



## EMC TEST REPORT For CE

Test Report No. : KES-E1-17T0517-R1  
Date of Issue : Oct. 23, 2017  
Product name : CCTV CAMERA  
Model/Type No. : HCO-6080RP  
Variant Model : HCO-6070RP  
Applicant : Hanwha Techwin Co., Ltd.  
Applicant Address : 1204, Changwon-daero, Seongsan-gu, Changwon-si,  
Gyeongsangnam-do, Korea  
Manufacturer : Hanwha Techwin (Tianjin) Co.,Ltd.  
Manufacturer Address : No.11 Weiliu Rd, Micro-Electronic Industrial  
Park, TEDA, Tianjin, 300385, People's Republic of China.  
Date of Receipt : Aug. 01, 2017  
Test date : Aug. 02, 2017 ~ Aug. 04, 2017  
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

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EMC Test Engineer

Reviewed by

Dong-Hun, Jang  
EMC Technical Manager

This test report is not related to KOLAS.

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**REPORT REVISION HISTORY**

| Date          | Test Report No.   | Revision History  |
|---------------|-------------------|-------------------|
| Aug. 14, 2017 | KES-E1-17T0517    | Issued            |
| Oct. 23, 2017 | KES-E1-17T0517-R1 | Standard Revision |
|               |                   |                   |
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## 1.0 General Product Description

### Main Specifications of E.U.T are:

| HCO-6080RN                       |                                                                                                                                                                            | HCO-6080RP   |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Video</b>                     |                                                                                                                                                                            |              |
| Imaging Device                   | 1/2.8" 2M CMOS                                                                                                                                                             |              |
| Total Pixels                     | 1,945(H) x 1,109(V) 2.16M pixels                                                                                                                                           |              |
| Effective Pixels                 | 1,945(H) x 1,097(V) 2.13M pixels                                                                                                                                           |              |
| Scanning System                  | Progressive Scan                                                                                                                                                           |              |
| Min. Illumination                | Color : 0.2Lux (F1.4, 50IRE); 0.11Lux (F1.4, 30IRE)<br>B/W : 0Lux(IR LED on)                                                                                               |              |
| S / N Ratio                      | 52dB (AGC off, Weight on)                                                                                                                                                  |              |
| Video Output                     | BNC(AHD / TVI / CVI / CVBS Selectable)                                                                                                                                     |              |
| Resolution                       | 1920 x 1080                                                                                                                                                                |              |
| Max. Framerate                   | 30fps @1080p                                                                                                                                                               | 25fps @1080p |
| <b>Lens Type</b>                 |                                                                                                                                                                            |              |
| Focal Length (Zoom Ratio)        | 2.8 ~ 12mm (4.3x) motorized varifocal                                                                                                                                      |              |
| Max. Aperture Ratio              | F1.4                                                                                                                                                                       |              |
| Angular Field of View            | H : 103.8°(Wide) ~ 32.4°(Tele) / V : 53.7°(Wide) ~ 18.4°(Tele)D : 121.9°(Wide) ~ 37.1°(Tele)                                                                               |              |
| Min. Object Distance             | 0.5m (1.64ft)                                                                                                                                                              |              |
| Focus Control                    | Simple focus(Motorized V/F) / Manual                                                                                                                                       |              |
| Lens Type                        | DC Auto Iris                                                                                                                                                               |              |
| Mount Type                       | Board-in type                                                                                                                                                              |              |
| Auto Back Focus(ABF)             | -                                                                                                                                                                          |              |
| <b>Operational</b>               |                                                                                                                                                                            |              |
| IR LED                           |                                                                                                                                                                            |              |
| Viewable length                  | 30m (98.43ft)                                                                                                                                                              |              |
| On Screen Display                | Multi-language Support(16)<br>English, Japanese, Spanish, French, Portuguese, Korean, German, Italian, Russian, Polish, Czech, Romanian, Serbian, Swedish, Danish, Turkish |              |
| Camera Title                     | Off / On (Displayed 15 characters)                                                                                                                                         |              |
| Day & Night                      | Auto (ICR) / Color / B/W                                                                                                                                                   |              |
| Backlight Compensation           | Off / User BLC / HLC                                                                                                                                                       |              |
| Wide Dynamic Range               | 120dB                                                                                                                                                                      |              |
| Contrast Enhancement             | -                                                                                                                                                                          |              |
| Digital Noise Reduction          | SSNR4 ( Off / On )                                                                                                                                                         |              |
| Defog                            | AUTO / MANUAL / OFF                                                                                                                                                        |              |
| Digital Image Stabilization      | Not support                                                                                                                                                                |              |
| Motion Detection                 | Off / On(4 zones)                                                                                                                                                          |              |
| Privacy Masking                  | Off / On (4zones rectangle)                                                                                                                                                |              |
| Gain Control                     | Off / Low / Middle / High / Very High                                                                                                                                      |              |
| White Balance                    | ATW / Outdoor / Indoor / Manual / AWC (1,800K° ~ 10,500K°)                                                                                                                 |              |
| LDC (Lens Distortion Correction) | Not support                                                                                                                                                                |              |
| Electronic Shutter Speed         | 1sec~ 1/12,000sec                                                                                                                                                          |              |
| Digital Zoom                     | Not support                                                                                                                                                                |              |
| Reverse                          | Off / H-Rev / V-Rev / HV-Rev                                                                                                                                               |              |
| Profile                          | Basic, Day & Night, Backlight, ITS, Indoor, User                                                                                                                           |              |
| Intelligent Video Analytics      | Not support                                                                                                                                                                |              |
| Alarm                            | MD output 1                                                                                                                                                                |              |
| Remote control interface         | Coaxial                                                                                                                                                                    |              |
| Protocol                         | NTSC/PAL : Pelco-C (Coaxitron)<br>AHD : ACP(AHD Coax Protocol)                                                                                                             |              |
| Video Transmission Distance      | 500m(5C2V Coaxial Cable)                                                                                                                                                   |              |
| <b>Environmental</b>             |                                                                                                                                                                            |              |
| Operating Temperature / Humidity | -30°C ~ +55°C (-22°F ~ +131°F) / Less than 90% RH<br>* Start up should be done at above -10°C                                                                              |              |
| Ingress Protection               | IP66                                                                                                                                                                       |              |
| Vandal Resistance                | IK10                                                                                                                                                                       |              |
| <b>Electrical</b>                |                                                                                                                                                                            |              |
| Input Voltage/Current            | Dual ( 24VAC±10% & 12VDC±10% )                                                                                                                                             |              |
| Power Consumption                | Max. 6W                                                                                                                                                                    |              |
| <b>Mechanical</b>                |                                                                                                                                                                            |              |
| Color / Material                 | Dark Gray / Aluminum                                                                                                                                                       |              |
| Dimension (WxHxD)                | 260* Ø 78 mm                                                                                                                                                               |              |
| Weight                           | 922g                                                                                                                                                                       |              |

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

## 1.2 Variant Model Differences

The Variant model is management model of each different sellers.

## 1.3 Device Modifications

Not applicable

## 1.4 Equipment Under Test

| Description | Model Number | Serial Number | Manufacturer                      | Remarks |
|-------------|--------------|---------------|-----------------------------------|---------|
| CCTV CAMERA | HCO-6080RP   | -             | Hanwha Techwin (Tianjin) Co.,Ltd. | E.U.T   |

## 1.5 Support Equipments

| Description     | Model Number  | Serial Number | Manufacturer               | Remarks |
|-----------------|---------------|---------------|----------------------------|---------|
| MONITOR         | 23MA53D       | 303KKMH9Z019  | LG Electronics Co., Ltd.   | -       |
| MONITOR Adapter | PSAB-L205A    | EAY62850201   | LG Innotek Yantai Co. Ltd. | -       |
| Alarm           | SIP-1201DD D0 | -             | SAMSUNG TECHWIN CO., LTD.  | -       |



## 1.6 External I/O Cabling

- AC 24 V Mode

| Start                  |          | END         |           | Cable Spec. |        |
|------------------------|----------|-------------|-----------|-------------|--------|
| Description            | I/O Port | Description | I/O Port  | Length      | Shield |
| CCTV CAMERA<br>(E.U.T) | BNC      | MONITOR     | Component | 3.5         | S      |
|                        | 2 Pin    | Alarm       | 2 Pin     | 3.0         | U      |

- DC 12 V Mode

| Start                  |          | END         |           | Cable Spec. |        |
|------------------------|----------|-------------|-----------|-------------|--------|
| Description            | I/O Port | Description | I/O Port  | Length      | Shield |
| CCTV CAMERA<br>(E.U.T) | BNC      | MONITOR     | Component | 3.5         | S      |
|                        | 2 Pin    | Alarm       | 2 Pin     | 3.0         | U      |

\* Unshielded=U, Shielded=S

## 1.7 E.U.T Operating Mode(s)

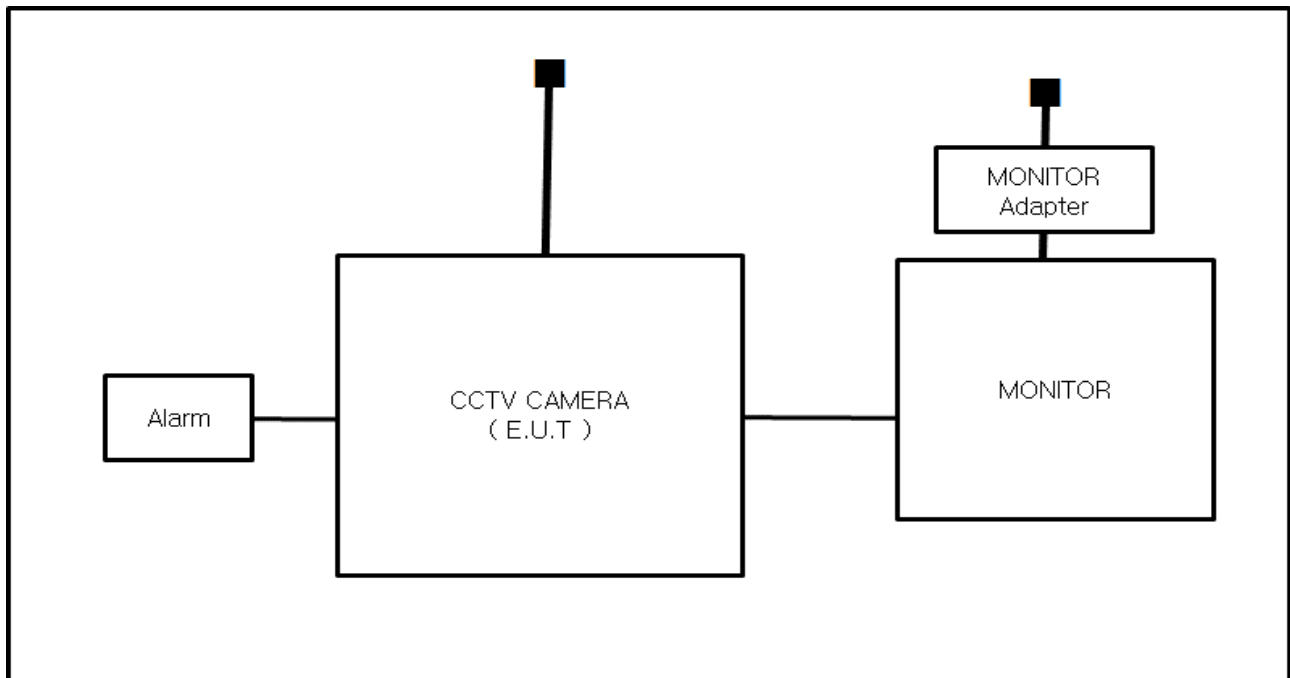
| Test mode | operating        |
|-----------|------------------|
| AC 24 V   | E.U.T Monitoring |
| DC 12 V   | E.U.T Monitoring |

| E.U.T Test operating S/W |         |                     |
|--------------------------|---------|---------------------|
| Name                     | Version | Manufacture Company |
| -                        | -       | -                   |

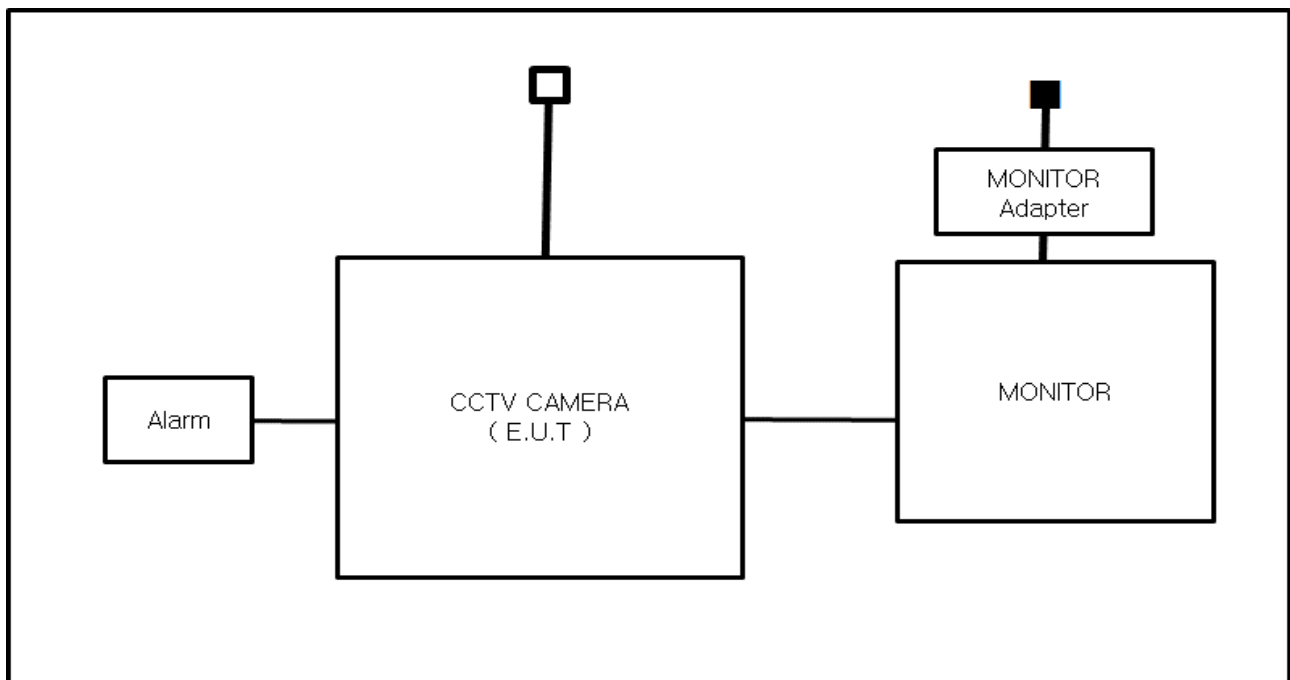
## 1.8 Configuration

■ AC Main  
□ DC Main

- AC 24 V Mode



- DC 12 V Mode



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## 1.9 Remarks when standards applied

- N/A

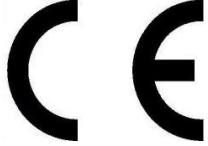
## 1.10 Calibration Details of Equipment Used for Measurement

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 and CISPR Publication 22.

## 1.12 Laboratory Accreditations and Listings

| Country       | Agency | Scope of Accreditation                                                                                                                                                                                 | Logo                                                                                                                      |
|---------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| USA           | FCC    | 3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.                                                                                                       |                                       |
| 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-4308, C-4798,<br>T-2311, G-914 |
| KOREA         | MSIP   | EMI (10 meter Open Area Test Site and two conducted sites)<br>Radio(3 & 10 meter Open Area Test Sites and one conducted site)<br>EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) | <br>KR0100                           |
| Canada        | IC     | 3 & 10 meter Open Area Test Sites and one conducted site                                                                                                                                               | <br>4769B-1                          |
| Europe        | CE     | EMI (10 meter Open Area Test Site and two conducted sites)<br>Radio(3 & 10 meter Open Area Test Sites and one conducted site)<br>EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) |                                      |
| International | KOLAS  | EMI (10 meter Open Area Test Site and two conducted sites)<br>Radio(3 & 10 meter Open Area Test Sites and one conducted site)<br>EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) |                                      |

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## 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

☒ Class A

☐ Class B

☐ EN 55024:2010 +A1:2015

☒ EN 50130-4:2011

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013



- 
- |                                                               |                                  |                                  |
|---------------------------------------------------------------|----------------------------------|----------------------------------|
| <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 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                    |                                  |                                  |



## 2.1 Conducted Emissions at Mains Power Ports

### Test Date

Aug. 02, 2017

### Test Location

Electro wave Shieldroom

### 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        | 04, 27, 2018 |
| <input checked="" type="checkbox"/> | LISN              | ENV216       | R & S        | 101137        | 02, 03, 2018 |
| <input checked="" type="checkbox"/> | LISN              | ENV216       | R & S        | 101786        | 04, 27, 2018 |
| <input checked="" type="checkbox"/> | PULSE LIMITER     | ESH3-Z2      | R & S        | 101914        | 12, 13, 2017 |

### Test Conditions

Temperature: 22,9 °C

Relative Humidity: 49,2 %

### 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

N/A

### Test Location

Electro wave Shieldroom

### Test Equipment

| Used                     | Description       | Model Number | Manufacturer | Serial Number | Cal. Due     |
|--------------------------|-------------------|--------------|--------------|---------------|--------------|
| <input type="checkbox"/> | EMI Test S/W      | EMC32        | R & S        | 9.12.00       | -            |
| <input type="checkbox"/> | EMI TEST RECEIVER | ESR3         | R & S        | 101783        | 04, 27, 2018 |
| <input type="checkbox"/> | LISN              | ENV216       | R & S        | 101137        | 02, 03, 2018 |
| <input type="checkbox"/> | LISN              | ENV216       | R & S        | 101786        | 04, 27, 2018 |
| <input type="checkbox"/> | PULSE LIMITER     | ESH3-Z2      | R & S        | 101914        | 12, 13, 2017 |
| <input type="checkbox"/> | 8-WIRE ISN CAT3   | CAT3 8158    | SCHWARZBECK  | 8158-0019     | 03, 29, 2018 |
| <input type="checkbox"/> | 8-WIRE ISN CAT5   | CAT5 8158    | SCHWARZBECK  | 8158-0030     | 03, 29, 2018 |
| <input type="checkbox"/> | 8-WIRE ISN CAT6   | NTFM 8158    | SCHWARZBECK  | 8158-0029     | 08, 11, 2017 |

### 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

N/A



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

### Test Date

Aug. 02, 2017

### Test Location

☐ OPEN AREA TEST SITE #2 ☒ SAC #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        | 04, 18, 2018 |
| <input checked="" type="checkbox"/> | AMPLIFIER                | SCU 01       | R & S            | 100603        | 12, 13, 2017 |
| <input checked="" type="checkbox"/> | TRILOG-BROADBAND ANTENNA | VULB9163     | Schwarzbeck      | 716           | 11, 28, 2018 |

### Test Conditions

Temperature: 24,9 °C  
Relative Humidity: 54,1 %

### Frequency Range of Measurement

30 MHz to 1 GHz

### Instrument Settings

IF Band Width: 120 kHz

### Test Results

The requirements are:

☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.



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

### Test Date

Aug. 02, 2017

### Test Location

SEMI ANECHOIC CHAMBER #2

### Test Equipment

| Used                                | Description          | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|----------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W         | e3           | AUDIX        | 8.083b        | -            |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER    | ESU26        | R & S        | 100552        | 04, 19, 2018 |
| <input checked="" type="checkbox"/> | PREAMPLIFIER         | 8449B        | AGILENT      | 3008A01729    | 05, 31, 2018 |
| <input type="checkbox"/>            | ATTENUATOR           | 8491A        | HP           | 35496         | 03, 24, 2018 |
| <input checked="" type="checkbox"/> | LOG-PERIODIC ANTENNA | STLP 9149    | SCHWARZBECK  | 9149-255      | 05, 17, 2018 |

### Test Conditions

Temperature: 24,9 °C

Relative Humidity: 54,1 %

### Frequency Range of Measurement

1 GHz to 6 GHz

### Instrument Settings

IF Band Width: 1 MHz

### Test Results

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.



## 2.5 Harmonic Current Emissions

### Test Date

N/A

### Test Location

Electro wave Shieldroom

### Test Equipment

| Used                     | Description            | Model Number | Manufacturer | Serial Number | Cal. Due     |
|--------------------------|------------------------|--------------|--------------|---------------|--------------|
| <input type="checkbox"/> | EMI Test S/W           | dpa.control  | EM TEST      | 5.4.11.0      | -            |
| <input type="checkbox"/> | DIGITAL POWER ANALYZER | DPA 500N     | EM TEST      | V1024106759   | 08, 08, 2017 |
| <input type="checkbox"/> | POWER SOURCE           | ACS 500N6    | EM TEST      | V1024106760   | 08, 08, 2017 |

### Test Conditions

Temperature: °C  
Relative Humidity: %

### 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

-



## 2.6 Voltage Fluctuations and Flicker

### 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 S/W           | dpa.control  | EM TEST      | 5.4.11.0      | -            |
| <input type="checkbox"/> | DIGITAL POWER ANALYZER | DPA 500N     | EM TEST      | V1024106759   | 08, 08, 2017 |
| <input type="checkbox"/> | POWER SOURCE           | ACS 500N6    | EM TEST      | V1024106760   | 08, 08, 2017 |

### Test Conditions

Temperature: °C  
Relative Humidity: %

### Test Results

The requirements are:

- ☐ PASS  
☐ NOT PASS  
☒ NOT APPLICABLE

### Remarks

-

### 3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:

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

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

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

A functional description and a definition of performance by the manufacture and noted in the test report, based on the following criteria:

#### Electrostatic discharge

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

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

#### Radiated electromagnetic fields

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

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

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

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

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

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

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

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

---

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

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

Flickering of an indicator during the application of discharge is permissible, providing

That there is no residual is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

**Conducted RF immunity**

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

Flickering of an indicator during the application of discharge is permissible, providing

That there is no residual is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change,  
and no such flickering of indicators oeuvres at  $U = 130 \text{ dB}\mu\text{V}$ .

For component of CCTV systems, where the status is monitored by observing the TV picture,  
then deterioration of the picture is allowed at  $U = 140 \text{ dB}\mu\text{V}$ , providing:

- (a) there is no permanent damage or change to the EUT  
(e.g. no corruption of memory or changes to programmable settings etc.)
- (b) at  $U = 130 \text{ dB}\mu\text{V}$ , any deterioration of the picture is so minor that the system could still be used; and
- (c) there in no observable deterioration of the picture at  $U = 120 \text{ dB}\mu\text{V}$ .

**Voltage dip/interruption / Voltage variation**

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

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



## 3.1 Electrostatic Discharge

### Reference Standard

EN 61000-4-2:2009

### Test Date

Aug. 02, 2017

### Test Location

EMS-ESD: Electro wave Shieldroom

### Test Equipment

| Used                                | Description   | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|---------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W  | -            | -            | -             | -            |
| <input checked="" type="checkbox"/> | ESD SIMULATOR | ESS-2000     | Noise Ken    | ESS05X4620    | 02, 24, 2018 |
| <input checked="" type="checkbox"/> | HCP           | -            | Noise Ken    | -             | -            |
| <input checked="" type="checkbox"/> | VCP           | -            | Noise Ken    | -             | -            |

### Test Conditions

Temperature: 22,9 °C  
Relative Humidity: 49,2 %  
Atmospheric Pressure: 99,3 kPa



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### 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 type="checkbox"/> 2 kV            | <input checked="" type="checkbox"/> 2 kV | <input type="checkbox"/> 2 kV            | <input type="checkbox"/> 2 kV            |
|                    | <input type="checkbox"/> 4 kV            | <input checked="" type="checkbox"/> 4 kV | <input type="checkbox"/> 4 kV            | <input 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           |

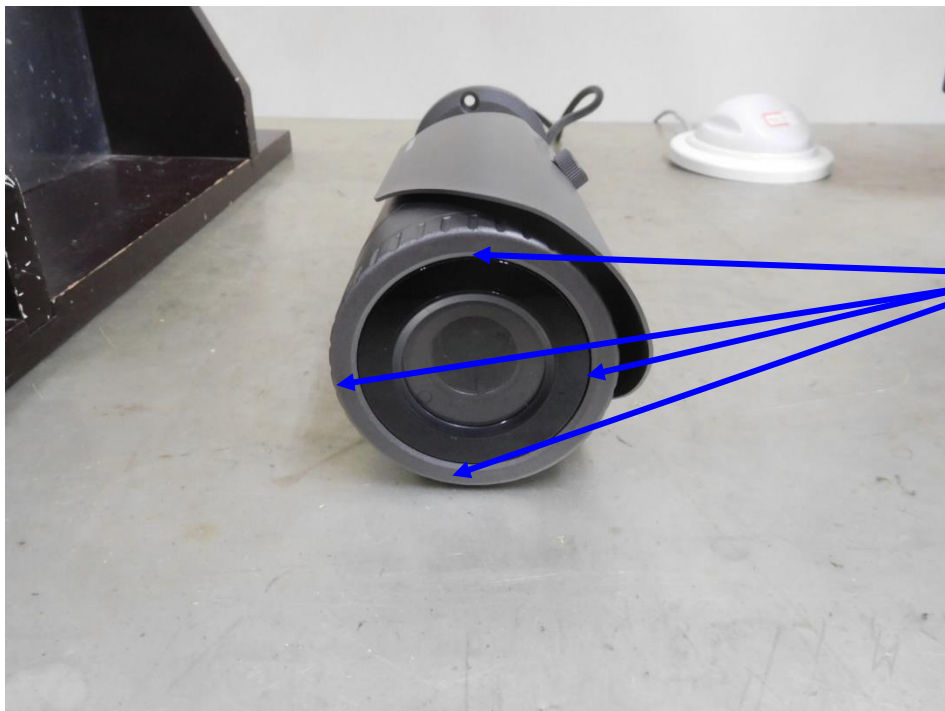
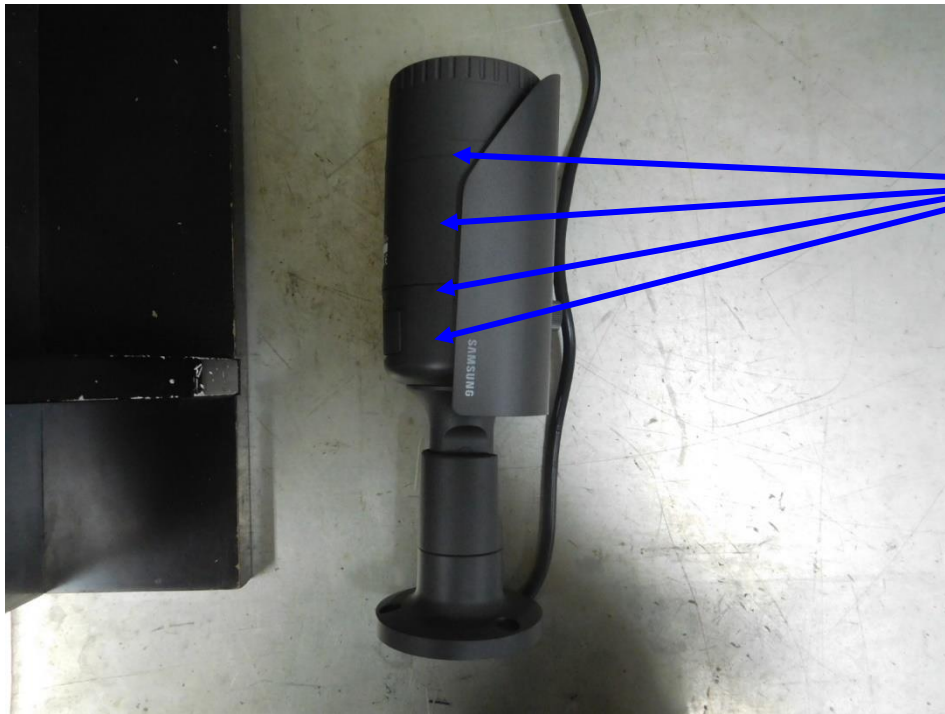
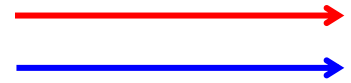
Notes: HCP: Horizontal coupling plane

VCP: Vertical coupling plane

Required Performance Criteria: ☒ Complied

**Location of Discharge:**

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



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**Test Data****- AC 24 V Mode****Indirect Discharge**

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

**Direct Discharge**

| No. | Test Point      | Discharge Method  | Observations | Remarks |
|-----|-----------------|-------------------|--------------|---------|
| 1   | Frong Enclosure | Contact Discharge | Complied     | -       |
| 2   | Lens            | Contact Discharge | Complied     | -       |
| 3   | Rear Enclosure  | Contact Discharge | Complied     | -       |
| 4   | Side Enclosure  | Contact Discharge | Complied     | -       |

**- DC 12 V Mode****Indirect Discharge**

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

**Direct Discharge**

| No. | Test Point      | Discharge Method  | Observations | Remarks |
|-----|-----------------|-------------------|--------------|---------|
| 1   | Frong Enclosure | Contact Discharge | Complied     | -       |
| 2   | Lens            | Contact Discharge | Complied     | -       |
| 3   | Rear Enclosure  | Contact Discharge | Complied     | -       |
| 4   | Side Enclosure  | Contact Discharge | Complied     | -       |

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

**Test Results**

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

**Remarks**PASS Required Performance Criteria.



## 3.2 Radiated Electric Field Immunity

### Reference Standard

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

### Test Date

Aug. 03, 2017

### Test Location

EMS-RS: ☐ SEMI ANECHOIC CHAMBER #2 ☒ SEMI ANECHOIC CHAMBER #3

### Test Equipment

| Used                                | Description                     | Model Number    | Manufacturer    | Serial Number | Cal. Due     |
|-------------------------------------|---------------------------------|-----------------|-----------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W                    | EMC32           | R & S           | 10.10.02      | -            |
| <input checked="" type="checkbox"/> | SIGNAL GENERATOR                | SMB 100A        | R & S           | 177586        | 08, 08, 2017 |
| <input checked="" type="checkbox"/> | BROADBAND AMPLIFIER             | BBA100          | R & S           | 101239        | 08, 08, 2017 |
| <input checked="" type="checkbox"/> | BROADBAND AMPLIFIER             | 100S1G6M1       | AR              | 579931        | 08, 08, 2017 |
| <input checked="" type="checkbox"/> | POWER METER                     | NRP2            | R & S           | 103475        | 08, 08, 2017 |
| <input checked="" type="checkbox"/> | AVG POWER SENSOR                | NRP-Z91         | R & S           | 102526        | 08, 08, 2017 |
| <input checked="" type="checkbox"/> | AVG POWER SENSOR                | NRP-Z91         | R & S           | 102527        | 08, 08, 2017 |
| <input checked="" type="checkbox"/> | STACKED DOUBLE LOG-PER- ANTENNA | STPL9128 E      | Schwarzbeck     | 9128ES-121    | -            |
| <input checked="" type="checkbox"/> | DIRECTIONAL COUPLER             | KYDC-D1070-DX40 | KY TELECOM      | KY150001      | 08, 08, 2017 |
| <input checked="" type="checkbox"/> | DOUBLE RIDGED HORN ANTENNA      | SAS-571         | A.H.SYSTEM, INC | 781           | 05, 02, 2019 |

### Test Conditions

Temperature: 25,5 °C  
Relative Humidity: 52,5 %  
Atmospheric Pressure: 99,2 kPa



### Test Specifications

Antenna Polarization: Horizontal & vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

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

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

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

Frequency step: ☒ 1 % step

Dwell Time: ☒ 1 s ☐ 3 s

# of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ Complied

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**Test Data**

- AC 24 V Mode

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

- DC 12 V Mode

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

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

**Test Results**

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

**Remarks**

PASS Required Performance Criteria.

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### 3.3 Electrical Fast Transients/Bursts

#### Reference Standard

EN 61000-4-4:2012

#### Test Date

Aug. 04, 2017

#### Test Location

EMS-EFT: Electro wave Shieldroom

#### Test Equipment

| Used                                | Description               | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|---------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W              | iec.control  | EM TEST      | 5.3.9         | -            |
| <input checked="" type="checkbox"/> | ULTRA COMPACT SIMULATOR   | UCS 500N5T   | EM TEST      | P1317117973   | 02, 08, 2018 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC              | MV2616       | EM TEST      | V0936105123   | 02, 08, 2018 |
| <input checked="" type="checkbox"/> | CAPACITIVE COUPLING CLAMP | HFK          | EM TEST      | 070925        | 06, 26, 2018 |

#### Test Conditions

Temperature: 23,5 °C  
Relative Humidity: 45,1 %  
Atmospheric Pressure: 99,1 kPa

#### Test Specifications

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

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

Burst Period: ☒ 300 ms ☐ 2 s

Repetition Rate: ☐ 5 kHz ☒ 100 kHz

Duration of Test Voltage: ☒ ≥ 1 min

Required Performance Criteria: ☒ Complied



## Test Data

- AC 24 V Mode

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

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

☐ 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) |
| -                   | -              | -              |

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**- DC 12 V Mode**

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

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

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

| Mode of Application | Observations   |                |
|---------------------|----------------|----------------|
|                     | (+) Burst (kV) | (-) Burst (kV) |
| L1 – L2             | Complied       | Complied       |

☐ Signal ports and telecommunication ports – Coupling Clamp used

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

Note: “Blank” = Not performed

Observations:

Complied – No degradation of function

**Test Results**

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

**Remarks**

PASS Required Performance Criteria.



### 3.4 Surge Transients

#### Reference Standard

EN 61000-4-5:2014

#### Test Date

Aug. 04, 2017

#### Test Location

EMS-Surge: Electro wave Shieldroom

#### Test Equipment

| Used                                | Description             | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|-------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W            | iec.control  | EM TEST      | 5.3.9         | -            |
| <input checked="" type="checkbox"/> | ULTRA COMPACT SIMULATOR | UCS 500N5T   | EM TEST      | P1317117973   | 02, 08, 2018 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC            | MV2616       | EM TEST      | V0936105123   | 02, 08, 2018 |
| <input checked="" type="checkbox"/> | CDN                     | CNV 508N1    | EM TEST      | P1551168979   | 04, 26, 2018 |
| <input type="checkbox"/>            | CDN                     | CNV 508T5    | EM TEST      | P1549168422   | 04, 26, 2018 |

#### Test Conditions

Temperature: 23,5 °C  
Relative Humidity: 45,1 %  
Atmospheric Pressure: 99,1 kPa



## Test Specifications

### AC Power Lines

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

Surge Amplitude :

Common Mode

☐ (0,5 / 1,0 / 2,0) kV

Differential Mode

☒ (0,5 / 1,0) kV

Number of Surges:

☒ 5 surges per angle

Angle:

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

Polarity:

☒ Positive & Negative

Repetition Rate:

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

Required Performance Criteria: ☒ Complied

### Other supply / Signal Lines

Source Impedance:

42 ohm for common mode

Surge Amplitude:

Common Mode

☒ (0,5 / 1,0) kV

Number of Surges:

☒ 5 Surges

Polarity:

☒ Positive & Negative

Repetition Rate:

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

Required Performance Criteria: ☒ Complied



## Test Data

- AC 24 V Mode

☒ Line to Line – Differential Mode

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

☐ Line to Earth – Common Mode

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

## Signal Lines

☒ Line to Earth – Common Mode

| Mode of Application | Observations   |                |
|---------------------|----------------|----------------|
|                     | (+) Surge (kV) | (-) Surge (kV) |
| BNC                 | Complied       | Complied       |
| Alarm               | Complied       | Complied       |

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**- DC 12 V Mode**☒ Line to Line – Differential Mode

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

☐ Line to Earth – Common Mode

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

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

| Mode of Application | Observations   |                |
|---------------------|----------------|----------------|
|                     | (+) Surge (kV) | (-) Surge (kV) |
| BNC                 | Complied       | Complied       |
| Alarm               | Complied       | Complied       |

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

**Test Results**

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

**Remarks**

PASS Required Performance Criteria.

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## 3.5 Conducted Disturbance

### Reference Standard

EN 61000-4-6:2014

### Test Date

Aug. 04, 2017

### Test Location

EMS-CS: Electro wave Shieldroom

### 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   | 08, 08, 2017 |
| <input checked="" type="checkbox"/> | ATTENUATOR                | ATT6         | EM TEST      | 1208-34       | 08, 08, 2017 |
| <input checked="" type="checkbox"/> | CDN                       | CDN-M2/M3N   | EM TEST      | 0909-06       | 08, 08, 2017 |
| <input type="checkbox"/>            | CDN                       | CDN T8RJ45   | EM TEST      | 0909-09       | 08, 08, 2017 |
| <input checked="" type="checkbox"/> | EM INJECTION CLAMP        | EM 101       | Liithi       | 35943         | 02, 03, 2018 |

### Test Conditions

Temperature: 23,5 °C  
Relative Humidity: 45,1 %  
Atmospheric Pressure: 99,1 kPa



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### Test Specifications

- Frequency range: ☒ 150 kHz to 100 MHz ☐ 150 kHz to 80 MHz
- Voltage Level: ☐ 1 Vrms ☐ 3 Vrms  
☒ 10 Vrms
- Modulation: ☒ AM, 80 %, 1 kHz sine wave  
☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)
- Frequency step: ☒ 1 % step
- Dwell Time: ☒ 1 s ☐ 3 s
- Required Performance Criteria: ☒ Complied

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## Test Data

- AC 24 V Mode

☒ Input a.c. power ports

| Coupling Location<br>(Line Stressed) | Coupling Method                                                            | Observations |
|--------------------------------------|----------------------------------------------------------------------------|--------------|
| L – N                                | CDN ( <input checked="" type="checkbox"/> M2, <input type="checkbox"/> M3) | Complied     |

☐ Input d.c. power ports

| Coupling Location<br>(Line Stressed) | Coupling Method                                                 | Observations |
|--------------------------------------|-----------------------------------------------------------------|--------------|
| -                                    | CDN ( <input type="checkbox"/> M2, <input type="checkbox"/> M3) | -            |

☐ Signal ports and telecommunication ports

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

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**- DC 12 V Mode**

☐ Input a.c. power ports

| Coupling Location<br>(Line Stressed) | Coupling Method                                                 | Observations |
|--------------------------------------|-----------------------------------------------------------------|--------------|
| -                                    | CDN ( <input type="checkbox"/> M2, <input type="checkbox"/> M3) | -            |

☒ Input d.c. power ports

| Coupling Location<br>(Line Stressed) | Coupling Method                                                            | Observations |
|--------------------------------------|----------------------------------------------------------------------------|--------------|
| L - N                                | CDN ( <input checked="" type="checkbox"/> M2, <input type="checkbox"/> M3) | Complied     |

☐ Signal ports and telecommunication ports

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

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

**Observations:**

Complied – No degradation of function

**Test Results**

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

**Remarks**

PASS Required Performance Criteria.



### 3.6 Voltage Dips and Short Interruptions

#### Reference Standard

EN 61000-4-11:2004

#### Test Date

Aug. 04, 2017

#### Test Location

EMS-Voltage dip: Electro wave Shieldroom

#### Test Equipment

| Used                                | Description             | Model Number | Manufacturer | Serial Number | Cal. Due     |
|-------------------------------------|-------------------------|--------------|--------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMS Test S/W            | iec.control  | EM TEST      | 5.3.9         | -            |
| <input checked="" type="checkbox"/> | ULTRA COMPACT SIMULATOR | UCS 500N5T   | EM TEST      | P1317117973   | 02, 08, 2018 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC            | MV2616       | EM TEST      | V0936105123   | 02, 08, 2018 |

#### Test Conditions

Temperature: 23,5 °C  
Relative Humidity: 45,1 %  
Atmospheric Pressure: 99,1 kPa



## Test Specifications & Observations/Remarks

- AC 24 V Mode

(Test Voltage : 50 Hz)

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

- Voltage variations

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

Observations:

Complied – No degradation of function

### Test Results

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

### Remarks

PASS Required Performance Criteria.

-The test has been tested using the AC / AC Adaptor

## APPENDIX A – TEST DATA

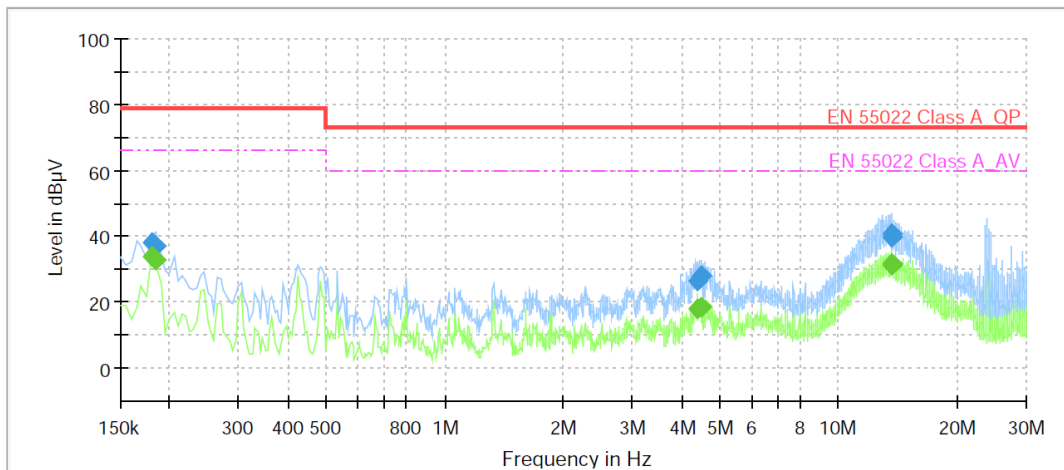
### Conducted Emissions at Mains Power Ports

- AC 24 V Mode

[HOT]

#### Common Information

Test Description: Conducted Emission  
Model No.: HCO-6080RP  
Mode: AC  
Operator Name: KES



#### Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.180000        | ---              | 33.77           | 66.00        | 32.23       | 1000.0          | 9.000           | L1   | 19.4       |
| 0.180000        | 37.94            | ---             | 79.00        | 41.06       | 1000.0          | 9.000           | L1   | 19.4       |
| 0.185000        | ---              | 33.10           | 66.00        | 32.90       | 1000.0          | 9.000           | L1   | 19.4       |
| 0.185000        | 36.97            | ---             | 79.00        | 42.03       | 1000.0          | 9.000           | L1   | 19.4       |
| 4.400000        | ---              | 17.87           | 60.00        | 42.13       | 1000.0          | 9.000           | L1   | 19.9       |
| 4.400000        | 26.50            | ---             | 73.00        | 46.50       | 1000.0          | 9.000           | L1   | 19.9       |
| 4.475000        | ---              | 18.43           | 60.00        | 41.57       | 1000.0          | 9.000           | L1   | 19.9       |
| 4.475000        | 27.95            | ---             | 73.00        | 45.05       | 1000.0          | 9.000           | L1   | 19.9       |
| 13.655000       | ---              | 31.35           | 60.00        | 28.65       | 1000.0          | 9.000           | L1   | 19.9       |
| 13.655000       | 39.79            | ---             | 73.00        | 33.21       | 1000.0          | 9.000           | L1   | 19.9       |
| 13.715000       | ---              | 31.75           | 60.00        | 28.25       | 1000.0          | 9.000           | L1   | 19.9       |
| 13.715000       | 40.68            | ---             | 73.00        | 32.32       | 1000.0          | 9.000           | L1   | 19.9       |

#### ◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

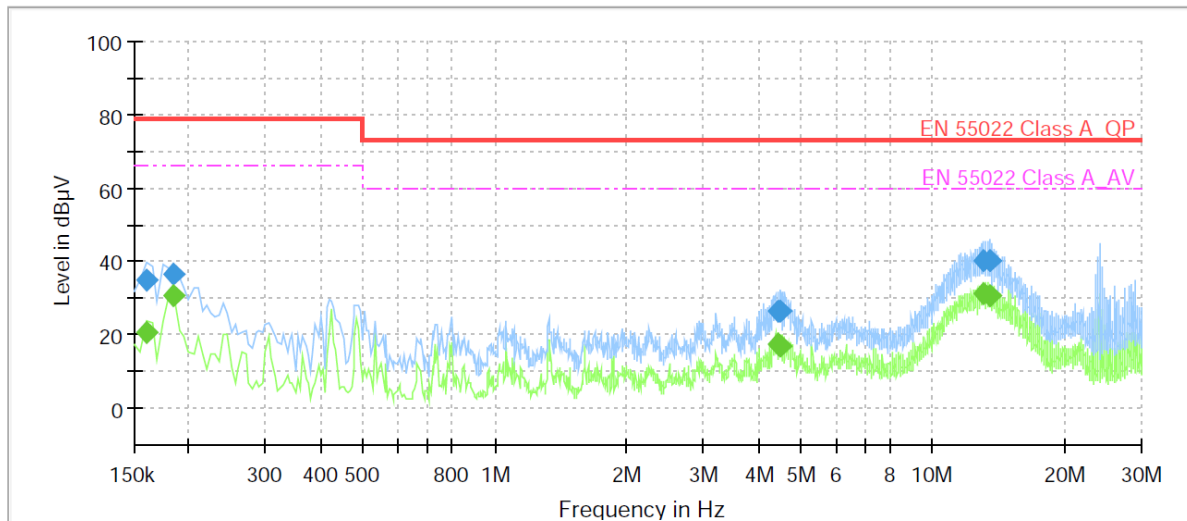
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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## [ NEUTRAL ]

### Common Information

|                   |                    |
|-------------------|--------------------|
| Test Description: | Conducted Emission |
| Model No.:        | HCO-6080RP         |
| Mode              | AC                 |
| 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        | ---              | 20.55           | 66.00        | 45.45       | 1000.0          | 9.000           | N    | 19.4       |
| 0.160000        | 34.78            | ---             | 79.00        | 44.22       | 1000.0          | 9.000           | N    | 19.4       |
| 0.185000        | ---              | 30.68           | 66.00        | 35.32       | 1000.0          | 9.000           | N    | 19.4       |
| 0.185000        | 36.40            | ---             | 79.00        | 42.60       | 1000.0          | 9.000           | N    | 19.4       |
| 4.430000        | ---              | 17.70           | 60.00        | 42.30       | 1000.0          | 9.000           | N    | 19.9       |
| 4.430000        | 26.25            | ---             | 73.00        | 46.75       | 1000.0          | 9.000           | N    | 19.9       |
| 4.505000        | ---              | 17.21           | 60.00        | 42.79       | 1000.0          | 9.000           | N    | 19.9       |
| 4.505000        | 26.48            | ---             | 73.00        | 46.52       | 1000.0          | 9.000           | N    | 19.9       |
| 13.060000       | ---              | 31.16           | 60.00        | 28.84       | 1000.0          | 9.000           | N    | 19.8       |
| 13.060000       | 40.48            | ---             | 73.00        | 32.52       | 1000.0          | 9.000           | N    | 19.8       |
| 13.465000       | ---              | 30.91           | 60.00        | 29.09       | 1000.0          | 9.000           | N    | 19.9       |
| 13.465000       | 40.47            | ---             | 73.00        | 32.53       | 1000.0          | 9.000           | N    | 19.9       |

#### ◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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



---

## Conducted Emissions at Telecommunication Ports

[10 Mbps]

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



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**[100 Mbps]**

N/A

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

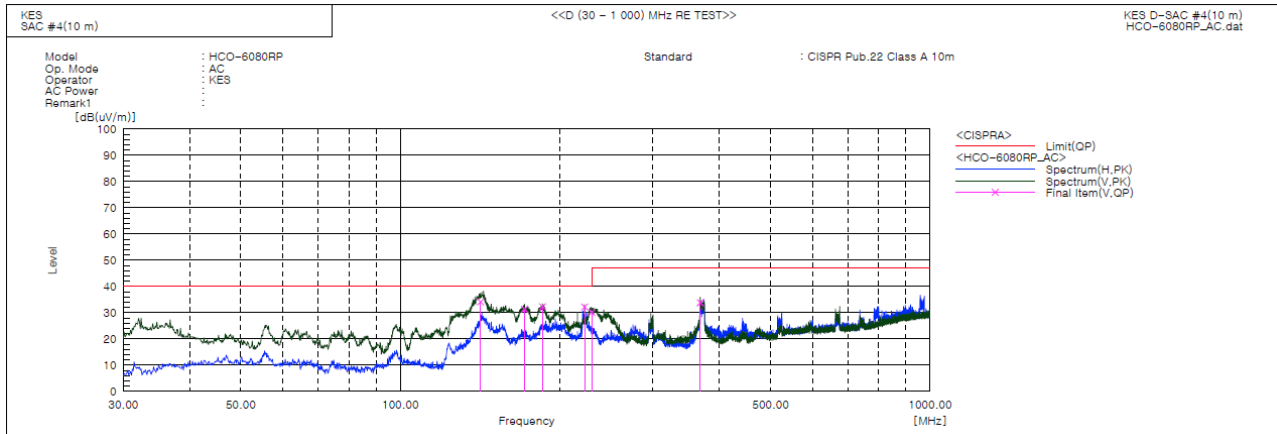
Corr. : Correction values (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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## Radiated Electric Field Emissions(Below 1 GHz)

- AC 24 V 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   | 141.714            | V   | 65.9                      | -31.8            | 34.1                       | 40.0                      | 5.9                  | 114.0          | 128.0          |        |
| 2   | 171.620            | V   | 61.7                      | -30.3            | 31.4                       | 40.0                      | 8.6                  | 100.0          | 209.0          |        |
| 3   | 185.564            | V   | 60.9                      | -28.6            | 32.3                       | 40.0                      | 7.7                  | 100.0          | 47.0           |        |
| 4   | 222.788            | V   | 58.4                      | -26.2            | 32.2                       | 40.0                      | 7.8                  | 150.0          | 144.0          |        |
| 5   | 368.288            | V   | 55.1                      | -21.3            | 33.8                       | 47.0                      | 13.2                 | 400.0          | 136.0          |        |
| 6   | 229.941            | V   | 56.1                      | -26.0            | 30.1                       | 40.0                      | 9.9                  | 150.0          | 127.0          |        |

### ◆ Calculation

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

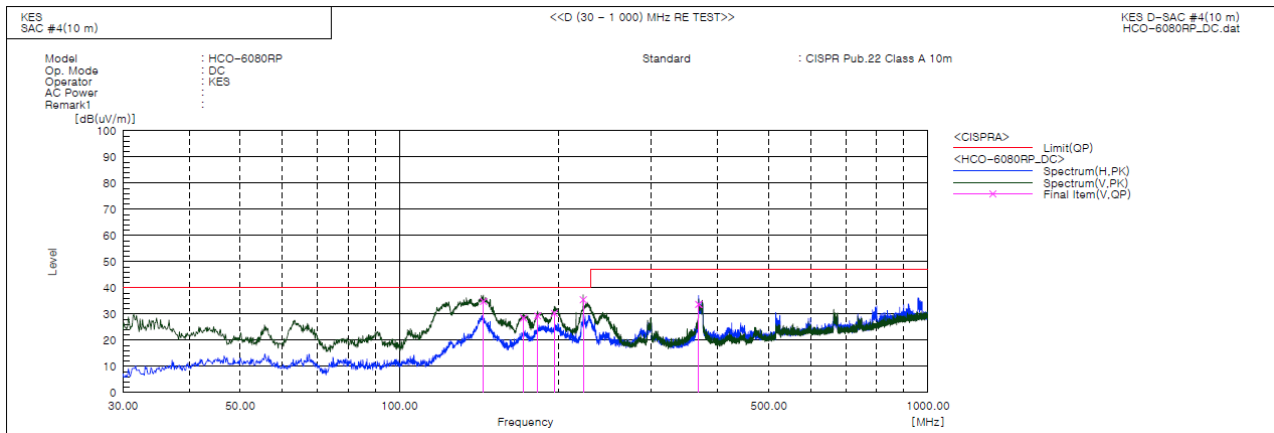
Margin(QP)[dB] = Limit[dB( $\mu$ V/m)] - Result(QP) [dB( $\mu$ V/m)]

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

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



- DC 12 V Mode



Final Result

| No. | Frequency (P) | Reading  | c.f       | Result     | Limit      | Margin | Height | Angle | Remark |
|-----|---------------|----------|-----------|------------|------------|--------|--------|-------|--------|
|     | [MHz]         | QP       |           | QP         | QP         | QP     |        |       |        |
|     |               | [dB(uV)] | [dB(1/m)] | [dB(uV/m)] | [dB(uV/m)] | [dB]   | [cm]   | [deg] |        |
| 1   | 144.218       | V 66.5   | -31.7     | 34.8       | 40.0       | 5.2    | 100.0  | 137.0 |        |
| 2   | 171.741       | V 58.8   | -30.3     | 28.5       | 40.0       | 11.5   | 100.0  | 342.0 |        |
| 3   | 182.654       | V 58.4   | -29.1     | 29.3       | 40.0       | 10.7   | 100.0  | 158.0 |        |
| 4   | 196.476       | V 57.2   | -26.9     | 30.3       | 40.0       | 9.7    | 100.0  | 114.0 |        |
| 5   | 222.788       | V 61.7   | -26.2     | 35.5       | 40.0       | 4.5    | 100.0  | 42.0  |        |
| 6   | 368.288       | V 55.0   | -21.3     | 33.7       | 47.0       | 13.3   | 400.0  | 153.0 |        |

◆ Calculation

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

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

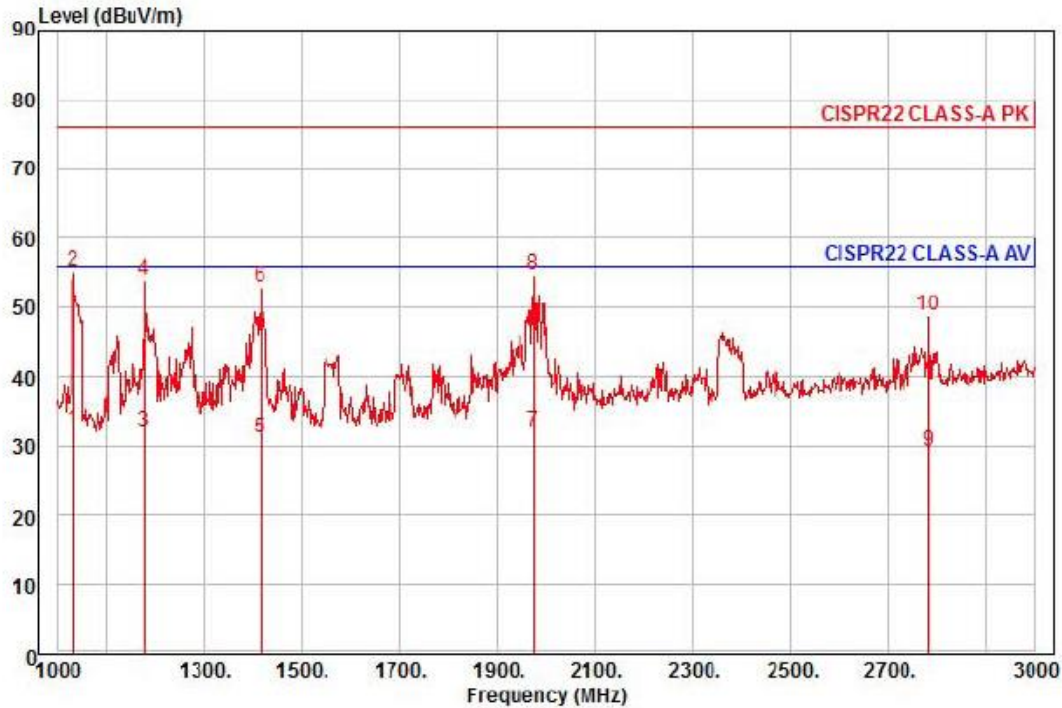
Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

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



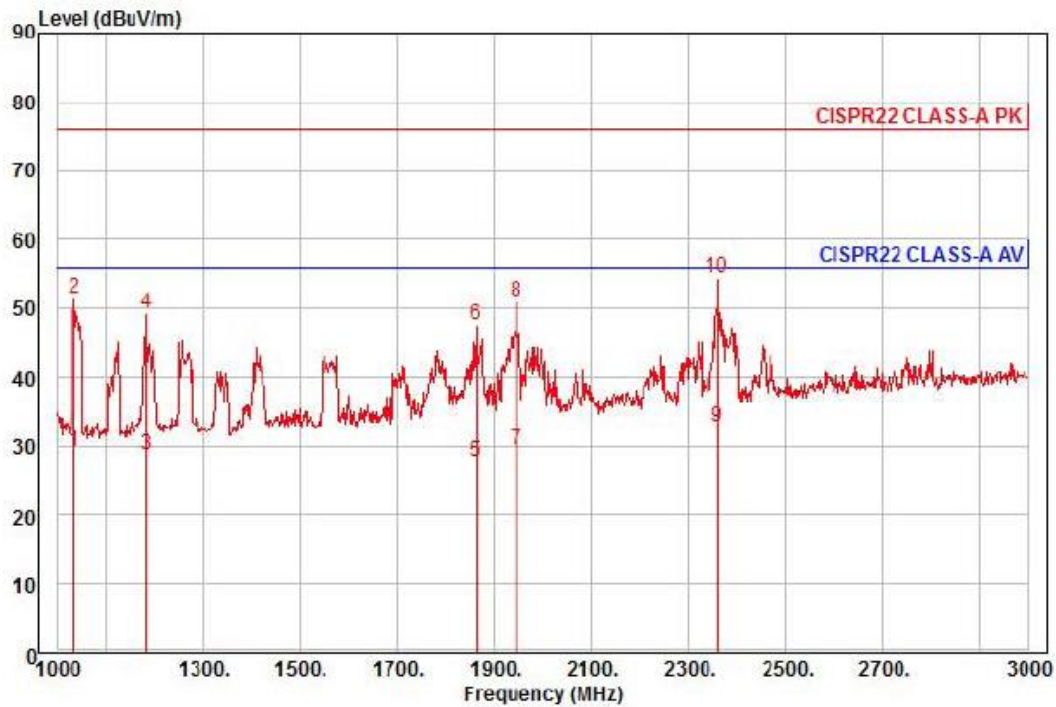
## Radiated Electric Field Emissions(Above 1 GHz)

- AC 24 V Mode



Site : chamber  
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) horizontal  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : HCO-6080RP  
Mode : AC  
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  | av   | 1032.00 | 39.11  | 22.60 | 6.74   | 354  | 56.00  | -23.58 | horizontal | Average |
| 2  | pp   | 1032.00 | 61.79  | 22.60 | 6.74   | 354  | 76.00  | -20.90 | horizontal | Peak    |
| 3  |      | 1178.00 | 37.87  | 23.04 | 7.21   | 32   | 56.00  | -23.78 | horizontal | Average |
| 4  |      | 1178.00 | 59.69  | 23.04 | 7.21   | 32   | 76.00  | -21.96 | horizontal | Peak    |
| 5  |      | 1414.00 | 35.22  | 23.76 | 7.97   | 51   | 56.00  | -24.74 | horizontal | Average |
| 6  |      | 1414.00 | 56.95  | 23.76 | 7.97   | 51   | 76.00  | -23.01 | horizontal | Peak    |
| 7  |      | 1974.00 | 31.75  | 25.91 | 9.57   | 57   | 56.00  | -23.96 | horizontal | Average |
| 8  |      | 1974.00 | 54.44  | 25.91 | 9.57   | 57   | 76.00  | -21.27 | horizontal | Peak    |
| 9  |      | 2784.00 | 24.35  | 28.79 | 11.56  | 307  | 56.00  | -26.78 | horizontal | Average |
| 10 |      | 2784.00 | 44.00  | 28.79 | 11.56  | 307  | 76.00  | -27.13 | horizontal | Peak    |



Site : chamber  
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : HCO-6080RP  
Mode : AC  
Memo : 1 ~ 3 GHz

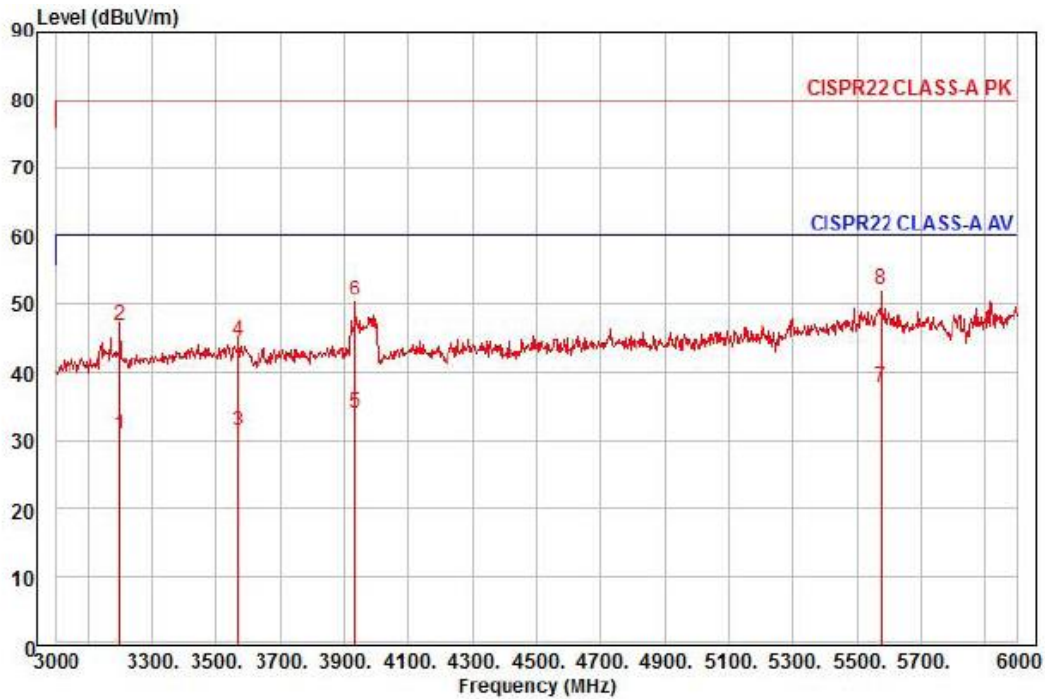
|       | Freq    | Read Level | Ant Factor | Cable Loss | Preamplifier Factor | TPos | Limit Line | Over Limit | Pol/Phase | Remark  |
|-------|---------|------------|------------|------------|---------------------|------|------------|------------|-----------|---------|
|       | MHz     | dBuV       | dB/m       | dB         | dB                  | deg  | dBuV/m     | dB         |           |         |
| 1     | 1034.00 | 35.88      | 22.60      | 6.75       | 36.03               | 14   | 56.00      | -26.80     | vertical  | Average |
| 2     | 1034.00 | 58.16      | 22.60      | 6.75       | 36.03               | 14   | 76.00      | -24.52     | vertical  | Peak    |
| 3     | 1184.00 | 34.37      | 23.06      | 7.23       | 35.90               | 30   | 56.00      | -27.24     | vertical  | Average |
| 4     | 1184.00 | 55.02      | 23.06      | 7.23       | 35.90               | 30   | 76.00      | -26.59     | vertical  | Peak    |
| 5     | 1864.00 | 28.34      | 25.47      | 9.27       | 35.29               | 359  | 56.00      | -28.21     | vertical  | Average |
| 6     | 1864.00 | 48.00      | 25.47      | 9.27       | 35.29               | 359  | 76.00      | -28.55     | vertical  | Peak    |
| 7     | 1946.00 | 29.25      | 25.80      | 9.50       | 35.22               | 1    | 56.00      | -26.67     | vertical  | Average |
| 8     | 1946.00 | 51.01      | 25.80      | 9.50       | 35.22               | 1    | 76.00      | -24.91     | vertical  | Peak    |
| 9 av  | 2360.00 | 30.54      | 27.10      | 10.50      | 35.31               | 28   | 56.00      | -23.17     | vertical  | Average |
| 10 pp | 2360.00 | 52.08      | 27.10      | 10.50      | 35.31               | 28   | 76.00      | -21.63     | vertical  | Peak    |



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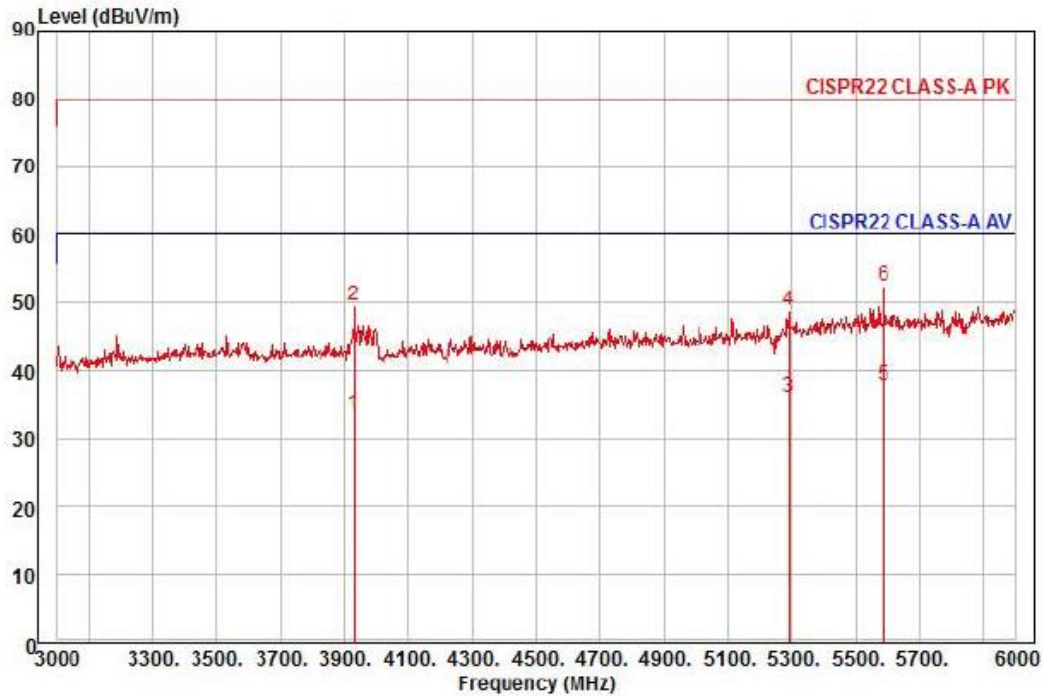
Test report No.:  
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Site : chamber  
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) horizontal  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : HCO-6080RP  
Mode : AC  
Memo : 3 ~ 6 GHz

|      |         | 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    | 3198.00 | 23.35 | 30.30  | 12.66 | 35.50  | 17   | 60.00  | -29.19 | horizontal | Average |
| 2    | 3198.00 | 39.40 | 30.30  | 12.66 | 35.50  | 17   | 80.00  | -33.14 | horizontal | Peak    |
| 3    | 3567.00 | 22.18 | 31.33  | 13.23 | 35.40  | 22   | 60.00  | -28.66 | horizontal | Average |
| 4    | 3567.00 | 35.39 | 31.33  | 13.23 | 35.40  | 22   | 80.00  | -35.45 | horizontal | Peak    |
| 5    | 3933.00 | 23.07 | 32.32  | 13.92 | 35.30  | 33   | 60.00  | -25.99 | horizontal | Average |
| 6    | 3933.00 | 39.54 | 32.32  | 13.92 | 35.30  | 33   | 80.00  | -29.52 | horizontal | Peak    |
| 7 pp | 5574.00 | 21.24 | 35.48  | 16.73 | 35.66  | 72   | 60.00  | -22.21 | horizontal | Average |
| 8 pk | 5574.00 | 35.80 | 35.48  | 16.73 | 35.66  | 72   | 80.00  | -27.65 | horizontal | Peak    |

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Site : chamber  
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : HCO-6080RP  
Mode : AC  
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    | 3930.00 | 22.66      | 32.31      | 13.92      | 35.30         | 57   | 60.00      | -26.41     | vertical  | Average |
| 2    | 3930.00 | 38.73      | 32.31      | 13.92      | 35.30         | 57   | 80.00      | -30.34     | vertical  | Peak    |
| 3    | 5292.00 | 20.91      | 34.55      | 16.24      | 35.65         | 257  | 60.00      | -23.95     | vertical  | Average |
| 4    | 5292.00 | 33.59      | 34.55      | 16.24      | 35.65         | 257  | 80.00      | -31.27     | vertical  | Peak    |
| 5 pp | 5586.00 | 21.11      | 35.50      | 16.74      | 35.67         | 10   | 60.00      | -22.32     | vertical  | Average |
| 6 pk | 5586.00 | 35.86      | 35.50      | 16.74      | 35.67         | 10   | 80.00      | -27.57     | vertical  | Peak    |

#### ◆ Calculation

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

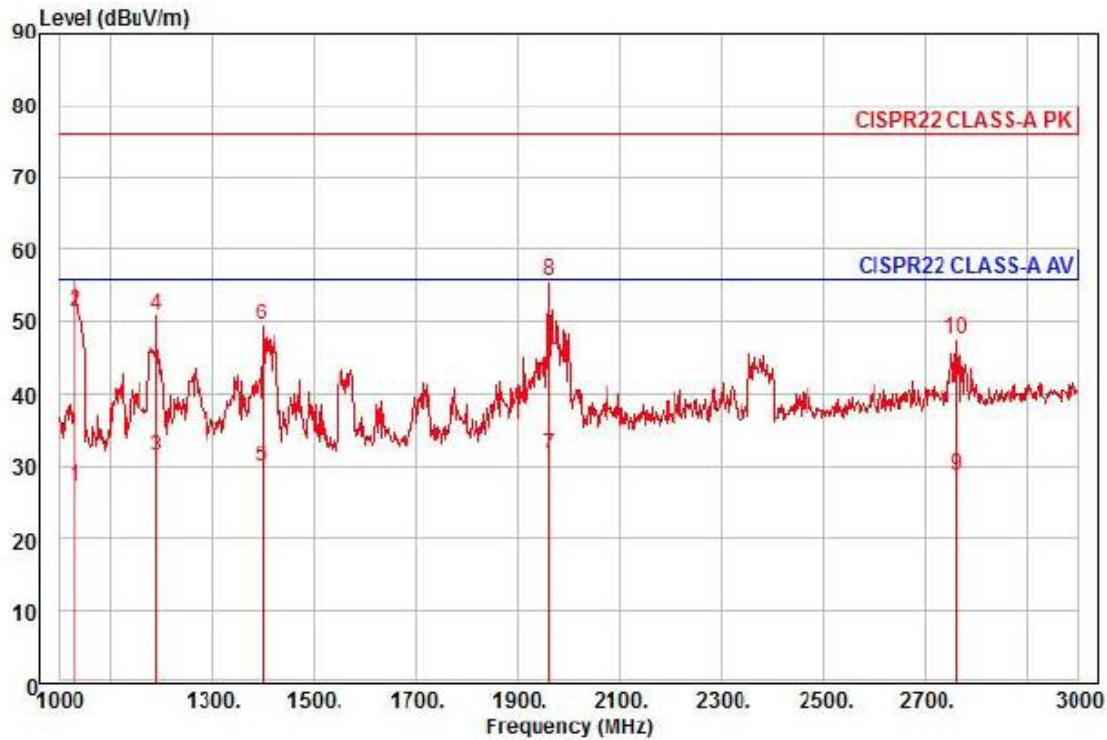
Margin(PK/CAV)[dB] = Limit[dB(μV/m)] - Result(PK/CAV) [dB(μV/m)]

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

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



- DC 12 V Mode



Site : chamber  
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) horizontal  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : HCO-6080RP  
Mode : DC  
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    | 1030.00 | 33.88 | 22.59  | 6.73  | 36.03  | 1    | 56.00  | -28.83 | horizontal | Average |
| 2    | 1030.00 | 58.09 | 22.59  | 6.73  | 36.03  | 1    | 76.00  | -24.62 | horizontal | Peak    |
| 3    | 1190.00 | 37.02 | 23.08  | 7.25  | 35.89  | 35   | 56.00  | -24.54 | horizontal | Average |
| 4    | 1190.00 | 56.48 | 23.08  | 7.25  | 35.89  | 35   | 76.00  | -25.08 | horizontal | Peak    |
| 5    | 1398.00 | 34.07 | 23.71  | 7.92  | 35.71  | 49   | 56.00  | -26.01 | horizontal | Average |
| 6    | 1398.00 | 53.66 | 23.71  | 7.92  | 35.71  | 49   | 76.00  | -26.42 | horizontal | Peak    |
| 7 av | 1962.00 | 31.54 | 25.86  | 9.54  | 35.20  | 55   | 56.00  | -24.26 | horizontal | Average |
| 8 pp | 1962.00 | 55.43 | 25.86  | 9.54  | 35.20  | 55   | 76.00  | -20.37 | horizontal | Peak    |
| 9    | 2762.00 | 24.08 | 28.69  | 11.50 | 35.47  | 311  | 56.00  | -27.20 | horizontal | Average |
| 10   | 2762.00 | 42.88 | 28.69  | 11.50 | 35.47  | 311  | 76.00  | -28.40 | horizontal | Peak    |

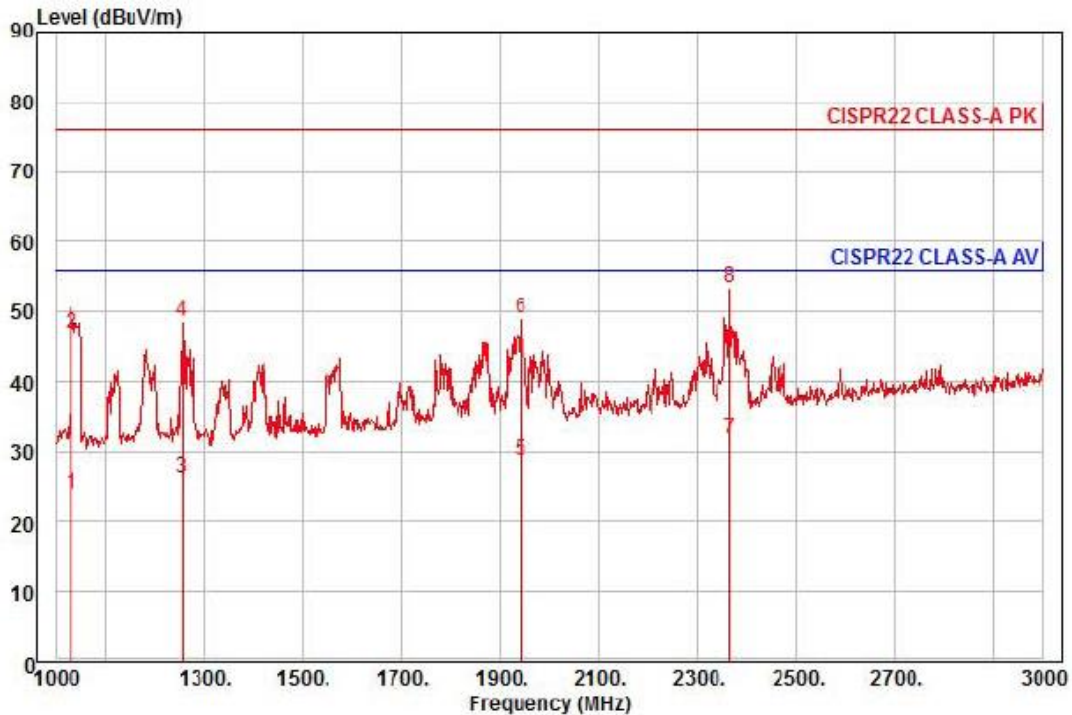
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Site : chamber  
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : HCO-6080RP  
Mode : DC  
Memo : 1 ~ 3 GHz

|      | Freq    | Read Level | Ant Factor | Cable Loss | Preamplifier Factor | TPos | Limit Line | Over Limit | Pol/Phase | Remark  |
|------|---------|------------|------------|------------|---------------------|------|------------|------------|-----------|---------|
|      | MHz     | dBuV       | dB/m       | dB         | dB                  | deg  | dBuV/m     | dB         |           |         |
| 1    | 1030.00 | 30.63      | 22.59      | 6.73       | 36.03               | 11   | 56.00      | -32.08     | vertical  | Average |
| 2    | 1030.00 | 53.58      | 22.59      | 6.73       | 36.03               | 11   | 76.00      | -29.13     | vertical  | Peak    |
| 3    | 1254.00 | 31.25      | 23.27      | 7.46       | 35.83               | 42   | 56.00      | -29.85     | vertical  | Average |
| 4    | 1254.00 | 53.63      | 23.27      | 7.46       | 35.83               | 42   | 76.00      | -27.47     | vertical  | Peak    |
| 5    | 1942.00 | 28.63      | 25.78      | 9.49       | 35.22               | 356  | 56.00      | -27.32     | vertical  | Average |
| 6    | 1942.00 | 48.89      | 25.78      | 9.49       | 35.22               | 356  | 76.00      | -27.06     | vertical  | Peak    |
| 7 av | 2366.00 | 29.68      | 27.12      | 10.51      | 35.31               | 22   | 56.00      | -24.00     | vertical  | Average |
| 8 pp | 2366.00 | 51.16      | 27.12      | 10.51      | 35.31               | 22   | 76.00      | -22.52     | vertical  | Peak    |

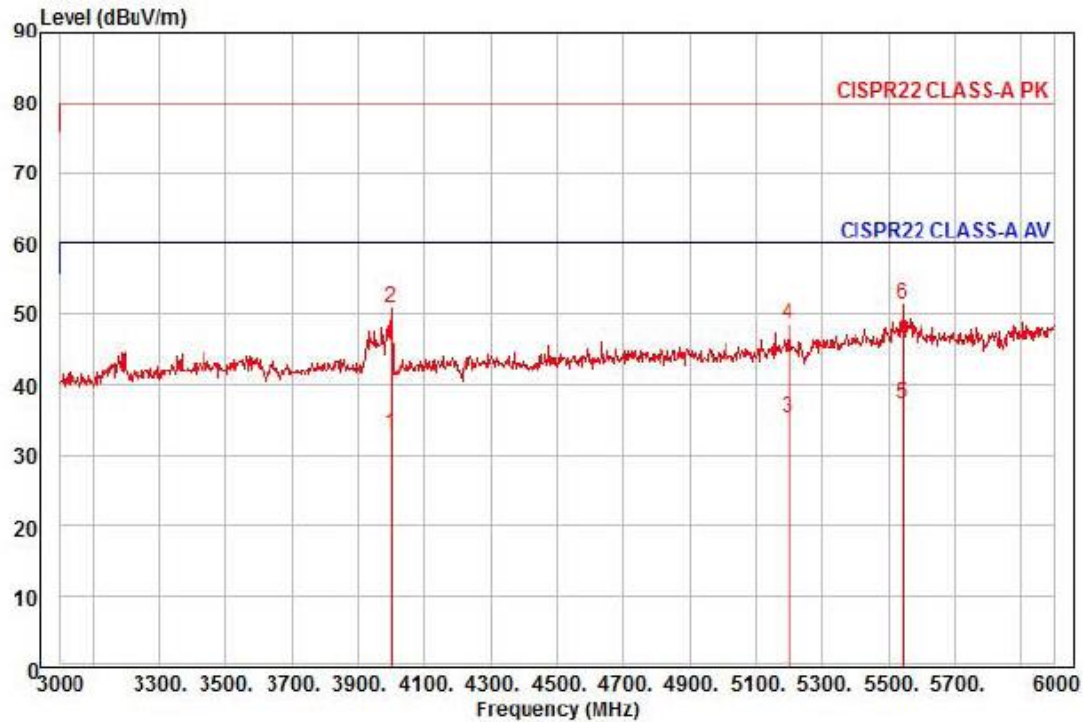
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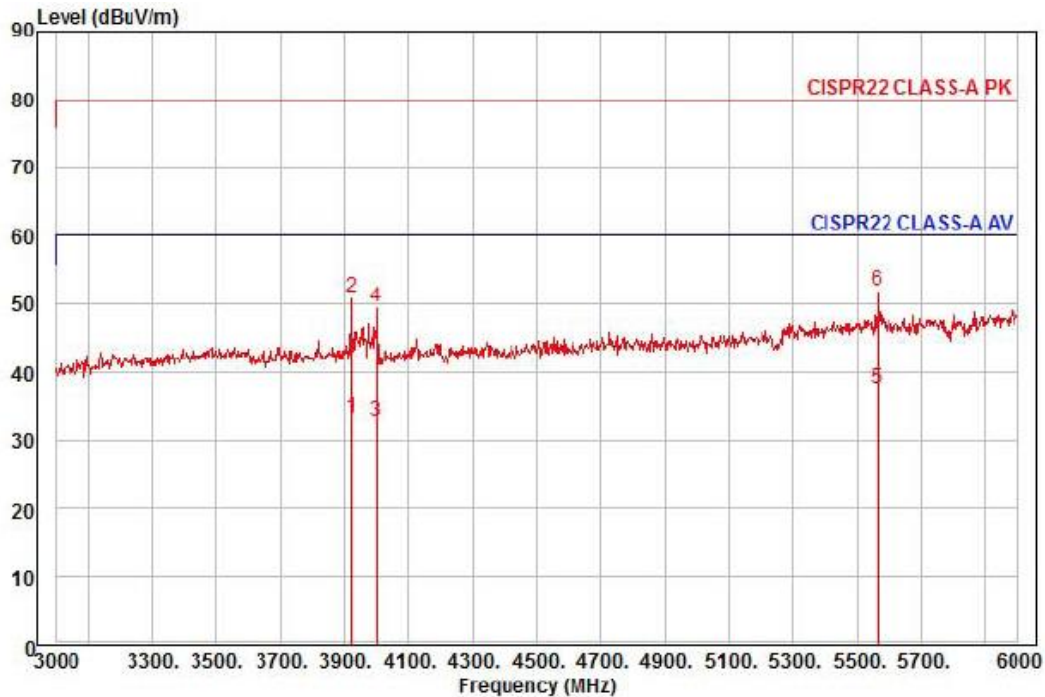
Test report No.:  
KES-E1-17T0517-R1  
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Site : chamber  
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) horizontal  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : HCO-6080RP  
Mode : DC  
Memo : 3 ~ 6 GHz

|      | 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    | 3999.00 | 21.82      | 32.50      | 14.07      | 35.28         | 34   | 60.00      | -26.89     | horizontal | Average |
| 2    | 3999.00 | 39.73      | 32.50      | 14.07      | 35.28         | 34   | 80.00      | -28.98     | horizontal | Peak    |
| 3    | 5199.00 | 20.78      | 34.19      | 16.06      | 35.64         | 326  | 60.00      | -24.61     | horizontal | Average |
| 4    | 5199.00 | 33.94      | 34.19      | 16.06      | 35.64         | 326  | 80.00      | -31.45     | horizontal | Peak    |
| 5 pp | 5541.00 | 20.92      | 35.43      | 16.67      | 35.66         | 76   | 60.00      | -22.64     | horizontal | Average |
| 6 pk | 5541.00 | 35.10      | 35.43      | 16.67      | 35.66         | 76   | 80.00      | -28.46     | horizontal | Peak    |

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Site : chamber  
Condition: CISPR22 CLASS-A PK 3m STLP9149(RRA CAL 2017-05-18) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : HCO-6080RP  
Mode : DC  
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    | 3921.00 | 22.53  | 32.29 | 13.90  | 35.30 | 51     | 60.00 | -26.58    | vertical |
| 2    | 3921.00 | 40.03  | 32.29 | 13.90  | 35.30 | 51     | 80.00 | -29.08    | vertical |
| 3    | 3999.00 | 21.49  | 32.50 | 14.07  | 35.28 | 54     | 60.00 | -27.22    | vertical |
| 4    | 3999.00 | 38.27  | 32.50 | 14.07  | 35.28 | 54     | 80.00 | -30.44    | vertical |
| 5 pp | 5562.00 | 20.94  | 35.46 | 16.71  | 35.66 | 12     | 60.00 | -22.55    | vertical |
| 6 pk | 5562.00 | 35.38  | 35.46 | 16.71  | 35.66 | 12     | 80.00 | -28.11    | vertical |

#### ◆ Calculation

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

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

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

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





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KES-E1-17T0517-R1  
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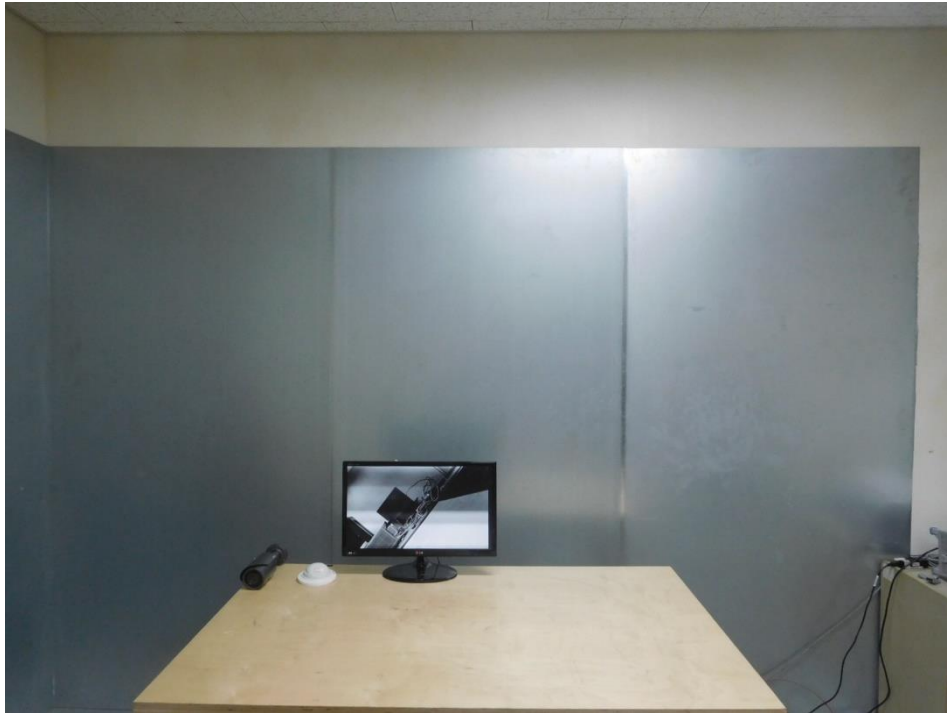
**Test Data - Voltage Fluctuations****Maximum Flicker results**

|          | <b>EUT values</b> | <b>Limit</b> | <b>Result</b> |
|----------|-------------------|--------------|---------------|
| Pst      | N/A               |              |               |
| Plt      |                   |              |               |
| dc [%]   |                   |              |               |
| dmax [%] |                   |              |               |
| Tmax [s] |                   |              |               |

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## Test Setup Photos and Configuration

### Conducted Voltage Emissions



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## Conducted Telecommunication Emissions

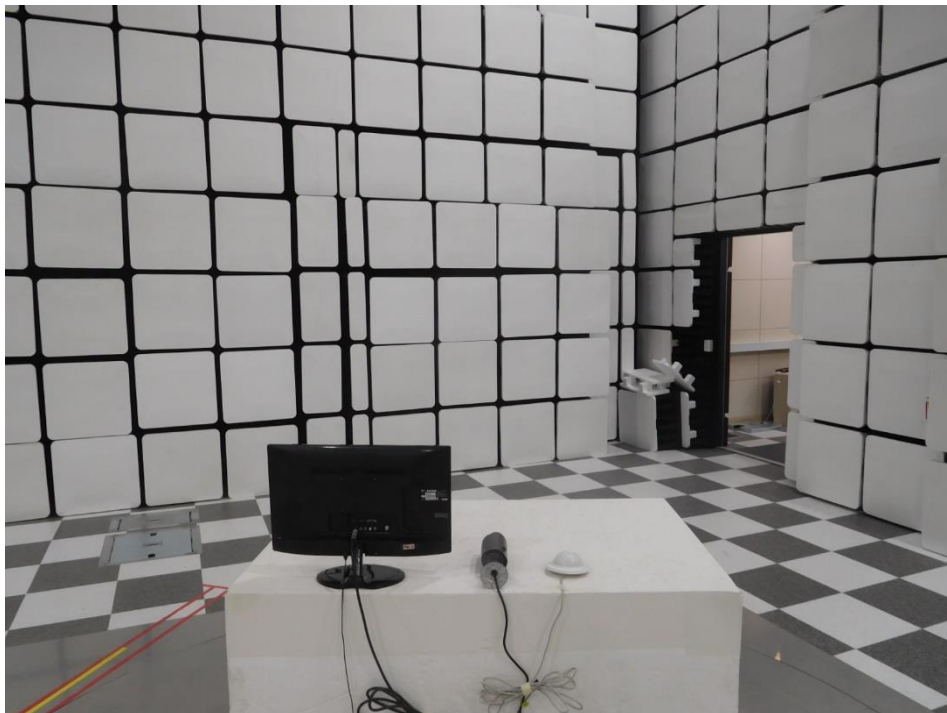
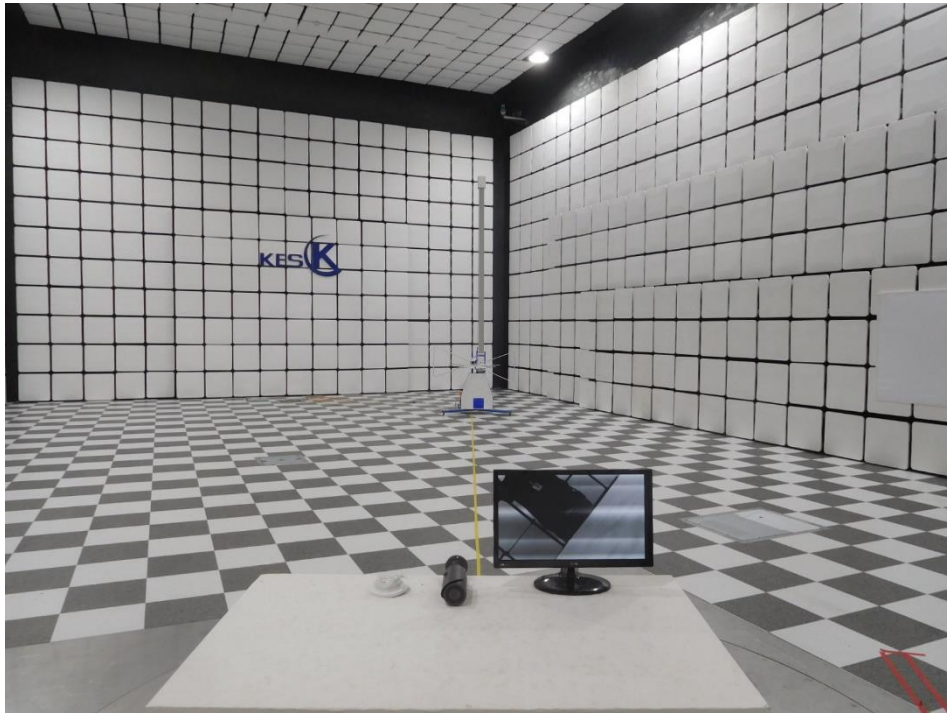
N/A

N/A

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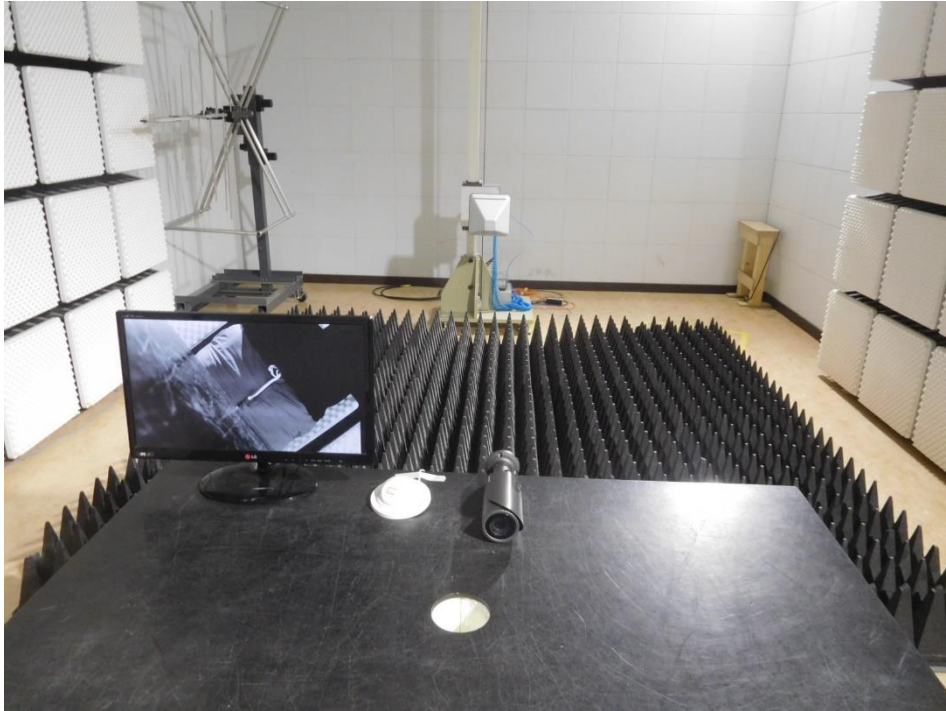
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## Radiated Electric Field Emissions(Below 1 GHz)



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## Radiated Electric Field Emissions(Above 1 GHz)



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## Harmonic Current Emissions and Voltage Fluctuations and Flicker

N/A

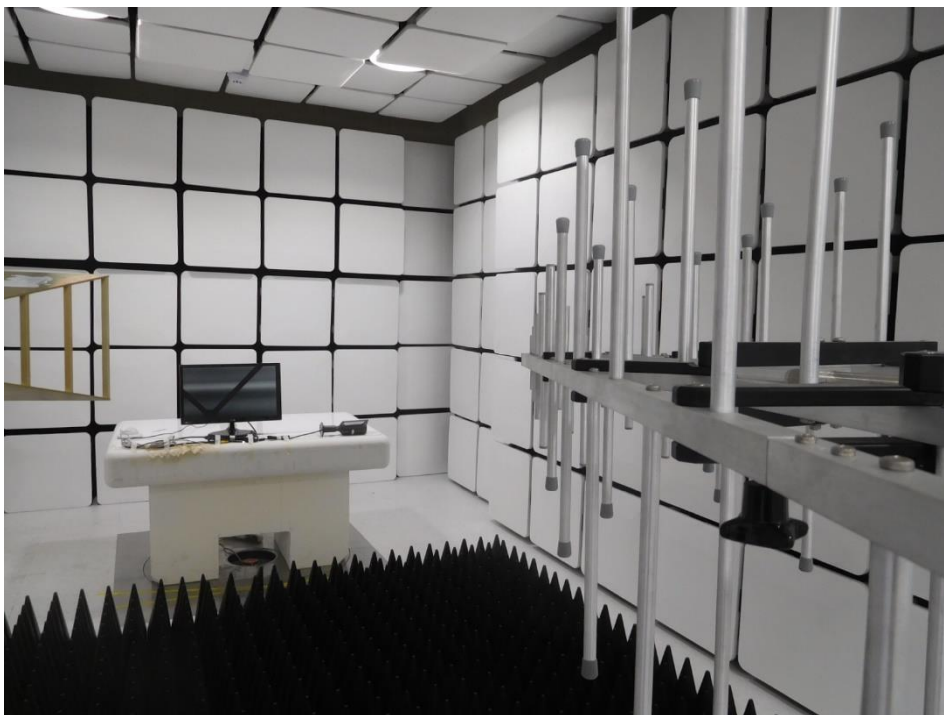
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## Electrostatic Discharge



## Radiated Electric Field Immunity



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## Electrical Fast Transients/Bursts



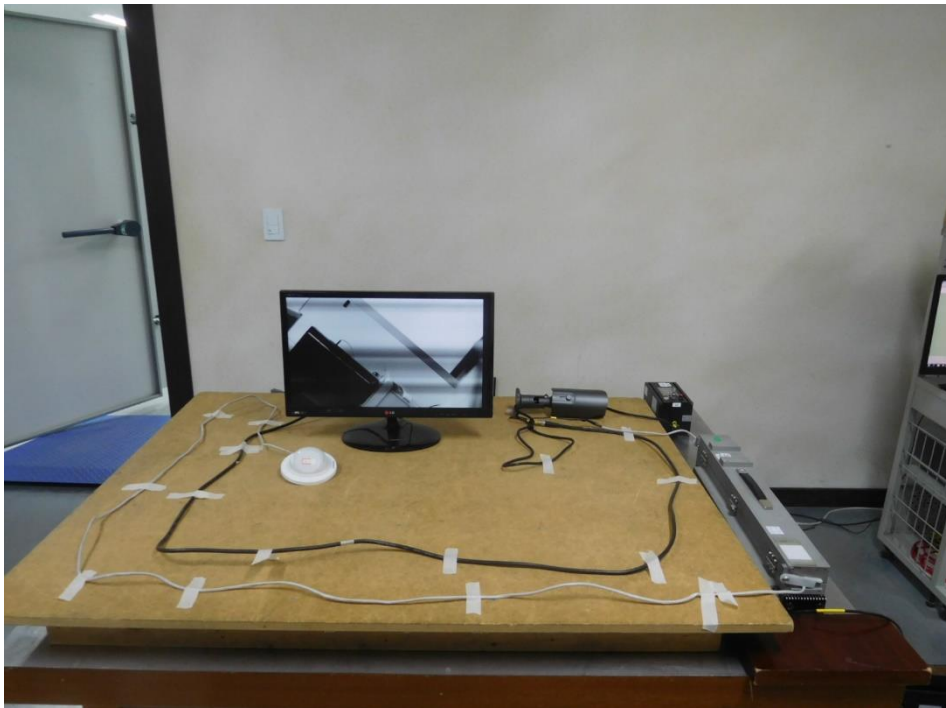
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## Surge Transients



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## Conducted Disturbance



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## Voltage Dips and Short Interruptions



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## EUT External Photographs

(Top)



(Bottom)



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## EUT Internal Photographs

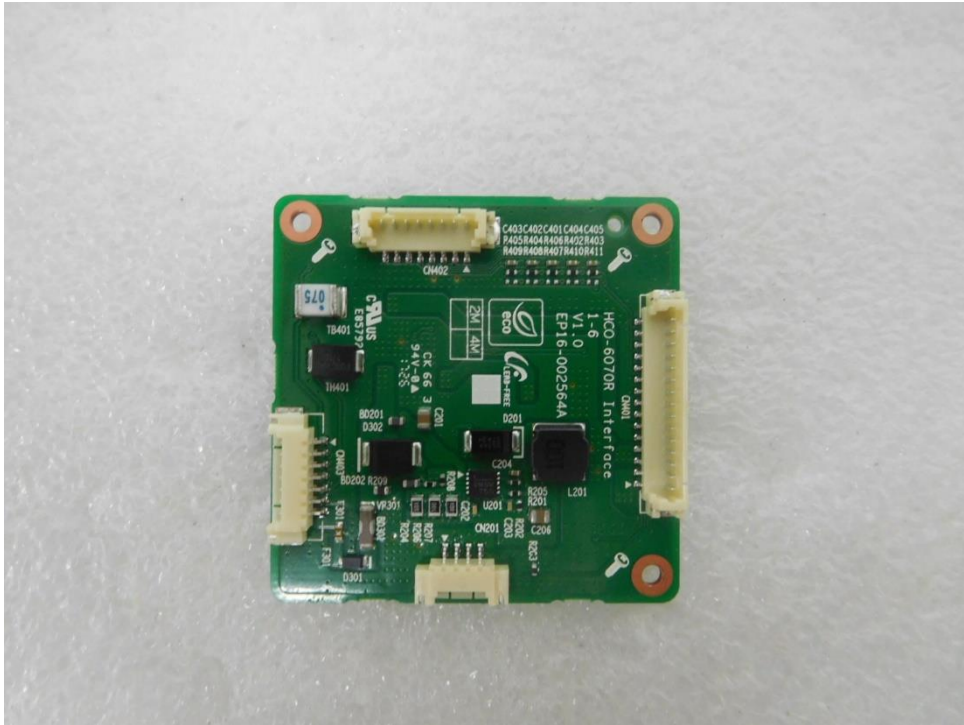
(Internal View)



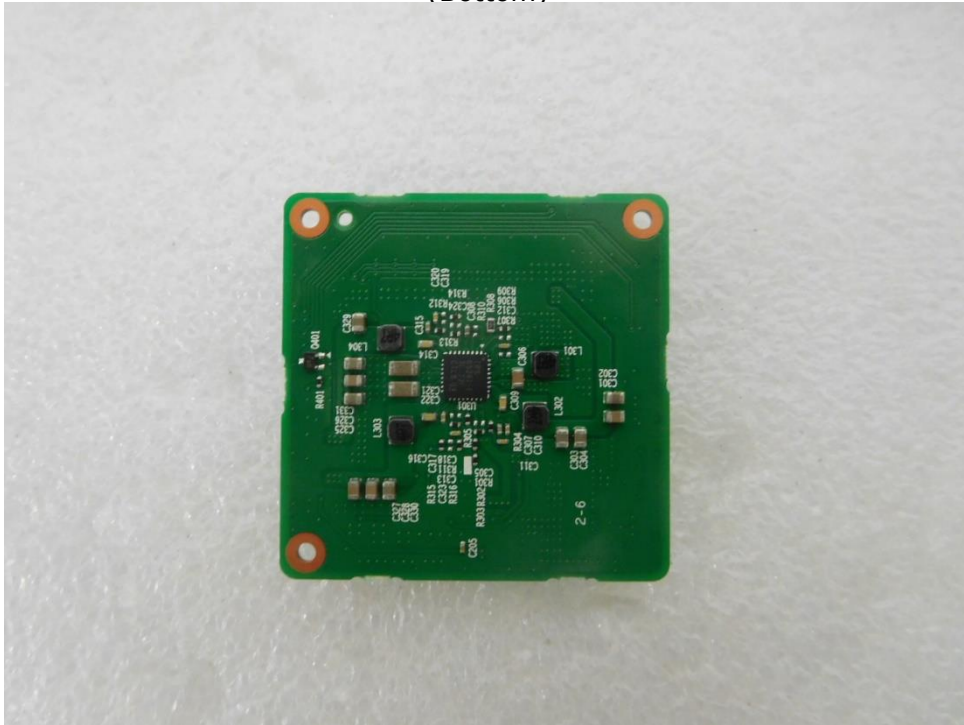
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## EUT Internal View – Main board

(Top)



(Bottom)



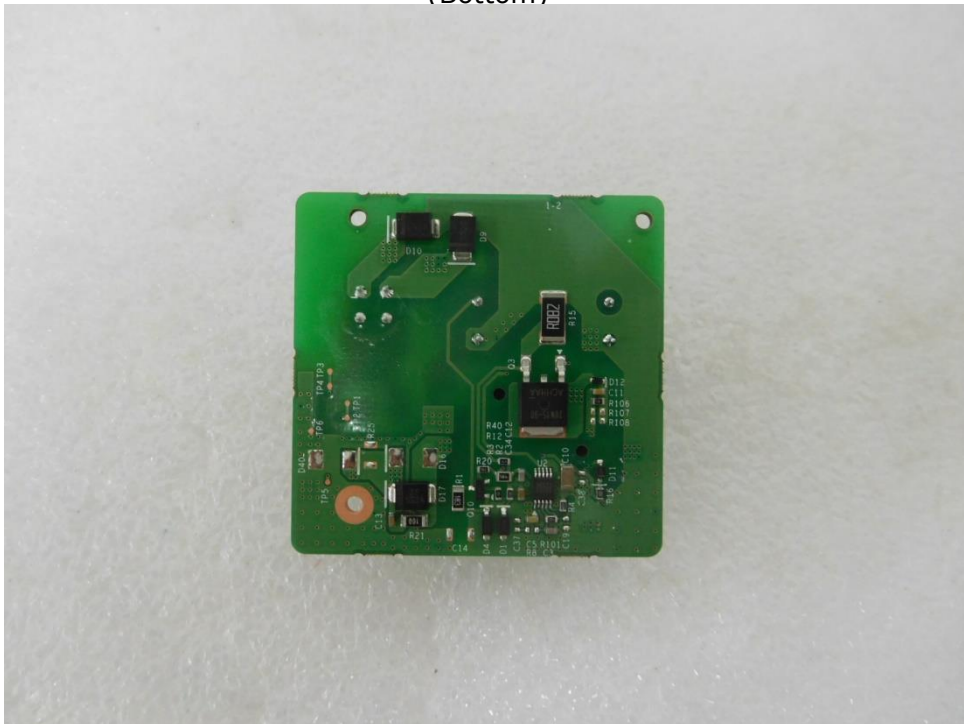
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## EUT Internal View – Power board

(Top)



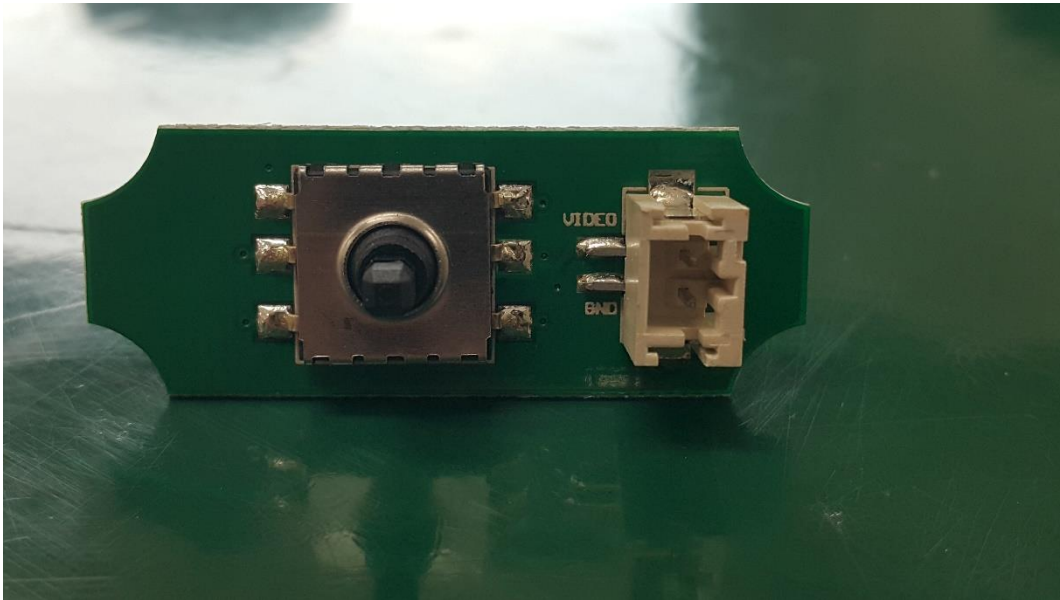
(Bottom)



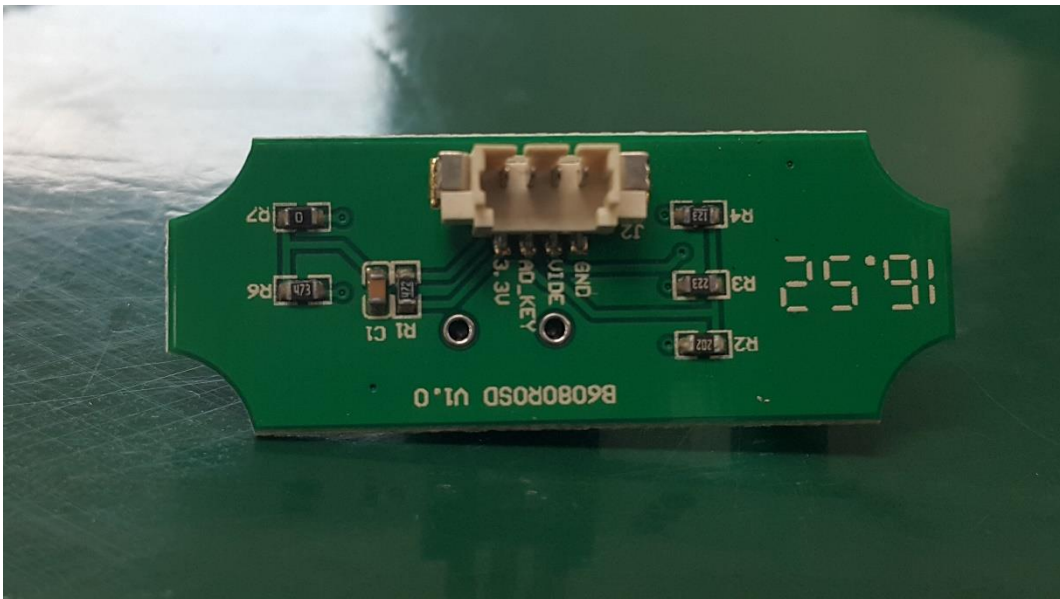
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## EUT Internal View – Serve board

(Top)



(Bottom)



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## EUT Internal View – IR board

(Top)



(Bottom)



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## Label and Location



### **CCTV CAMERA**

Model No : HCO-6080RP

Manufacturer : Hanwha Techwin (Tianjin) Co.,Ltd.

Made in of China

