



## EMC TEST REPORT For IC

Test Report No. : KES-E1-16T0695-R1  
Date of Issue : Feb. 24, 2023  
Product name : NETWORK CAMERA  
Model/Type No. : XND-6080  
Variant Model : -  
Applicant : Hanwha Vision Co., Ltd  
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,  
Gyeonggi-do, Republic of Korea  
Manufacturer : 1. HANWHA VISION VIETNAM COMPANY LIMITED  
2. D-TECH CO.,LTD.  
Manufacturer Address : 1. Lot O-2, Que Vo Industrial Zone extended area,  
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam  
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do,  
Korea (Suwon Industrial Complex)  
Date of Receipt : Nov, 23, 2016  
Test date : Dec, 19, 2016 ~ Dec, 21, 2016  
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dae Hyun, Kim  
EMC Test Engineer

Reviewed by

Dong-Hun, Jang  
EMC Technical Manager

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

**KES Co., Ltd.**

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Report No.:

KES-E1-16T0695-R1

Page (2) of (38)

**REPORT REVISION HISTORY**

| Date          | Test Report No.   | Revision History                                                                 |
|---------------|-------------------|----------------------------------------------------------------------------------|
| Dec. 28, 2016 | KES-E1-16T0695    | Issued                                                                           |
| Feb. 24, 2023 | KES-E1-16T0695-R1 | Change the Applicant, manufacturer at the request of the customer and model name |
|               |                   |                                                                                  |
|               |                   |                                                                                  |
|               |                   |                                                                                  |
|               |                   |                                                                                  |
|               |                   |                                                                                  |
|               |                   |                                                                                  |
|               |                   |                                                                                  |
|               |                   |                                                                                  |

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## TABLE OF CONTENTS

|                                                      |                                                             |    |
|------------------------------------------------------|-------------------------------------------------------------|----|
| 1.0                                                  | General Product Description.....                            | 4  |
| 1.1                                                  | Test Voltage & Frequency .....                              | 7  |
| 1.2                                                  | Variant Model Differences .....                             | 7  |
| 1.3                                                  | Device Modifications .....                                  | 7  |
| 1.4                                                  | Equipment Under Test.....                                   | 7  |
| 1.5                                                  | Support Equipments .....                                    | 7  |
| 1.6                                                  | External I/O Cabling .....                                  | 8  |
| 1.7                                                  | EUT Operating Mode(s) .....                                 | 9  |
| 1.8                                                  | Configuration .....                                         | 10 |
| 1.9                                                  | Calibration Details of Equipment Used for Measurement ..... | 11 |
| 1.10                                                 | Test Facility .....                                         | 11 |
| 1.11                                                 | Laboratory Accreditations and Listings .....                | 11 |
| 2.0                                                  | Test Regulations.....                                       | 12 |
| 2.1                                                  | Conducted Emissions Mains Power Ports.....                  | 14 |
| 2.2                                                  | Radiated Electric Field Emissions(Below 1 GHz) .....        | 15 |
| 2.3                                                  | Radiated Electric Field Emissions(Above 1 GHz) .....        | 16 |
| APPENDIX A – TEST DATA.....                          |                                                             | 17 |
| Conducted Emissions at Mains Power Ports.....        |                                                             | 17 |
| Radiated Electric Field Emissions(Below 1 GHz) ..... |                                                             | 19 |
| Radiated Electric Field Emissions(Above 1 GHz) ..... |                                                             | 20 |
| Test Setup Photos and Configuration .....            |                                                             | 28 |
| Conducted Voltage Emissions .....                    |                                                             | 28 |
| Radiated Electric Field Emissions(Below 1 GHz) ..... |                                                             | 29 |
| Radiated Electric Field Emissions(Above 1 GHz) ..... |                                                             | 31 |
| EUT External Photographs .....                       |                                                             | 33 |
| EUT Internal Photographs .....                       |                                                             | 34 |



## 1.0 General Product Description

### Main Specifications of EUT are:

|                             |                                                                                                                                                                                                                                                                     |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Video</b>                |                                                                                                                                                                                                                                                                     |
| Imaging Device              | 1/2.8" 2M CMOS                                                                                                                                                                                                                                                      |
| Total Pixels                | 1945(H) x 1109(V) 2.16M                                                                                                                                                                                                                                             |
| Effective Pixels            | 1945(H) x 1097(V) 2.13M                                                                                                                                                                                                                                             |
| Scanning System             | Progressive Scan                                                                                                                                                                                                                                                    |
| Min. Illumination           | Color : 0.03 lux(F1.4, 1./30sec)<br>B/W : 0.003 Lux (F1.4, 1./30sec)                                                                                                                                                                                                |
| S / N Ratio                 | 50dB                                                                                                                                                                                                                                                                |
| Video Out                   | CVBS : 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P), for installation<br>USB : Micro USB type B, 1920 x 1080 for installation                                                                                                                                   |
| <b>Lens</b>                 |                                                                                                                                                                                                                                                                     |
| Focal Length (Zoom Ratio)   | 2.8~12mm(4.3x) motorized varifocal                                                                                                                                                                                                                                  |
| Max. Aperture Ratio         | 1.4(Wide) ~ 3.6(Tele)                                                                                                                                                                                                                                               |
| Angular Field of View       | H: 119.5°, V: 62.8°, D: 142.1°<br>H: 27.9°, V: 15.7°, D: 32.0°                                                                                                                                                                                                      |
| Min. Object Distance        | 0.5m (1.64ft)                                                                                                                                                                                                                                                       |
| Focus Control               | Simple focus(Motorized V/F) / Manual, Remote control via network<br>(Manual, Simple focus)                                                                                                                                                                          |
| Lens Type                   | DC Auto Iris, P-iris                                                                                                                                                                                                                                                |
| Mount Type                  | Board-in type                                                                                                                                                                                                                                                       |
| <b>Pan / Tilt / Rotate</b>  |                                                                                                                                                                                                                                                                     |
| Pan / Tilt / Rotate range   | 0° ~ 354° / 0° ~ 85°(TBD) / 0° ~ 355°                                                                                                                                                                                                                               |
| <b>Operational</b>          |                                                                                                                                                                                                                                                                     |
| IR LED                      | -                                                                                                                                                                                                                                                                   |
| Viewable Length             | -                                                                                                                                                                                                                                                                   |
| Camera Title                | Off / On (Displayed up to 85 characters)<br>- W/W : English/Numeric/Special Characters<br>- China : English/Numeric/Special/Chinese Characters<br>- Common : Multi-line (Max 5), Color (Grey/Green/Red/Blue/Black/White),<br>Transparency, Auto Scale by Resolution |
| Day & Night                 | Auto (ICR) / Color / B/W / External / Schedule                                                                                                                                                                                                                      |
| Backlight Compensation      | Off / BLC / HLC(Masking/Dimming), WDR                                                                                                                                                                                                                               |
| Wide Dynamic Range          | 150dB                                                                                                                                                                                                                                                               |
| Contrast Enhancement        | SSDR (Off / On)                                                                                                                                                                                                                                                     |
| Digital Noise Reduction     | SSNR5 (2D+3D Noise Filter) (Off / On)                                                                                                                                                                                                                               |
| Digital Image Stabilization | Off / On                                                                                                                                                                                                                                                            |
| Defog                       | Auto(input from fog detection) / Manual / Off                                                                                                                                                                                                                       |
| Motion Detection            | Off/ On(8ea, 8point Polygonal zones), Hand over                                                                                                                                                                                                                     |
| Privacy Masking             | Off / On (32ea, polygonal zones)<br>- Color : Grey/Green/Red/Blue/Black/White<br>- Mosaic                                                                                                                                                                           |
| Gain Control                | Off / Low / Middle / High                                                                                                                                                                                                                                           |
| White Balance               | ATW / AWC / Manual / Indoor / Outdoor((included Mercury & Sodium)                                                                                                                                                                                                   |
| Contrast                    | level adjustment                                                                                                                                                                                                                                                    |
| LDC                         | On/Off (5 levels with Min/Max)                                                                                                                                                                                                                                      |
| Electronic Shutter Speed    | Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)                                                                                                                                                                                                                  |
| Digital PTZ                 | 24X, 'Digital PTZ(Preset, Group)                                                                                                                                                                                                                                    |

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Report No.:

KES-E1-16T0695-R1

Page (5) of (38)

|                          |                                                                                                                                                                                                             |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flip / Mirror            | Flip : On/Off<br>Mirror : On/Off<br>Hallway view : 90°/270°                                                                                                                                                 |
| Video & Audio Analytics  | Tampering, Loitering, Directional Detection, Defocus Detection, Fog Detection, Virtual Line, Enter/Exit, Appear / Disappear, Audio Detection, Motion Detection, Digital Auto Tracking, Sound Classification |
| Alarm I/O                | Input 1ea / Output 1ea                                                                                                                                                                                      |
| Remote Control Interface | -                                                                                                                                                                                                           |
| RS-485 Protocol          | -                                                                                                                                                                                                           |
| Alarm Triggers           | Alarm Input, Motion Detection, Video & Audio Analytics, Network Disconnect                                                                                                                                  |
| Alarm events             | File upload via FTP, E-Mail<br>Notification via E-Mail<br>local storage(SD/SDHC/SDXC) or NAS recording at Event Triggers<br>External output<br>DPTZ preset                                                  |
| Audio In                 | Selectable (Mic IN/Line IN), Built-in MIC. Max output level : 1Vrms<br>Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm                                                                         |
| Audio out                | Line out, Max output level: 1 Vrms                                                                                                                                                                          |
| Fan / Heater             | N/A                                                                                                                                                                                                         |
| Pixel Counter            | Support                                                                                                                                                                                                     |
| <b>Network</b>           |                                                                                                                                                                                                             |
| Video Compression Format | H.265/H.264 (MPEG-4 Part 10/AVC) : Main/Baseline/High , Motion JPEG                                                                                                                                         |
| Resolution               | 1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x450, 720x576, 640x480, 640x360, 320x240, 320x180                                                                                           |
| Max. Framerate           | H.265/H.264 : Max. 60fps at all resolutions<br>Motion JPEG : Max. 30fps                                                                                                                                     |
| Smart Codec              | Manual Mode (area-based : 5EA)                                                                                                                                                                              |
| WiseStream               | Support                                                                                                                                                                                                     |
| Video Quality Adjustment | H.264/H.265 : Target Bitrate Level Control<br>MJPEG : Target Bitrate Level Control                                                                                                                          |
| Bitrate Control Method   | H.264/H.265 : CBR or VBR<br>MJPEG : VBR                                                                                                                                                                     |
| Streaming Capability     | Multiple Streaming (Up to 10 Profiles)                                                                                                                                                                      |
| Audio Compression Format | G.711 u-law /G.726 Selectable<br>G.726 (ADPCM) 8KHz, G.711 8KHz<br>G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps<br>AAC-LC : 48Kbps at 8/16/32/48KHz                                                               |
| Audio Communication      | Bi-directional (2-Way)                                                                                                                                                                                      |
| IP                       | IPv4, IPv6                                                                                                                                                                                                  |
| Protocol                 | TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour                             |
| Security                 | HTTPS(SSL) Login Authentication<br>Digest Login Authentication<br>IP Address Filtering<br>User access Log<br>802.1X Authentication (EAP-TLS, EAP-LEAP)                                                      |
| Streaming Method         | Unicast / Multicast                                                                                                                                                                                         |
| Max. User Access         | 20 users at Unicast Mode                                                                                                                                                                                    |

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Report No.:

KES-E1-16T0695-R1

Page (6) of (38)

|                                  |                                                                                                                                                                                                                                                                                          |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Edge Storage                     | SD/SDHC/SDXC 2slot (up to 512 GB)<br>- Continuous recording(1'st slot to 2'nd slot)<br>- Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded.<br>NAS(Network Attached Storage)<br>Local PC for Instant Recording                                                    |
| Application Programming          | ONVIF Profile S/G<br>SUNAPI(HTTP API)<br>Open Platform                                                                                                                                                                                                                                   |
| Webpage Language                 | English, Korean, Chinese, French, Italian, Spanish, German, Japanese,<br>Russian, Swedish, Danish, Portuguese, Czech, Polish, Turkish, Rumanian, Serbian,<br>Dutch, Croatia, Hungary, Greek, Norsk, Finnish                                                                              |
| Web Viewer                       | Supported OS: Windows 7, 8, 10, Mac OS X 10.10. 10.11 10.12<br>Non-plugin Webviewer<br>Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49 , Apple Safari<br>9 (Mac OS X only)<br>Plug-in Webviewer<br>Supported Browser : MS Explore 11, Apple Safari 9 (Mac OS X only) |
| Central Management Software      | SmartViewer, SSM                                                                                                                                                                                                                                                                         |
| <b>Environmental</b>             |                                                                                                                                                                                                                                                                                          |
| Operating Temperature / Humidity | -10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH                                                                                                                                                                                                                                        |
| Storage Temperature / Humidity   | -50°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH                                                                                                                                                                                                                                        |
| Ingress Protection               | -                                                                                                                                                                                                                                                                                        |
| Vandal Resistance                | IK08                                                                                                                                                                                                                                                                                     |
| <b>Electrical</b>                |                                                                                                                                                                                                                                                                                          |
| Input Voltage / Current          | 12VDC ± 10%, PoE(IEEE802.3af)                                                                                                                                                                                                                                                            |
| Power Consumption                | TBD                                                                                                                                                                                                                                                                                      |
| <b>Mechanical</b>                |                                                                                                                                                                                                                                                                                          |
| Color / Material                 | IVORY / Plastic                                                                                                                                                                                                                                                                          |
| Dimension (WxHxD)                | PND-9080R                                                                                                                                                                                                                                                                                |
| Weight                           |                                                                                                                                                                                                                                                                                          |

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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 ☐ 100 Vac ☐ 110 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 | XND-6080     | -             | HANWHA VISION<br>VIETNAM COMPANY<br>LIMITED | E.U.T   |

## 1.5 Support Equipments

| Description      | Model Number   | Serial Number | Manufacturer                                     | Remarks |
|------------------|----------------|---------------|--------------------------------------------------|---------|
| PoE Adapter      | ANY4805C-LT1   | 10H300002     | ANY ELECTRONICS CO.,<br>LTD                      | -       |
| Speaker          | BR10000A CUVE  | -             | BEIJING EDIFIER HI-TECH<br>GROUP.                | -       |
| Mobile Phone     | A1688          | -             | Apple Inc.                                       | -       |
| Micro SD Card    | -              | -             | -                                                | -       |
| Notebook         | ProBook4430s   | -             | HP                                               | -       |
| Notebook Adapter | SeriesPPP0009H | -             | CHICONY POWER<br>TECHNOLOGY (SUZHOU)<br>CO.,LTD, | -       |
| Alarm Jig        | -              | -             | -                                                | -       |

## 1.6 External I/O Cabling

- DC 12 V Mode

| Start                     |                    | END           |                    | Cable Spec. |        |
|---------------------------|--------------------|---------------|--------------------|-------------|--------|
| Description               | I/O Port           | Description   | I/O Port           | Length      | Shield |
| NETWORK CAMERA<br>(E.U.T) | RJ-45(LAN)         | Notebook      | RJ-45(LAN)         | 4.0         | U      |
|                           | Audio in           | Mobile Phone  | Audio Out          | 1.2         | U      |
|                           | Audio Out          | Speaker       | Audio in           | 1.1         | U      |
|                           | Alarm              | Alarm Jig     | Alarm              | 3.2         | U      |
|                           | Micro SD Card Slot | Micro SD Card | Micro SD Card Slot | -           | -      |

- PoE Mode

| Start                     |                    | END           |                    | Cable Spec. |        |
|---------------------------|--------------------|---------------|--------------------|-------------|--------|
| Description               | I/O Port           | Description   | I/O Port           | Length      | Shield |
| NETWORK CAMERA<br>(E.U.T) | Audio in           | Mobile Phone  | Audio Out          | 1.2         | U      |
|                           | Audio Out          | Speaker       | Audio in           | 1.1         | U      |
|                           | Alarm              | Alarm Jig     | Alarm              | 3.2         | U      |
|                           | Micro SD Card Slot | Micro SD Card | Micro SD Card Slot | -           | -      |
|                           | RJ-45(PoE)         | PoE Adapter   | RJ-45(PoE)         | 4.0         | U      |
| PoE Adapter               | RJ-45(LAN)         | Notebook      | RJ-45(LAN)         | 1.9         | U      |

\* Unshielded = U, Shielded = S



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Report No.:

KES-E1-16T0695-R1

Page (9) of (38)

## 1.7 EUT Operating Mode(s)

| Test mode | Normal operating             |
|-----------|------------------------------|
| DC 12 V   | E.U.T Monitoring , Ping test |
| PoE       |                              |

| E.U.T Test operating S/W |         |                        |
|--------------------------|---------|------------------------|
| Name                     | Version | Manufacture Company    |
| WebViewer                | -       | Hanwha Vision Co., Ltd |

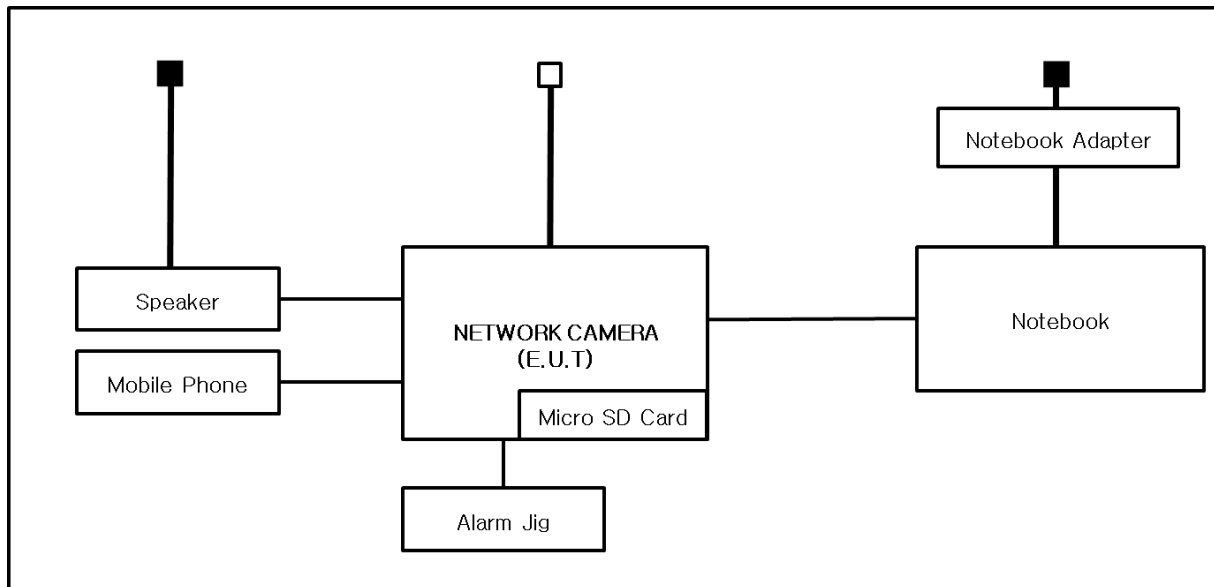
- Input power condition during the measurements was 12 v (dc) , PoE.

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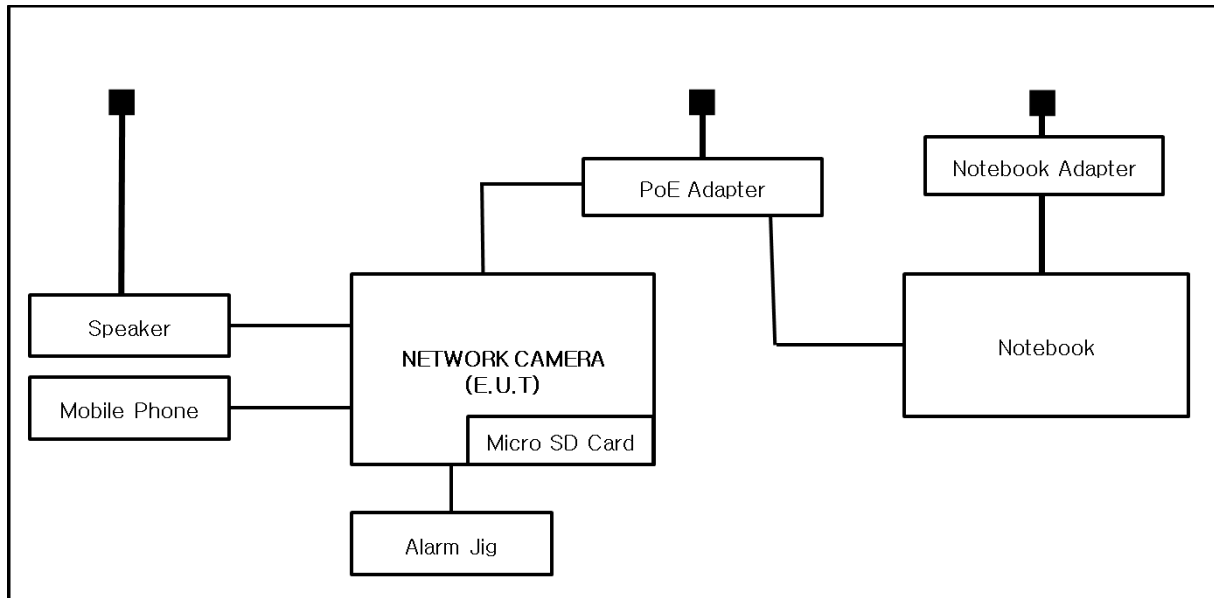
## 1.8 Configuration

■ AC Main  
 □ DC 12 V Main

- DC 12 V Mode



- PoE Mode



## 1.9 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.

## 1.10 Test Facility

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

## 1.11 Laboratory Accreditations and Listings

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

## 2.0 Test Regulations

The emissions tests were performed according to following regulations:

☐ **EMC – Directive 2014/30/EU**

☐ EN 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 55022:2010

☐ Class A

☐ Class B

☐ EN 55024:2010 +A1:2015

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013



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Report No.:  
KES-E1-16T0695-R1  
Page (13) of (38)

- |                                                                          |                                             |                                  |
|--------------------------------------------------------------------------|---------------------------------------------|----------------------------------|
| <input type="checkbox"/> <b>VCCI V-3 / 2015.04</b>                       | <input type="checkbox"/> Class A            | <input type="checkbox"/> Class B |
| <input type="checkbox"/> <b>AS/NZS CISPR22:2009 +A1:2010</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 C63.4-2009                                 |                                             |                                  |
| <input checked="" type="checkbox"/> <b>IC Regulation ICES-003 : 2016</b> |                                             |                                  |
| <input checked="" type="checkbox"/> CAN/CSA CISPR 22-10                  | <input checked="" type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> ANSI C63.4-2014                                 |                                             |                                  |
| <input type="checkbox"/> <b>RE- Directive 2014/53/EU</b>                 |                                             |                                  |
| <input type="checkbox"/> EN 301 489-1 V1.9.2                             |                                             |                                  |
| <input type="checkbox"/> Equipment for fixed use                         |                                             |                                  |
| <input type="checkbox"/> Equipment for vehicular use                     |                                             |                                  |
| <input type="checkbox"/> Equipment for portable use                      |                                             |                                  |
| <input type="checkbox"/> EN 301 489-3 V1.6.1                             |                                             |                                  |
| <input type="checkbox"/> EN 301 489-17 V2.2.1                            |                                             |                                  |
| <input type="checkbox"/> EN 60945:2002                                   |                                             |                                  |

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## 2.1 Conducted Emissions Mains Power Ports

### Test Date

N/A

### Test Location

Electro wave Shieldroom

### Test Equipment

| Used                     | Description             | Model Number | Manufacturer | Serial Number | Cal. Due     |
|--------------------------|-------------------------|--------------|--------------|---------------|--------------|
| <input type="checkbox"/> | EMI Test Receiver       | ESR3         | R & S        | 101783        | 05, 03, 2017 |
| <input type="checkbox"/> | LISN                    | ENV216       | R & S        | 101137        | 02, 04, 2017 |
| <input type="checkbox"/> | LISN                    | ENV216       | R & S        | 101786        | 05, 02, 2017 |
| <input type="checkbox"/> | Electro wave Shieldroom | -            | SEMITEC      | -             | -            |
| <input type="checkbox"/> | EMI Test S/W            | EMC32        | R & S        | 9.12.00       | -            |

### Test Conditions

Temperature: °C  
Relative Humidity: %

### 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

DC 12 V , PoE Mode N/A :

E.U.T power is 12 v (dc) power and PoE, limits are not specified

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

**Test Date**

Dec, 19, 2016

**Test Location**☐ Open Area Test Site #1☒ Open Area Test Site #2**Test Equipment**

| Used                                | Description              | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|--------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test Receiver        | ESR3         | R&S          | 101781        | 05, 03, 2017 |
| <input checked="" type="checkbox"/> | Trilog-Broadband Antenna | VULB 9163    | SCHWARZBECK  | 9168-713      | 05, 15, 2017 |
| <input checked="" type="checkbox"/> | Open Area Test Site      | -            | KES          | -             | -            |
| <input checked="" type="checkbox"/> | Antenna Mast             | -            | DAEIL EMC    | -             | -            |
| <input checked="" type="checkbox"/> | Turn Table               | -            | DAEIL EMC    | -             | -            |
| <input checked="" type="checkbox"/> | EMI Test S/W             | -            | -            | -             | -            |

**Test Conditions**

Temperature: 3,6 °C

Relative Humidity: 61,0 %

**Frequency Range of Measurement**

30 MHz to 1 GHz

**Instrument Settings**

IF Band Width: 120 kHz

**Test Results**

The requirements are:

☒ PASS☐ NOT PASS☐ NOT APPLICABLE**Remarks**See Appendix A for test data.

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

### Test Date

Dec, 21, 2016

### Test Location

Semi Anechoic Chamber #2

### Test Equipment

| Used                                | Description                    | Model Number | Manufacturer                  | Serial Number | Cal. Due     |
|-------------------------------------|--------------------------------|--------------|-------------------------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test Receiver              | ESU26        | R&S                           | 100552        | 04, 24, 2017 |
| <input checked="" type="checkbox"/> | Broadband Coaxial Preamplifier | BBV 9718     | Schwarzbeck Mess - Elektronik | 9718-246      | 10, 24, 2017 |
| <input checked="" type="checkbox"/> | DOUBLE RIDGED HORN ANTENNA     | SAS-571      | A.H.SYSTEM,INC                | 781           | 05, 07, 2017 |
| <input checked="" type="checkbox"/> | Semi Anechoic Chamber #2       | -            | SEMITEC                       | -             | -            |
| <input checked="" type="checkbox"/> | Antenna Mast                   | -            | AUDIX                         | -             | -            |
| <input checked="" type="checkbox"/> | Turn Table                     | -            | AUDIX                         | -             | -            |
| <input checked="" type="checkbox"/> | EMI Test S/W                   | e3           | AUDIX                         | 8.083b        | -            |

### Test Conditions

Temperature: 19,9 °C

Relative Humidity: 39,7 %

### 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.





**KES Co., Ltd.**

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Report No.:  
KES-E1-16T0695-R1  
Page (17) of (38)

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## APPENDIX A – TEST DATA

### Conducted Emissions at Mains Power Ports

[HOT]

N/A

#### ◆ 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)

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The authenticity of the test report, contact kes@kes.co.kr



## KES Co., Ltd.

C-3701, Simin-daero 365-40,  
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www.kes.co.kr

Report No.:

KES-E1-16T0695-R1

Page (18) of (38)

[NEUTRAL]

N/A

### ◆ 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)

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## Radiated Electric Field Emissions(Below 1 GHz)

- DC 12 V Mode

| Frequency | Amplitude    | ANT             | ANT. Height | Correction Factor |               | Corrected Amplitude | Applicable Limit | Margin |
|-----------|--------------|-----------------|-------------|-------------------|---------------|---------------------|------------------|--------|
| [MHz]     | [dB $\mu$ V] | Polar.<br>(H/V) | [m]         | ANT.<br>[dB/m]    | Cable<br>[dB] | [dB $\mu$ V/m]      | [dB $\mu$ V/m]   | [dB]   |
| 49.21     | 7.74         | V               | 1.00        | 13.91             | 2.07          | 23.72               | 40.00            | 16.28  |
| 186.02    | 11.40        | H               | 4.00        | 9.98              | 3.97          | 25.35               | 40.00            | 14.65  |
| 225.83    | 9.89         | H               | 3.90        | 11.87             | 4.43          | 26.19               | 40.00            | 13.81  |
| 334.42    | 11.38        | V               | 1.10        | 14.18             | 5.49          | 31.05               | 47.00            | 15.95  |
| 525.50    | 12.68        | V               | 1.20        | 17.66             | 7.21          | 37.55               | 47.00            | 9.45   |
| 550.73    | 10.74        | V               | 1.50        | 18.22             | 7.41          | 36.37               | 47.00            | 10.63  |
| 623.98    | 11.04        | V               | 1.70        | 19.40             | 7.99          | 38.43               | 47.00            | 8.57   |

\* H : Horizontal, V : Vertical

### ◆ Calculation

Corrected Amplitude [dB $\mu$ V] = Amplitude[dBuV] + Correction Factor [dB]

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

Correction Factor : ANT FACTOR + Cable loss

- PoE Mode

| Frequency | Amplitude    | ANT             | ANT. Height | Correction Factor |               | Corrected Amplitude | Applicable Limit | Margin |
|-----------|--------------|-----------------|-------------|-------------------|---------------|---------------------|------------------|--------|
| [MHz]     | [dB $\mu$ V] | Polar.<br>(H/V) | [m]         | ANT.<br>[dB/m]    | Cable<br>[dB] | [dB $\mu$ V/m]      | [dB $\mu$ V/m]   | [dB]   |
| 50.36     | 18.47        | V               | 1.00        | 13.90             | 2.10          | 34.47               | 40.00            | 5.53   |
| 300.49    | 12.64        | H               | 4.00        | 13.39             | 5.16          | 31.19               | 47.00            | 15.81  |
| 475.10    | 10.02        | H               | 3.40        | 16.75             | 6.90          | 33.67               | 47.00            | 13.33  |
| 500.28    | 9.80         | V               | 1.20        | 17.11             | 7.01          | 33.92               | 47.00            | 13.08  |
| 550.74    | 9.93         | V               | 1.70        | 18.22             | 7.41          | 35.56               | 47.00            | 11.44  |
| 601.02    | 7.86         | V               | 2.00        | 19.30             | 7.84          | 35.00               | 47.00            | 12.00  |

\* H : Horizontal, V : Vertical

### ◆ Calculation

Corrected Amplitude [dB $\mu$ V] = Amplitude[dBuV] + Correction Factor [dB]

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

Correction Factor : ANT FACTOR + Cable loss

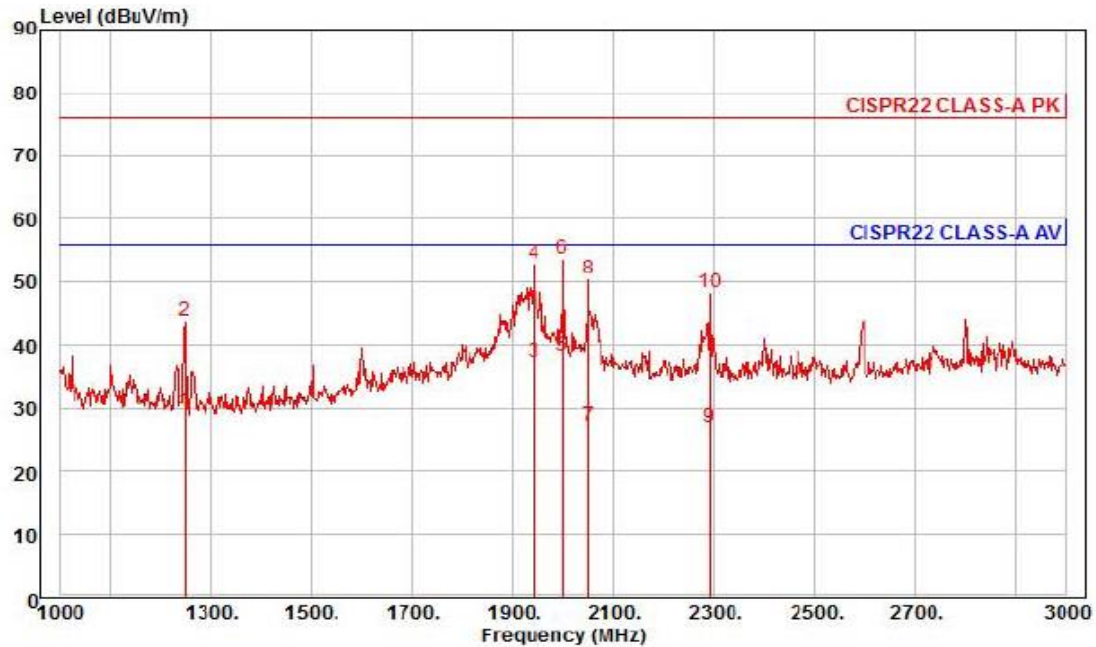
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## Radiated Electric Field Emissions(Above 1 GHz)

- DC 12 V Mode



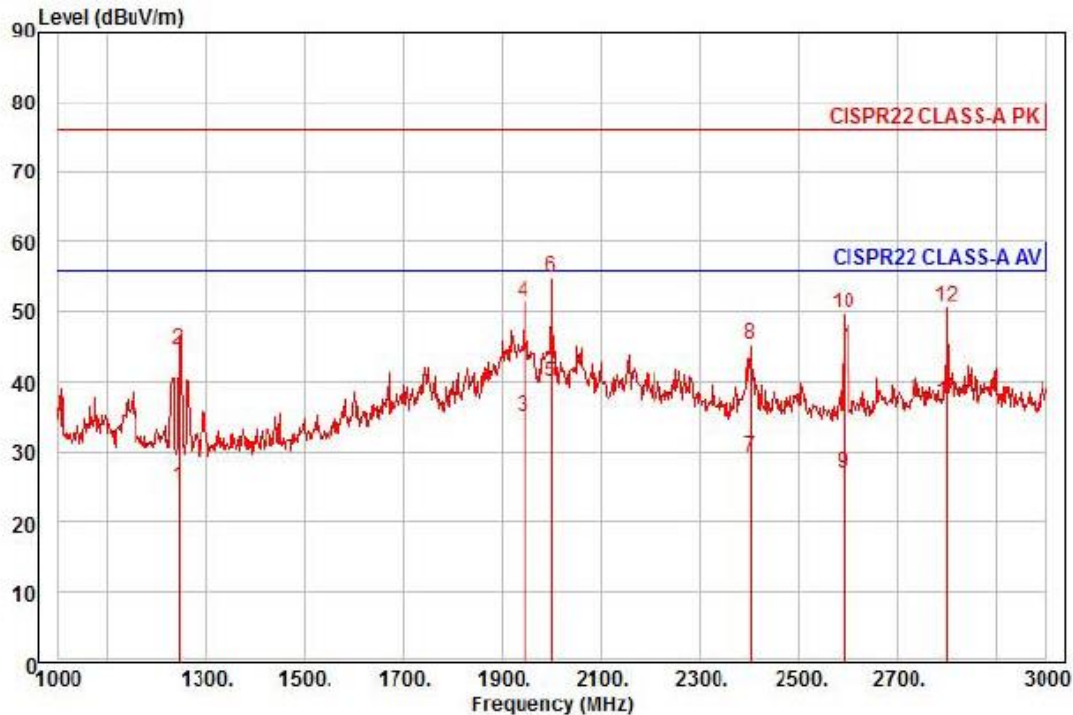
Site : chamber  
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project : NETWORK CAMERA  
Model : XND-6080N  
Mode : DC 12 V  
Memo : 1 ~ 3 GHz

|      | Freq    | Read Level | Ant Factor | Cable Loss | Preamp Factor | TPos | Limit Line | Over Limit | Pol/Phase  | Remark  |
|------|---------|------------|------------|------------|---------------|------|------------|------------|------------|---------|
|      | MHz     | dBuV       | dB/m       | dB         | dB            | deg  | dBuV/m     | dB         |            |         |
| 1    | 1248.00 | 36.85      | 24.89      | 7.28       | 39.49         | 242  | 56.00      | -26.47     | horizontal | Average |
| 2    | 1248.00 | 51.15      | 24.89      | 7.28       | 39.49         | 242  | 76.00      | -32.17     | horizontal | Peak    |
| 3    | 1942.00 | 39.83      | 27.65      | 9.19       | 39.38         | 52   | 56.00      | -18.71     | horizontal | Average |
| 4    | 1942.00 | 55.59      | 27.65      | 9.19       | 39.38         | 52   | 76.00      | -22.95     | horizontal | Peak    |
| 5 pp | 2000.00 | 40.37      | 27.88      | 9.34       | 39.41         | 44   | 56.00      | -17.82     | horizontal | Average |
| 6 pk | 2000.00 | 55.85      | 27.88      | 9.34       | 39.41         | 44   | 76.00      | -22.34     | horizontal | Peak    |
| 7    | 2050.00 | 29.25      | 28.00      | 9.45       | 39.41         | 58   | 56.00      | -28.71     | horizontal | Average |
| 8    | 2050.00 | 52.39      | 28.00      | 9.45       | 39.41         | 58   | 76.00      | -25.57     | horizontal | Peak    |
| 9    | 2292.00 | 27.82      | 28.60      | 10.04      | 39.42         | 10   | 56.00      | -28.96     | horizontal | Average |
| 10   | 2292.00 | 48.98      | 28.60      | 10.04      | 39.42         | 10   | 76.00      | -27.80     | horizontal | Peak    |

### ◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,  
Cable Loss : Cable loss, Preamp Factor : Preamp Factor



Site : chamber  
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project : NETWORK CAMERA  
Model : XND-6080N  
Mode : DC 12 V  
Memo : 1 ~ 3 GHz

|      | Freq    | Read Level | Ant Factor | Cable Loss | Preamp Factor | TPos | Limit Line | Over Limit | Pol/Phase | Remark  |
|------|---------|------------|------------|------------|---------------|------|------------|------------|-----------|---------|
|      | MHz     | dBuV       | dB/m       | dB         | dB            | deg  | dBuV/m     | dB         |           |         |
| 1    | 1244.00 | 32.44      | 24.88      | 7.27       | 39.50         | 187  | 56.00      | -30.91     | vertical  | Average |
| 2    | 1244.00 | 51.89      | 24.88      | 7.27       | 39.50         | 187  | 76.00      | -31.46     | vertical  | Peak    |
| 3    | 1944.00 | 37.54      | 27.66      | 9.19       | 39.38         | 263  | 56.00      | -20.99     | vertical  | Average |
| 4    | 1944.00 | 54.04      | 27.66      | 9.19       | 39.38         | 263  | 76.00      | -24.49     | vertical  | Peak    |
| 5 pp | 2000.00 | 42.15      | 27.88      | 9.34       | 39.41         | 263  | 56.00      | -16.04     | vertical  | Average |
| 6 pk | 2000.00 | 57.02      | 27.88      | 9.34       | 39.41         | 263  | 76.00      | -21.17     | vertical  | Peak    |
| 7    | 2402.00 | 29.50      | 28.86      | 10.33      | 39.42         | 235  | 56.00      | -26.73     | vertical  | Average |
| 8    | 2402.00 | 45.64      | 28.86      | 10.33      | 39.42         | 235  | 76.00      | -30.59     | vertical  | Peak    |
| 9    | 2590.00 | 26.53      | 29.33      | 10.72      | 39.64         | 56   | 56.00      | -29.06     | vertical  | Average |
| 10   | 2590.00 | 49.41      | 29.33      | 10.72      | 39.64         | 56   | 76.00      | -26.18     | vertical  | Peak    |
| 11   | 2800.00 | 35.80      | 29.84      | 11.23      | 39.88         | 204  | 56.00      | -19.01     | vertical  | Average |
| 12   | 2800.00 | 49.55      | 29.84      | 11.23      | 39.88         | 204  | 76.00      | -25.26     | vertical  | Peak    |

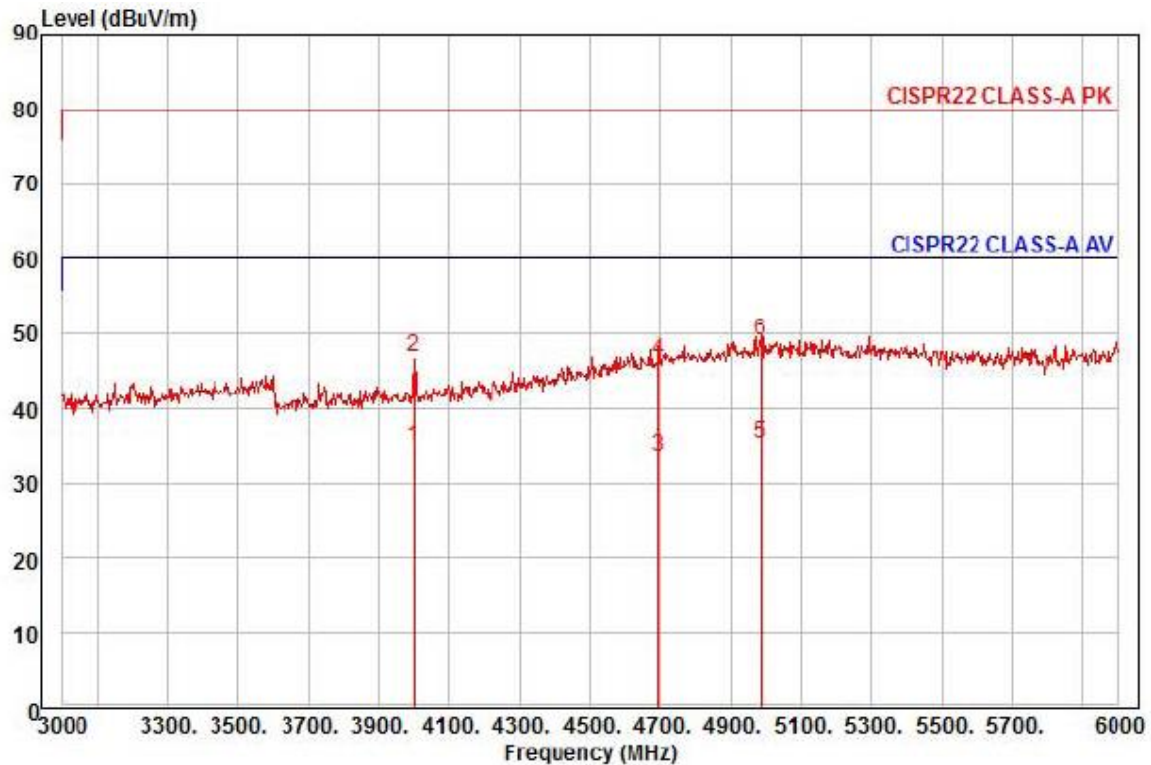
#### ◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,  
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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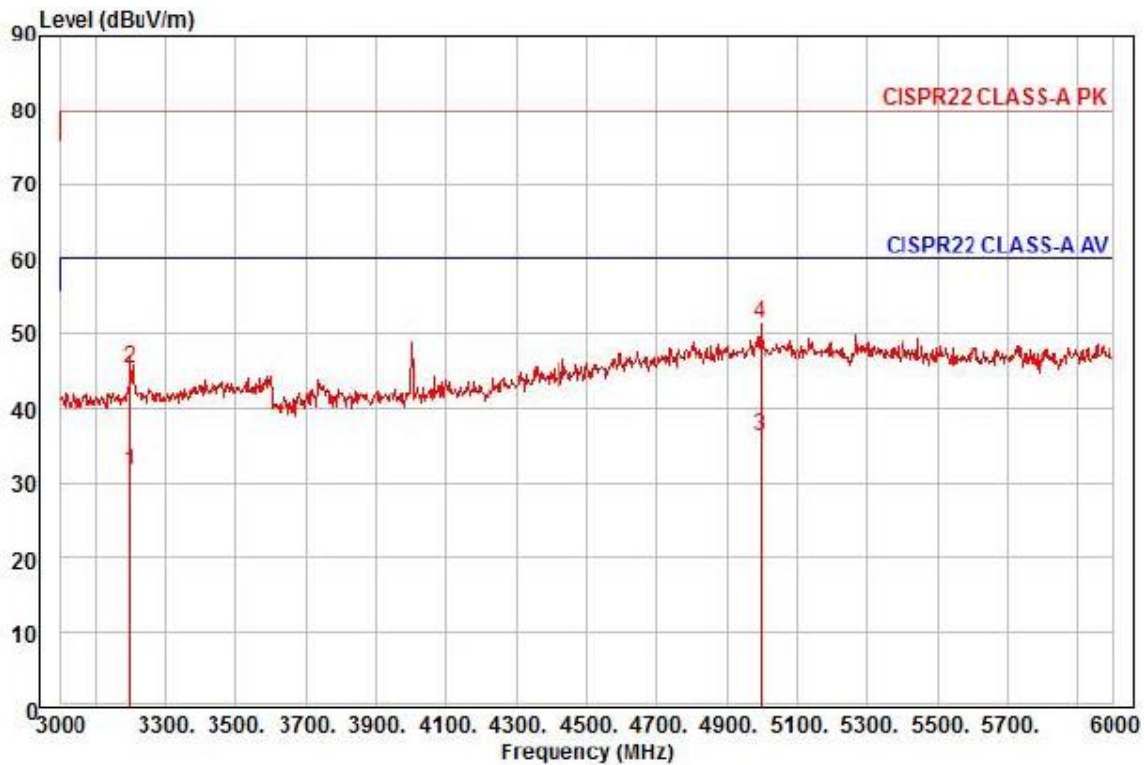
Site : chamber  
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project : NETWORK CAMERA  
Model : XND-6080N  
Mode : DC 12 V  
Memo : 3 ~ 6 GHz

|      | Read    | Ant    | Cable | Preamp | TPos  | Limit  | Over  |           |                    |
|------|---------|--------|-------|--------|-------|--------|-------|-----------|--------------------|
| Freq | Level   | Factor | Loss  | Factor |       | Line   | Limit | Pol/Phase | Remark             |
| MHz  | dBuV    | dB/m   | dB    | dB     | deg   | dBuV/m | dB    |           |                    |
| 1    | 3999.00 | 30.02  | 32.01 | 13.56  | 40.70 | 1      | 60.00 | -25.11    | horizontal Average |
| 2    | 3999.00 | 41.91  | 32.01 | 13.56  | 40.70 | 1      | 80.00 | -33.22    | horizontal Peak    |
| 3    | 4695.00 | 23.35  | 35.98 | 14.87  | 40.58 | 293    | 60.00 | -26.38    | horizontal Average |
| 4    | 4695.00 | 36.08  | 35.98 | 14.87  | 40.58 | 293    | 80.00 | -33.65    | horizontal Peak    |
| 5 pp | 4983.00 | 22.62  | 37.62 | 15.30  | 40.29 | 110    | 60.00 | -24.75    | horizontal Average |
| 6 pk | 4983.00 | 36.32  | 37.62 | 15.30  | 40.29 | 110    | 80.00 | -31.05    | horizontal Peak    |

#### ◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,  
Cable Loss : Cable loss, Preamp Factor : Preamp Factor



Site : chamber  
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project : NETWORK CAMERA  
Model : XND-6080N  
Mode : DC 12 V  
Memo : 3 ~ 6 GHz

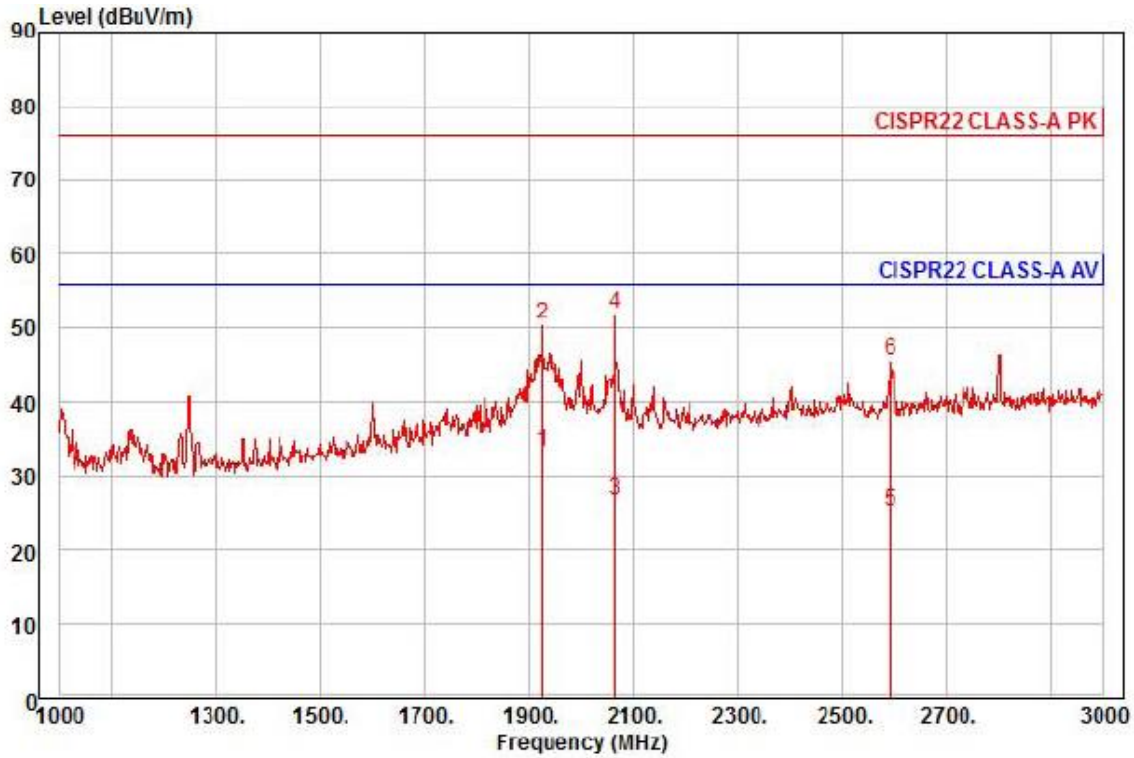
|      | Freq    | Read Level | Ant Factor | Cable Loss | Preamp Factor | TPos | Limit Line | Over Limit | Pol/Phase | Remark  |
|------|---------|------------|------------|------------|---------------|------|------------|------------|-----------|---------|
|      | MHz     | dBuV       | dB/m       | dB         | dB            | deg  | dBuV/m     | dB         |           |         |
| 1    | 3198.00 | 29.22      | 30.66      | 12.05      | 40.41         | 14   | 60.00      | -28.48     | vertical  | Average |
| 2    | 3198.00 | 43.17      | 30.66      | 12.05      | 40.41         | 14   | 80.00      | -34.53     | vertical  | Peak    |
| 3 pp | 4995.00 | 23.68      | 37.69      | 15.31      | 40.28         | 120  | 60.00      | -23.60     | vertical  | Average |
| 4 pk | 4995.00 | 38.88      | 37.69      | 15.31      | 40.28         | 120  | 80.00      | -28.40     | vertical  | Peak    |

◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,  
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

- PoE Mode



Site : chamber  
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project : NETWORK CAMERA  
Model : XND-6080N  
Mode : PoE  
Memo : 1 ~ 3 GHz

|      | Freq    | Read Level | Ant Factor | Cable Loss | Preamp Factor | TPos | Limit Line | Over Limit | Pol/Phase  | Remark  |
|------|---------|------------|------------|------------|---------------|------|------------|------------|------------|---------|
|      | MHz     | dBuV       | dB/m       | dB         | dB            | deg  | dBuV/m     | dB         |            |         |
| 1 pp | 1924.00 | 36.01      | 27.58      | 9.14       | 39.37         | 21   | 56.00      | -22.64     | horizontal | Average |
| 2    | 1924.00 | 53.12      | 27.58      | 9.14       | 39.37         | 21   | 76.00      | -25.53     | horizontal | Peak    |
| 3    | 2064.00 | 28.72      | 28.04      | 9.48       | 39.41         | 318  | 56.00      | -29.17     | horizontal | Average |
| 4 pk | 2064.00 | 53.83      | 28.04      | 9.48       | 39.41         | 318  | 76.00      | -24.06     | horizontal | Peak    |
| 5    | 2592.00 | 24.91      | 29.33      | 10.72      | 39.64         | 226  | 56.00      | -30.68     | horizontal | Average |
| 6    | 2592.00 | 45.30      | 29.33      | 10.72      | 39.64         | 226  | 76.00      | -30.29     | horizontal | Peak    |

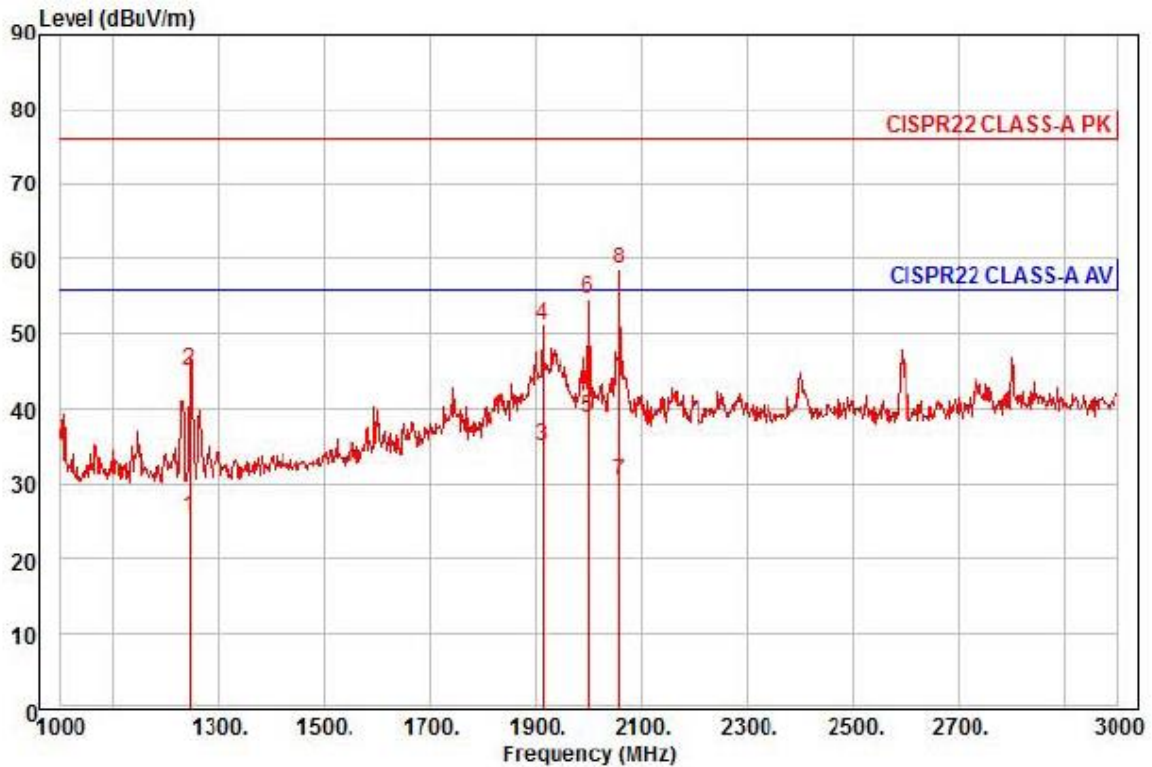
◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,

Cable Loss : Cable loss, Preamp Factor : Preamp Factor





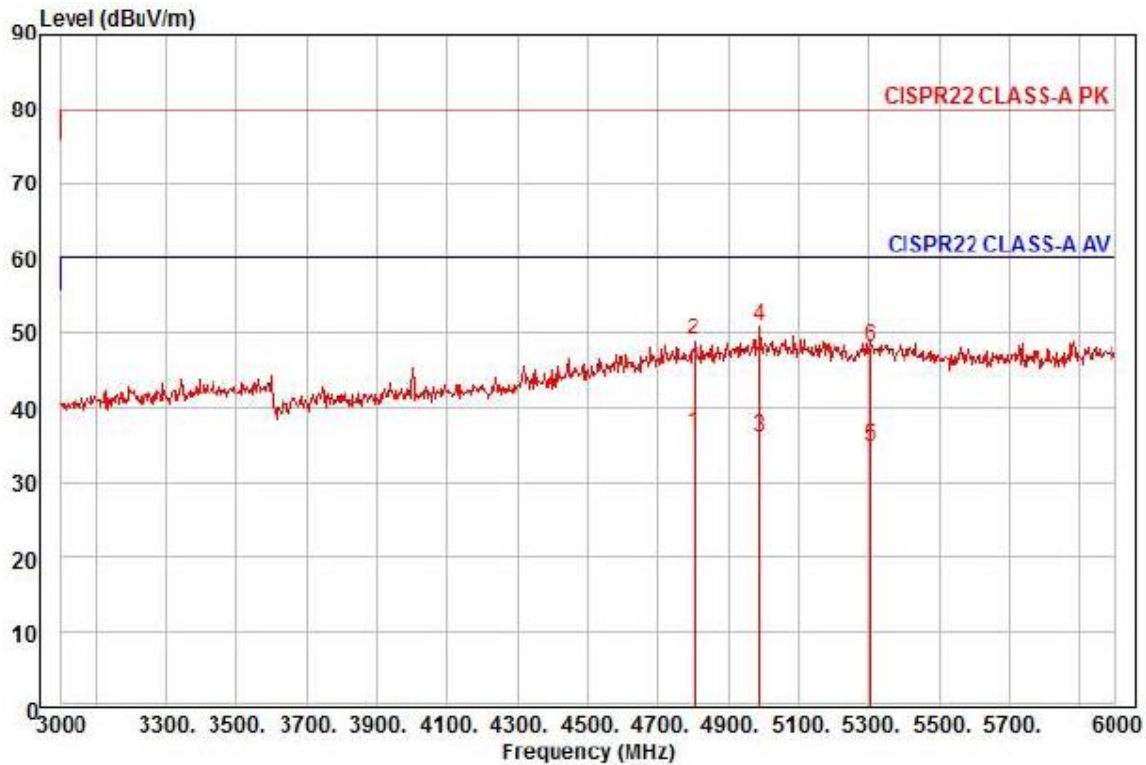
Site : chamber  
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project : NETWORK CAMERA  
Model : XND-6080N  
Mode : PoE  
Memo : 1 ~ 3 GHz

|      | Read    | Ant    | Cable | Preamp | TPos  | Limit  | Over  |           |          |
|------|---------|--------|-------|--------|-------|--------|-------|-----------|----------|
| Freq | Level   | Factor | Loss  | Factor |       | Line   | Limit | Pol/Phase | Remark   |
| MHz  | dBuV    | dB/m   | dB    | dB     | deg   | dBuV/m | dB    |           |          |
| 1    | 1244.00 | 32.75  | 24.88 | 7.27   | 39.50 | 188    | 56.00 | -30.60    | vertical |
| 2    | 1244.00 | 52.45  | 24.88 | 7.27   | 39.50 | 188    | 76.00 | -30.90    | vertical |
| 3    | 1912.00 | 37.74  | 27.53 | 9.11   | 39.37 | 280    | 56.00 | -20.99    | vertical |
| 4    | 1912.00 | 53.91  | 27.53 | 9.11   | 39.37 | 280    | 76.00 | -24.82    | vertical |
| 5 pp | 2000.00 | 41.01  | 27.88 | 9.34   | 39.41 | 102    | 56.00 | -17.18    | vertical |
| 6    | 2000.00 | 56.78  | 27.88 | 9.34   | 39.41 | 102    | 76.00 | -21.41    | vertical |
| 7    | 2056.00 | 32.35  | 28.02 | 9.47   | 39.41 | 110    | 56.00 | -25.57    | vertical |
| 8 pk | 2056.00 | 60.46  | 28.02 | 9.47   | 39.41 | 110    | 76.00 | -17.46    | vertical |

#### ◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,  
Cable Loss : Cable loss, Preamp Factor : Preamp Factor



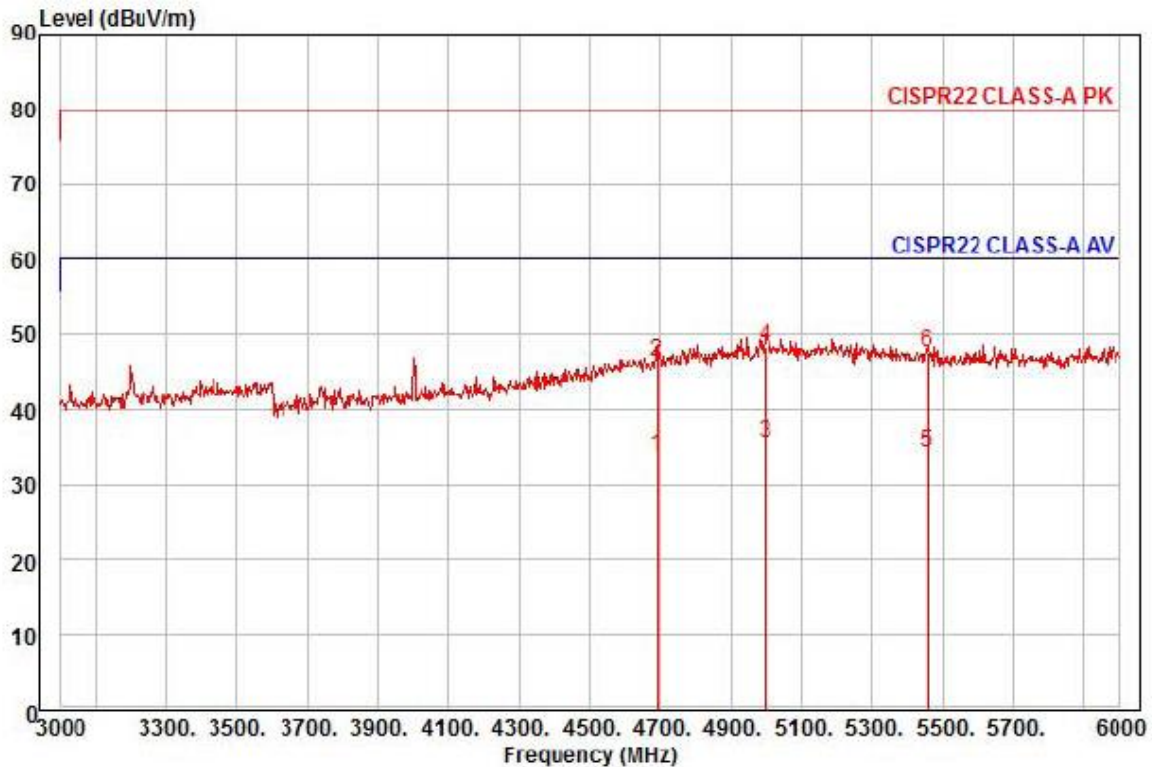
Site : chamber  
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project : NETWORK CAMERA  
Model : XND-6080N  
Mode : PoE  
Memo : 3 ~ 6 GHz

|      |         | Read  | Ant    | Cable | Preamp | TPos | Limit  | Over   |            |         |
|------|---------|-------|--------|-------|--------|------|--------|--------|------------|---------|
|      | Freq    | Level | Factor | Loss  | Factor |      | Line   | Limit  | Pol/Phase  | Remark  |
|      | MHz     | dBuV  | dB/m   | dB    | dB     | deg  | dBuV/m | dB     |            |         |
| 1 pp | 4800.00 | 25.40 | 36.58  | 15.10 | 40.47  | 70   | 60.00  | -23.39 | horizontal | Average |
| 2    | 4800.00 | 37.95 | 36.58  | 15.10 | 40.47  | 70   | 80.00  | -30.84 | horizontal | Peak    |
| 3    | 4986.00 | 23.34 | 37.64  | 15.30 | 40.28  | 116  | 60.00  | -24.00 | horizontal | Average |
| 4 pk | 4986.00 | 38.43 | 37.64  | 15.30 | 40.28  | 116  | 80.00  | -28.91 | horizontal | Peak    |
| 5    | 5304.00 | 22.51 | 37.11  | 15.88 | 40.77  | 148  | 60.00  | -25.27 | horizontal | Average |
| 6    | 5304.00 | 35.89 | 37.11  | 15.88 | 40.77  | 148  | 80.00  | -31.89 | horizontal | Peak    |

◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,  
Cable Loss : Cable loss, Preamp Factor : Preamp Factor



Site : chamber  
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project : NETWORK CAMERA  
Model : XND-6080N  
Mode : PoE  
Memo : 3 ~ 6 GHz

|      |         | Read  | Ant    | Cable | Preamp | TPos | Limit  | Over   |           |         |
|------|---------|-------|--------|-------|--------|------|--------|--------|-----------|---------|
|      | Freq    | Level | Factor | Loss  | Factor |      | Line   | Limit  | Pol/Phase | Remark  |
|      | MHz     | dBuV  | dB/m   | dB    | dB     | deg  | dBuV/m | dB     |           |         |
| 1    | 4692.00 | 23.64 | 35.96  | 14.86 | 40.58  | 10   | 60.00  | -26.12 | vertical  | Average |
| 2    | 4692.00 | 36.13 | 35.96  | 14.86 | 40.58  | 10   | 80.00  | -33.63 | vertical  | Peak    |
| 3 pp | 4998.00 | 22.76 | 37.71  | 15.31 | 40.27  | 241  | 60.00  | -24.49 | vertical  | Average |
| 4 pk | 4998.00 | 35.45 | 37.71  | 15.31 | 40.27  | 241  | 80.00  | -31.80 | vertical  | Peak    |
| 5    | 5460.00 | 22.54 | 36.79  | 16.13 | 41.03  | 266  | 60.00  | -25.57 | vertical  | Average |
| 6    | 5460.00 | 35.60 | 36.79  | 16.13 | 41.03  | 266  | 80.00  | -32.51 | vertical  | Peak    |

#### ◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,  
Cable Loss : Cable loss, Preamp Factor : Preamp Factor



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Report No.:  
KES-E1-16T0695-R1  
Page (28) of (38)

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**Test Setup Photos and Configuration  
Conducted Voltage Emissions**

N/A

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The authenticity of the test report, contact kes@kes.co.kr



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

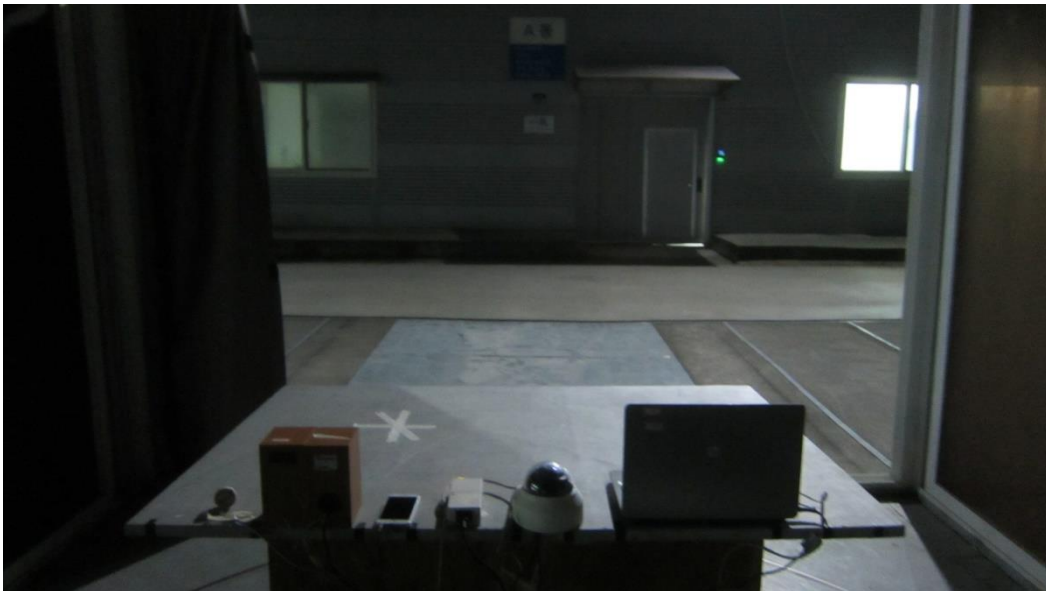
- DC 12 V Mode



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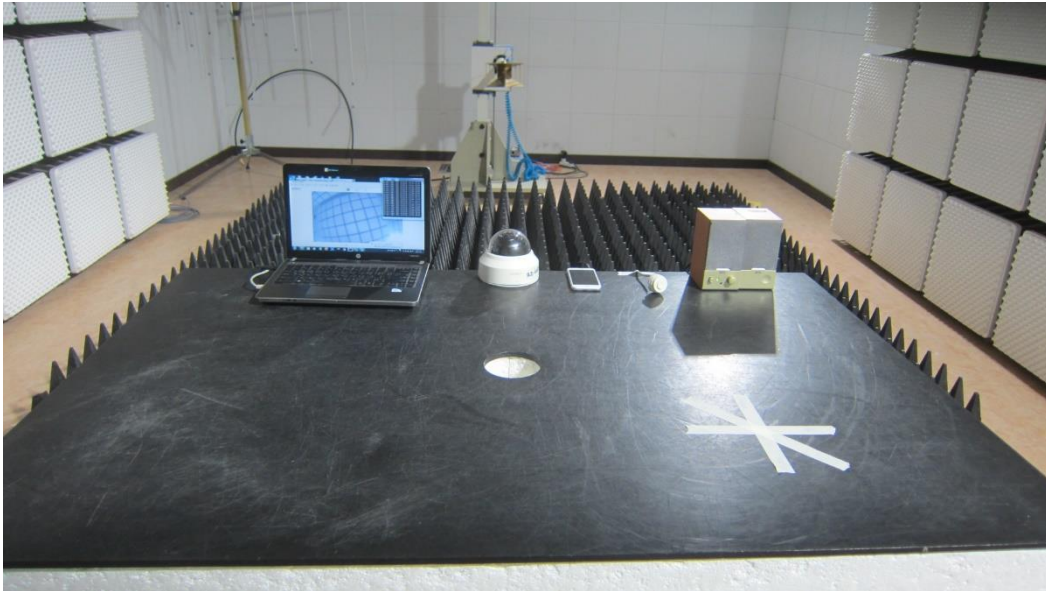
---

- PoE Mode



## Radiated Electric Field Emissions(Above 1 GHz)

- DC 12 V Mode



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- PoE Mode



## EUT External Photographs

(Top)



(Bottom)



## EUT Internal Photographs

(Internal View)



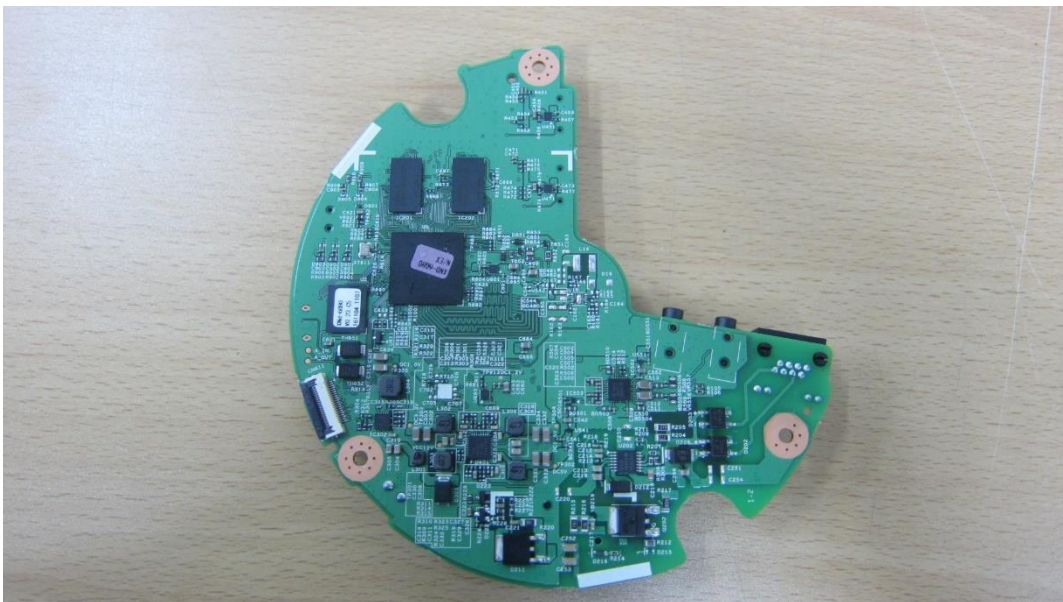


## EUT Internal View – Main board

(Top)

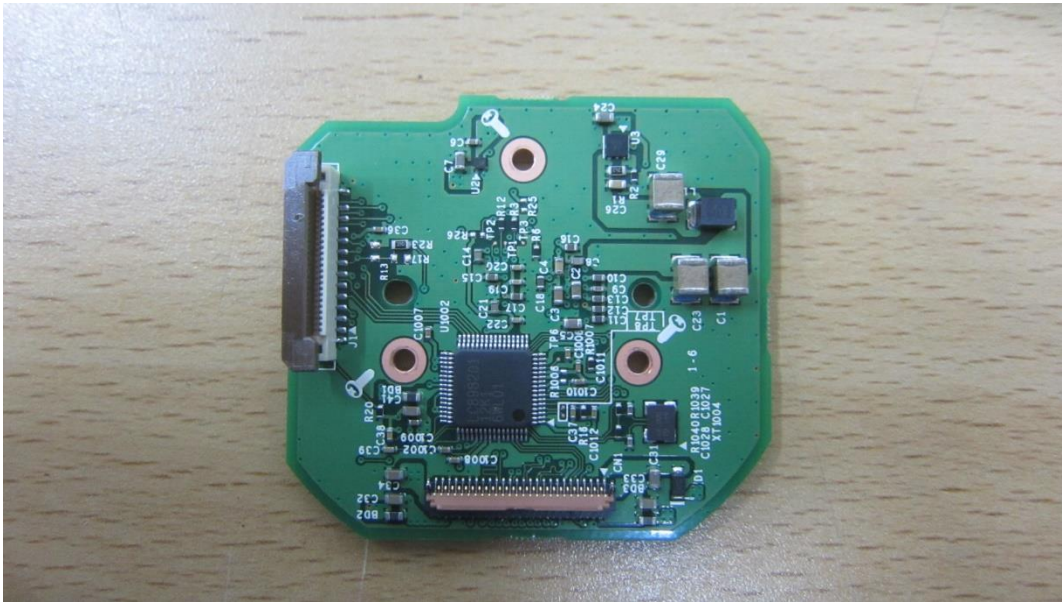


(Bottom)

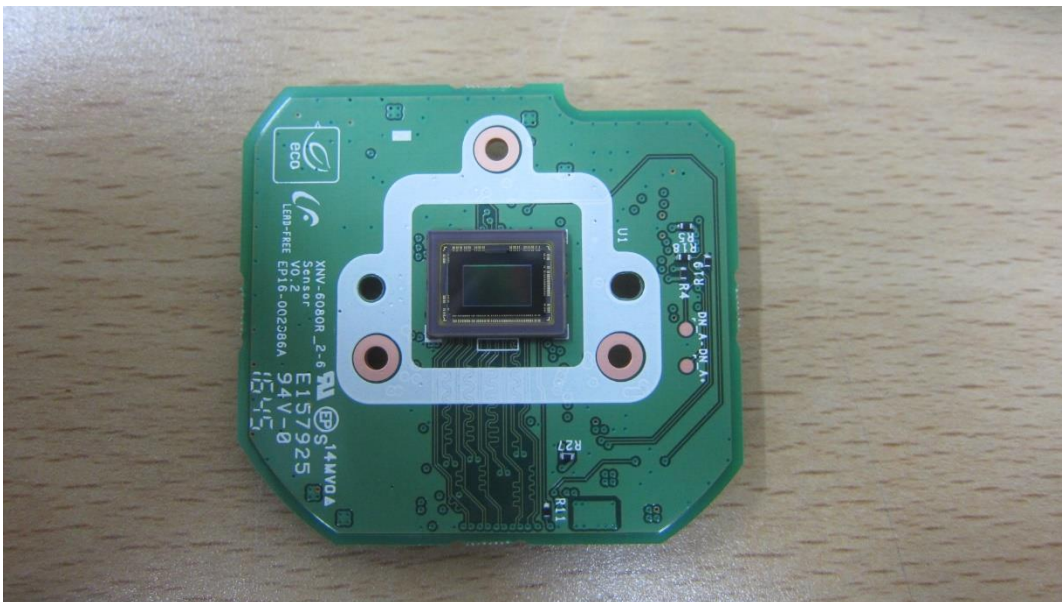


## EUT Internal View – Sub board

(Top)



(Bottom)



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## EUT Internal View – Lens

(Top)



(Bottom)





## EUT Internal View – IR Board

### Label Photographs



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

[LABEL VIEW]