# IC TEST REPORT

For

Azlan Logistics Limited

TC-HDMI31

Model No.: TC-HDMI31

| | | |
|---|---|---|
| Prepared for | : | Azlan Logistics Limited |
| Address | : | Redwood 2, Chineham Business Park, Crockford Lane, Basingstoke RG24 8WQ, United Kindom |
| Prepared by | : | Shenzhen LCS Compliance Testing Laboratory Ltd. |
| Address | : | 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China |
| Tel | : | (86)755-82591330 |
| Fax | : | (86)755-82591332 |
| Web | : | www.LCS-cert.com |
| Mail | : | webmaster@LCS-cert.com |

| | | |
|---|---|---|
| Date of receipt of test sample | : | Mar 22, 2018 |
| Number of tested samples | : | 3 |
| Serial number | : | Prototype |
| Date of Test | : | Mar 25, 2018 ~ Apr 02, 2018 |
| Date of Report | : | Apr 11, 2018 |

# IC TEST REPORT

**ICES-003 ISSUE 6: 2016**
**ANSI C63.4: 2014**

| | |
|---|---|
| **Report Reference No. .....:** | **LCS180322028AEA** |
| Date Of Issue .....: | Apr 11, 2018 |
| **Testing Laboratory Name.....:** | **Shenzhen LCS Compliance Testing Laboratory Ltd.** |
| Address .....: | 1/F., Xingyuan Industrial Park, Tongda Road, Bao' an Avenue, Bao' an District, Shenzhen, Guangdong, China |
| Testing Location/ Procedure .....: | Full application of Harmonised standards ■<br>Partial application of Harmonised standards □<br>Other standard testing method □ |
| **Applicant's Name .....:** | **Azlan Logistics Limited** |
| Address .....: | Redwood 2, Chineham Business Park, Crockford Lane, Basingstoke RG24 8WQ, United Kindom |
| **Test Specification:** | |
| Standard .....: | ICES-003 ISSUE 6: 2016<br>ANSI C63.4: 2014 |
| Test Report Form No.....: | LCSEMC-1.0 |
| TRF Originator .....: | Shenzhen LCS Compliance Testing Laboratory Ltd. |
| Master TRF .....: | Dated 2011-03 |



| | |
|---|---|
| **Test Item Description.....:** | **TC-HDMI31** |
| Trade Mark .....: | VISION |
| Model/ Type Reference .....: | TC-HDMI31 |
| Ratings .....: | Input:100-240V~, 50/60Hz, 0.4A<br>Output:5V⎓, 2A |
| **Result .....:** | **Positive** |

| **Compiled by:** | **Supervised by:** | **Approved by:** |
|---|---|---|
| Calvin Weng | Dick Su | |
| Calvin Weng/ Administrators | Dick Su/ Technique principal | Gavin Liang/ Manager |

# IC -- TEST REPORT

| **Test Report No. : LCS180322028AEA** | Apr 11, 2018<br>Date of issue |
|---|---|

| | | |
|---|---|---|
| Type / Model..... | : | TC-HDMI31 |
| EUT..... | : | TC-HDMI31 |
| **Applicant.....** | **:** | **Azlan Logistics Limited** |
| Address..... | : | Redwood 2, Chineham Business Park, Crockford Lane, Basingstoke RG24 8WQ, United Kindom |
| Telephone..... | : | / |
| Fax..... | : | / |
| **Manufacturer.....** | : | **Azlan Logistics Limited** |
| Address..... | : | Redwood 2, Chineham Business Park, Crockford Lane, Basingstoke RG24 8WQ, United Kindom |
| Telephone..... | : | / |
| Fax..... | : | / |
| **Factory.....** | **:** | **Azlan Logistics Limited** |
| Address..... | : | Redwood 2, Chineham Business Park, Crockford Lane, Basingstoke RG24 8WQ, United Kindom |
| Telephone..... | : | / |
| Fax..... | : | / |

| | |
|---|---|
| **Test Result** according to the standards on page 6: | **Positive** |

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

# Revision History

| Revision | Issue Date | Revisions | Revised By |
|---|---|---|---|
| 000 | Apr 11, 2018 | Initial Issue | Gavin Liang |
| | | | |
| | | | |

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Test Report Description Page

# 1. SUMMARY OF STANDARDS AND RESULTS

## 1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

| EMISSION | | | |
|---|---|---|---|
| **Description of Test Item** | **Standard** | **Limits** | **Results** |
| Conducted disturbance at mains terminals | ICES-003 ISSUE 6: 2016 | Class B | PASS |
| Radiated disturbance | ICES-003 ISSUE 6: 2016 | Class B | PASS |
| N/A is an abbreviation for Not Applicable. | | | |

| **Test mode:** | | |
|---|---|---|
| Mode 1 | HDMI input & HDMI output | Pre-scan |

# 2. GENERAL INFORMATION

## 2.1.Description of Device (EUT)

| | | |
|---|---|---|
| EUT | : | TC-HDMI31 |
| Trade Mark | : | VISION |
| Model Number | : | TC-HDMI31 |
| Power Supply | : | Input:100-240V~, 50/60Hz, 0.4A<br>Output:5V⎓, 2A |
| Highest working frequency | : | 594MHz |

## 2.2.Description of Test Facility

Site Description
EMC Lab. : FCC Registration Number. is 254912.

Industry Canada Registration Number. is 9642A-1.

ESMD Registration Number. is ARCB0108.

UL Registration Number. is 100571-492.

TUV SUD Registration Number. is SCN1081.

TUV RH Registration Number. is UA 50296516-001.

NVLAP Registration Code is 600167-0.

## 2.3.Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

## 2.4.Measurement Uncertainty

| Test | Parameters | Expanded uncertainty (Ulab) | Expanded uncertainty (Ucispr) |
|---|---|---|---|
| Conducted Emission | Level accuracy<br>(9kHz to 150kHz)<br>(150kHz to 30MHz) | ± 2.63 dB<br>± 2.35 dB | ± 4.0 dB<br>± 3.6 dB |
| Power disturbance | Level accuracy<br>(30MHz to 300MHz) | ± 2.90dB | ± 4.5 dB |
| Electromagnetic Radiated Emission (3-loop) | Level accuracy<br>(9kHz to 30MHz) | ± 3.60 dB | ± 2.63 dB |
| Radiated Emission | Level accuracy<br>(9kHz to 30MHz) | ± 3.68 dB | ± 2.63 dB |
| Radiated Emission | Level accuracy<br>(30MHz to 1000MHz) | ± 3.48 dB | ± 2.63 dB |
| Radiated Emission | Level accuracy<br>(above 1000MHz) | ± 3.90 dB | N/A |
| Mains Harmonic | Voltage | ± 0.510% | N/A |
| Voltage Fluctuations & Flicker | Voltage | ± 0.510% | N/A |
| EMF | | ± 21.59% | N/A |

(1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

(2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

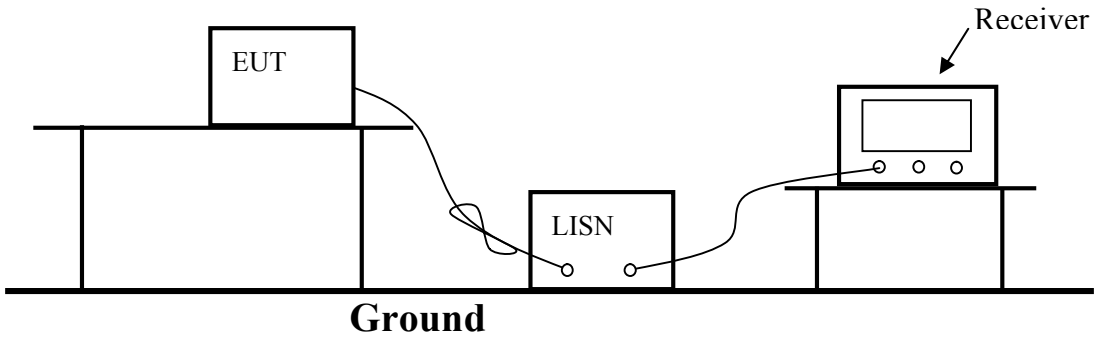
# 3. POWER LINE CONDUCTED EMISSION MEASUREMENT

## 3.1. Test Equipment

The following test equipments are used during the power line conducted measurement:

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
|---|---|---|---|---|---|
| 1 | EMI Test Receiver | ROHDE & SCHWARZ | ESR 7 | 101181 | 2017-06-17 |
| 2 | 10dB Attenuator | SCHWARZBECK | MTS-IMP136 | 261115-001-00 32 | 2017-06-17 |
| 3 | Artificial Mains | ROHDE & SCHWARZ | ENV216 | 101288 | 2017-06-17 |
| 4 | EMI Test Software | AUDIX | E3 | N/A | N/A |
| 5 | ISN | SCHWARZBECK | NTFM 8158 | NTFM 8158 0120 | 2017-06-17 |

## 3.2.Block Diagram of Test Setup




## 3.3.Test Standard

ICES-003 ISSUE 6: 2016

Power Line Conducted Emission Limits (Class B)

| Frequency (MHz) | | | Limit (dBμV) | |
|---|---|---|---|---|
| | | | Quasi-peak Level | Average Level |
| 0.15 | ~ | 0.50 | 66.0 ~ 56.0 * | 56.0 ~ 46.0 * |
| 0.50 | ~ | 5.00 | 56.0 | 46.0 |
| 5.00 | ~ | 30.00 | 60.0 | 50.0 |
| NOTE1-The lower limit shall apply at the transition frequencies.<br>NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz. | | | | |

## 3.4.EUT Configuration on Test

The following equipments are installed on Conducted Emission Measurement to see ICES-003 ISSUE 6 requirements and operating in a manner which tends to maximize its emission characteristics in normal application.

## 3.5.Operating Condition of EUT

3.5.1.Setup the EUT as shown on Section 3.2.

3.5.2.Turn on the power of all equipments.

3.5.3.Let the EUT work in measuring mode (Full Load) and measure it.

## 3.6.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided 50-ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the ICES-003 ISSUE 6 regulations during conducted emission measurement.

The bandwidth of the field strength meter is set at 9kHz in 150kHz~30MHz.

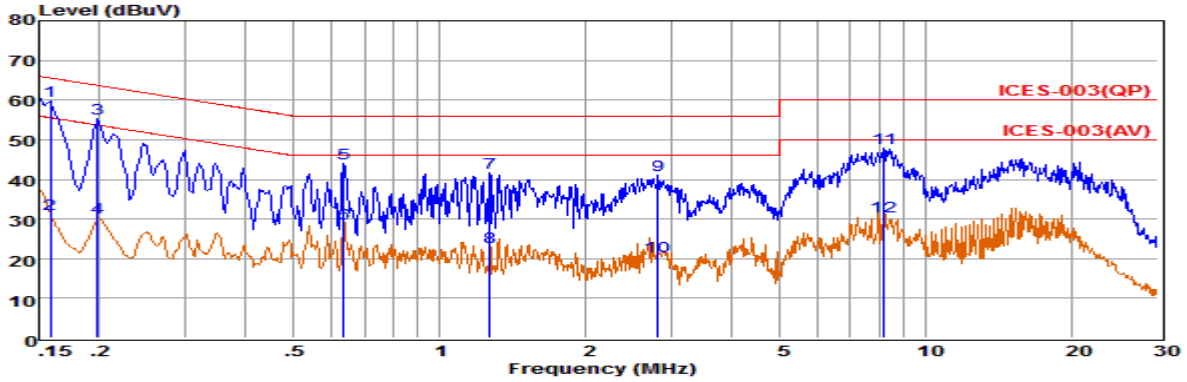
The frequency range from 150kHz to 30MHz is investigated

## 3.7.Test Results

**PASS.**

Please refer to the next page for the test result.

| Model No. | TC-HDMI31 | Test Mode | Mode 1 |
|---|---|---|---|
| Environmental Conditions | 22.6℃, 50.3% RH | Test Engineer | Tom Liu |
| Pol | Line | | |

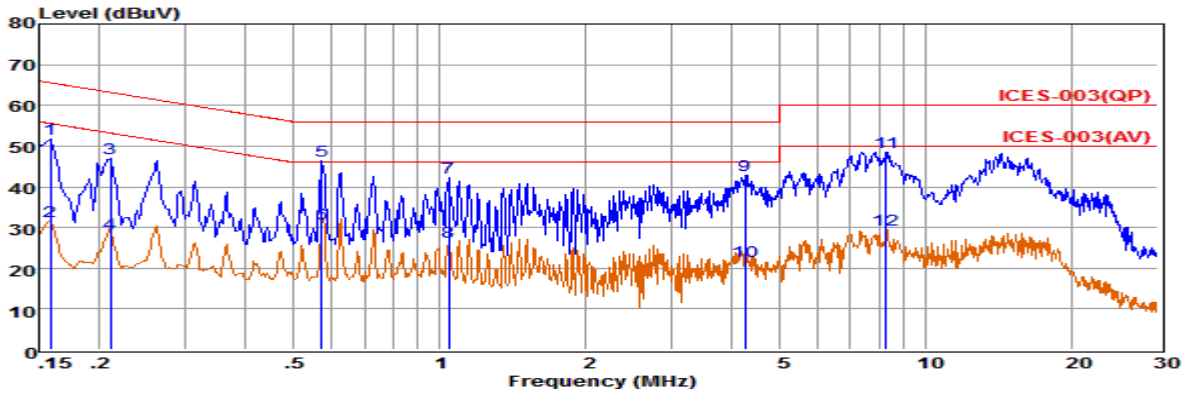



Env. Ins: 22.6*/50.3%

| | Freq | Reading | LISNFac | CabLos | Aux2Fac | Measured | Limit | Over | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.16 | 40.04 | 9.58 | 0.02 | 10.00 | 59.64 | 65.56 | -5.92 | QP |
| 2 | 0.16 | 11.59 | 9.58 | 0.02 | 10.00 | 31.19 | 55.55 | -24.36 | Average |
| 3 | 0.20 | 35.81 | 9.63 | 0.02 | 10.00 | 55.46 | 63.71 | -8.25 | QP |
| 4 | 0.20 | 10.63 | 9.63 | 0.02 | 10.00 | 30.28 | 53.71 | -23.43 | Average |
| 5 | 0.63 | 24.30 | 9.63 | 0.04 | 10.00 | 43.97 | 56.00 | -12.03 | QP |
| 6 | 0.63 | 9.20 | 9.63 | 0.04 | 10.00 | 28.87 | 46.00 | -17.13 | Average |
| 7 | 1.27 | 21.92 | 9.63 | 0.05 | 10.00 | 41.60 | 56.00 | -14.40 | QP |
| 8 | 1.27 | 3.10 | 9.63 | 0.05 | 10.00 | 22.78 | 46.00 | -23.22 | Average |
| 9 | 2.81 | 21.30 | 9.64 | 0.05 | 10.00 | 40.99 | 56.00 | -15.01 | QP |
| 10 | 2.81 | 0.89 | 9.64 | 0.05 | 10.00 | 20.58 | 46.00 | -25.42 | Average |
| 11 | 8.19 | 28.03 | 9.68 | 0.07 | 10.00 | 47.78 | 60.00 | -12.22 | QP |
| 12 | 8.19 | 10.75 | 9.68 | 0.07 | 10.00 | 30.50 | 50.00 | -19.50 | Average |

Remarks: 1. Measured = Reading + LISNFac + Cable Loss + Aux2 Fac.
2. The emission levels that are 20dB below the official limit are not reported.

| Model No. | TC-HDMI31 | Test Mode | Mode 1 |
|---|---|---|---|
| Environmental Conditions | 22.6℃, 50.3% RH | Test Engineer | Tom Liu |
| Pol | Neutral | | |




Env. Ins: 22.6*/50.3%

| | Freq | Reading | LISNFac | CabLos | Aux2Fac | Measured | Limit | Over | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.16 | 32.06 | 9.68 | 0.02 | 10.00 | 51.76 | 65.56 | -13.80 | QP |
| 2 | 0.16 | 11.82 | 9.68 | 0.02 | 10.00 | 31.52 | 55.55 | -24.03 | Average |
| 3 | 0.21 | 27.24 | 9.59 | 0.03 | 10.00 | 46.86 | 63.18 | -16.32 | QP |
| 4 | 0.21 | 8.80 | 9.59 | 0.03 | 10.00 | 28.42 | 53.18 | -24.76 | Average |
| 5 | 0.57 | 26.74 | 9.62 | 0.04 | 10.00 | 46.40 | 56.00 | -9.60 | QP |
| 6 | 0.57 | 11.19 | 9.62 | 0.04 | 10.00 | 30.85 | 46.00 | -15.15 | Average |
| 7 | 1.04 | 22.49 | 9.63 | 0.05 | 10.00 | 42.17 | 56.00 | -13.83 | QP |
| 8 | 1.04 | 6.65 | 9.63 | 0.05 | 10.00 | 26.33 | 46.00 | -19.67 | Average |
| 9 | 4.25 | 23.20 | 9.65 | 0.06 | 10.00 | 42.91 | 56.00 | -13.09 | QP |
| 10 | 4.25 | 1.86 | 9.65 | 0.06 | 10.00 | 21.57 | 46.00 | -24.43 | Average |
| 11 | 8.28 | 28.83 | 9.70 | 0.07 | 10.00 | 48.60 | 60.00 | -11.40 | QP |
| 12 | 8.28 | 9.74 | 9.70 | 0.07 | 10.00 | 29.51 | 50.00 | -20.49 | Average |

Remarks: 1. Measured = Reading + LISNFac + Cable Loss + Aux2 Fac.
2. The emission levels that are 20dB below the official limit are not reported.

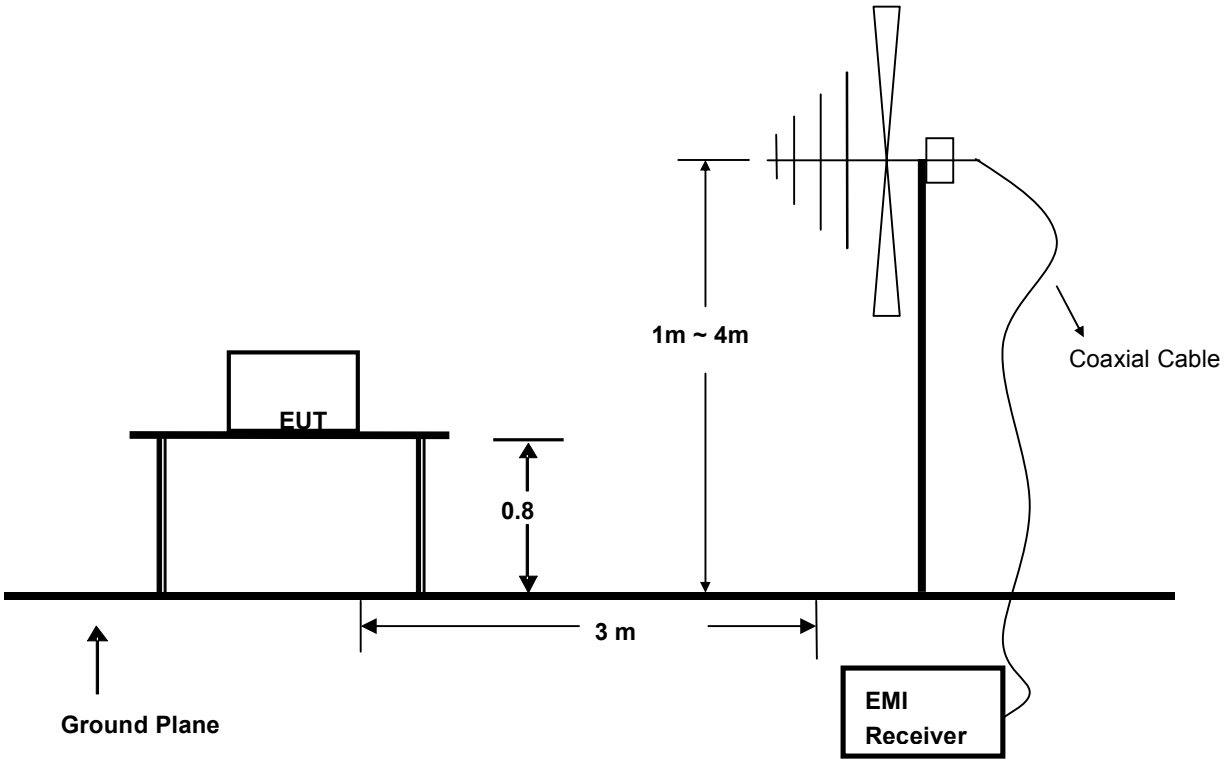
# 4. RADIATED EMISSION MEASUREMENT

## 4.1. Test Equipment

The following test equipments are used during the radiated emission measurement:

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
|---|---|---|---|---|---|
| 1 | 3m Semi Anechoic Chamber | SIDT FRANKONIA | SAC-3M | 03CH03-HY | 2017-06-17 |
| 2 | EMI Test Receiver | ROHDE & SCHWARZ | ESR 7 | 101181 | 2017-06-17 |
| 3 | Log per Antenna | SCHWARZBECK | VULB9163 | 9163-470 | 2017-04-17 |
| 4 | EMI Test Software | AUDIX | E3 | N/A | 2017-06-17 |
| 5 | Positioning Controller | MF | MF-7082 | / | 2017-06-17 |

## 4.2.Block Diagram of Test Setup




## 4.3. Test Standard

ICES-003 ISSUE 6: 2016

## 4.4. Radiated Emission Limits

All emanations from a class B device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

| FREQUENCY MHz | DISTANCE Meters | RADIATED LIMIT dB(μV)/m |
|---|---|---|
| | | Quasi-peak |
| 30 ~ 88 | 3 | 40.0 |
| 88 ~ 216 | 3 | 43.5 |
| 216 ~ 960 | 3 | 46.0 |
| 960 ~ 1000 | 3 | 54.0 |

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

## 4.5. EUT Configuration on Test

The ICES-003 ISSUE 6 regulations test method must be used to find the maximum emission during radiated emission measurement.

## 4.6.Operating Condition of EUT

4.6.1 Turn on the power.

4.6.2 After that, let the EUT work in test mode (Full Load) and measure it.

## 4.7.Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. By-log antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

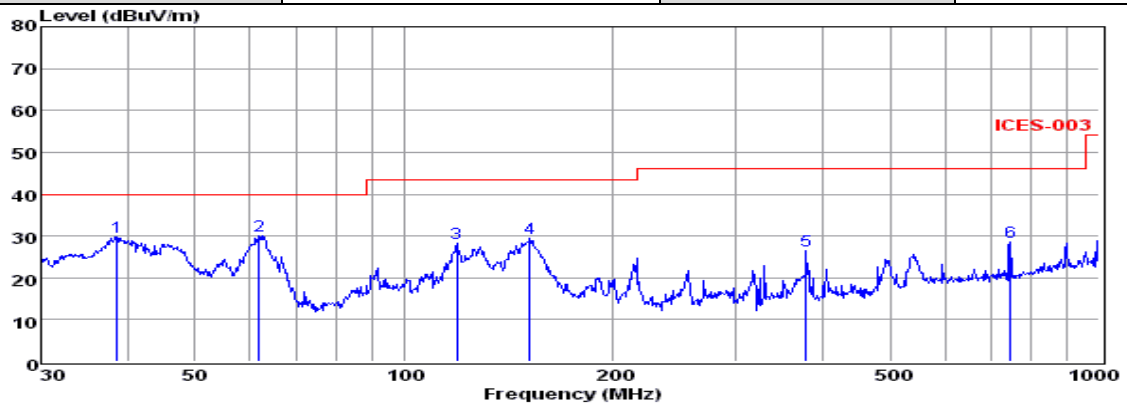
The bandwidth of the Receiver is set at 120kHz.

The frequency range from 30MHz to 1000MHz is investigated.

## 4.8.Test Results

**PASS.** For test data, please refer to the next page.

| Model No. | TC-HDMI31 | Test Mode | Mode 1 |
|---|---|---|---|
| Environmental Conditions | 23.1℃, 51.3% RH | Detector Function | Quasi-peak |
| Pol | Vertical | Distance | 3m |
| Test Engineer | Tom Liu | | |

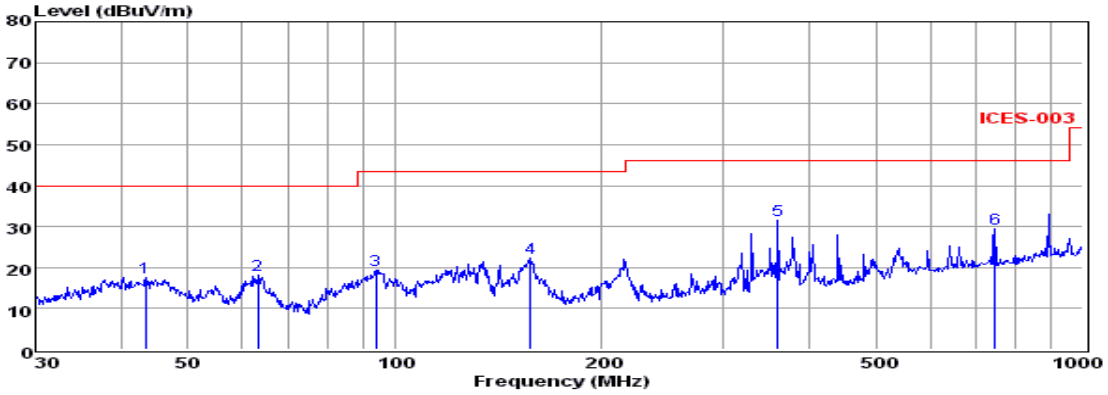



Env./Ins: 23.1℃/51.3%

| | Freq | Reading | CabLos | Antfac | Measured | Limit | Over | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB/m | dBuV/m | dBuV/m | dB | |
| 1 | 38.62 | 16.04 | 0.38 | 13.23 | 29.65 | 40.00 | -10.35 | QP |
| 2 | 61.78 | 17.55 | 0.48 | 11.99 | 30.02 | 40.00 | -9.98 | QP |
| 3 | 119.02 | 16.93 | 0.64 | 10.65 | 28.22 | 43.50 | -15.28 | QP |
| 4 | 151.60 | 20.41 | 0.73 | 8.33 | 29.47 | 43.50 | -14.03 | QP |
| 5 | 378.58 | 10.69 | 1.30 | 14.58 | 26.57 | 46.00 | -19.43 | QP |
| 6 | 744.87 | 7.57 | 1.61 | 19.37 | 28.55 | 46.00 | -17.45 | QP |

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that ate 20db blow the offficial limit are not reported

| Model No. | TC-HDMI31 | Test Mode | Mode 1 |
|---|---|---|---|
| Environmental Conditions | 23.1℃, 51.3% RH | Detector Function | Quasi-peak |
| Pol | Horizontal | Distance | 3m |
| Test Engineer | Tom Liu | | |




Env./Ins: 23.1℃/51.3%

| | Freq | Reading | CabLos | Antfac | Measured | Limit | Over | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB/m | dBuV/m | dBuV/m | dB | |
| 1 | 43.35 | 3.53 | 0.50 | 13.56 | 17.59 | 40.00 | -22.41 | QP |
| 2 | 63.09 | 6.14 | 0.48 | 11.47 | 18.09 | 40.00 | -21.91 | QP |
| 3 | 93.77 | 6.28 | 0.56 | 12.61 | 19.45 | 43.50 | -24.05 | QP |
| 4 | 157.56 | 12.78 | 0.83 | 8.57 | 22.18 | 43.50 | -21.32 | QP |
| 5 | 360.45 | 15.80 | 1.18 | 14.43 | 31.41 | 46.00 | -14.59 | QP |
| 6 | 744.87 | 8.48 | 1.61 | 19.37 | 29.46 | 46.00 | -16.54 | QP |

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that ate 20db blow the offficial limit are not reported

| Test Mode: TM1(above 1GHz) | Tested by: Tom Liu |
|---|---|
| Test voltage: AC 230V/50Hz | Test Distance: 3m |
| Detector Function: Peak+AV | Test Results: Passed |

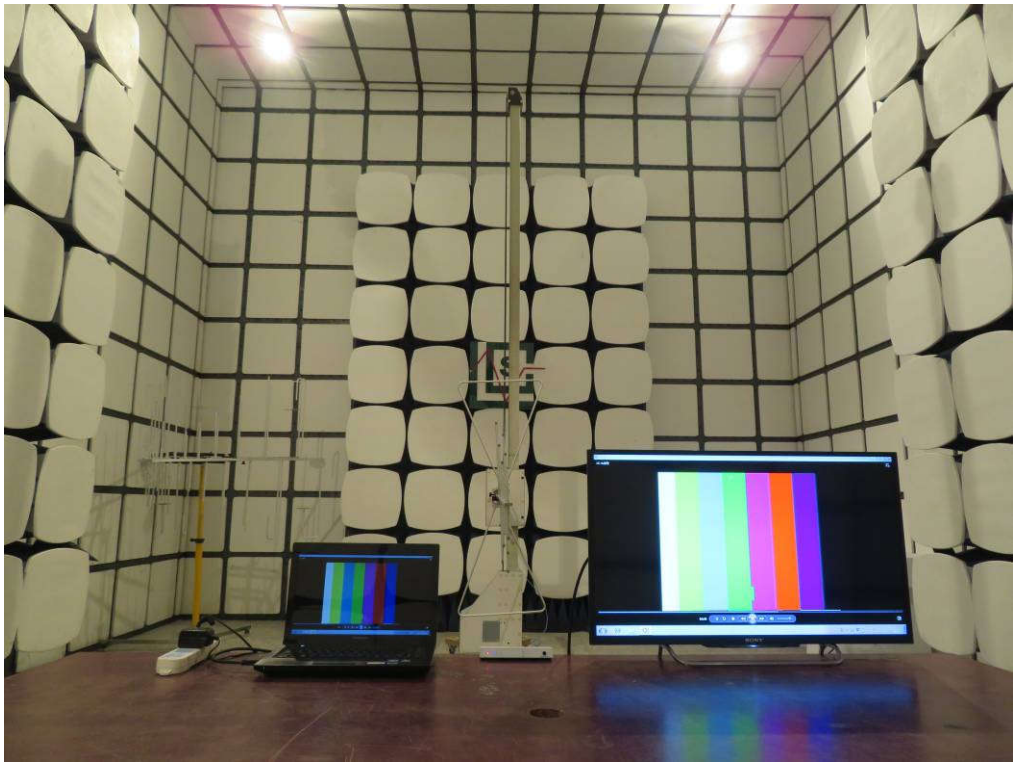
| Polarization | Frequency MHz | Emission Level dBμV/m | | Limits dBμV/m | | Margin dBμV/m | |
|---|---|---|---|---|---|---|---|
| | | Peak | AV | Peak | AV | Peak | AV |
| Horizontal | 1363.52 | 53.74 | 39.83 | 74.00 | 54.00 | -20.26 | -14.17 |
| | 1963.11 | 51.64 | 34.34 | 74.00 | 54.00 | -22.36 | -19.66 |
| | 2104.33 | 54.76 | 33.94 | 74.00 | 54.00 | -19.24 | -20.06 |
| | 3284.15 | 54.02 | 38.03 | 74.00 | 54.00 | -19.98 | -15.97 |
| | 4359.35 | 55.24 | 33.53 | 74.00 | 54.00 | -18.76 | -20.47 |
| | 4712.64 | 57.48 | 33.42 | 74.00 | 54.00 | -16.52 | -20.58 |
| Vertical | 1363.39 | 52.93 | 40.50 | 74.00 | 54.00 | -21.07 | -13.50 |
| | 1963.59 | 51.07 | 34.89 | 74.00 | 54.00 | -22.93 | -19.11 |
| | 2105.31 | 54.79 | 34.38 | 74.00 | 54.00 | -19.21 | -19.62 |
| | 3283.78 | 54.22 | 38.48 | 74.00 | 54.00 | -19.78 | -15.52 |
| | 4360.00 | 54.90 | 33.92 | 74.00 | 54.00 | -19.10 | -20.08 |
| | 4712.47 | 58.20 | 33.27 | 74.00 | 54.00 | -15.80 | -20.73 |

1. Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
2. Measurements above show only up to 6 maximum emissions noted.
3. Data of measurement within this frequency range shown " -- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. According to FCC Part 15.33, as the highest working frequency is 594MHz, the highest investigated frequency is 5GHz.

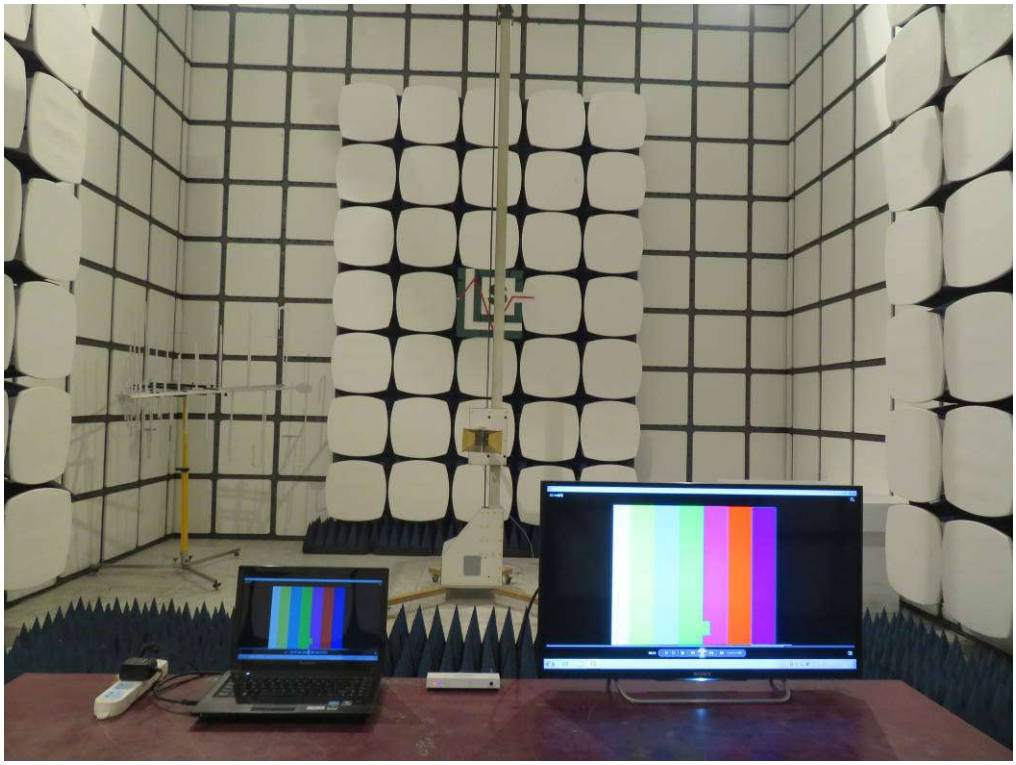
# 5. PHOTOGRAPH

## 5.1. Photo of Power Line Conducted Measurement

## 5.2. Photo of Radiated Measurement



Radiated Emission below 1GHz



Radiated Emission above 1GHz

# 6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT


Fig. 1

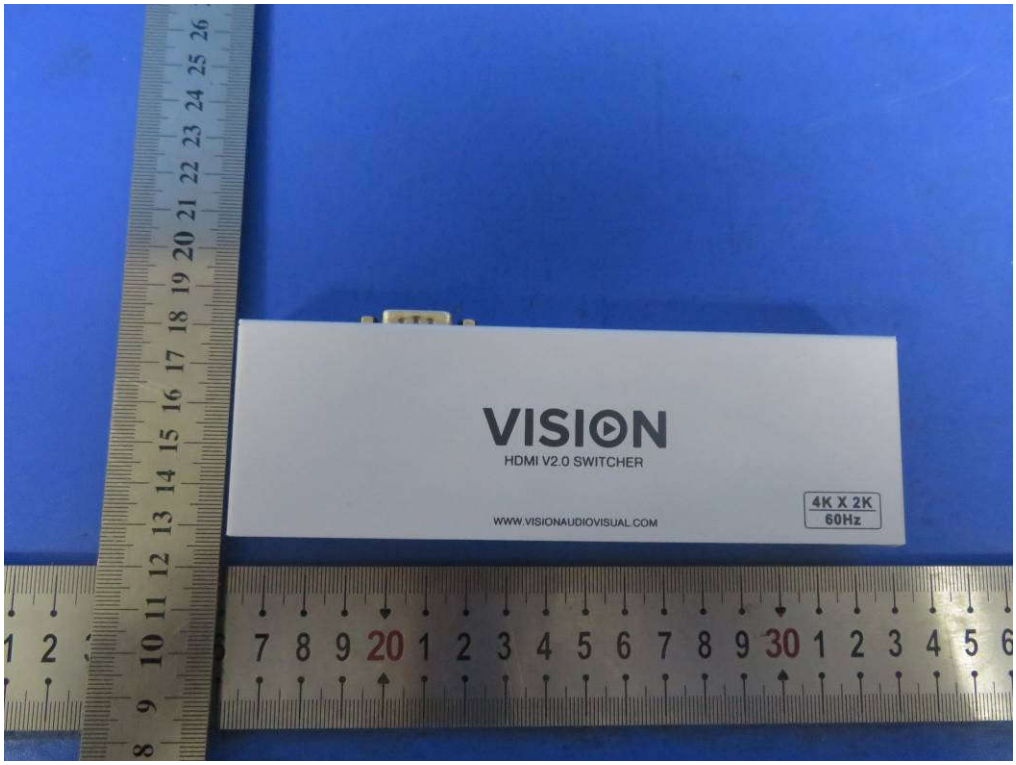



Fig. 2

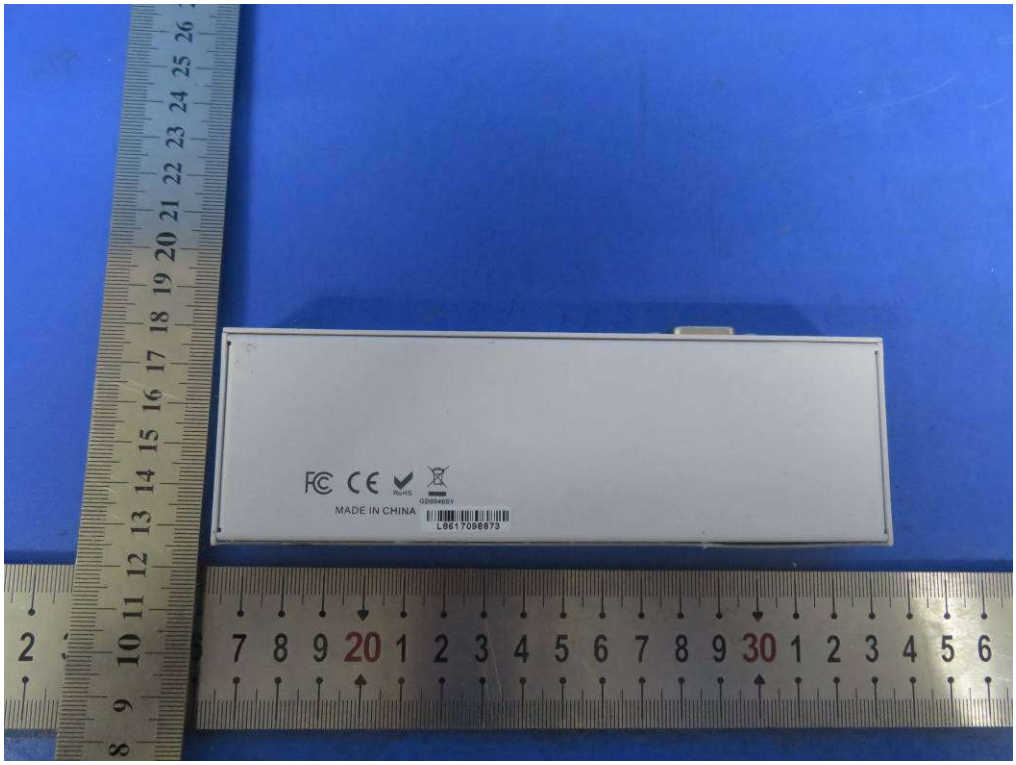



Fig. 3

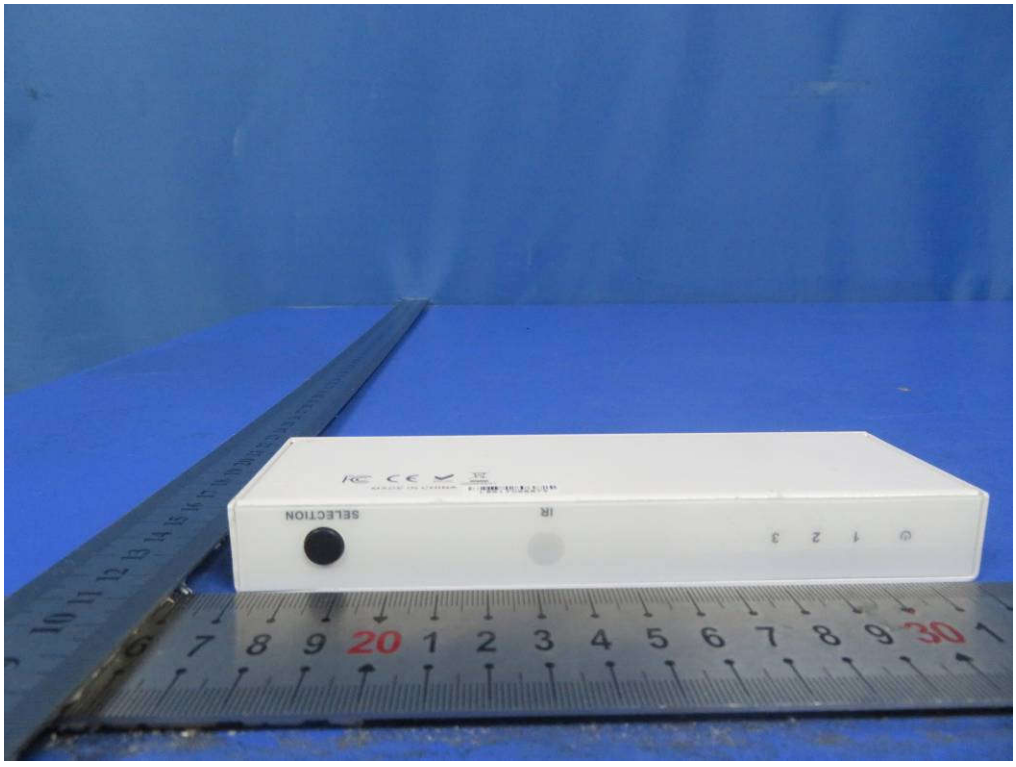



Fig. 4

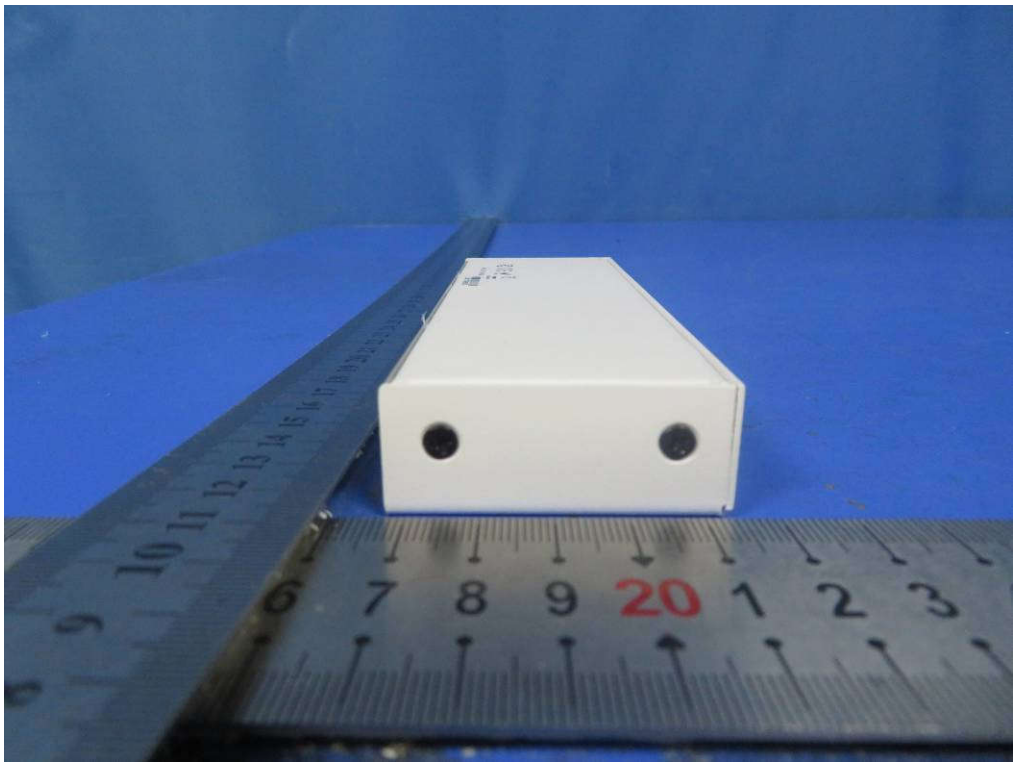


Fig. 5


Fig. 6

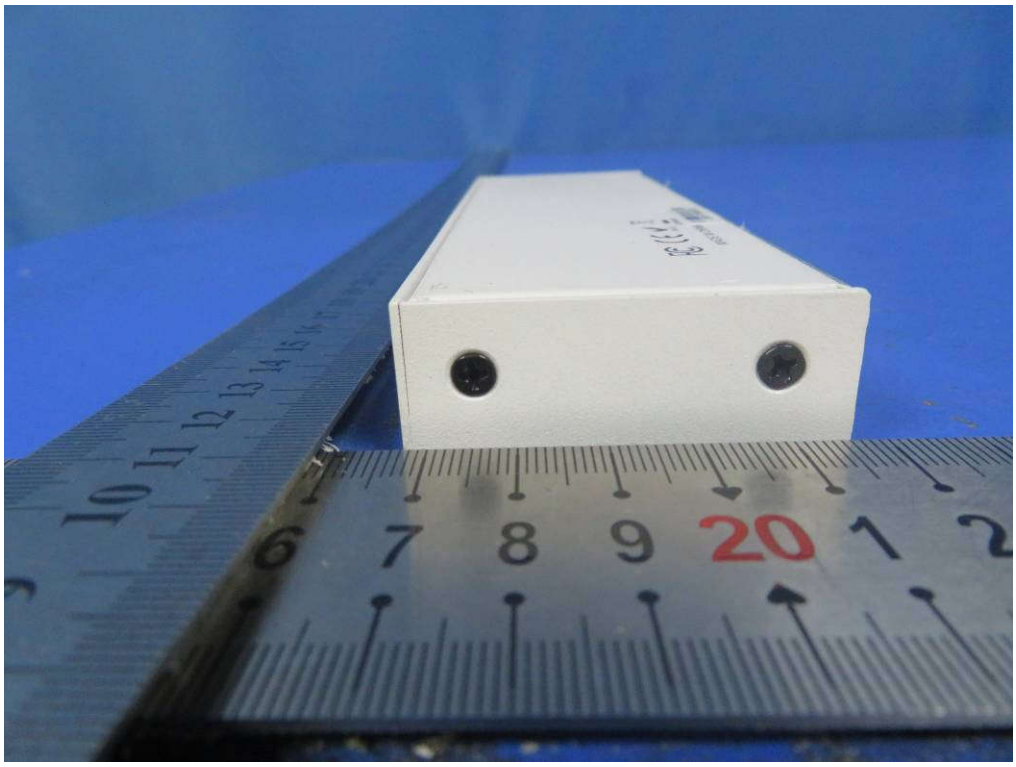


Fig.7

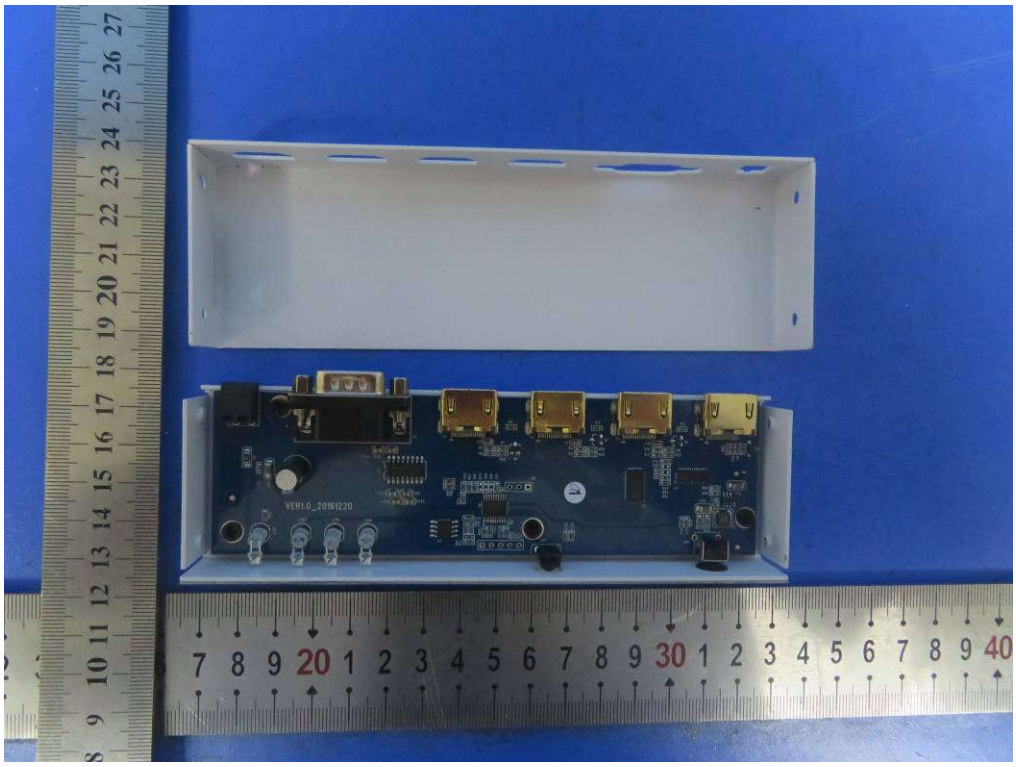


Fig.8

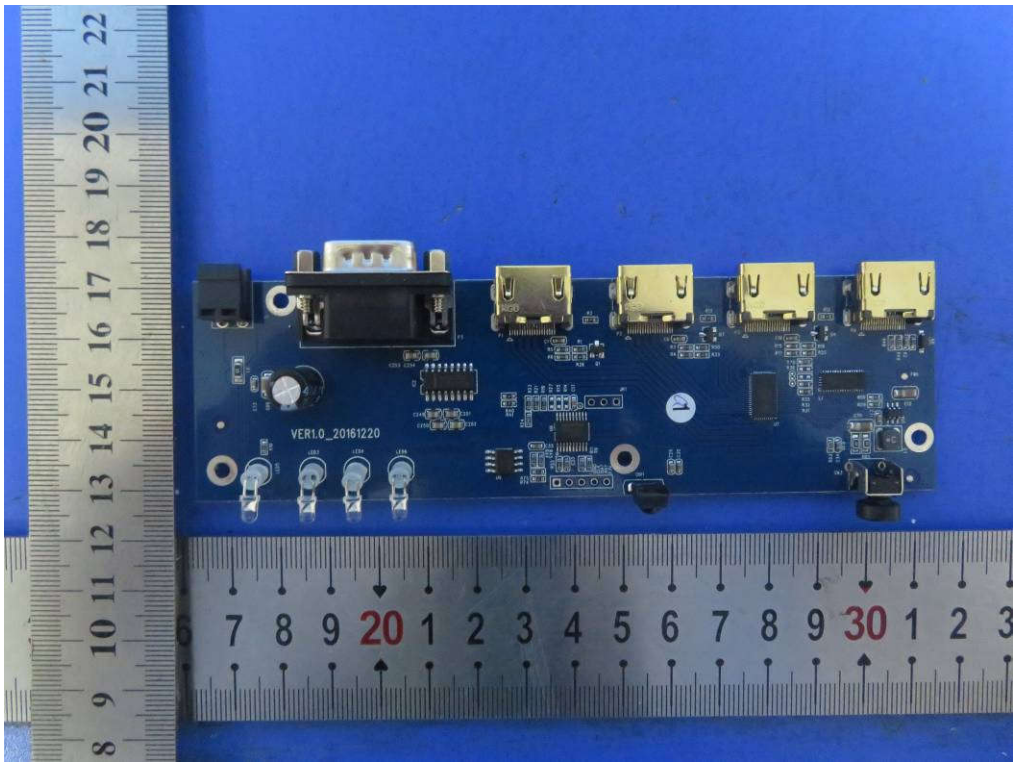



Fig.9

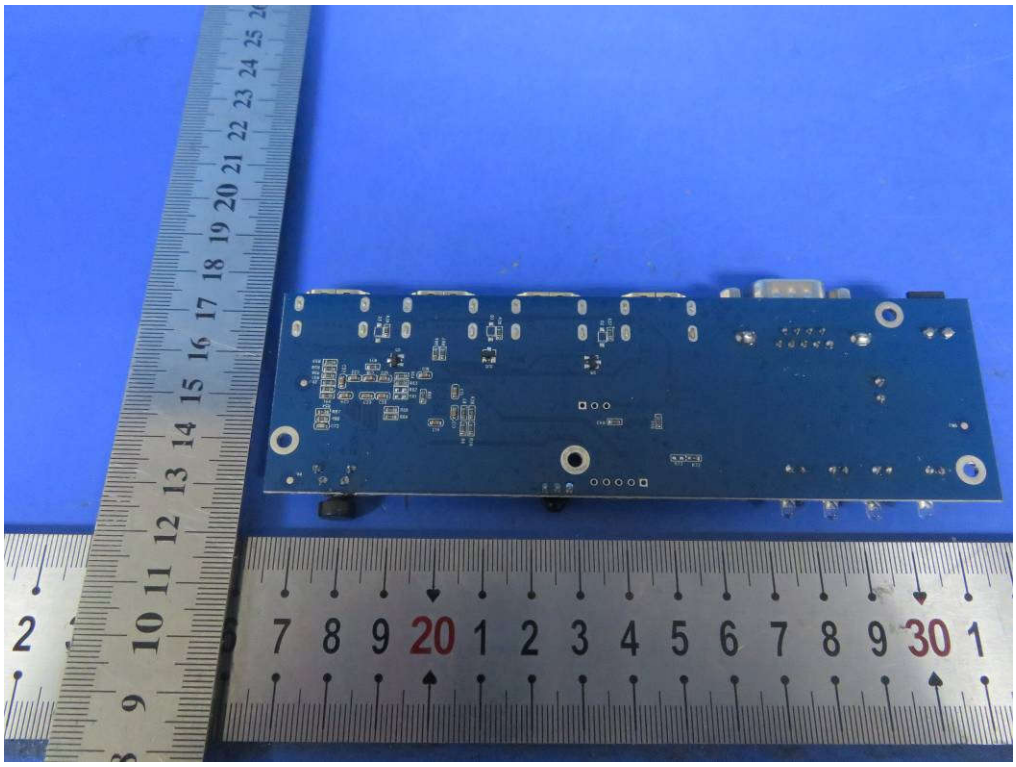


Fig.10

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