



## EMC TEST REPORT For CE

Test Report No. : KES-E1-17T0399-R1  
Date of Issue : Jun. 27, 2018  
Product name : LED MONITOR  
Model/Type No. : SMT-1931  
Variant Model : -  
Applicant : Hanwha Techwin Co., Ltd.  
Applicant Address : 6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si,  
Gyeonggi-do, 13488, KOREA  
Manufacturer : Weihai Daewoo Electronics Co.,Ltd.  
Manufacturer Address : No.26, HongKong Road, Economic & Technical  
Development Zone, 264205 Weihai City, Shandong Province,  
China  
Date of Receipt : Jun. 15, 2017  
Test date : Jun. 22, 2017 – Jun. 24, 2017  
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Young Suk, Song  
EMC Test Engineer

Reviewed by

Dong-Hun, Jang  
EMC Technical Manager

This test report is not related to KOLAS.



## KES Co., Ltd.

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### REPORT REVISION HISTORY

| Date          | Test Report No.   | Revision History                         |
|---------------|-------------------|------------------------------------------|
| Jun. 28, 2017 | KES-E1-17T0399    | Issued                                   |
| Jun. 27, 2018 | KES-E1-17T0399-R1 | Re-issue due to Applicant Address change |
|               |                   |                                          |
|               |                   |                                          |
|               |                   |                                          |
|               |                   |                                          |
|               |                   |                                          |
|               |                   |                                          |
|               |                   |                                          |
|               |                   |                                          |

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## 1.0 General Product Description

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

| Display             |                                  | LED                                                                                                                                            |         |
|---------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Screen Size         |                                  | 19"                                                                                                                                            |         |
| Max. Resolution     |                                  | 1366 x 768                                                                                                                                     |         |
| Brightness          |                                  | 250cd/m2                                                                                                                                       |         |
| Contrast Ratio      |                                  | 1,000 : 1                                                                                                                                      |         |
| Aspect Ratio        |                                  | 16:9                                                                                                                                           |         |
| Viewing Angle (H/V) |                                  | 170°/160°                                                                                                                                      |         |
| Display Color       |                                  | 16.7Million                                                                                                                                    |         |
| Response Time       |                                  | 5ms                                                                                                                                            |         |
| Video System        |                                  | NTSC / PAL                                                                                                                                     |         |
| Panel Life          |                                  | 30,000 hours                                                                                                                                   |         |
| Filter Type         |                                  | 3D Combfilter                                                                                                                                  |         |
| Interface           |                                  |                                                                                                                                                |         |
| Video               | Connector                        | BNC types: (2 in/2 out)                                                                                                                        |         |
| RGB                 | Connector                        | One(1) Analog RGB 15-pin D-sub                                                                                                                 |         |
|                     | Input signal                     | 0.7 Vp-p ±5 %                                                                                                                                  |         |
| HDMI                | Connector                        | One(1) HDMI input (type A connector)                                                                                                           |         |
| Audio               | Connector                        | Two(2) RCA type (2 stereo inputs)                                                                                                              |         |
|                     | Output signal                    | Speakers: two(2) x 1 W                                                                                                                         |         |
| Application Support |                                  | Remote Controller                                                                                                                              |         |
| On Screen Display   |                                  | Samsung UI                                                                                                                                     |         |
| Functions           |                                  | VESA™ DPM Compatible                                                                                                                           |         |
| Language            |                                  | English, Spanish, French, German, Italian,<br>Portuguese, Russian<br>Swedish, Turkish,<br>Thai,Dutch,Danish,Arabic,Chinese, Japanese,<br>Korea |         |
| General             |                                  | Auto Switch                                                                                                                                    |         |
| Electrical          | Input Voltage                    | AC100 ~ 240V (50/60Hz)                                                                                                                         |         |
|                     | Power consumption                | 30w                                                                                                                                            | PV 阶段确认 |
| Environmental       | Operating Temperature            | 0 ~ +40°C (+32°F ~ +104°F)                                                                                                                     |         |
|                     | Humidity                         | 20% – 90% (non-condensing)                                                                                                                     |         |
| Mechanical          | Dimensions with Stand (WxHxD)    | 446.4mm x 359.6mm x 217.4mm                                                                                                                    |         |
|                     | Dimensions without Stand (WxHxD) | 446.4mm x 59.4mm x 276.9mm                                                                                                                     |         |
|                     | Weight                           | 4.7kg                                                                                                                                          |         |
|                     | LCD Protection Glass             | Yes                                                                                                                                            |         |
|                     | Cabinet Color                    | Black                                                                                                                                          |         |
|                     | VESA Mounts Interface            | 100mm x 100mm                                                                                                                                  |         |



## 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

Not applicable

## 1.3 Device Modifications

Not applicable

## 1.4 Equipment Under Test

| Description    | Model Number | Serial Number | Manufacturer                       | Remarks |
|----------------|--------------|---------------|------------------------------------|---------|
| LED MONITOR    | SMT-1931     | -             | Weihai Daewoo Electronics Co.,Ltd. | E.U.T   |
| Remote Control | -            | -             | -                                  | -       |

## 1.5 Support Equipments

| Description      | Model Number            | Serial Number                 | Manufacturer                               | Remarks |
|------------------|-------------------------|-------------------------------|--------------------------------------------|---------|
| Notebook         | NT63025J                | JK9091EF400432X               | Samsung Electronics Co., Ltd.              | -       |
| Notebook Adaptor | A13-040N2A              | CN60BA4400313AD<br>0N843KO243 | Chicony Power Technology (suzhou)Co., Ltd. | -       |
| MONITOR          | SMT-1935                | -                             | Weihai Daewoo Electronics Co.,Ltd.         | -       |
| DVD PLAYER       | KRIZER FLAVO HDV-808PRO | 2010070920                    | Shenzhen, YALIJIA Electronics Co., Ltd.    | -       |
| USB Memory       | -                       | -                             | Sandisk                                    | 16 GB   |

## 1.6 External I/O Cabling

- D-SUB Mode

| Start               |          | END         |          | Cable Spec. |        |
|---------------------|----------|-------------|----------|-------------|--------|
| Description         | I/O Port | Description | I/O Port | Length      | Shield |
| LED MONITOR (E.U.T) | D-SUB    | Notebook    | D-SUB    | 1.5         | S      |

\* Unshielded=U, Shielded=S

- HDMI Mode

| Start               |          | END         |          | Cable Spec. |        |
|---------------------|----------|-------------|----------|-------------|--------|
| Description         | I/O Port | Description | I/O Port | Length      | Shield |
| LED MONITOR (E.U.T) | HDMI     | Notebook    | HDMI     | 1.5         | S      |

\* Unshielded=U, Shielded=S

- BNC Mode

| Start               |          | END         |               | Cable Spec. |        |
|---------------------|----------|-------------|---------------|-------------|--------|
| Description         | I/O Port | Description | I/O Port      | Length      | Shield |
| LED MONITOR (E.U.T) | BNC out  | MONITOR     | BNC in        | 3.0         | S      |
|                     | BNC in   | DVD PLAYER  | BNC out       | 3.0         | S      |
|                     | Audio in |             | Audio out (R) | 1.0         | U      |
|                     | Audio in |             | Audio out (L) | 1.0         | U      |
| DVD PLAYER          | USB      | USB Memory  | USB           | -           | -      |

\* Unshielded=U, Shielded=S

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

| Test mode | operating        |
|-----------|------------------|
| D-SUB     | E.U.T Monitoring |
| HDMI      | E.U.T Monitoring |
| BNC       | E.U.T Monitoring |

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

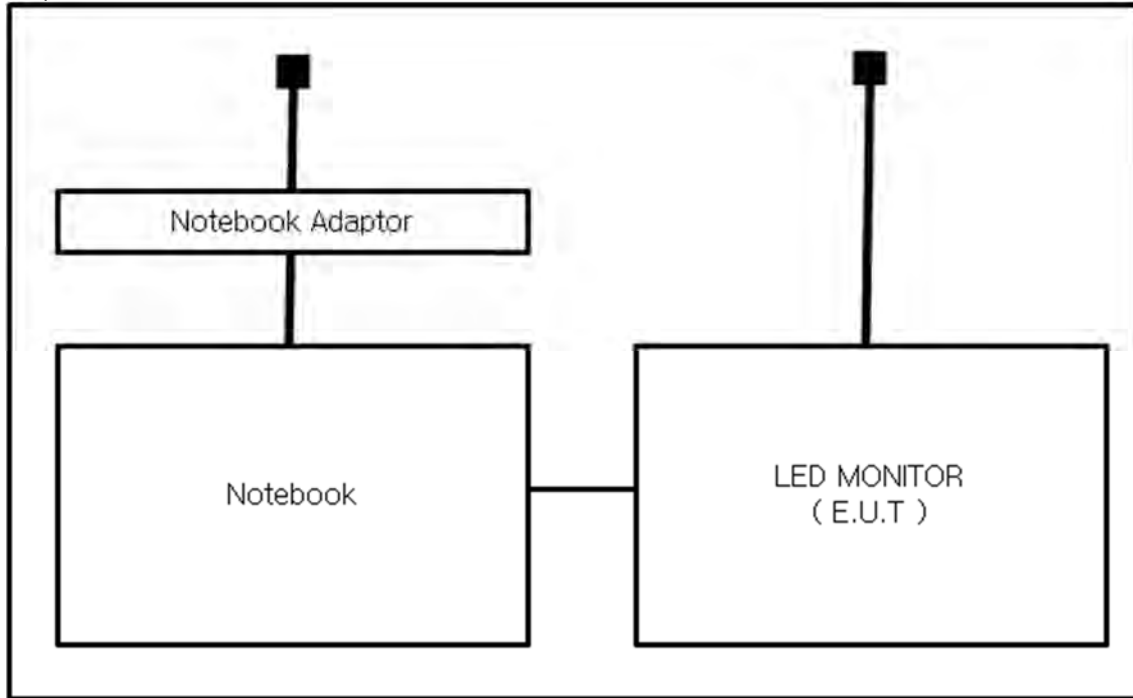
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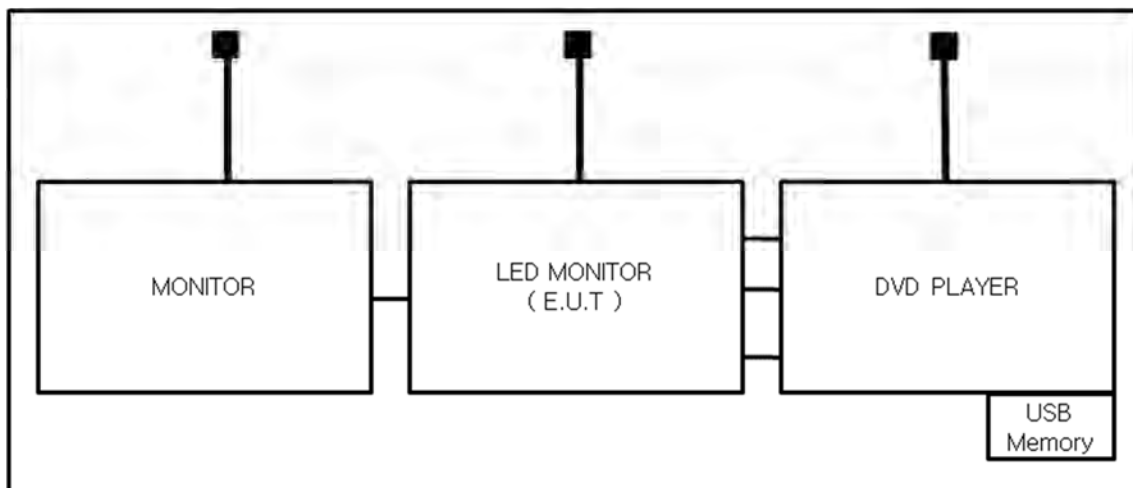
## 1.8 Configuration

■ AC Main  
 □ DC Main

- D-SUB, HDMI Mode



- BNC 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. The sites are constructed in conformance with the requirements of ANSI C63.4:2014 and CISPR 16-1-4:2012

## 1.11 Laboratory Accreditations and Listings

| Country       | Agency         | Scope of Accreditation                                                                                                                                                                                        | Accreditation No                                                                                                          |
|---------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| KOREA         | <b>RRA</b>     | EMI (3 m & 10 m Semi-Aechoic Chamber ,<br>10 m Open Area and conducted test site)<br>EMS (ESD, RS, EFT/Burst, Surge, CS,<br>Magnetic, Dips and interruptions)                                                 | <br>KR0100                             |
| International | <b>KOLAS</b>   | EMI (3 m & 10 m Semi-Aechoic Chamber ,<br>and conducted test site)<br>EMS (ESD, RS, EFT/Burst, Surge, CS,<br>Magnetic, Dips and interruptions)                                                                | <br>KT489                             |
| USA           | <b>FCC</b>     | 3 m & 10 m Semi-Aechoic Chamber, 10 m<br>Open Area and Conducted test site to<br>perform FCC Part 15/18 measurements.                                                                                         | <br>KR0100                           |
| Canada        | <b>ISED</b>    | 3 m & 10 m Semi-Aechoic Chamber and<br>Conducted test site                                                                                                                                                    | <br>23298-1                          |
| JAPAN         | <b>VCCI</b>    | Mains Ports Conducted Interference<br>Measurement, Telecommunication Ports<br>Conducted Disturbance Measurement and<br>Radiation 10 meter site, Facility for<br>measuring radiated disturbance above 1<br>GHz | <br>R-4308, C-4798,<br>T-2311, G-914 |
| Europe        | <b>TÜV SÜD</b> | EMI (3 m & 10 m Semi-Aechoic Chamber ,<br>10 m Open Area and conducted test<br>site)<br>EMS (ESD, RS, EFT/Burst, Surge, CS,<br>Magnetic, Dips and interruptions)                                              | <br>CARAT 17 07 01633<br>001         |

## 2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010

☐ Group 1  
☐ Class A

☐ Group 2  
☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 61547:2009

☒ EN 55032:2012/AC:2013

☒ Class A

☐ Class B

☒ EN 55024:2010 +A1:2015

☐ EN 50130-4:2011

☒ EN 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**

Jun. 22, 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: 23,7 °C

Relative Humidity: 51,5 %

**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 |

### 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

-



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

### Test Date

Jun. 22, 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: 25,1 °C

Relative Humidity: 46,8 %

### Frequency Range of Measurement

30 MHz to 1 GHz

### Instrument Settings

IF Band Width: 120 kHz

### Test Results

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.



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

### Test Date

Jun. 22, 2017

### Test Location

SEMI ANECHOIC CHAMBER #3

### Test Equipment

| Used                                | Description                | Model Number | Manufacturer     | Serial Number | Cal. Due     |
|-------------------------------------|----------------------------|--------------|------------------|---------------|--------------|
| <input checked="" type="checkbox"/> | EMI Test S/W               | EP5/RE       | TOYO Corporation | 6.0.0         | -            |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER          | ESR7         | R & S            | 101190        | 08, 08, 2017 |
| <input checked="" type="checkbox"/> | PREAMPLIFIER               | 8449B        | AGILENT          | 3008A01967    | 05, 31, 2018 |
| <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: 47,5 %

### 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

Jun. 22, 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           | dpa.control  | EM TEST      | 5.4.8.0       | -            |
| <input checked="" type="checkbox"/> | DIGITAL POWER ANALYZER | DPA 500N     | EM TEST      | V1024106759   | 08, 08, 2017 |
| <input checked="" type="checkbox"/> | POWER SOURCE           | ACS 500N6    | EM TEST      | V1024106760   | 08, 08, 2017 |

### Test Conditions

23,7 °C  
Relative Humidity: 51,5 %

### Classification of Equipment for Harmonic Current Emissions

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

### Test Results

The requirements are:

- ☒ PASS
- ☐ NOT PASS
- ☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.



## 2.6 Voltage Fluctuations and Flicker

### Test Date

Jun. 22, 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           | dpa.control  | EM TEST      | 5.4.8.0       | -            |
| <input checked="" type="checkbox"/> | DIGITAL POWER ANALYZER | DPA 500N     | EM TEST      | V1024106759   | 08, 08, 2017 |
| <input checked="" type="checkbox"/> | POWER SOURCE           | ACS 500N6    | EM TEST      | V1024106760   | 08, 08, 2017 |

### Test Conditions

23,7 °C  
Relative Humidity: 51,5 %

### Test Results

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data.

### **3.0 Criteria for compliance**

Criteria for compliance was based on the following guidelines:

#### **General performance criteria**

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

#### **3.1 Performance criterion A**

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

#### **3.2 Performance criterion B**

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

#### **3.3 Performance criterion C**

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



## 3.1 Electrostatic Discharge

### Reference Standard

EN 61000-4-2:2009

### Test Date

Jun. 23, 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: 24,7 °C  
Relative Humidity: 50,1 %  
Atmospheric Pressure: 99,2 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 checked="" type="checkbox"/> 2 kV | <input checked="" type="checkbox"/> 2 kV | <input checked="" type="checkbox"/> 2 kV | <input checked="" type="checkbox"/> 2 kV |
|                    | <input checked="" type="checkbox"/> 4 kV | <input checked="" type="checkbox"/> 4 kV | <input checked="" type="checkbox"/> 4 kV | <input checked="" type="checkbox"/> 4 kV |
|                    | <input type="checkbox"/> 6 kV            | <input type="checkbox"/> 6 kV            | <input type="checkbox"/> 6 kV            | <input type="checkbox"/> 6 kV            |
|                    | <input type="checkbox"/> 8 kV            | <input checked="" type="checkbox"/> 8 kV | <input type="checkbox"/> 8 kV            | <input type="checkbox"/> 8 kV            |
|                    | <input type="checkbox"/> 15 kV           | <input type="checkbox"/> 15 kV           | <input type="checkbox"/> 15 kV           | <input type="checkbox"/> 15 kV           |

Notes: HCP: Horizontal coupling plane

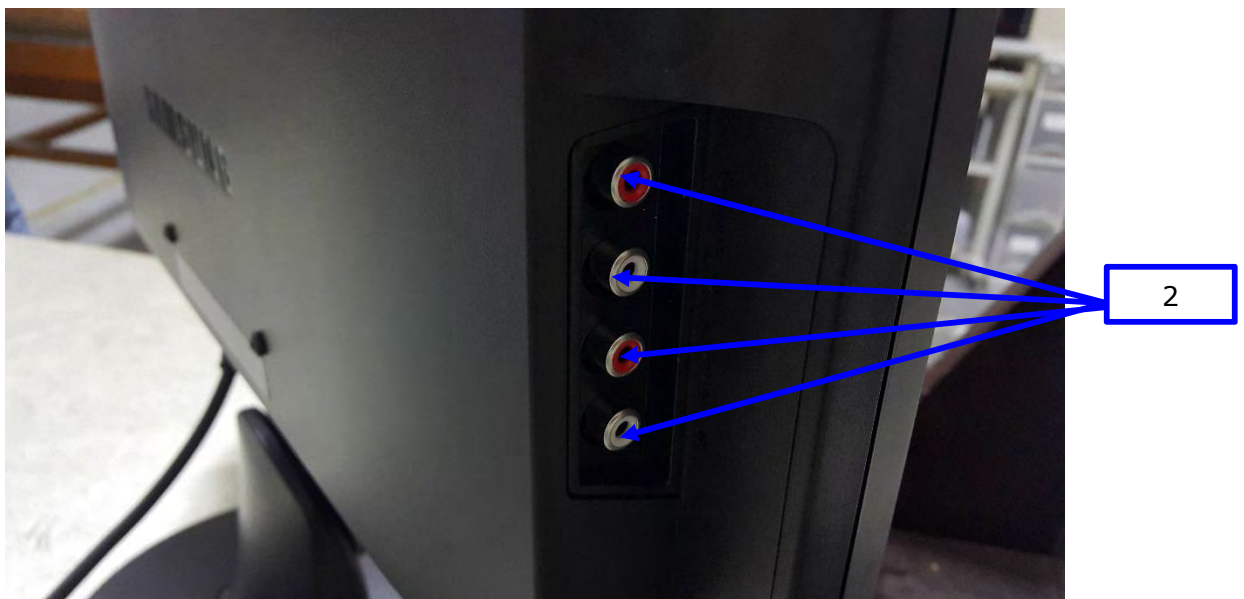
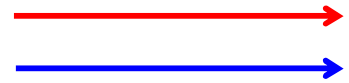
VCP: Vertical coupling plane

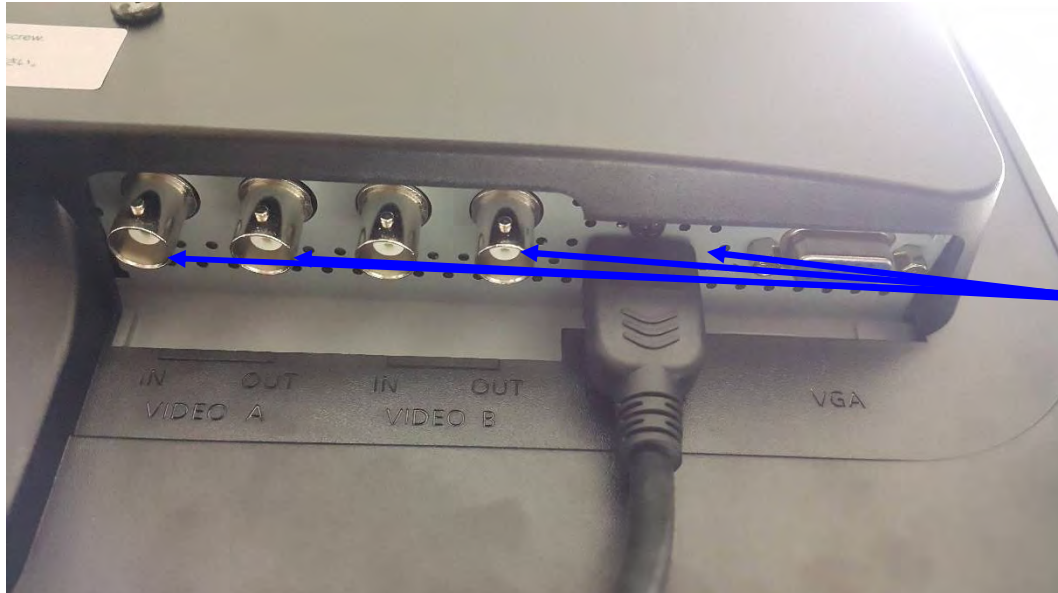
Required Performance Criteria: ☒ B

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**Location of Discharge:**

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







## Test Data

### - D-SUB Mode

#### Indirect Discharge

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

#### Direct Discharge

| No. | Test Point | Discharge Method | Observations | Remarks |
|-----|------------|------------------|--------------|---------|
| 1   | Panel      | Air D.           | A            | -       |
| 2   | Ports      | Contact D.       | A            | -       |
| 3   | Screw      | Contact D.       | A            | -       |

### - HDMI Mode

#### Indirect Discharge

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

#### Direct Discharge

| No. | Test Point | Discharge Method | Observations | Remarks |
|-----|------------|------------------|--------------|---------|
| 1   | Panel      | Air D.           | A            | -       |
| 2   | Ports      | Contact D.       | A            | -       |
| 3   | Screw      | Contact D.       | A            | -       |



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**- BNC Mode****Indirect Discharge**

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

**Direct Discharge**

| No. | Test Point | Discharge Method | Observations | Remarks |
|-----|------------|------------------|--------------|---------|
| 1   | Panel      | Air D.           | A            | -       |
| 2   | Ports      | Contact D.       | A            | -       |
| 3   | Screw      | Contact D.       | A            | -       |

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

Jun. 23, 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      | 08, 08, 2017 |
| <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    | -            |

### Test Conditions

Temperature: 21,3 °C  
Relative Humidity: 48,1 %  
Atmospheric Pressure: 99,4 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: ☒ A

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**Test Data****- D-SUB Mode**

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

**- HDMI Mode**

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

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- BNC Mode

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

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.

### 3.3 Electrical Fast Transients/Bursts

**Reference Standard**

EN 61000-4-4:2012

**Test Date**

Jun. 24, 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      | 5.0.9.0       | -            |
| <input checked="" type="checkbox"/> | ULTRA COMPACT SIMULATOR   | UCS 500 N5   | EM TEST      | V0936105120   | 06, 27, 2017 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC              | MV2616       | EM TEST      | V0936105123   | 06, 27, 2017 |
| <input checked="" type="checkbox"/> | CAPACITIVE COUPLING CLAMP | HFK          | EM TEST      | 070925        | 06, 27, 2017 |

**Test Conditions**

Temperature: 24,6 °C  
Relative Humidity: 49,8 %  
Atmospheric Pressure: 99,4 kPa

**Test Specifications**

|                                                              |                                                                        |                                              |
|--------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------------------|
| Pulse Amplitude & Polarity:<br>(AC Power Lines)              | <input type="checkbox"/> ± 1.0 kV<br><input type="checkbox"/> ± 4.0 kV | <input checked="" type="checkbox"/> ± 2.0 kV |
| Pulse Amplitude & Polarity:<br>(Other supply / Signal Lines) | <input type="checkbox"/> ± 0.5 kV<br><input type="checkbox"/> ± 2.0 kV | <input checked="" type="checkbox"/> ± 1.0 kV |
| Burst Period:                                                | <input checked="" type="checkbox"/> 300 ms                             | <input type="checkbox"/> 2 s                 |
| Repetition Rate:                                             | <input checked="" type="checkbox"/> 5 klz                              | <input type="checkbox"/> 100 klz             |
| Duration of Test Voltage:                                    | <input checked="" type="checkbox"/> ≥ 1 min                            |                                              |
| Required Performance Criteria:                               | <input checked="" type="checkbox"/> B                                  |                                              |

## Test Data

### - D-SUB Mode

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

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

☐ 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) |
| -                   | -              | -              |

### - HDMI Mode

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

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

☐ 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) |
| -                   | -              | -              |

- BNC Mode

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

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

☐ 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) |
| BNC in              | A              | A              |
| BNC out             | A              | A              |

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

Jun. 24, 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      | 5.0.9.0       | -            |
| <input checked="" type="checkbox"/> | ULTRA COMPACT SIMULATOR | UCS 500 N5   | EM TEST      | V0936105120   | 06, 27, 2017 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC            | MV2616       | EM TEST      | V0936105123   | 06, 27, 2017 |
| <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: 24,6 °C  
Relative Humidity: 49,8 %  
Atmospheric Pressure: 99,4 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: ☒ B

### Signal Lines

Source Impedance: 42 ohm for common mode

Surge Amplitude:

Common Mode

☒ (1,0) kV

Number of Surges:

☒ 5 Surges

Polarity:

☒ Positive & Negative

Repetition Rate:

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

Required Performance Criteria: ☒ C



## Test Data

- D-SUB Mode

☒ Line to Line – Differential Mode

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

☐ 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) |
| -                   | -              | -              |

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**- HDMI Mode**☒ Line to Line – Differential Mode

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

☐ 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) |
| -                   | -              | -              |

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**- BNC Mode**☒ Line to Line – Differential Mode

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

☐ 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 in              | A              | A              |
| BNC out             | A              | A              |

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.



### 3.5 Conducted Disturbance

#### Reference Standard

EN 61000-4-6:2014

#### Test Date

Jun. 24, 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 checked="" 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 |
| <input type="checkbox"/>            | MICROPHONE                | MP201        | BSWA         | 520963        | 11, 11, 2017 |
| <input type="checkbox"/>            | SOUND ACOUSTIC TESTER     | TST-1000     | TESTEK       | 150045        | 11, 08, 2018 |

#### Test Conditions

Temperature: 24,6 °C  
Relative Humidity: 49,8 %  
Atmospheric Pressure: 99,4 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: ☒ A

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## Test Data

### - D-SUB Mode

☒ Input a.c. power ports

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

☐ Input d.c. power ports

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

☐ Signal ports and telecommunication ports

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

### - HDMI Mode

☒ Input a.c. power ports

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

☐ Input d.c. power ports

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

☐ Signal ports and telecommunication ports

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



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**- BNC Mode**☒ Input a.c. power ports

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

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

| Coupling Location<br>(Line Stressed) | Coupling Method    | Observations |
|--------------------------------------|--------------------|--------------|
| BNC in                               | EM Injection Clamp | A            |
| BNC out                              | EM Injection Clamp | A            |

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

Jun. 24, 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      | 5.0.9.0       | -            |
| <input checked="" type="checkbox"/> | ULTRA COMPACT<br>SIMULATOR | UCS 500 N5   | EM TEST      | V0936105120   | 06, 27, 2017 |
| <input checked="" type="checkbox"/> | MOTOR VARIAC               | MV2616       | EM TEST      | V0936105123   | 06, 27, 2017 |

#### Test Conditions

Temperature: 24,6 °C  
Relative Humidity: 49,8 %  
Atmospheric Pressure: 99,4 kPa



## Test Specifications & Observations/Remarks

### - D-SUB Mode

| Test Level                                                          | Duration [in period/ms (50 Hz)]                 | Criteria | Results  |
|---------------------------------------------------------------------|-------------------------------------------------|----------|----------|
| <input checked="" type="checkbox"/> 0 %Ut<br>( >95 % dip)           | <input checked="" type="checkbox"/> 0.5 / 10    | <u>B</u> | <u>A</u> |
| <input checked="" type="checkbox"/> 30 %Ut<br>( 70 % dip)           | <input checked="" type="checkbox"/> 25 / 500    | <u>C</u> | <u>A</u> |
| <input checked="" type="checkbox"/> 0 %Ut<br>( >95 % Interruptions) | <input checked="" type="checkbox"/> 250 / 5 000 | <u>C</u> | <u>B</u> |

### - HDMI Mode

| Test Level                                                          | Duration [in period/ms (50 Hz)]                 | Criteria | Results  |
|---------------------------------------------------------------------|-------------------------------------------------|----------|----------|
| <input checked="" type="checkbox"/> 0 %Ut<br>( >95 % dip)           | <input checked="" type="checkbox"/> 0.5 / 10    | <u>B</u> | <u>A</u> |
| <input checked="" type="checkbox"/> 30 %Ut<br>( 70 % dip)           | <input checked="" type="checkbox"/> 25 / 500    | <u>C</u> | <u>A</u> |
| <input checked="" type="checkbox"/> 0 %Ut<br>( >95 % Interruptions) | <input checked="" type="checkbox"/> 250 / 5 000 | <u>C</u> | <u>B</u> |

### - BNC Mode

| Test Level                                                          | Duration [in period/ms (50 Hz)]                 | Criteria | Results  |
|---------------------------------------------------------------------|-------------------------------------------------|----------|----------|
| <input checked="" type="checkbox"/> 0 %Ut<br>( >95 % dip)           | <input checked="" type="checkbox"/> 0.5 / 10    | <u>B</u> | <u>A</u> |
| <input checked="" type="checkbox"/> 30 %Ut<br>( 70 % dip)           | <input checked="" type="checkbox"/> 25 / 500    | <u>C</u> | <u>A</u> |
| <input checked="" type="checkbox"/> 0 %Ut<br>( >95 % Interruptions) | <input checked="" type="checkbox"/> 250 / 5 000 | <u>C</u> | <u>B</u> |



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www.kes.co.kr

Test report No.:

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### Observations:

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

### Test Results

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

### Remarks

Refer to the results

---

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## APPENDIX A – TEST DATA

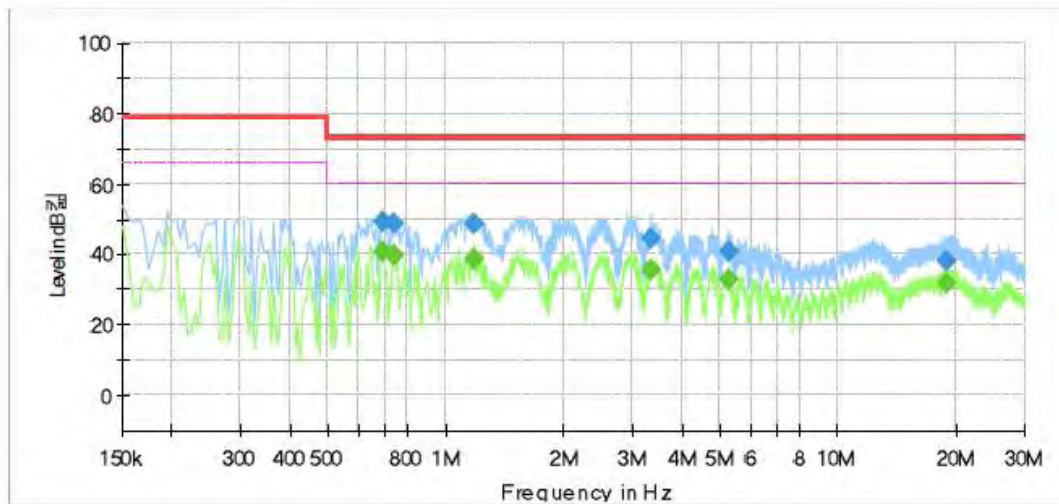
### Conducted Emissions at Mains Power Ports

- D-SUB Mode

[HOT]

#### Common Information

|                   |                    |
|-------------------|--------------------|
| Test Description: | Conducted Emission |
| Model No.:        | SMT-1931           |
| Mode              | D-SUB_H            |
| Operator Name:    | KES                |



#### Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.690000        | ---              | 40.69           | 60.00        | 19.31       | 1000.0          | 9.000           | L1   | 20.4       |
| 0.690000        | 49.14            | ---             | 73.00        | 23.86       | 1000.0          | 9.000           | L1   | 20.4       |
| 0.740000        | ---              | 39.79           | 60.00        | 20.21       | 1000.0          | 9.000           | L1   | 20.3       |
| 0.740000        | 48.68            | ---             | 73.00        | 24.32       | 1000.0          | 9.000           | L1   | 20.3       |
| 1.180000        | ---              | 38.90           | 60.00        | 21.10       | 1000.0          | 9.000           | L1   | 20.1       |
| 1.180000        | 48.50            | ---             | 73.00        | 24.50       | 1000.0          | 9.000           | L1   | 20.1       |
| 3.330000        | ---              | 35.69           | 60.00        | 24.31       | 1000.0          | 9.000           | L1   | 19.7       |
| 3.330000        | 44.33            | ---             | 73.00        | 28.67       | 1000.0          | 9.000           | L1   | 19.7       |
| 5.305000        | ---              | 32.84           | 60.00        | 27.16       | 1000.0          | 9.000           | L1   | 19.8       |
| 5.305000        | 40.70            | ---             | 73.00        | 32.30       | 1000.0          | 9.000           | L1   | 19.8       |
| 19.045000       | ---              | 31.77           | 60.00        | 28.23       | 1000.0          | 9.000           | L1   | 20.3       |
| 19.045000       | 38.20            | ---             | 73.00        | 34.80       | 1000.0          | 9.000           | L1   | 20.3       |

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

## [ NEUTRAL ]

### Common Information

Test Description:

Model No.:

Mode

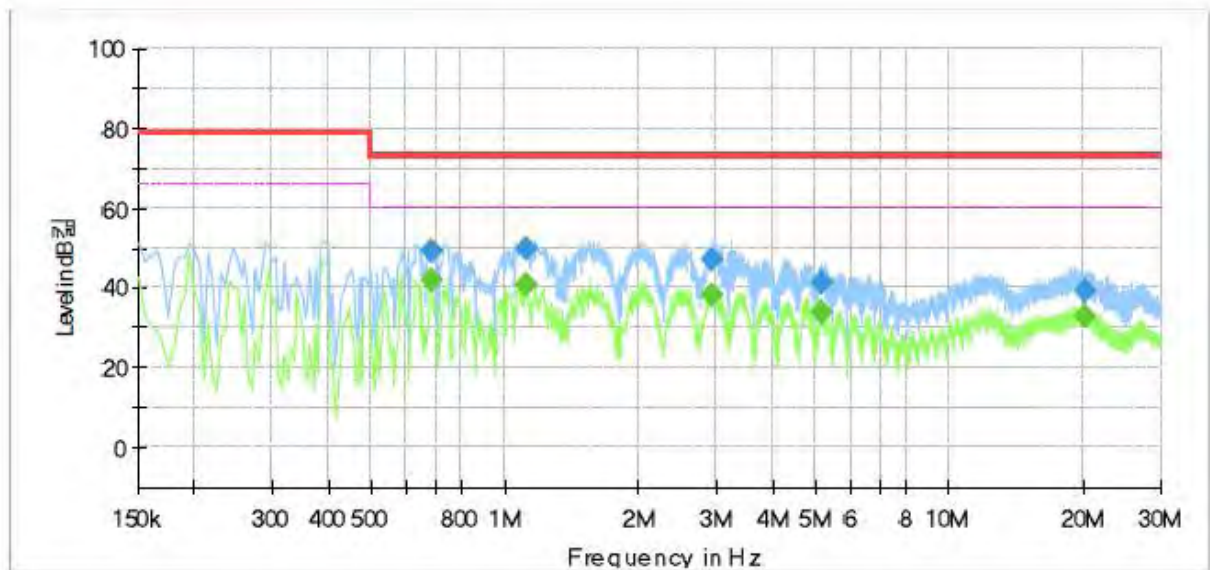
Operator Name:

Conducted Emission

SMT-1931

D-SUB\_N

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### Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.685000        | ---              | 41.59           | 60.00        | 18.41       | 1000.0          | 9.000           | N    | 20.4       |
| 0.685000        | 49.42            | ---             | 73.00        | 23.58       | 1000.0          | 9.000           | N    | 20.4       |
| 1.125000        | ---              | 40.54           | 60.00        | 19.46       | 1000.0          | 9.000           | N    | 20.1       |
| 1.125000        | 49.54            | ---             | 73.00        | 23.46       | 1000.0          | 9.000           | N    | 20.1       |
| 2.915000        | ---              | 38.24           | 60.00        | 21.76       | 1000.0          | 9.000           | N    | 19.8       |
| 2.915000        | 47.09            | ---             | 73.00        | 25.91       | 1000.0          | 9.000           | N    | 19.8       |
| 5.180000        | ---              | 33.92           | 60.00        | 26.08       | 1000.0          | 9.000           | N    | 19.8       |
| 5.180000        | 41.07            | ---             | 73.00        | 31.93       | 1000.0          | 9.000           | N    | 19.8       |
| 20.235000       | ---              | 32.79           | 60.00        | 27.21       | 1000.0          | 9.000           | N    | 20.2       |
| 20.235000       | 39.43            | ---             | 73.00        | 33.57       | 1000.0          | 9.000           | N    | 20.2       |

#### ◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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



- HDMI Mode

[HOT]

## Common Information

Test Description:

Model No.:

Mode

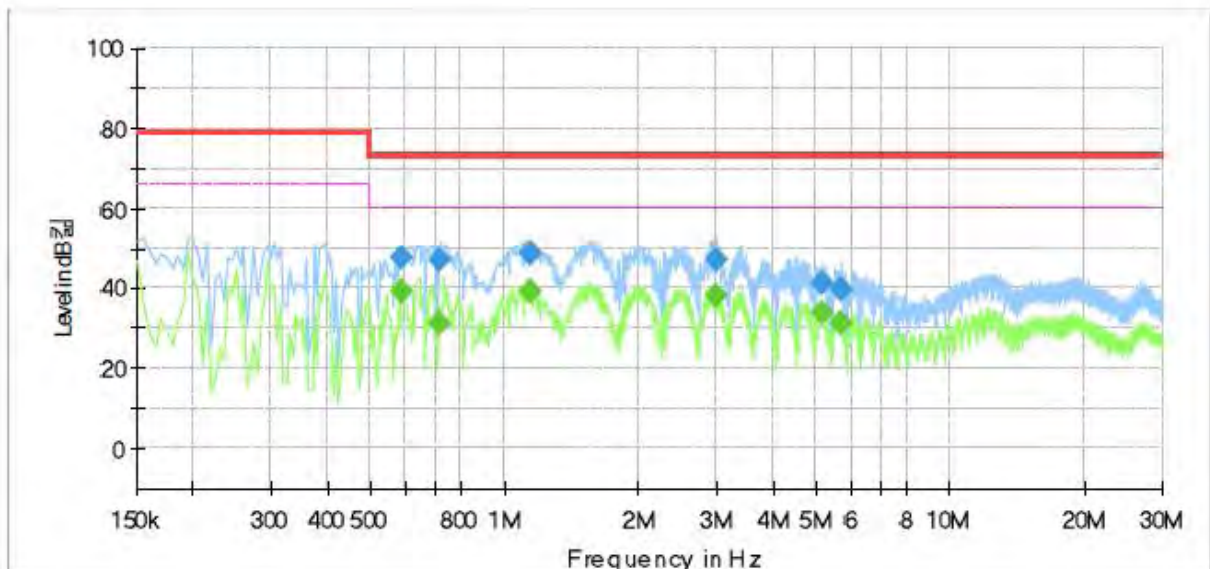
Operator Name:

Conducted Emission

SMT-1931

HDMI\_H

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## Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.590000        | ---              | 39.01           | 60.00        | 20.99       | 1000.0          | 9.000           | L1   | 20.5       |
| 0.590000        | 47.54            | ---             | 73.00        | 25.46       | 1000.0          | 9.000           | L1   | 20.5       |
| 0.715000        | ---              | 31.48           | 60.00        | 28.52       | 1000.0          | 9.000           | L1   | 20.3       |
| 0.715000        | 47.07            | ---             | 73.00        | 25.93       | 1000.0          | 9.000           | L1   | 20.3       |
| 1.145000        | ---              | 39.09           | 60.00        | 20.91       | 1000.0          | 9.000           | L1   | 20.1       |
| 1.145000        | 48.96            | ---             | 73.00        | 24.04       | 1000.0          | 9.000           | L1   | 20.1       |
| 2.985000        | ---              | 38.20           | 60.00        | 21.80       | 1000.0          | 9.000           | L1   | 19.7       |
| 2.985000        | 47.11            | ---             | 73.00        | 25.89       | 1000.0          | 9.000           | L1   | 19.7       |
| 5.195000        | ---              | 33.97           | 60.00        | 26.03       | 1000.0          | 9.000           | L1   | 19.8       |
| 5.195000        | 41.41            | ---             | 73.00        | 31.59       | 1000.0          | 9.000           | L1   | 19.8       |
| 5.715000        | ---              | 31.39           | 60.00        | 28.61       | 1000.0          | 9.000           | L1   | 19.8       |
| 5.715000        | 39.49            | ---             | 73.00        | 33.51       | 1000.0          | 9.000           | L1   | 19.8       |

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

## [ NEUTRAL ]

### Common Information

Test Description:

Model No.:

Mode

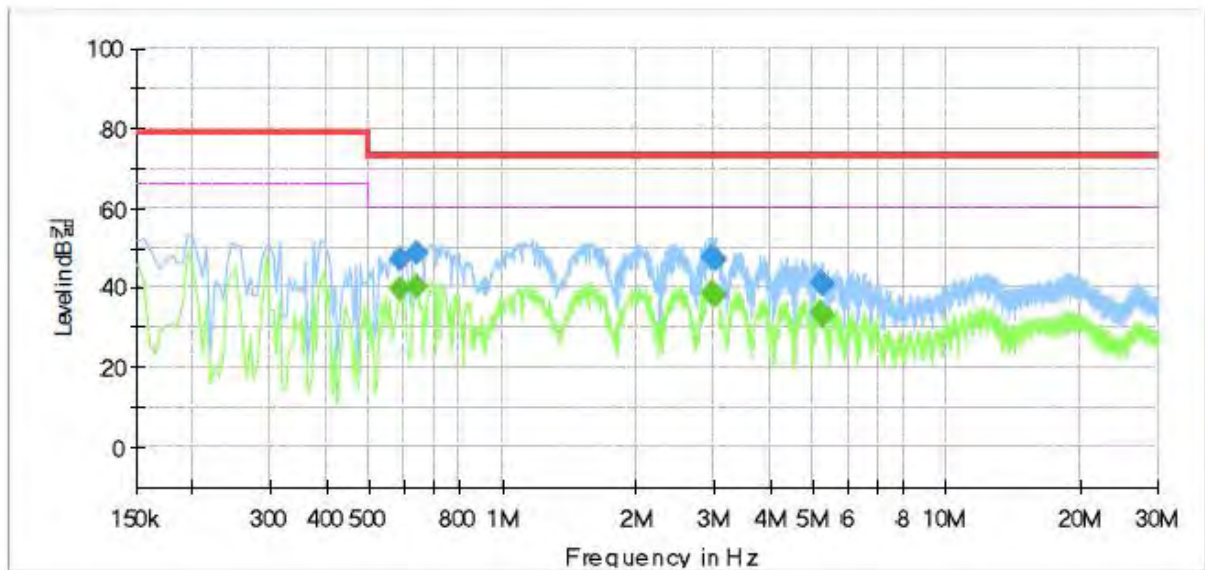
Operator Name:

Conducted Emission

SMT-1931

HDMI\_N

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### Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.590000        | ---              | 39.45           | 60.00        | 20.55       | 1000.0          | 9.000           | N    | 20.5       |
| 0.590000        | 47.33            | ---             | 73.00        | 25.67       | 1000.0          | 9.000           | N    | 20.5       |
| 0.640000        | ---              | 40.33           | 60.00        | 19.67       | 1000.0          | 9.000           | N    | 20.4       |
| 0.640000        | 48.56            | ---             | 73.00        | 24.44       | 1000.0          | 9.000           | N    | 20.4       |
| 2.955000        | ---              | 38.89           | 60.00        | 21.11       | 1000.0          | 9.000           | N    | 19.7       |
| 2.955000        | 47.40            | ---             | 73.00        | 25.60       | 1000.0          | 9.000           | N    | 19.7       |
| 3.010000        | ---              | 37.93           | 60.00        | 22.07       | 1000.0          | 9.000           | N    | 19.7       |
| 3.010000        | 46.90            | ---             | 73.00        | 26.10       | 1000.0          | 9.000           | N    | 19.7       |
| 5.215000        | ---              | 33.95           | 60.00        | 26.05       | 1000.0          | 9.000           | N    | 19.8       |
| 5.215000        | 41.39            | ---             | 73.00        | 31.61       | 1000.0          | 9.000           | N    | 19.8       |
| 5.275000        | ---              | 32.94           | 60.00        | 27.06       | 1000.0          | 9.000           | N    | 19.8       |
| 5.275000        | 41.01            | ---             | 73.00        | 31.99       | 1000.0          | 9.000           | N    | 19.8       |

#### ◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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





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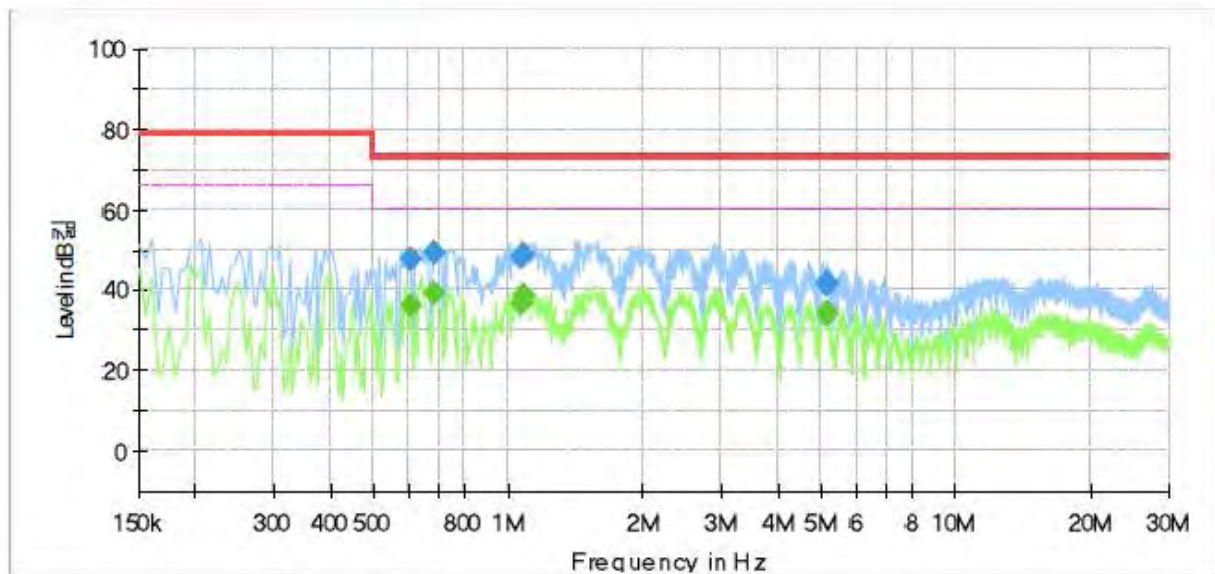
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- BNC Mode

[HOT]

### Common Information

Test Description: Conducted Emission  
Model No.: SMT-1931  
Mode: BNC\_H  
Operator Name: KES



### Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.605000        | ---              | 36.16           | 60.00        | 23.84       | 1000.0          | 9.000           | L1   | 20.4       |
| 0.605000        | 47.53            | ---             | 73.00        | 25.47       | 1000.0          | 9.000           | L1   | 20.4       |
| 0.685000        | ---              | 39.35           | 60.00        | 20.65       | 1000.0          | 9.000           | L1   | 20.4       |
| 0.685000        | 49.00            | ---             | 73.00        | 24.00       | 1000.0          | 9.000           | L1   | 20.4       |
| 1.070000        | ---              | 36.32           | 60.00        | 23.68       | 1000.0          | 9.000           | L1   | 20.1       |
| 1.070000        | 48.16            | ---             | 73.00        | 24.84       | 1000.0          | 9.000           | L1   | 20.1       |
| 1.080000        | ---              | 38.62           | 60.00        | 21.38       | 1000.0          | 9.000           | L1   | 20.1       |
| 1.080000        | 48.85            | ---             | 73.00        | 24.15       | 1000.0          | 9.000           | L1   | 20.1       |
| 5.140000        | ---              | 34.23           | 60.00        | 25.77       | 1000.0          | 9.000           | L1   | 19.8       |
| 5.140000        | 41.04            | ---             | 73.00        | 31.96       | 1000.0          | 9.000           | L1   | 19.8       |
| 5.155000        | ---              | 33.91           | 60.00        | 26.09       | 1000.0          | 9.000           | L1   | 19.8       |
| 5.155000        | 41.68            | ---             | 73.00        | 31.32       | 1000.0          | 9.000           | L1   | 19.8       |

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

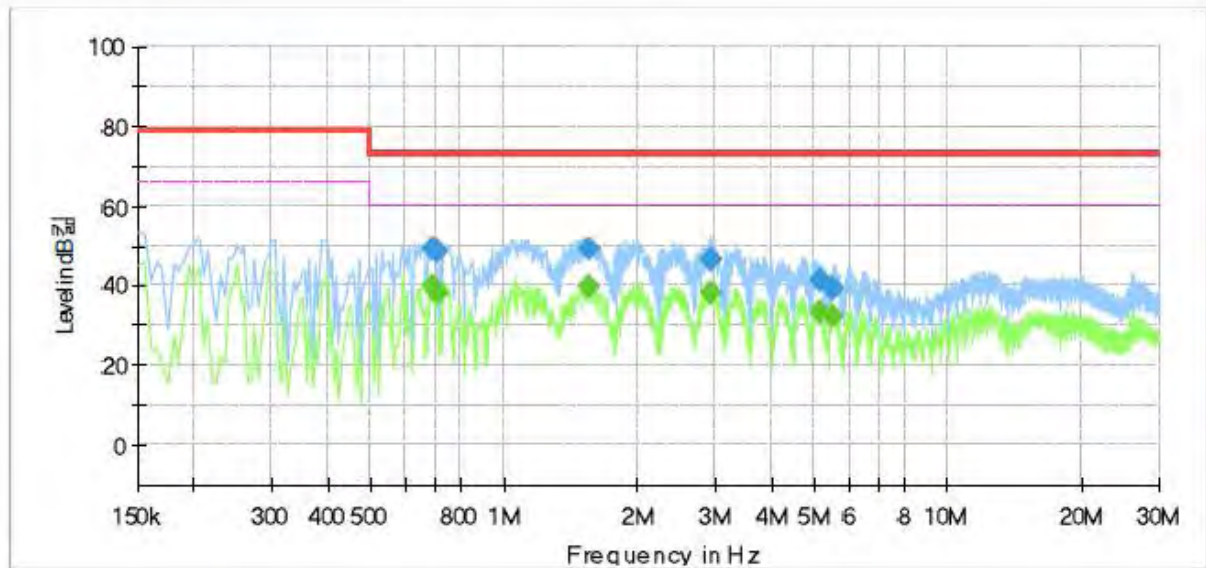
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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## [ NEUTRAL ]

### Common Information

|                   |                    |
|-------------------|--------------------|
| Test Description: | Conducted Emission |
| Model No.:        | SMT-1931           |
| Mode              | BNC_N              |
| Operator Name:    | KES                |



### Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.690000        | ---              | 39.84           | 60.00        | 20.16       | 1000.0          | 9.000           | N    | 20.4       |
| 0.690000        | 48.97            | ---             | 73.00        | 24.03       | 1000.0          | 9.000           | N    | 20.4       |
| 0.705000        | ---              | 37.95           | 60.00        | 22.05       | 1000.0          | 9.000           | N    | 20.4       |
| 0.705000        | 48.70            | ---             | 73.00        | 24.30       | 1000.0          | 9.000           | N    | 20.4       |
| 1.560000        | ---              | 39.75           | 60.00        | 20.25       | 1000.0          | 9.000           | N    | 19.9       |
| 1.560000        | 48.98            | ---             | 73.00        | 24.02       | 1000.0          | 9.000           | N    | 19.9       |
| 2.925000        | ---              | 37.94           | 60.00        | 22.06       | 1000.0          | 9.000           | N    | 19.8       |
| 2.925000        | 46.81            | ---             | 73.00        | 26.19       | 1000.0          | 9.000           | N    | 19.8       |
| 5.195000        | ---              | 33.55           | 60.00        | 26.45       | 1000.0          | 9.000           | N    | 19.8       |
| 5.195000        | 41.56            | ---             | 73.00        | 31.44       | 1000.0          | 9.000           | N    | 19.8       |
| 5.505000        | ---              | 32.05           | 60.00        | 27.95       | 1000.0          | 9.000           | N    | 19.8       |
| 5.505000        | 39.30            | ---             | 73.00        | 33.70       | 1000.0          | 9.000           | N    | 19.8       |

#### ◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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



---

## 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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Test report No.:  
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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.

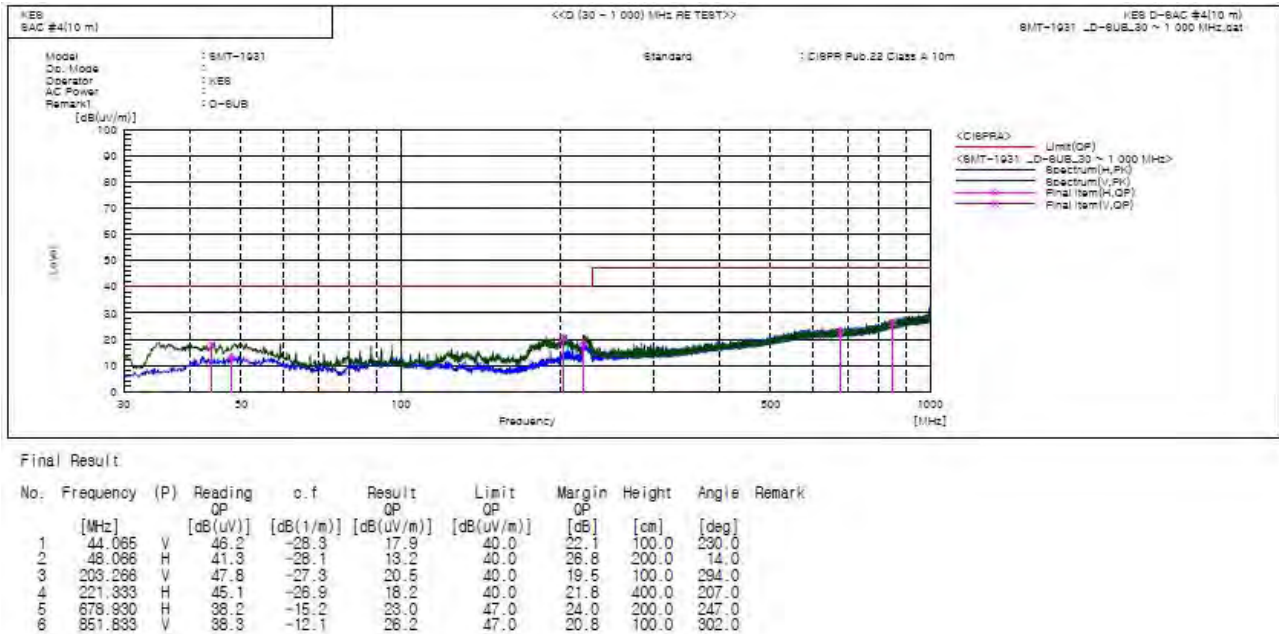
Corr. : Correction values (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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## Radiated Electric Field Emissions(Below 1 GHz)

- D-SUB Mode



### ◆ Calculation

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

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

Correction Factor : ANT FACTOR + Cable loss



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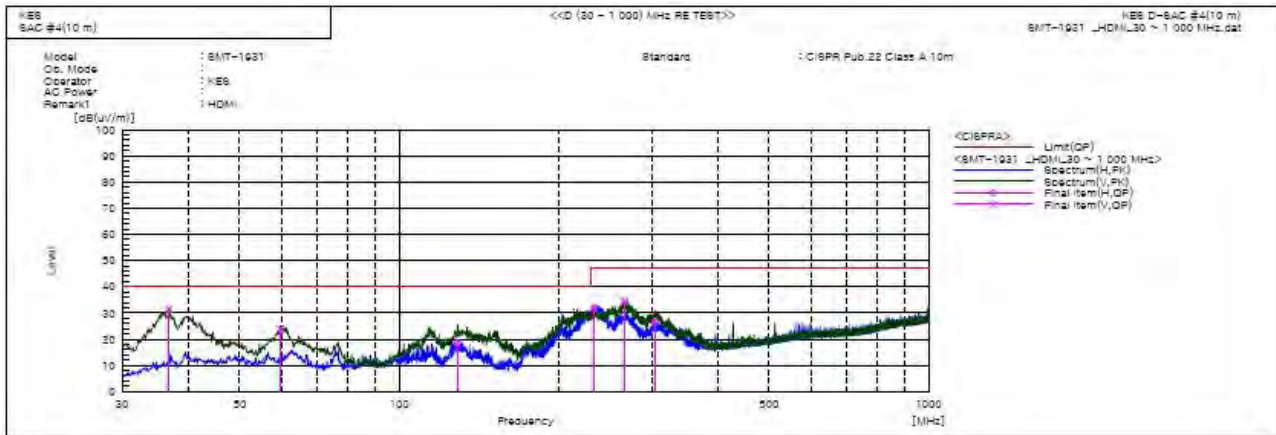
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Test report No.:

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### - HDMI Mode



#### Final Result

| No. | Frequency [MHz] | (P) | Reading OP [dB(uV)] | c.f. [dB(1/m)] | Result OP [dB(uV/m)] | Limit OP [dB(uV/m)] | Margin OP [dB] | Height [cm] | Angle [deg] | Remark |
|-----|-----------------|-----|---------------------|----------------|----------------------|---------------------|----------------|-------------|-------------|--------|
| 1   | 36.790          | V   | 62.6                | -31.1          | 31.5                 | 40.0                | 8.5            | 150.0       | 147.0       |        |
| 2   | 59.706          | V   | 53.2                | -29.3          | 23.9                 | 40.0                | 16.1           | 400.0       | 267.0       |        |
| 3   | 129.061         | H   | 51.0                | -32.3          | 18.7                 | 40.0                | 21.3           | 200.0       | 293.0       |        |
| 4   | 233.943         | H   | 58.6                | -26.6          | 32.0                 | 47.0                | 15.0           | 400.0       | 115.0       |        |
| 5   | 266.393         | V   | 60.2                | -25.6          | 34.6                 | 47.0                | 12.4           | 106.0       | 187.0       |        |
| 6   | 304.510         | H   | 51.2                | -24.6          | 26.6                 | 47.0                | 20.4           | 400.0       | 286.0       |        |

#### ◆ Calculation

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

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

Correction Factor : ANT FACTOR + Cable loss

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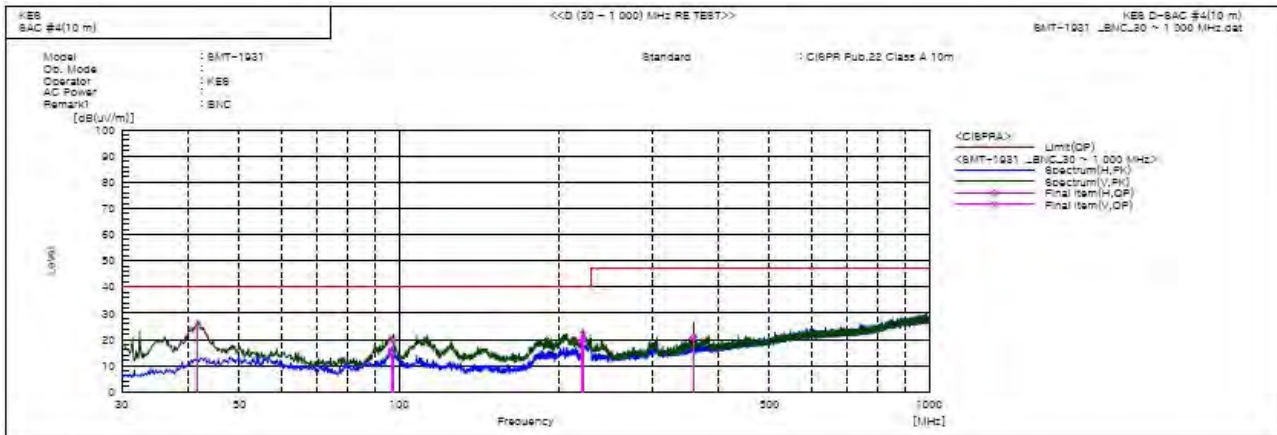
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Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea  
Tel: +82-31-425-6200 / Fax: +82-31-424-0450  
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Test report No.:

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### - BNC Mode



#### Final Result

| No. | Frequency [MHz] | (P) | Reading OP [dB(uV)] | c.f [dB(1/m)] | Result OP [dB(uV/m)] | Limit OP [dB(uV/m)] | Margin OP [dB] | Height [cm] | Angle [deg] | Remark |
|-----|-----------------|-----|---------------------|---------------|----------------------|---------------------|----------------|-------------|-------------|--------|
| 1   | 41.761          | V   | 53.9                | -29.0         | 24.9                 | 40.0                | 15.1           | 100.0       | 11.0        |        |
| 2   | 96.930          | H   | 43.8                | -29.1         | 14.7                 | 40.0                | 25.3           | 400.0       | 144.0       |        |
| 3   | 97.658          | V   | 49.0                | -29.0         | 20.0                 | 40.0                | 20.0           | 100.0       | 243.0       |        |
| 4   | 222.060         | H   | 46.1                | -28.9         | 19.2                 | 40.0                | 20.8           | 400.0       | 168.0       |        |
| 5   | 222.424         | V   | 48.5                | -28.9         | 21.6                 | 40.0                | 18.4           | 100.0       | 267.0       |        |
| 6   | 359.992         | H   | 43.6                | -22.7         | 20.9                 | 47.0                | 26.1           | 400.0       | 53.0        |        |

#### ◆ Calculation

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

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

Correction Factor : ANT FACTOR + Cable loss

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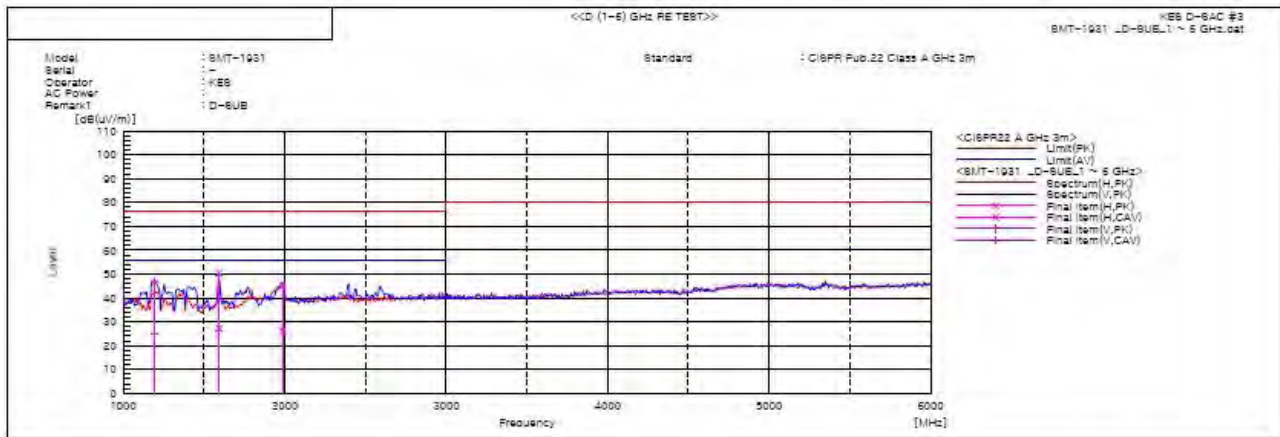
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## Radiated Electric Field Emissions(Above 1 GHz)

### - D-SUB Mode



### ◆ 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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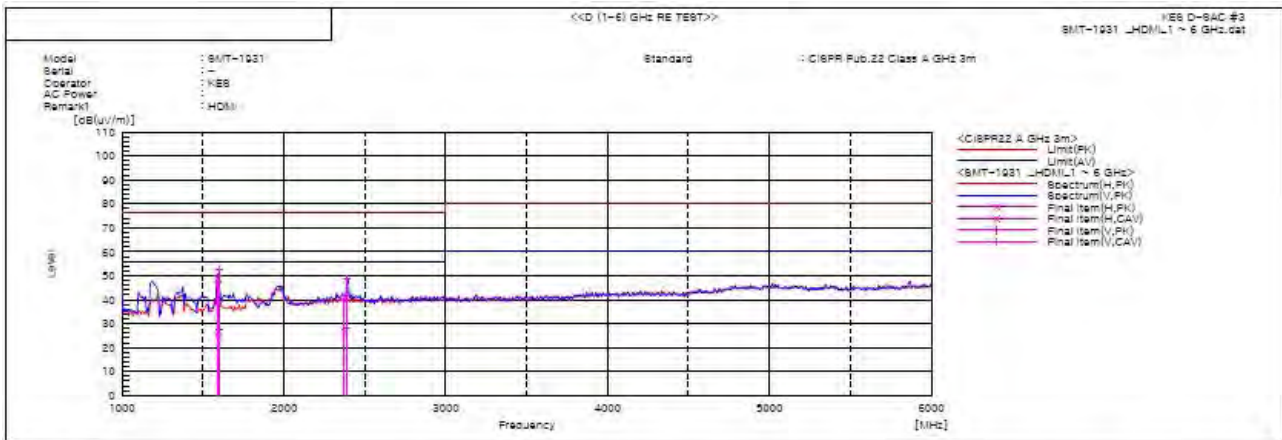
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### - HDMI Mode



#### Final Result

| No. | Frequency [MHz] | (P) | Reading PK [dB(uV)] | Reading CAV [dB(uV)] | c.f. [dB(1/m)] | Result PK [dB(uV/m)] | Result CAV [dB(uV/m)] | Limit PK [dB(uV/m)] | Limit AV [dB(uV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] | Remark |
|-----|-----------------|-----|---------------------|----------------------|----------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|--------|
| 1   | 1593.045        | H   | 56.2                | 32.2                 | -7.5           | 48.7                 | 24.7                  | 76.0                | 56.0                | 27.3           | 31.3            | 100.0       | 209.7       |        |
| 2   | 1599.785        | V   | 60.1                | 34.9                 | -7.4           | 52.7                 | 27.6                  | 76.0                | 56.0                | 23.3           | 28.6            | 100.0       | 55.8        |        |
| 3   | 2372.057        | H   | 43.1                | 29.1                 | -2.5           | 40.6                 | 26.6                  | 76.0                | 56.0                | 35.4           | 29.4            | 100.0       | 77.2        |        |
| 4   | 2390.519        | V   | 51.0                | 30.6                 | -2.4           | 48.6                 | 28.2                  | 76.0                | 56.0                | 27.4           | 27.8            | 100.0       | 112.6       |        |

#### ◆ 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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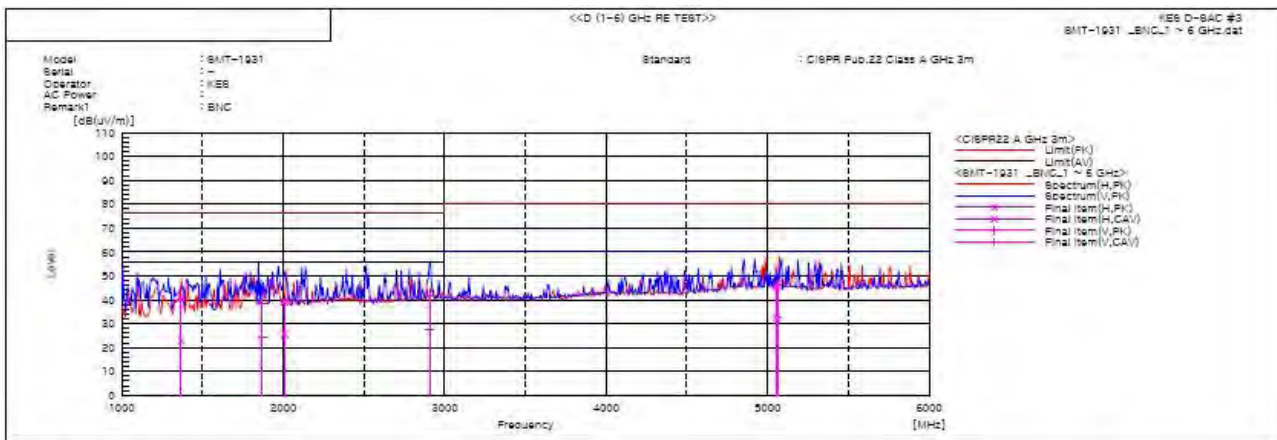
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### - BNC Mode



#### Final Result

| No. | Frequency [MHz] | (P) | Reading PK [dB(uV)] | Reading CAV [dB(uV)] | c.f. [dB(1/m)] | Result PK [dB(uV/m)] | Result CAV [dB(uV/m)] | Limit PK [dB(uV/m)] | Limit AV [dB(uV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] | Remark |
|-----|-----------------|-----|---------------------|----------------------|----------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|--------|
| 1   | 1367.828        | H   | 49.9                | 31.9                 | -9.0           | 40.9                 | 22.9                  | 76.0                | 56.0                | 35.1           | 33.1            | 100.0       | 6.9         |        |
| 2   | 1871.343        | V   | 42.9                | 28.8                 | -4.8           | 38.1                 | 24.0                  | 76.0                | 56.0                | 37.9           | 32.0            | 100.0       | 26.5        |        |
| 3   | 2009.149        | H   | 43.0                | 29.5                 | -3.9           | 39.1                 | 25.6                  | 76.0                | 56.0                | 36.9           | 30.4            | 100.0       | 243.6       |        |
| 4   | 2306.821        | V   | 42.2                | 28.3                 | -0.7           | 41.5                 | 27.6                  | 76.0                | 56.0                | 34.5           | 28.4            | 100.0       | 138.5       |        |
| 5   | 5053.940        | H   | 39.1                | 26.0                 | 6.3            | 45.4                 | 32.3                  | 80.0                | 60.0                | 34.6           | 27.7            | 100.0       | 216.8       |        |
| 6   | 5066.479        | V   | 39.6                | 26.5                 | 6.3            | 45.9                 | 32.8                  | 80.0                | 60.0                | 34.1           | 27.2            | 100.0       | 212.4       |        |

### ◆ 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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**Harmonic Current Emissions and Voltage Fluctuations and Flicker**

- D-SUB Mode

**Average harmonic current results**

| Hn | I <sub>eff</sub> [A] | % of Limit | Limit [A] | Result |
|----|----------------------|------------|-----------|--------|
| 1  | 90.762E-3            | 100.000    |           |        |
| 2  | 1.364E-3             | 1.503      |           | PASS   |
| 3  | 79.709E-3            | 87.822     | 2.30      | PASS   |
| 4  | 1.986E-3             | 2.188      |           | PASS   |
| 5  | 75.451E-3            | 83.130     | 1.14      | PASS   |
| 6  | 1.466E-3             | 1.616      |           | PASS   |
| 7  | 69.901E-3            | 77.016     | 770.00E-3 | PASS   |
| 8  | 1.366E-3             | 1.505      |           | PASS   |
| 9  | 62.024E-3            | 68.338     | 400.00E-3 | PASS   |
| 10 | 1.630E-3             | 1.796      |           | PASS   |
| 11 | 53.921E-3            | 59.410     | 330.00E-3 | PASS   |
| 12 | 1.102E-3             | 1.214      |           | PASS   |
| 13 | 45.736E-3            | 50.391     | 210.00E-3 | PASS   |
| 14 | 1.466E-3             | 1.615      |           | PASS   |
| 15 | 36.686E-3            | 40.421     | 150.00E-3 | PASS   |
| 16 | 1.064E-3             | 1.172      |           | PASS   |
| 17 | 27.738E-3            | 30.562     | 130.00E-3 | PASS   |
| 18 | 764.799E-6           | 0.843      |           | PASS   |
| 19 | 19.569E-3            | 21.561     | 120.00E-3 | PASS   |
| 20 | 809.318E-6           | 0.892      |           | PASS   |
| 21 | 12.427E-3            | 13.692     | 165.00E-3 | PASS   |
| 22 | 744.647E-6           | 0.820      |           | PASS   |
| 23 | 6.859E-3             | 7.557      | 150.00E-3 | PASS   |
| 24 | 784.122E-6           | 0.864      |           | PASS   |
| 25 | 4.038E-3             | 4.449      |           | PASS   |
| 26 | 731.892E-6           | 0.806      |           | PASS   |
| 27 | 4.683E-3             | 5.160      |           | PASS   |
| 28 | 713.457E-6           | 0.786      |           | PASS   |
| 29 | 5.945E-3             | 6.550      | 120.00E-3 | PASS   |
| 30 | 684.250E-6           | 0.754      |           | PASS   |
| 31 | 6.668E-3             | 7.346      | 105.00E-3 | PASS   |
| 32 | 696.635E-6           | 0.768      |           | PASS   |
| 33 | 6.467E-3             | 7.125      | 105.00E-3 | PASS   |
| 34 | 666.622E-6           | 0.734      |           | PASS   |
| 35 | 5.992E-3             | 6.602      | 90.00E-3  | PASS   |
| 36 | 666.109E-6           | 0.734      |           | PASS   |
| 37 | 4.842E-3             | 5.334      |           | PASS   |
| 38 | 650.634E-6           | 0.717      |           | PASS   |
| 39 | 3.276E-3             | 3.609      |           | PASS   |
| 40 | 594.515E-6           | 0.655      |           | PASS   |

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

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## Test Data - Harmonics (continued)

| <b>Maximum harmonic current results</b> |                      |            |           |        |
|-----------------------------------------|----------------------|------------|-----------|--------|
| Hn                                      | I <sub>eff</sub> [A] | % of Limit | Limit [A] | Result |
| 1                                       | 90.957E-3            | 100.000    |           |        |
| 2                                       | 3.167E-3             | 3.482      |           | PASS   |
| 3                                       | 79.864E-3            | 87.804     | 3.45      | PASS   |
| 4                                       | 2.751E-3             | 3.024      |           | PASS   |
| 5                                       | 75.596E-3            | 83.112     | 1.71      | PASS   |
| 6                                       | 2.370E-3             | 2.605      |           | PASS   |
| 7                                       | 70.260E-3            | 77.245     | 1.15      | PASS   |
| 8                                       | 1.624E-3             | 1.786      |           | PASS   |
| 9                                       | 63.330E-3            | 69.626     | 600.00E-3 | PASS   |
| 10                                      | 2.045E-3             | 2.248      |           | PASS   |
| 11                                      | 54.693E-3            | 60.131     | 495.00E-3 | PASS   |
| 12                                      | 1.298E-3             | 1.427      |           | PASS   |
| 13                                      | 46.494E-3            | 51.116     | 315.00E-3 | PASS   |
| 14                                      | 2.081E-3             | 2.288      |           | PASS   |
| 15                                      | 37.680E-3            | 41.426     | 225.00E-3 | PASS   |
| 16                                      | 1.445E-3             | 1.589      |           | PASS   |
| 17                                      | 28.329E-3            | 31.146     | 195.00E-3 | PASS   |
| 18                                      | 886.092E-6           | 0.974      |           | PASS   |
| 19                                      | 20.136E-3            | 22.138     | 180.00E-3 | PASS   |
| 20                                      | 977.187E-6           | 1.074      |           | PASS   |
| 21                                      | 12.925E-3            | 14.210     | 165.00E-3 | PASS   |
| 22                                      | 931.441E-6           | 1.024      |           | PASS   |
| 23                                      | 7.156E-3             | 7.867      | 150.00E-3 | PASS   |
| 24                                      | 901.337E-6           | 0.991      |           | PASS   |
| 25                                      | 4.205E-3             | 4.623      |           | PASS   |
| 26                                      | 995.534E-6           | 1.095      |           | PASS   |
| 27                                      | 5.238E-3             | 5.759      | 120.00E-3 | PASS   |
| 28                                      | 938.294E-6           | 1.032      |           | PASS   |
| 29                                      | 6.439E-3             | 7.080      | 120.00E-3 | PASS   |
| 30                                      | 861.697E-6           | 0.947      |           | PASS   |
| 31                                      | 7.288E-3             | 8.013      | 105.00E-3 | PASS   |
| 32                                      | 889.331E-6           | 0.978      |           | PASS   |
| 33                                      | 6.768E-3             | 7.440      | 105.00E-3 | PASS   |
| 34                                      | 810.620E-6           | 0.891      |           | PASS   |
| 35                                      | 6.126E-3             | 6.736      | 90.00E-3  | PASS   |
| 36                                      | 821.239E-6           | 0.903      |           | PASS   |
| 37                                      | 5.079E-3             | 5.584      | 90.00E-3  | PASS   |
| 38                                      | 732.144E-6           | 0.805      |           | PASS   |
| 39                                      | 3.609E-3             | 3.968      |           | PASS   |
| 40                                      | 770.300E-6           | 0.847      |           | PASS   |

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

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- HDMI Mode

**Average harmonic current results**

| Hn | I <sub>eff</sub> [A] | % of Limit | Limit [A] | Result |
|----|----------------------|------------|-----------|--------|
| 1  | 91.186E-3            | 100.000    |           |        |
| 2  | 1.343E-3             | 1.473      |           | PASS   |
| 3  | 80.175E-3            | 87.924     | 2.30      | PASS   |
| 4  | 1.948E-3             | 2.137      |           | PASS   |
| 5  | 75.942E-3            | 83.282     | 1.14      | PASS   |
| 6  | 1.490E-3             | 1.634      |           | PASS   |
| 7  | 70.696E-3            | 77.529     | 770.00E-3 | PASS   |
| 8  | 1.396E-3             | 1.531      |           | PASS   |
| 9  | 62.526E-3            | 68.569     | 400.00E-3 | PASS   |
| 10 | 1.475E-3             | 1.617      |           | PASS   |
| 11 | 54.559E-3            | 59.832     | 330.00E-3 | PASS   |
| 12 | 1.128E-3             | 1.237      |           | PASS   |
| 13 | 47.175E-3            | 51.735     | 210.00E-3 | PASS   |
| 14 | 1.364E-3             | 1.496      |           | PASS   |
| 15 | 38.455E-3            | 42.173     | 150.00E-3 | PASS   |
| 16 | 1.044E-3             | 1.145      |           | PASS   |
| 17 | 29.197E-3            | 32.019     | 130.00E-3 | PASS   |
| 18 | 779.887E-6           | 0.855      |           | PASS   |
| 19 | 20.930E-3            | 22.953     | 120.00E-3 | PASS   |
| 20 | 812.394E-6           | 0.891      |           | PASS   |
| 21 | 13.779E-3            | 15.111     | 165.00E-3 | PASS   |
| 22 | 722.817E-6           | 0.793      |           | PASS   |
| 23 | 7.896E-3             | 8.659      | 150.00E-3 | PASS   |
| 24 | 789.735E-6           | 0.866      |           | PASS   |
| 25 | 4.599E-3             | 5.044      |           | PASS   |
| 26 | 742.466E-6           | 0.814      |           | PASS   |
| 27 | 4.406E-3             | 4.832      |           | PASS   |
| 28 | 707.496E-6           | 0.776      |           | PASS   |
| 29 | 5.498E-3             | 6.030      | 120.00E-3 | PASS   |
| 30 | 671.655E-6           | 0.737      |           | PASS   |
| 31 | 6.311E-3             | 6.921      | 105.00E-3 | PASS   |
| 32 | 672.315E-6           | 0.737      |           | PASS   |
| 33 | 6.395E-3             | 7.013      | 105.00E-3 | PASS   |
| 34 | 664.509E-6           | 0.729      |           | PASS   |
| 35 | 6.141E-3             | 6.734      | 90.00E-3  | PASS   |
| 36 | 669.663E-6           | 0.734      |           | PASS   |
| 37 | 5.220E-3             | 5.724      | 90.00E-3  | PASS   |
| 38 | 693.812E-6           | 0.761      |           | PASS   |
| 39 | 3.834E-3             | 4.205      |           | PASS   |
| 40 | 610.317E-6           | 0.669      |           | PASS   |

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

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## Test Data - Harmonics (continued)

**Maximum harmonic current results**

| Hn | I <sub>eff</sub> [A] | % of Limit | Limit [A] | Result |
|----|----------------------|------------|-----------|--------|
| 1  | 91.742E-3            | 100.000    |           |        |
| 2  | 1.643E-3             | 1.791      |           | PASS   |
| 3  | 80.603E-3            | 87.858     | 3.45      | PASS   |
| 4  | 2.494E-3             | 2.719      |           | PASS   |
| 5  | 76.452E-3            | 83.333     | 1.71      | PASS   |
| 6  | 1.657E-3             | 1.806      |           | PASS   |
| 7  | 71.138E-3            | 77.541     | 1.15      | PASS   |
| 8  | 1.615E-3             | 1.760      |           | PASS   |
| 9  | 63.179E-3            | 68.866     | 600.00E-3 | PASS   |
| 10 | 1.770E-3             | 1.930      |           | PASS   |
| 11 | 55.222E-3            | 60.192     | 495.00E-3 | PASS   |
| 12 | 1.311E-3             | 1.429      |           | PASS   |
| 13 | 47.333E-3            | 51.593     | 315.00E-3 | PASS   |
| 14 | 1.866E-3             | 2.033      |           | PASS   |
| 15 | 38.703E-3            | 42.186     | 225.00E-3 | PASS   |
| 16 | 1.413E-3             | 1.540      |           | PASS   |
| 17 | 29.447E-3            | 32.097     | 195.00E-3 | PASS   |
| 18 | 890.435E-6           | 0.971      |           | PASS   |
| 19 | 21.188E-3            | 23.095     | 180.00E-3 | PASS   |
| 20 | 905.851E-6           | 0.987      |           | PASS   |
| 21 | 14.046E-3            | 15.310     | 165.00E-3 | PASS   |
| 22 | 789.496E-6           | 0.861      |           | PASS   |
| 23 | 8.118E-3             | 8.849      | 150.00E-3 | PASS   |
| 24 | 882.782E-6           | 0.962      |           | PASS   |
| 25 | 4.749E-3             | 5.176      |           | PASS   |
| 26 | 846.932E-6           | 0.923      |           | PASS   |
| 27 | 4.595E-3             | 5.009      |           | PASS   |
| 28 | 813.857E-6           | 0.887      |           | PASS   |
| 29 | 5.841E-3             | 6.367      | 120.00E-3 | PASS   |
| 30 | 849.702E-6           | 0.926      |           | PASS   |
| 31 | 6.665E-3             | 7.265      | 105.00E-3 | PASS   |
| 32 | 878.038E-6           | 0.957      |           | PASS   |
| 33 | 6.554E-3             | 7.144      | 105.00E-3 | PASS   |
| 34 | 770.753E-6           | 0.840      |           | PASS   |
| 35 | 6.226E-3             | 6.787      | 90.00E-3  | PASS   |
| 36 | 814.460E-6           | 0.888      |           | PASS   |
| 37 | 5.332E-3             | 5.812      | 90.00E-3  | PASS   |
| 38 | 761.843E-6           | 0.830      |           | PASS   |
| 39 | 3.986E-3             | 4.345      |           | PASS   |
| 40 | 688.659E-6           | 0.751      |           | PASS   |

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

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- BNC Mode

**Average harmonic current results**

| Hn | I <sub>eff</sub> [A] | % of Limit | Limit [A] | Result |
|----|----------------------|------------|-----------|--------|
| 1  | 90.814E-3            | 100.000    |           |        |
| 2  | 1.457E-3             | 1.604      |           | PASS   |
| 3  | 79.863E-3            | 87.941     | 2.30      | PASS   |
| 4  | 2.107E-3             | 2.320      |           | PASS   |
| 5  | 75.759E-3            | 83.422     | 1.14      | PASS   |
| 6  | 1.621E-3             | 1.785      |           | PASS   |
| 7  | 70.655E-3            | 77.801     | 770.00E-3 | PASS   |
| 8  | 1.542E-3             | 1.699      |           | PASS   |
| 9  | 62.710E-3            | 69.053     | 400.00E-3 | PASS   |
| 10 | 1.592E-3             | 1.753      |           | PASS   |
| 11 | 55.035E-3            | 60.602     | 330.00E-3 | PASS   |
| 12 | 1.249E-3             | 1.375      |           | PASS   |
| 13 | 47.849E-3            | 52.689     | 210.00E-3 | PASS   |
| 14 | 1.469E-3             | 1.617      |           | PASS   |
| 15 | 39.247E-3            | 43.217     | 150.00E-3 | PASS   |
| 16 | 1.072E-3             | 1.181      |           | PASS   |
| 17 | 30.139E-3            | 33.188     | 130.00E-3 | PASS   |
| 18 | 780.119E-6           | 0.859      |           | PASS   |
| 19 | 21.946E-3            | 24.166     | 120.00E-3 | PASS   |
| 20 | 773.530E-6           | 0.852      |           | PASS   |
| 21 | 14.733E-3            | 16.223     | 165.00E-3 | PASS   |
| 22 | 693.219E-6           | 0.763      |           | PASS   |
| 23 | 8.732E-3             | 9.615      | 150.00E-3 | PASS   |
| 24 | 842.715E-6           | 0.928      |           | PASS   |
| 25 | 5.111E-3             | 5.628      | 135.00E-3 | PASS   |
| 26 | 820.443E-6           | 0.903      |           | PASS   |
| 27 | 4.448E-3             | 4.898      |           | PASS   |
| 28 | 803.829E-6           | 0.885      |           | PASS   |
| 29 | 5.395E-3             | 5.941      | 120.00E-3 | PASS   |
| 30 | 764.552E-6           | 0.842      |           | PASS   |
| 31 | 6.276E-3             | 6.910      | 105.00E-3 | PASS   |
| 32 | 746.701E-6           | 0.822      |           | PASS   |
| 33 | 6.489E-3             | 7.145      | 105.00E-3 | PASS   |
| 34 | 694.334E-6           | 0.765      |           | PASS   |
| 35 | 6.363E-3             | 7.007      | 90.00E-3  | PASS   |
| 36 | 641.567E-6           | 0.706      |           | PASS   |
| 37 | 5.494E-3             | 6.049      | 90.00E-3  | PASS   |
| 38 | 629.338E-6           | 0.693      |           | PASS   |
| 39 | 4.111E-3             | 4.527      |           | PASS   |
| 40 | 535.746E-6           | 0.590      |           | PASS   |

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

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## Test Data - Harmonics (continued)

**Maximum harmonic current results**

| Hn | I <sub>eff</sub> [A] | % of Limit | Limit [A] | Result |
|----|----------------------|------------|-----------|--------|
| 1  | 90.963E-3            | 100.000    |           |        |
| 2  | 1.753E-3             | 1.927      |           | PASS   |
| 3  | 80.006E-3            | 87.955     | 3.45      | PASS   |
| 4  | 2.668E-3             | 2.933      |           | PASS   |
| 5  | 75.890E-3            | 83.430     | 1.71      | PASS   |
| 6  | 1.814E-3             | 1.994      |           | PASS   |
| 7  | 70.760E-3            | 77.790     | 1.15      | PASS   |
| 8  | 1.694E-3             | 1.862      |           | PASS   |
| 9  | 63.360E-3            | 69.655     | 600.00E-3 | PASS   |
| 10 | 1.953E-3             | 2.147      |           | PASS   |
| 11 | 55.728E-3            | 61.264     | 495.00E-3 | PASS   |
| 12 | 1.386E-3             | 1.524      |           | PASS   |
| 13 | 47.985E-3            | 52.752     | 315.00E-3 | PASS   |
| 14 | 1.927E-3             | 2.119      |           | PASS   |
| 15 | 39.411E-3            | 43.327     | 225.00E-3 | PASS   |
| 16 | 1.415E-3             | 1.555      |           | PASS   |
| 17 | 30.285E-3            | 33.294     | 195.00E-3 | PASS   |
| 18 | 946.246E-6           | 1.040      |           | PASS   |
| 19 | 22.120E-3            | 24.317     | 180.00E-3 | PASS   |
| 20 | 856.587E-6           | 0.942      |           | PASS   |
| 21 | 14.906E-3            | 16.387     | 165.00E-3 | PASS   |
| 22 | 769.179E-6           | 0.846      |           | PASS   |
| 23 | 8.893E-3             | 9.776      | 150.00E-3 | PASS   |
| 24 | 971.229E-6           | 1.068      |           | PASS   |
| 25 | 5.204E-3             | 5.721      | 135.00E-3 | PASS   |
| 26 | 898.249E-6           | 0.987      |           | PASS   |
| 27 | 4.538E-3             | 4.989      |           | PASS   |
| 28 | 926.374E-6           | 1.018      |           | PASS   |
| 29 | 5.562E-3             | 6.115      | 120.00E-3 | PASS   |
| 30 | 840.172E-6           | 0.924      |           | PASS   |
| 31 | 6.512E-3             | 7.160      | 105.00E-3 | PASS   |
| 32 | 872.781E-6           | 0.959      |           | PASS   |
| 33 | 6.626E-3             | 7.285      | 105.00E-3 | PASS   |
| 34 | 814.460E-6           | 0.895      |           | PASS   |
| 35 | 6.476E-3             | 7.120      | 90.00E-3  | PASS   |
| 36 | 750.689E-6           | 0.825      |           | PASS   |
| 37 | 5.591E-3             | 6.147      | 90.00E-3  | PASS   |
| 38 | 723.980E-6           | 0.796      |           | PASS   |
| 39 | 4.216E-3             | 4.635      |           | PASS   |
| 40 | 599.510E-6           | 0.659      |           | PASS   |

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

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## Test Data - Voltage Fluctuations

### Maximum Flicker results

#### - D-SUB Mode

|          | <b>EUT values</b> | <b>Limit</b> | <b>Result</b> |
|----------|-------------------|--------------|---------------|
| Pst      | 0.028             | 1.00         | PASS          |
| Plt      | 0.028             | 0.65         | PASS          |
| dc [%]   | 0.000             | 3.30         | PASS          |
| dmax [%] | 0.036             | 4.00         | PASS          |
| Tmax [s] | 0.000             | 0.50         | PASS          |

#### - HDMI Mode

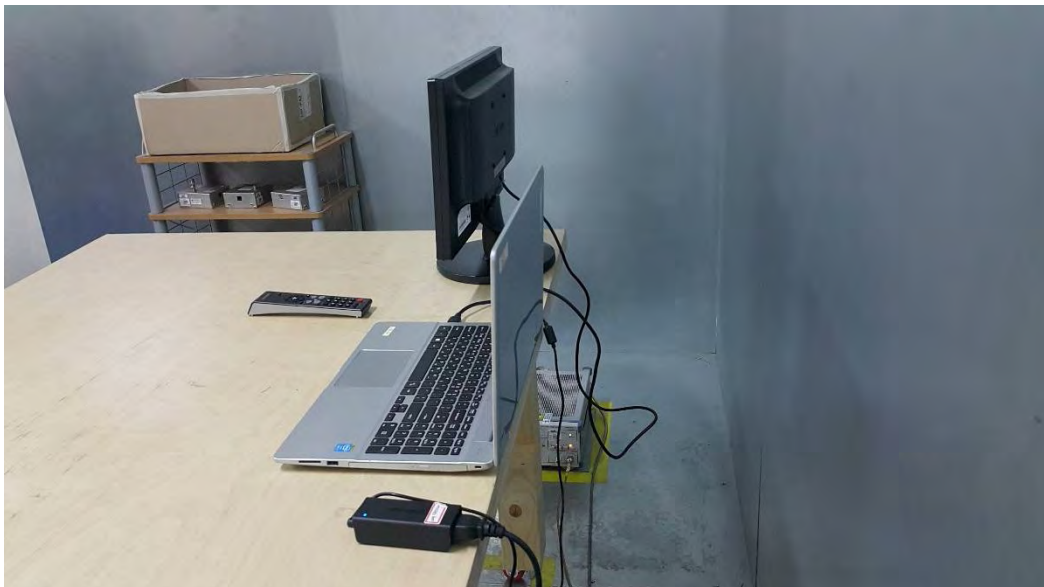
|          | <b>EUT values</b> | <b>Limit</b> | <b>Result</b> |
|----------|-------------------|--------------|---------------|
| Pst      | 0.028             | 1.00         | PASS          |
| Plt      | 0.028             | 0.65         | PASS          |
| dc [%]   | 0.000             | 3.30         | PASS          |
| dmax [%] | 0.035             | 4.00         | PASS          |
| Tmax [s] | 0.000             | 0.50         | PASS          |

#### - BNC Mode

|          | <b>EUT values</b> | <b>Limit</b> | <b>Result</b> |
|----------|-------------------|--------------|---------------|
| Pst      | 0.028             | 1.00         | PASS          |
| Plt      | 0.028             | 0.65         | PASS          |
| dc [%]   | 0.000             | 3.30         | PASS          |
| dmax [%] | 0.033             | 4.00         | PASS          |
| Tmax [s] | 0.000             | 0.50         | PASS          |

## Test Setup Photos and Configuration

### Conducted Voltage Emissions



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## Conducted Telecommunication Emissions

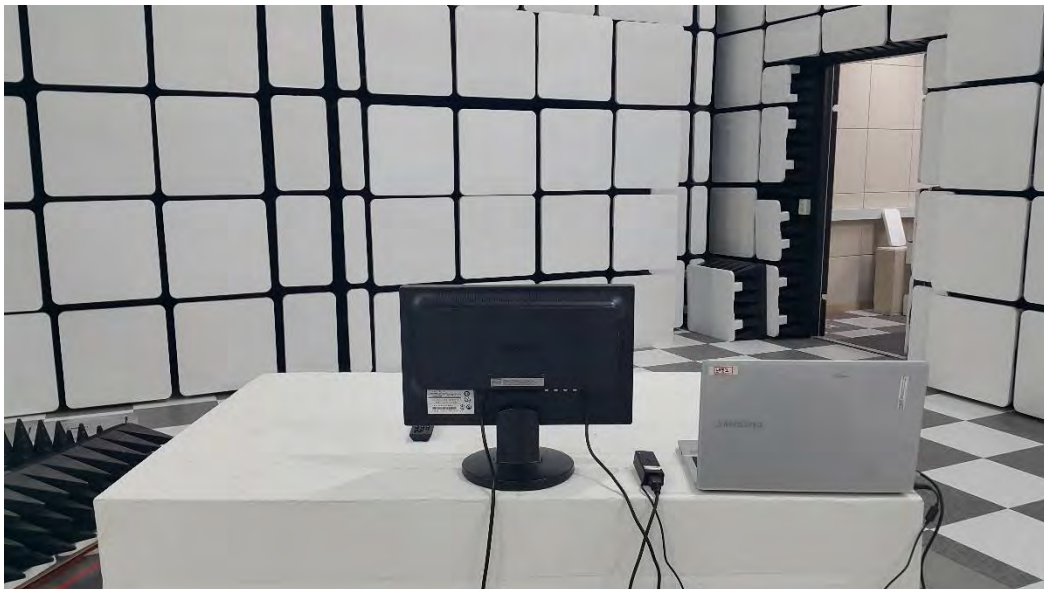
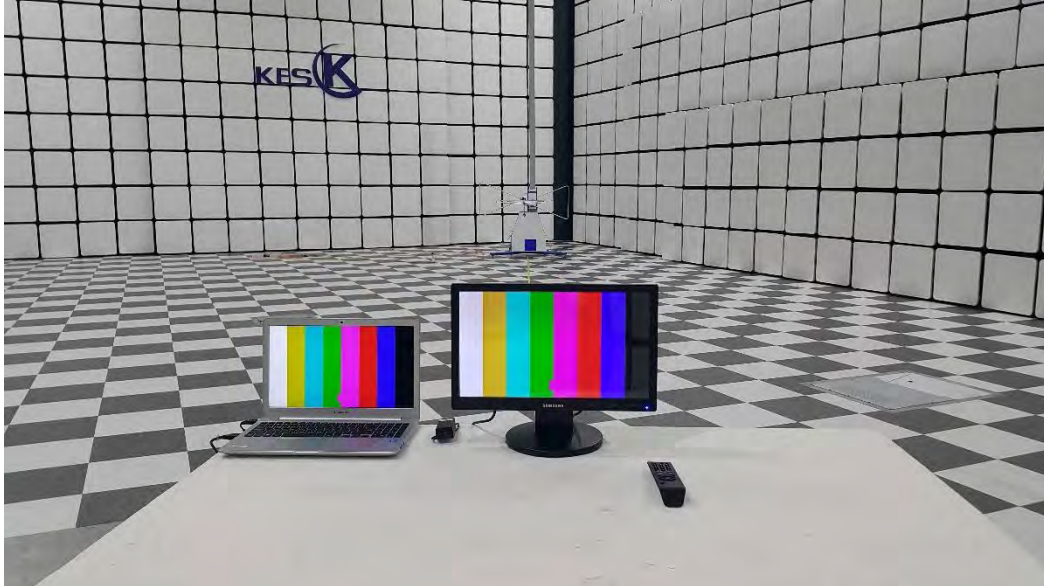
N/A

N/A

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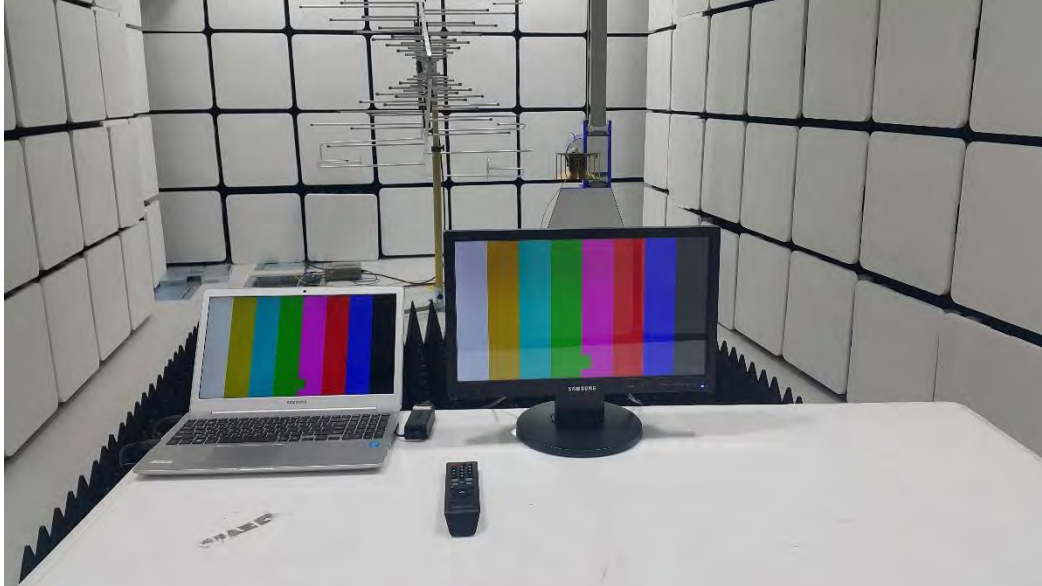
## **Radiated Electric Field Emissions(Below 1 GHz)**



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## Radiated Electric Field Emissions(Above 1 GHz)



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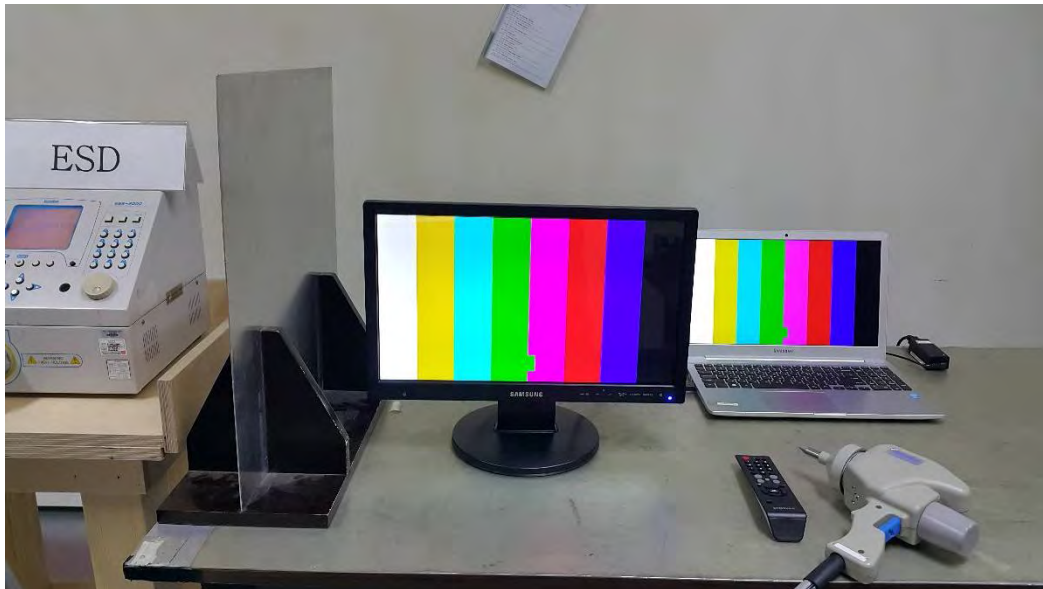
## Harmonic Current Emissions and Voltage Fluctuations and Flicker



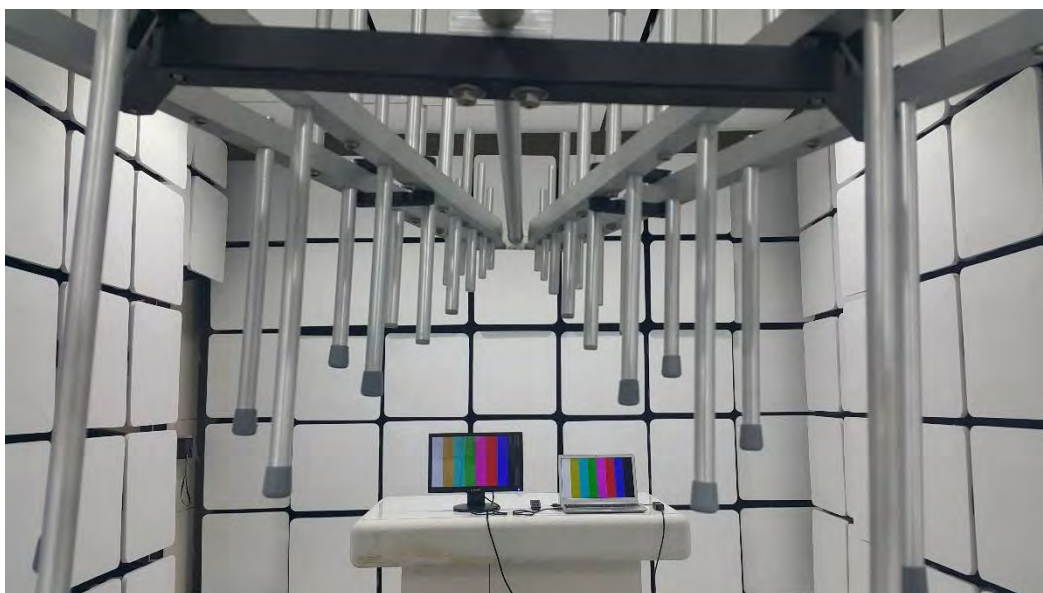
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## Electrostatic Discharge

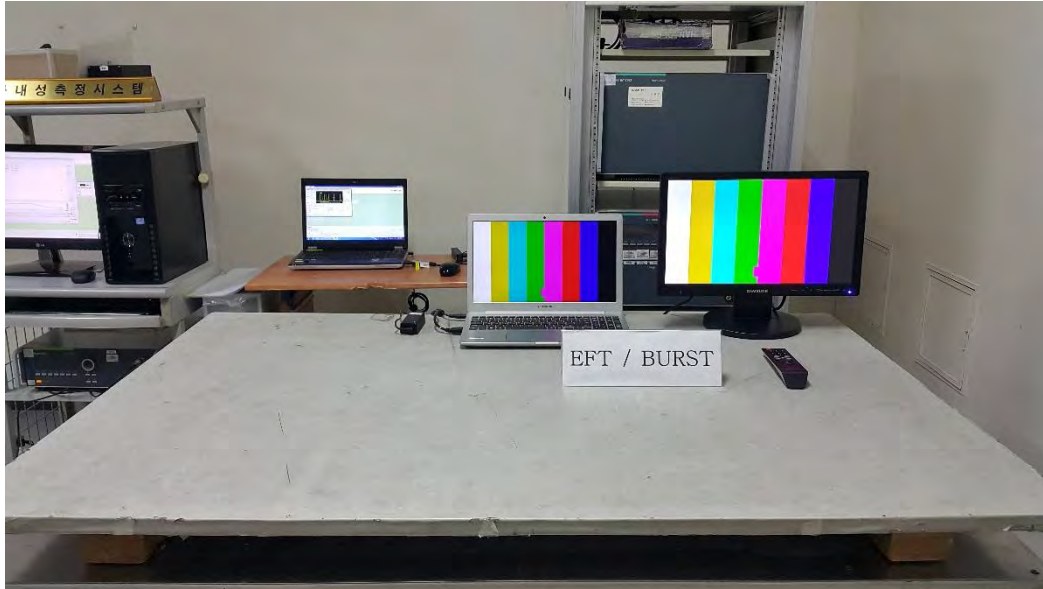


## Radiated Electric Field Immunity



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## Electrical Fast Transients/Bursts



N/A

## Surge Transients

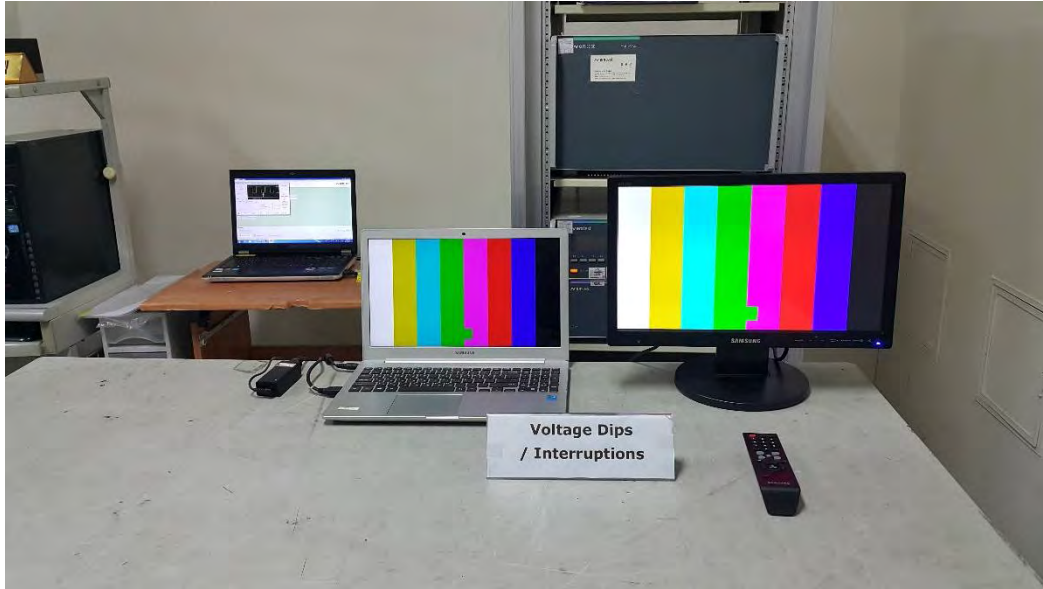


## Conducted Disturbance



N/A

## Voltage Dips and Short Interruptions



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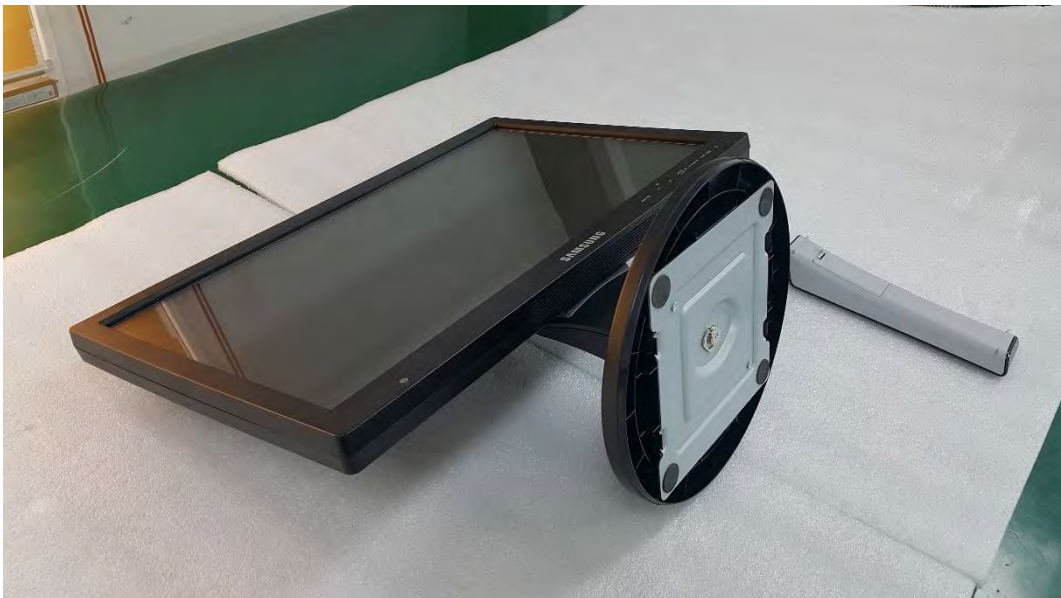


## EUT External Photographs

(Top)



(Bottom)



## **EUT Internal Photographs**

(Internal View)

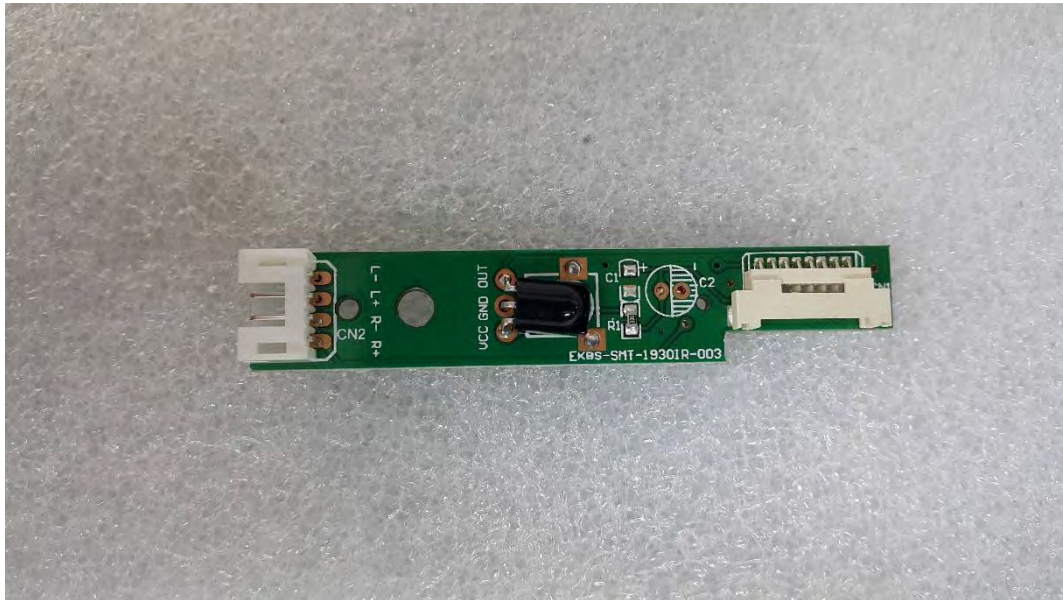


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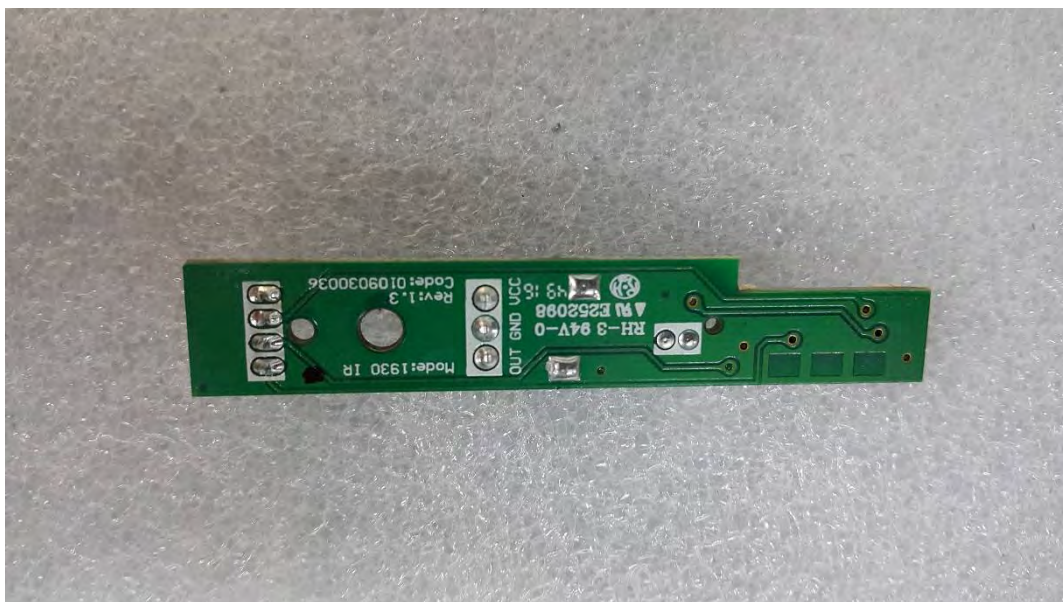


## EUT Internal View – Sub Board 1

(Top)



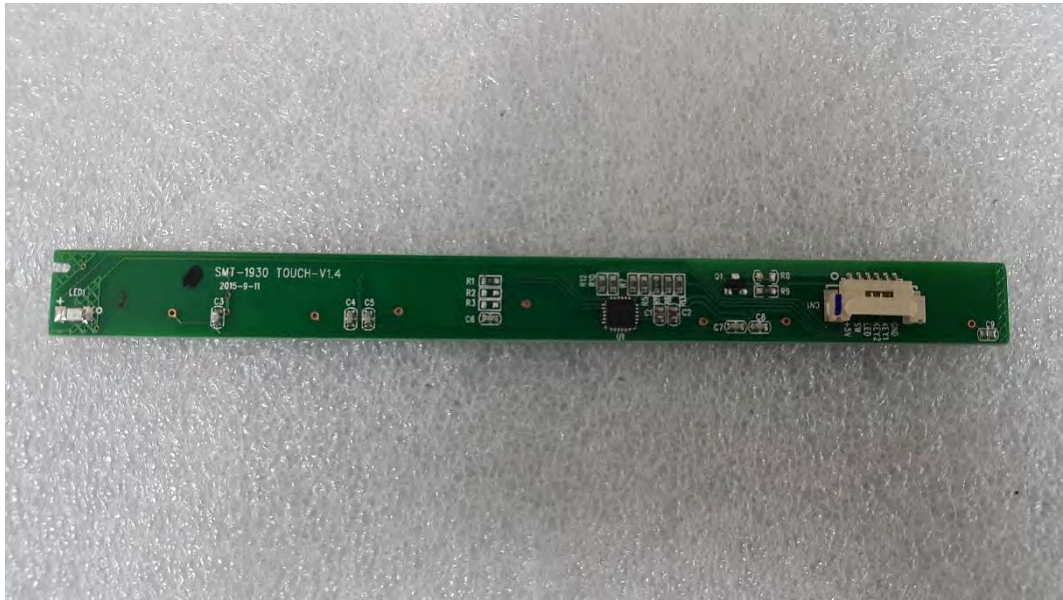
(Bottom)



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## EUT Internal View – Sub Board 2

(Top)



(Bottom)

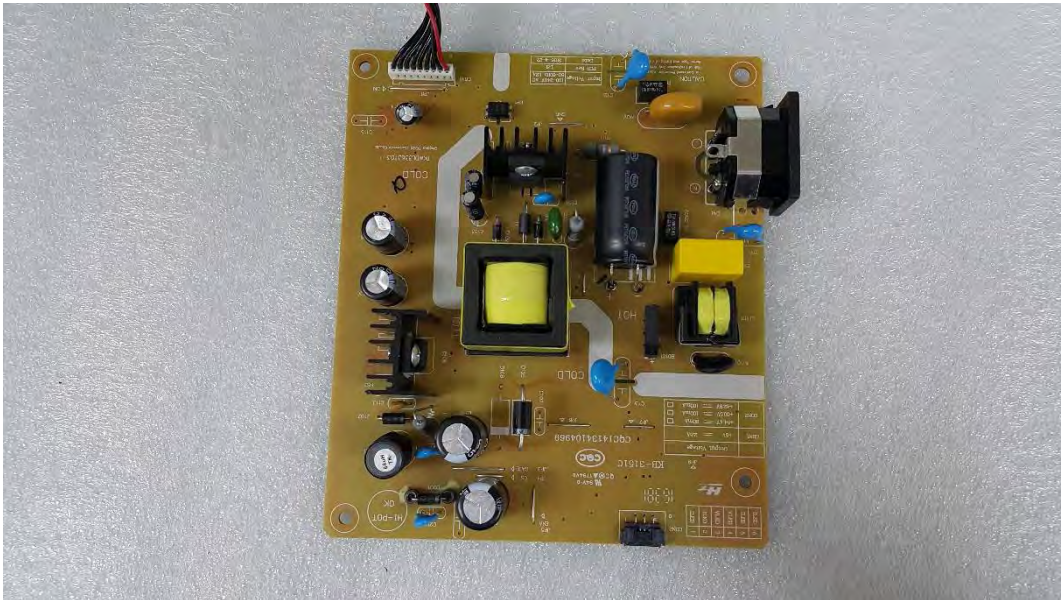


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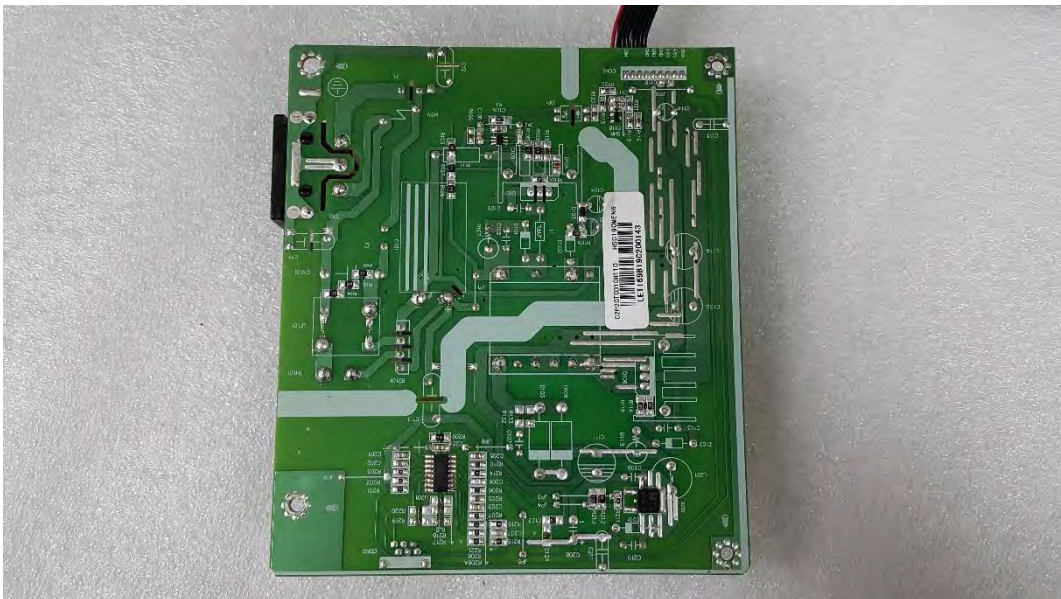


## EUT Internal View – Power Board

(Top)



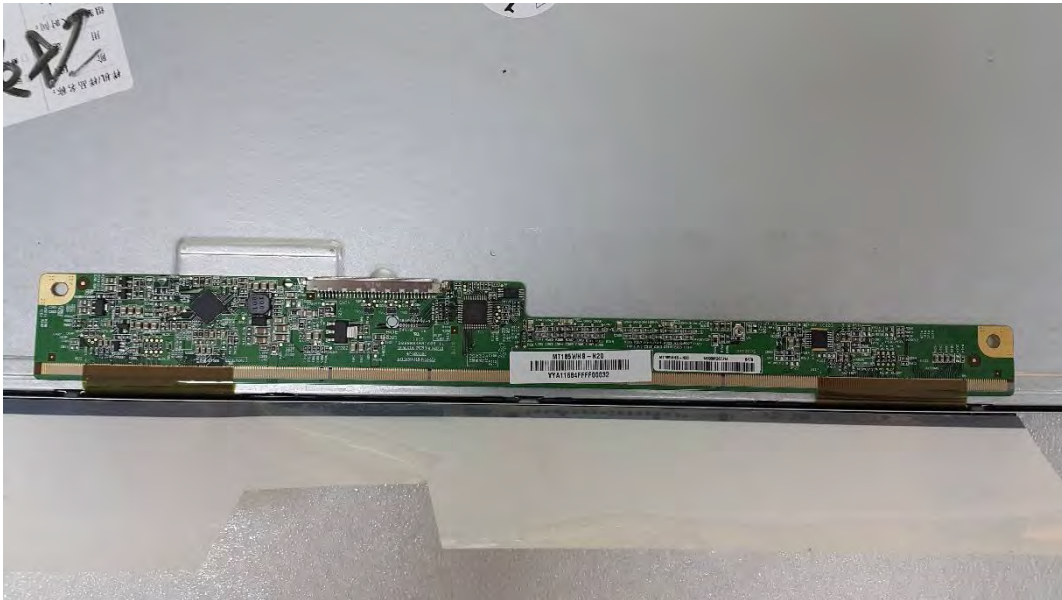
(Bottom)



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## EUT Internal View – Panel Board

(Top)



(Bottom)

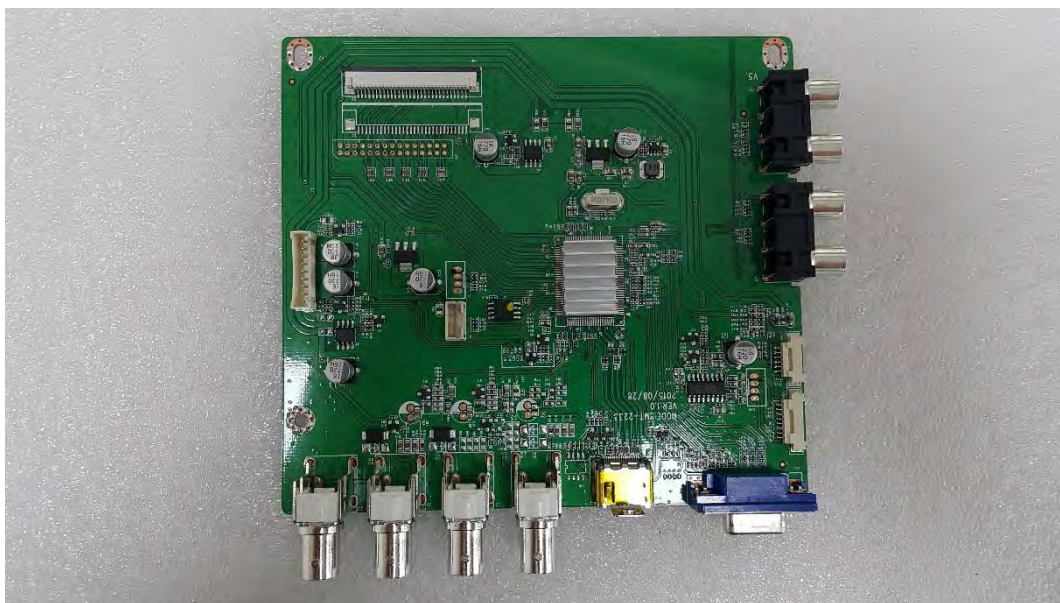


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## EUT Internal View – Main Board

(Top)



(Bottom)



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## Label and Location



### **LED MONITOR**

Model No : SMT-1931

Manufacturer : Weihai Daewoo Electronics Co.,Ltd

Made in China

