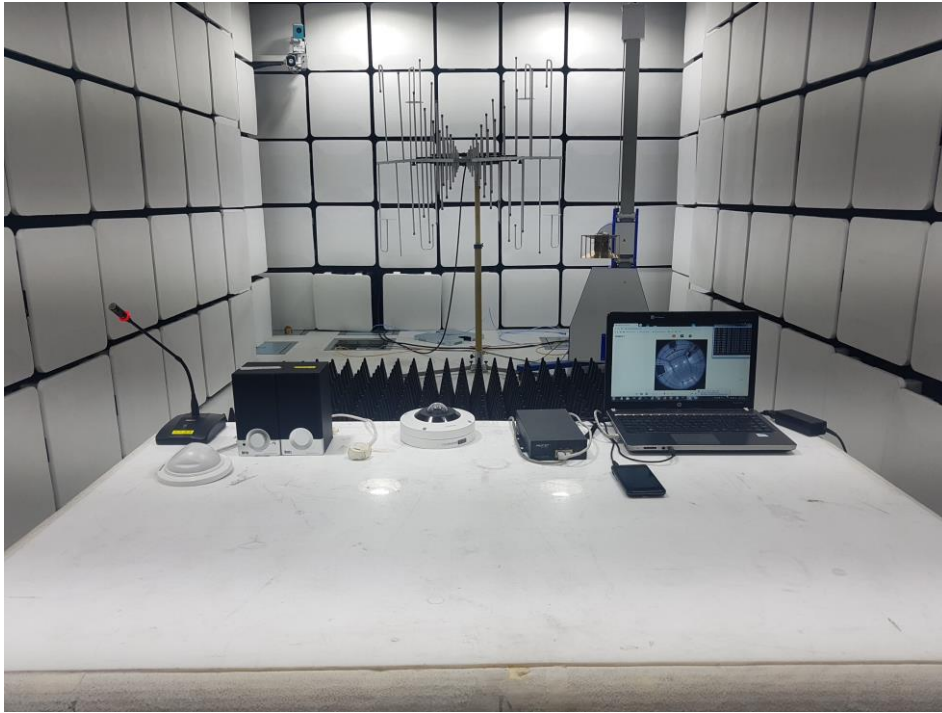
## Radiated Electric Field Emissions(Above 1 GHz)

- DC Mode



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- PoE Mode



## Harmonic Current Emissions and Voltage Fluctuations and Flicker

- DC Mode

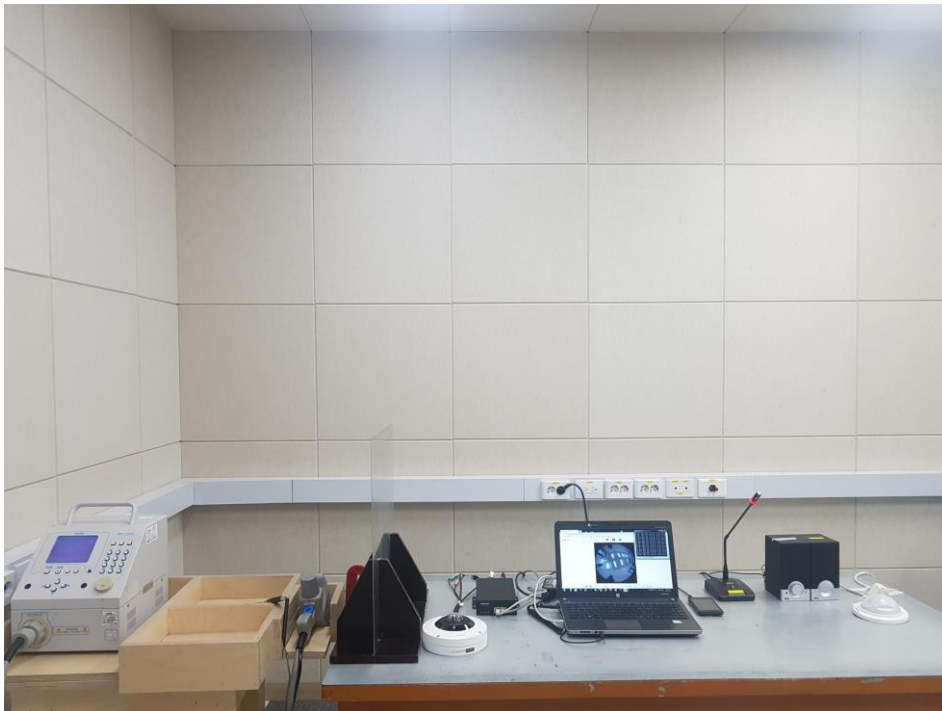


## Electrostatic Discharge

### - DC Mode



### - PoE Mode



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## Radio-frequency Electromagnetic Field

- DC Mode



- PoE Mode



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## Fast Transients

### - DC Mode



### - PoE Mode



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## Surges

- DC Mode



- PoE Mode



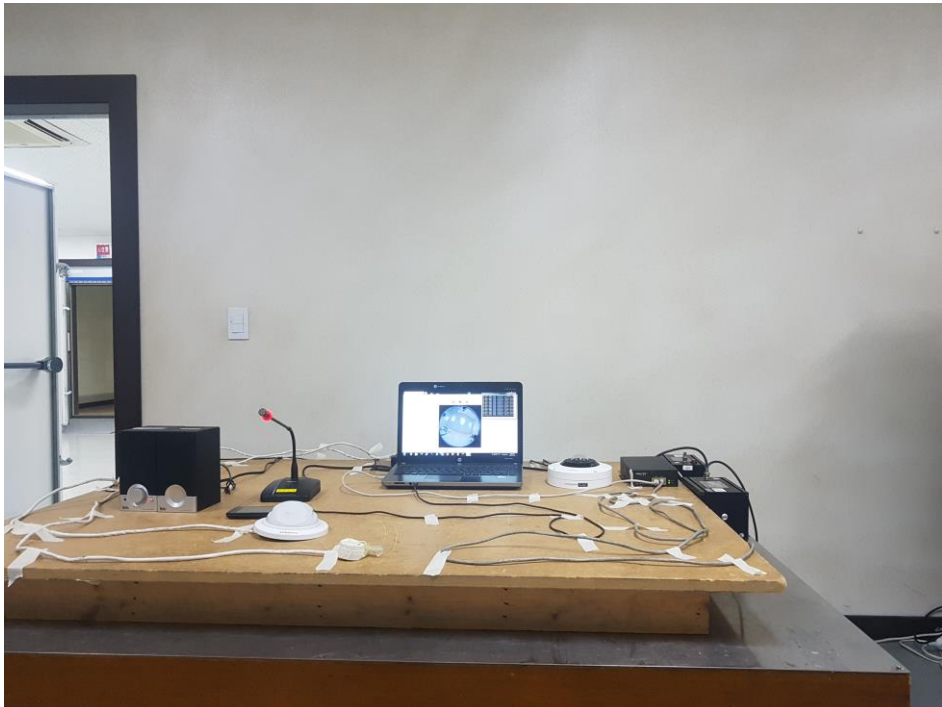
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## Conducted Disturbance

- DC Mode



- PoE Mode



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## Power Frequency Magnetic Field Immunity

N/A

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## EUT External Photographs

(Top)



(Bottom)



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## EUT Internal Photographs

(Internal View)



## EUT Internal View – Main Board

(Top)



(Bottom)



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## EUT Internal View – SUB Board

(Top)



(Bottom)



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## EUT Internal View – Camera Board

(Top)

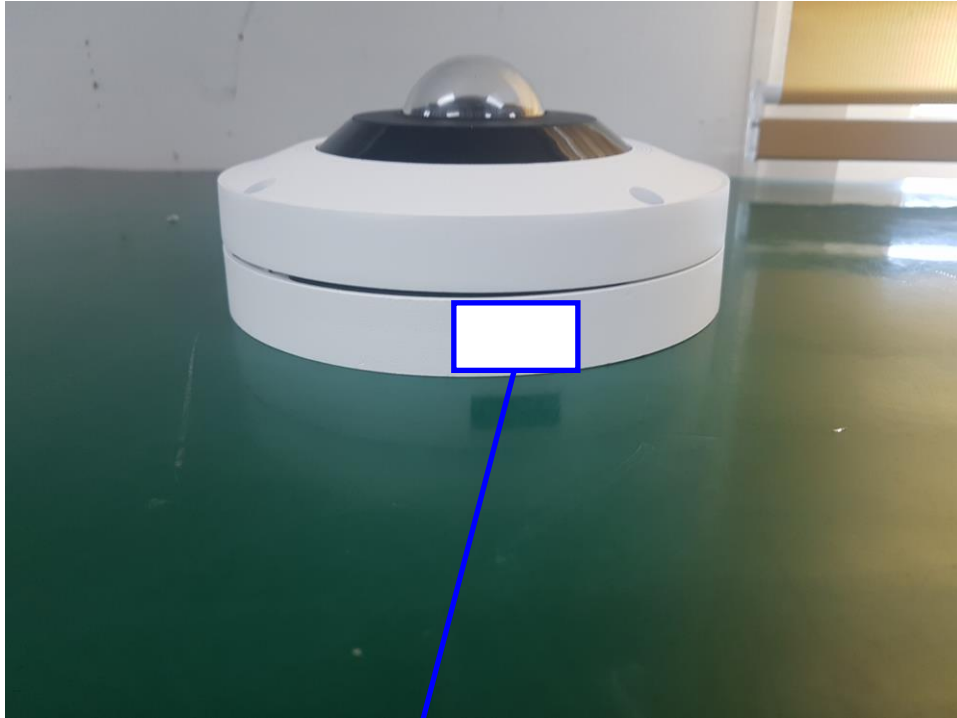


(Bottom)



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## Label and Location



**NETWORK CAMERA**

Model No : XNF-9010RVM

Manufacturer : HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.

Made in Vietnam

