# EMC TEST REPORT

| | | | |
|---|---|---|---|
| **Project No.** | **LBE20151793** | **Revision No.** | 0 |
| **FCC ID** | **A3LS27E360F** | | |
| **Applicant** | **Name of organization** | Samsung Electronics Co., Ltd. | |
| | **Address** | 19 Chapin Rd. Building D Pine Brook NJ 07058 | |
| | **Date of application** | 2015.03.10 | |
| **EUT Equipment Under Test** | **Type of device** | Class B personal computers and peripherals | |
| | **Equipment authorization** | ☐ Declaration of Conformity ☒ Certification ☐ Verification | |
| | **Kind of product** | **LCD MONITOR** | |
| | **Model No.** | *S27E36***<br>（The character "*"may be 0-9,A-Z or blank ,it means different color） | |
| | | **Variant Model No.** | None |
| | **Manufacturer** | Tianjin Samsung Electronics Co., LTD.<br>Weisi Rd. Micro-Electronic Industrial Park,Jingang Rd.<br>Xiqing Dist, Tianjin,300385 China<br>No.20 Jiangtai Road, the West Zone of TEDA ,Tianjin,<br>People's Republic of China | |
| **Applied Standards** | | FCC Part 15, Subpart B class B | |
| | | ANSI C63.4-2009 | |
| **Test period** | | 2015.03.11~2015.03.16 | |
| **Issue date** | | 2015.03.17 | |

**Test result** : **Complied**

The equipment under test has found to be compliant with the applied standards.
(Refer to the attached test result for more detail.)

| | |
|---|---|
| **Tested by** : Xinxing Fu | **Reviewed by :** Zhongyuan Gao |

The test results in this report only apply to the tested sample. This report must not be reproduced, except in full, without written permission from CSQAL

SAMSUNG

TSEC Wei 4 Road, Microelectronics Industrial Park, Jingang High way, Tianjin, China
Tel: 86 22 23961234, Fax: 86 22 23961234-5214

According to Sec. 2.1077, 47 CFR of the FCC Rules.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

| | |
|---|---|
| **Equipment EUT Type** | Class B personal computers and peripherals |
| **Kind of product** | **LCD MONITOR** |
| **Trade Name** | Samsung Electronics |
| **Model** | ***S27E36*** <br> **（The character "*" may be 0-9,A-Z or blank ,it means different color）** |
| **Applied Rules** | FCC Part 15, Subpart B Class B |
| | ANSI C63.4-2009 |
| **Manufacturer** | Tianjin Samsung Electronics Co., LTD. <br> Weisi Rd. Micro-Electronic Industrial Park, Jingang Rd. <br> Xiqing Dist, Tianjin,300385 China <br> No.20 Jiangtai Road, the West Zone of TEDA ,Tianjin, <br> People's Republic of China |

We hereby *declare tha*t the equipment bearing the trade name and model number specified above was tested conforming to the applicable FCC Rules under the most accurate measurement standards possible, and that all the necessary steps have been taken and are in force to assure that production units of the same equipment will continue to comply with the Commission's requirements.

| | |
|---|---|
| U.S. RESPONSIBLE PARTY | Samsung Electronics America QA Lab <br> 18600 Broad wick St. Rancho Dominguez CA 90220 |
| CONTACT PERSON | ***Mr. Chan-ho Youn,*** *Manager* <br> E-Mail : jjano.youn@samsung.com <br> Tel : 1-973-808-6362 Fax : 1-973-808-6361 |



This report must not be reproduced, except in full, without written permission from CSQAL

# Table of contents

**1. Report information**
1.1 Revision history
1.2 Sample calculation

**2. Summary of test results**
2.1 Emission

**3. General Information**
3.1 Test facility

**4. Test configuration**
4.1 Test Peripherals
4.2 EUT operating mode
4.3 Details of Sampling
4.4 Used cable description
4.5 EUT Description
4.6 Description of the EUT exercising method
4.7 Measurement uncertainty

**5. Result of individual tests**
5.1 Conducted disturbance
5.2 Radiated disturbance

**Appendix – EUT photography**


This report must not be reproduced, except in full, without written permission from CSQAL

# 1. Report information

## 1.1 Revision history

| No. | Revised detailed information |
|---|---|
| Issue 0 | There are no revisions and this version is basic test report |

## 1.2 Sample calculation (example)

### 1.2.1 Conducted disturbance (at 10 MHz)

- Limit = 60 dBμV (Quasi-peak limit)
- Level (50 dBμV) = Meter Reading (40.2 dBμV) + factor ( 9.8 dB, AMN factor 9.7 dB + Cable loss 0.1 dB)
- Margin (10 dB) = Limit (60 dBμV) – Level (50 dBμV) = 10 dB below limit

### 1.2.2 Radiated disturbance (at 100 MHz)

- Limit = 30 dBμV/m at 10 m
- Level (20 dBμV/m)
  = Meter Reading (40 dBμV) + factor (- 20 dB (1/m), antenna factor + cable loss – amplifier gain)
- Margin (10 dB) = Limit (30 dBμV/m) – Level (20 dBμV/m) = 10 dB below limit

# 2. Summary of test results

## 2.1 Emission

The EUT has been tested according to the following specifications:

| Applied | Test type | Applied standard | Result | Remarks |
|---|---|---|---|---|
| ☒ | Conducted Disturbance | FCC Part 15 Subpart B<br>ANSI C63.4-2009 | Complied | Meets Class B Limit |
| ☒ | Radiated Disturbance | | Complied | Meets Class B Limit |

- Note : These results are deemed satisfactory evidence of compliance with ICES-003 of the Canadian Interference-Causing Equipment Regulations.


This report must not be reproduced, except in full, without written permission from CSQAL

# 3. General Information

## 3.1 Test facility

The following firm has submitted the information required by Section 2.948 of the FCC Rules for measuring devices subject to Certification under Parts 15 & 18. The FCC takes no responsibility regarding the capability of this firm for performing the required measurements. Accordingly, this firm should not advertise or otherwise imply FCC approval of CSQAL.
CHINA SAMSUNG QUALITY ASSURANCE LABORATORY is LOCATED ON Block D, 17 - 19, Wei 4 Road, Microelectronics Industrial Park, Jingang Highway, Tianjin China.
Registration Number: 745769
E-mail Address:xiaoli@samsung.com
Phone Number:86-22-2396-1234-5211
All testing are performed in Semi-anechoic chambers conforming to the site attenuation Characteristics defined by ANSI C63.4, CISPR 22, 16-1 and 16-2 and Shielded rooms.
CSQAL is operated as testing laboratory in accordance with the requirements of ISO/IEC 17025:2005.


This report must not be reproduced, except in full, without written permission from CSQAL

# 4. Test Setup configuration

## 4.1 Test Peripherals

The peripherals which were interconnected to the EUT during the test are as follows:

| Item | Model No. | Serial No. | Manufacturer | Note |
|---|---|---|---|---|
| LCD Monitor | S27E360F | - | Samsung | EUT |
| Adapter | A2514_DSM | - | Samsung | |
| PC | DM-V200-PA15 | ZLPZ9WAZ600123A | Samsung | - |
| Printer | CLP-315 | Z0CEBAZZ500252J | Samsung | - |
| USB Keyboard | SK-8185 | OY526K | Dell | - |
| USB Mouse | MOC5UO | J0G00G9L | Dell | - |

## 4.2 EUT operating mode(s)

To achieve compliance applied standard specification, the following mode(s) were made during compliance testing:

| | |
|---|---|
| **Operating Mode 1** | VGA IN |
| **Operating Mode 2** | HDMI IN |

## 4.3 Details of Sampling

Customer selected, single unit.

## 4.4 Cable description

The type(s) of cables which were connected to the ports (of the EUT) are as follows:

| No | Connect Cable | Length [m] | Ferrite core [Y/N] | Remark |
|---|---|---|---|---|
| 1 | VGA in | 1.5 | Y | To PC |
| 2 | HDMI in | 1.5 | Y | To PC |
| 3 | POWER | 1.8 | N | FOR EUT |
| 4 | EARPHONE | 1.2 | N | FOR EUT |


This report must not be reproduced, except in full, without written permission from CSQAL

## 4.5 EUT Description

The following features describe EUT represented by this report:

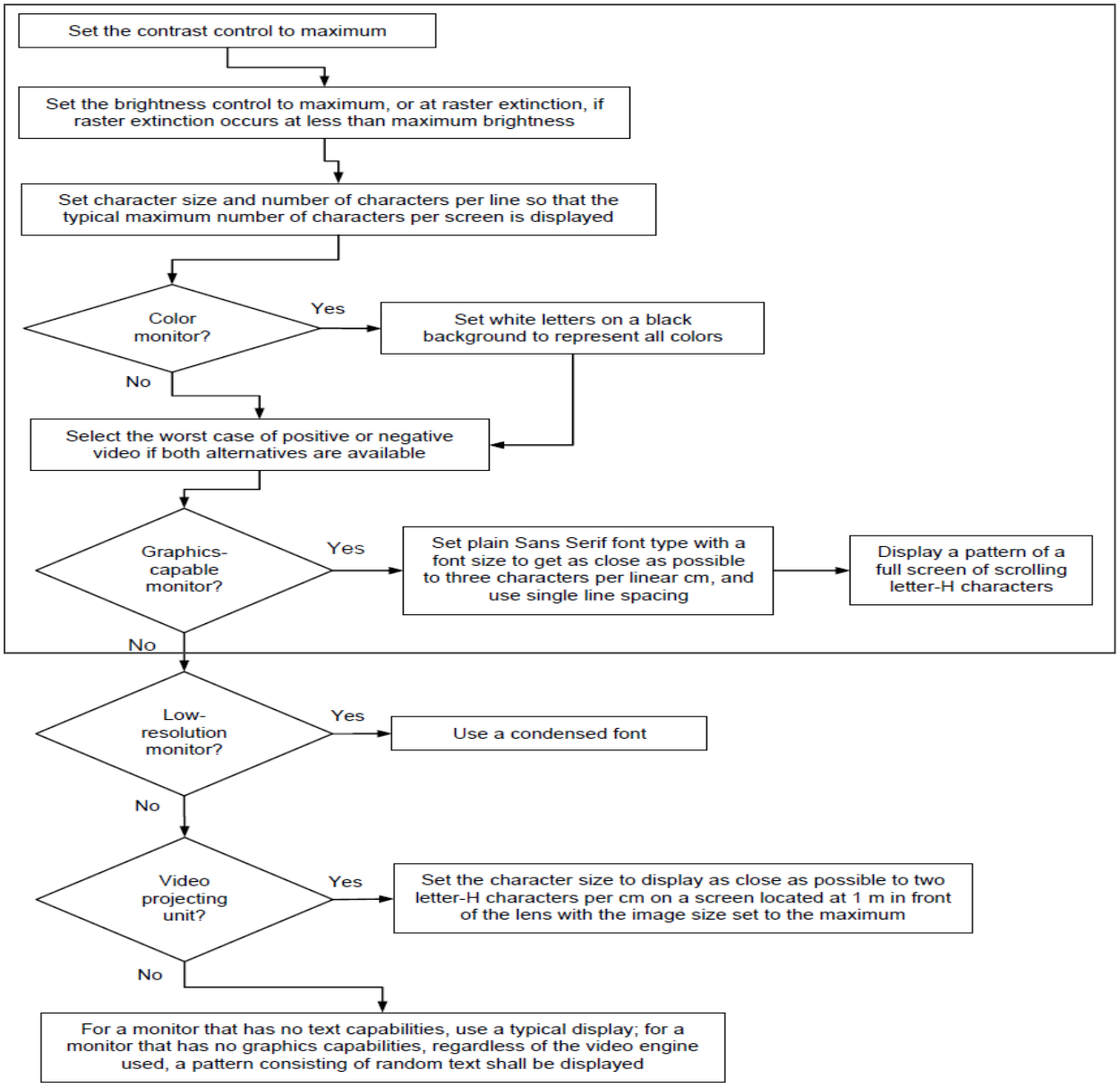
Test model: S27E360F
Test Voltage:110V 60Hz
Panel information: BOM code : BN95-01985A Model code : CY-MJ270BNLV1
Manufacturer : LCM

| Model Name | | S22E390H / S22E391H | S24E390HL / S24E391HL | S27E390H / S27E391H S27E360F |
|---|---|---|---|---|
| Panel | Size | | | 27 Inches (68 cm) |
| | Display area | | | 597.89 mm (H) x 336.31 mm (V)<br>23.54 Inches (H) x 13.24 Inches (V) |
| | Pixel Pitch | | | 0.3114 mm (H) x 0.3114 mm (V)<br>0.0123 Inches (H) x 0.0123 Inches (V) |
| Power Supply | | This product supports 100-240 V. Since the standard voltage may differ from country to country, please check the label on the back of the product. | | |
| Dimensions (W x H x D) / Weight | Without Stand | | | 624.7 x 375.8 x 79.6 mm<br>24.6 x 14.8 x 3.1 Inches |
| | With Stand | | | 624.7 x 444.7 x 243.4 mm / 4.7 kg<br>24.6 x 17.5 x 9.6 Inches / 10.4 lbs |
| Environmental Consideration | Operating | Temperature : 50°F ~ 104°F (10°C ~ 40°C)<br>Humidity : 10 % – 80 %, non-condensing | | |
| | Storage | Temperature : -4°F ~ 113°F (-20°C ~ 45°C)<br>Humidity : 5 % – 95 %, non-condensing | | |


This report must not be reproduced, except in full, without written permission from CSQAL

## 4.6 Description of the EUT exercising method

The EUT exercise program used during EMI testing was CSQAL standardized test program for MS Windows. The program repetitively sends a screen of H – Character to the display. Connect video output of computer on EUT's VGA port, HDMI port and scrolling H – character continuously on EUT's screen.
The EUT system includes a monitor, the operational conditions shown as follows, within the selected area.




**Notes:** 1. Set the brightness control to maximum

2. Set the contrast control to maximum

3. Display a pattern of a full screen of scrolling letter-H characters with a font size to get as close as possible to three characters per linear cm and use single line spacing



This report must not be reproduced, except in full, without written permission from CSQAL

## 4.7 Measurement uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus: (According to CISPR 16-4 and UKAS Lab 34.)

| **Test type** | | | **Measurement uncertainty (C.L. 95 %, k = 2)** |
|---|---|---|---|
| Disturbance voltage at the mains terminals | | | 3.0 dB |
| Radiated Disturbance | Horizontal | 30 MHz - 1 GHz | 4.4 dB |
| | Vertical | 30 MHz - 1 GHz | 4.4 dB |
| | Horizontal | 1GHz - 6 GHz | 3.7 dB |
| | Vertical | 1GHz - 6 GHz | 3.7 dB |



This report must not be reproduced, except in full, without written permission from CSQAL

# 5. Results of individual test

## 5.1 Conducted disturbance

Both conducted lines are measured in Quasi-Peak and Average mode, including the worst-case data points for each tested configuration.
The EUT measured in accordance with the methods described in standards.

**Limits for conducted disturbance at the mains ports of class B ITE**

| Frequency range Limits MHz | Limits dB(μV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0,15 to 0,50 | 66 to 56 | 56 to 46 |
| 0,50 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |

Note 1: 1 μV is regarded as 0 dB.
Note 2: The limits shall decreases linearly with the logarithm of the frequency in the range 150 – 500 kHz.
Note 3: If the average limit is met in the measurement with quasi-peak detector, the measurement with average detector is unnecessary.
Note 4: The lower limit shall apply at the transition frequency.

If the reading on the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 seconds at each measurement frequency, the highest reading shall be recorded, with the exception of any brief isolated high reading (which shall be ignored).

### 5.1.1 Test instrumentation

Test instrumentation used in the Conducted disturbance test was as follows:

| Test instrumentation | Model name | Manufacturer | Serial or Firmware (No./Ver.) | Calibration | |
|---|---|---|---|---|---|
| | | | | Date | Interval (Month) |
| Test Software | EP5CE | TOYO | V 4.7.10 | N/A | N/A |
| Measuring receiver | ESCI | R&S | 101027 | 2015.03.02 | 12 |
| Artificial mains network | ENV216 | R&S | 101123 | 2014.08.18 | 12 |
| Artificial mains network | ENV216 | R&S | 101059 | 2014.08.18 | 12 |


This report must not be reproduced, except in full, without written permission from CSQAL

## 5.1.2 Photograph of the test Configuration

**(Front)**

**(Rear)**

This report must not be reproduced, except in full, without written permission from CSQAL

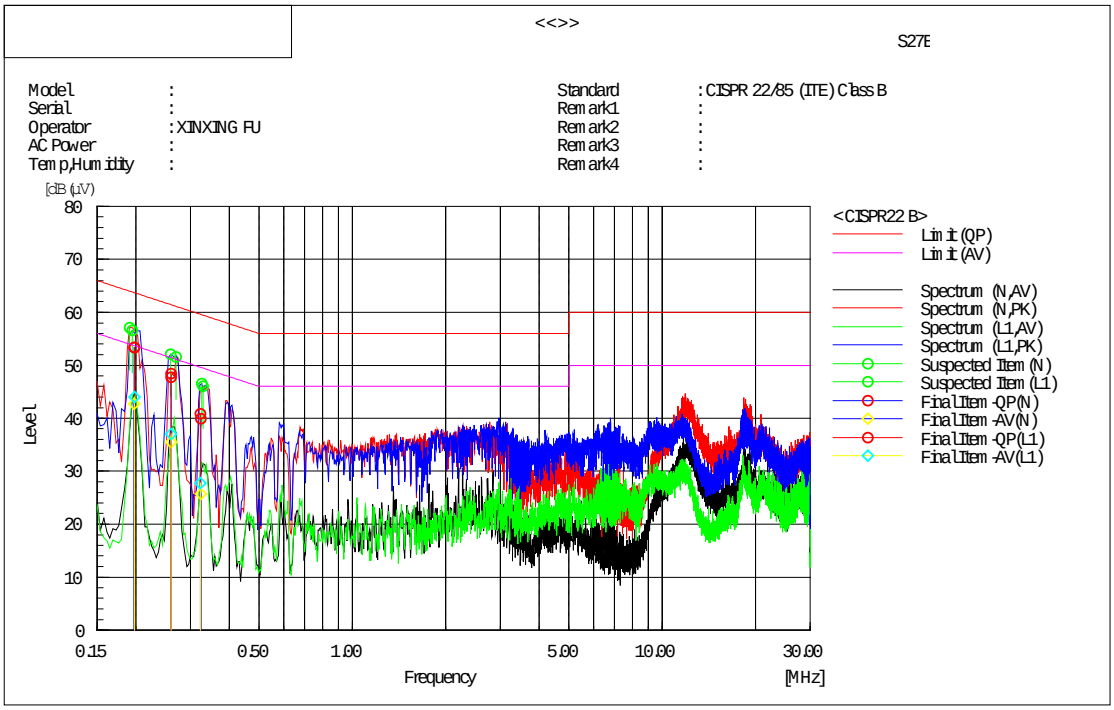
## 5.1.3 Test results

| **Test date** | 2015.03.11 | | **Test engineer** | | Xinxing Fu | |
|---|---|---|---|---|---|---|
| **Climate condition** | **Ambient temperature** | 23±1℃ | **Relative humidity** | 32±0% | **Atmospheric pressure** | 101±0 kPa |
| **Test place** | Shielded Room #2 | | | | | |

## 5.1.4 Test data

### ■ Operating Mode: VGA IN

Set the brightness control to maximum, Set the contrast control to maximum
Scan three resolutions (800*600@60Hz, 1280*768@60Hz, 1920*1080@60Hz), then choose the worst one (1920*1080@60Hz) for final evaluation.




Final Result

--- N Phase ---

| No. | Frequency [MHz] | Reading QP [dB(µV)] | Reading AV [dB(µV)] | c.f [dB] | Result QP [dB(µV)] | Result AV [dB(µV)] | Limit QP [dB(µV)] | Limit AV [dB(µV)] | Margin QP [dB] | Margin AV [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.19742 | 43.3 | 32.7 | 10.0 | 53.3 | 42.7 | 63.7 | 53.7 | 10.4 | 11.0 | |
| 2 | 0.26001 | 37.7 | 25.5 | 10.0 | 47.7 | 35.5 | 61.4 | 51.4 | 13.7 | 15.9 | |
| 3 | 0.32409 | 29.9 | 15.7 | 10.0 | 39.9 | 25.7 | 59.6 | 49.6 | 19.7 | 23.9 | |

--- L1 Phase ---

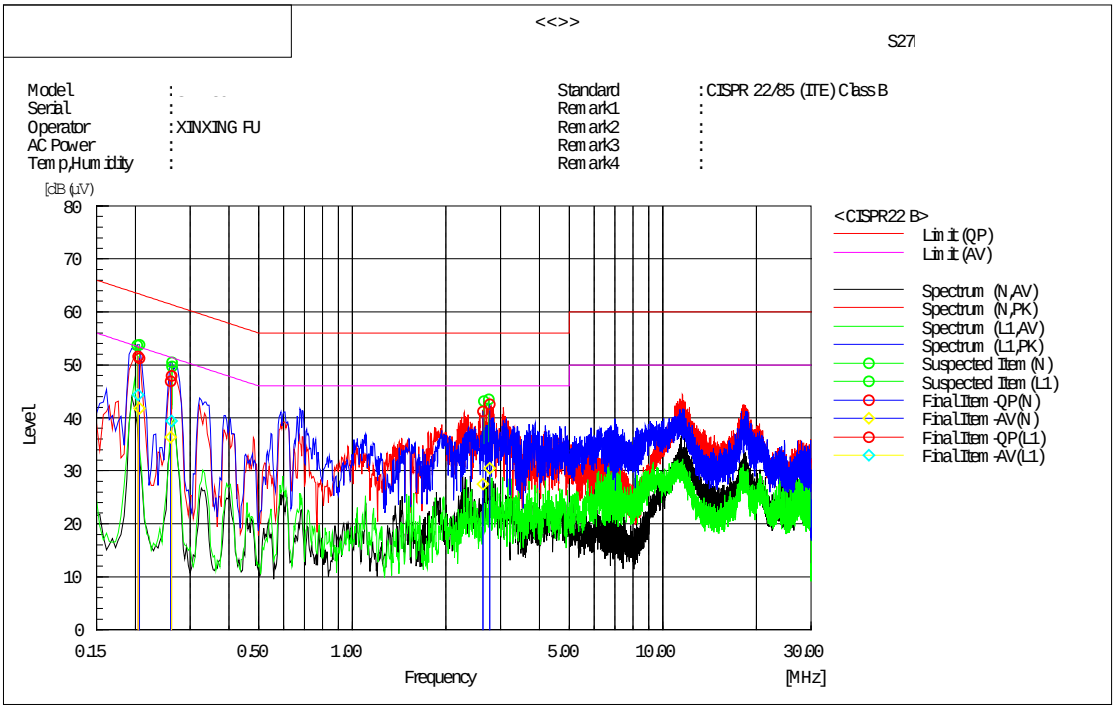
| No. | Frequency [MHz] | Reading QP [dB(µV)] | Reading AV [dB(µV)] | c.f [dB] | Result QP [dB(µV)] | Result AV [dB(µV)] | Limit QP [dB(µV)] | Limit AV [dB(µV)] | Margin QP [dB] | Margin AV [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.19795 | 43.4 | 34.0 | 10.0 | 53.4 | 44.0 | 63.7 | 53.7 | 10.3 | 9.7 | |
| 2 | 0.260 | 38.5 | 27.0 | 10.0 | 48.5 | 37.0 | 61.4 | 51.4 | 12.9 | 14.4 | |
| 3 | 0.32357 | 30.9 | 17.7 | 10.0 | 40.9 | 27.7 | 59.6 | 49.6 | 18.7 | 21.9 | |



This report must not be reproduced, except in full, without written permission from CSQAL

## ■ Operating Mode: HDMI IN

**Set the brightness control to maximum, Set the contrast control to maximum**
**Scan three resolutions (800*600@60Hz, 1280*768@60Hz,** 1920*1080@60Hz**), then choose the worst one (1920*1080@60Hz) for final evaluation.**




Final Result

--- N Phase ---

| No. | Frequency [MHz] | Reading QP [dB(µ V)] | Reading AV [dB(µ V)] | c.f [dB] | Result QP [dB(µ V)] | Result AV [dB(µ V)] | Limit QP [dB(µ V)] | Limit AV [dB(µ V)] | Margin QP [dB] | Margin AV [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.20608 | 41.2 | 31.8 | 10.0 | 51.2 | 41.8 | 63.4 | 53.4 | 12.2 | 11.6 | |
| 2 | 0.25989 | 36.9 | 26.3 | 10.0 | 46.9 | 36.3 | 61.4 | 51.4 | 14.5 | 15.1 | |
| 3 | 2.76993 | 32.7 | 20.5 | 9.9 | 42.6 | 30.4 | 56.0 | 46.0 | 13.4 | 15.6 | |
| 4 | 2.63127 | 31.3 | 17.6 | 9.9 | 41.2 | 27.5 | 56.0 | 46.0 | 14.8 | 18.5 | |

--- L1 Phase ---

| No. | Frequency [MHz] | Reading QP [dB(µ V)] | Reading AV [dB(µ V)] | c.f [dB] | Result QP [dB(µ V)] | Result AV [dB(µ V)] | Limit QP [dB(µ V)] | Limit AV [dB(µ V)] | Margin QP [dB] | Margin AV [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.20444 | 41.6 | 34.3 | 10.0 | 51.6 | 44.3 | 63.4 | 53.4 | 11.8 | 9.1 | |
| 2 | 0.2617 | 37.9 | 29.4 | 10.0 | 47.9 | 39.4 | 61.4 | 51.4 | 13.5 | 12.0 | |

Note) Level (Quasi-Peak and/or Average) = Meter Reading (Quasi-Peak and/or Average) + Factor (LISN Insertion Loss + Cable Loss)

Margin = Limit – Level (Quasi-Peak and/or Average)



This report must not be reproduced, except in full, without written permission from CSQAL

## 5.2 Radiated disturbance

Of those disturbances above (*L* - 20dB), where *L* is the limit level in logarithmic units, record at least the disturbance levels and the frequencies of the six highest disturbances.
The following data lists the significant emission frequencies, measured levels, correction factors (for antenna and cables), orientation of table, polarization and height of antenna, the corrected reading, the limit, and the amount of margin. All measurements were taken utilizing quasi-peak detection unless stated otherwise.
Measurements were performed at an antenna to EUT distance of 3 meters and elevated between 1 and 4 meters. Both vertical and horizontal antenna polarizations were measured.
Above 1GHz, peak detector function mode was used with resolution bandwidth of 1 MHz and a video bandwidth of 1 MHz. If the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.

Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

| Frequency range Limits MHz | Quasi-peak Limits (microvolts/meter) |
|---|---|
| | Class B |
| 30 to 88 | 100 |
| 88 to 216 | 150 |
| 216 to 960 | 200 |
| Above 960 | 500 |
| Note 1: The lower limit shall apply at the transition frequency.<br>Note 2: Additional provisions may be required for cases where interference occurs.<br>Note 3: 1 µV/m is regarded as 0 dB. | |

Measurements above 1GHz were performed at an antenna to EUT distance of 3 meters and elevated 1 to 4 meters in FAC. Both vertical and horizontal antenna polarizations were measured.

The test is performed in a semi-anechoic chamber, use of absorbing material to cover part of the metal ground plane，the dimension of the absorbing material is: 3 x 3 x 0.3 m (W x D x H)

**Limits for radiated disturbance of ITE at a measuring distance of 3 m**

| Frequency range Limits MHz | Class A | | Class B | |
|---|---|---|---|---|
| | Peak dB(µV/m) | Average dB(µV/m) | Peak dB(µV/m) | Average dB(µV/m) |
| 1000 to 3000 | 76 | 56 | 70 | 50 |
| 3000 to 6000 | 80 | 60 | 74 | 54 |
| Note 1: The lower limit shall apply at the transition frequency. | | | | |


This report must not be reproduced, except in full, without written permission from CSQAL

## 5.2.1 Test instrumentation

Test instrumentation used in the Radiated disturbance was as follows:

30MHz~1GHz

| Test instrumentation | Model name | Manufacturer | Serial or Firmware (No./Ver.) | Calibration | |
|---|---|---|---|---|---|
| | | | | Date | Interval (Month) |
| Test Software | EP5/RE | TOYO | V 4.7.10 | N/A | N/A |
| Bi-con Antenna | CBL6112D | TESEQ | 30998 | 2013.04.03 | 24 |
| EMI Receiver | ESCI | R&S | 101026 | 2015.03.02 | 12 |
| AMPLIFIER | 310N | SONOMA | 300911 | 2014.07.05 | 12 |
| Ant Mast | MA4000 | INN CO | - | N/A | N/A |
| Mast Controller | CO2000 | INN CO | - | N/A | N/A |
| RF Selector | NS4900N | TOYO | - | N/A | N/A |

Above 1GHz

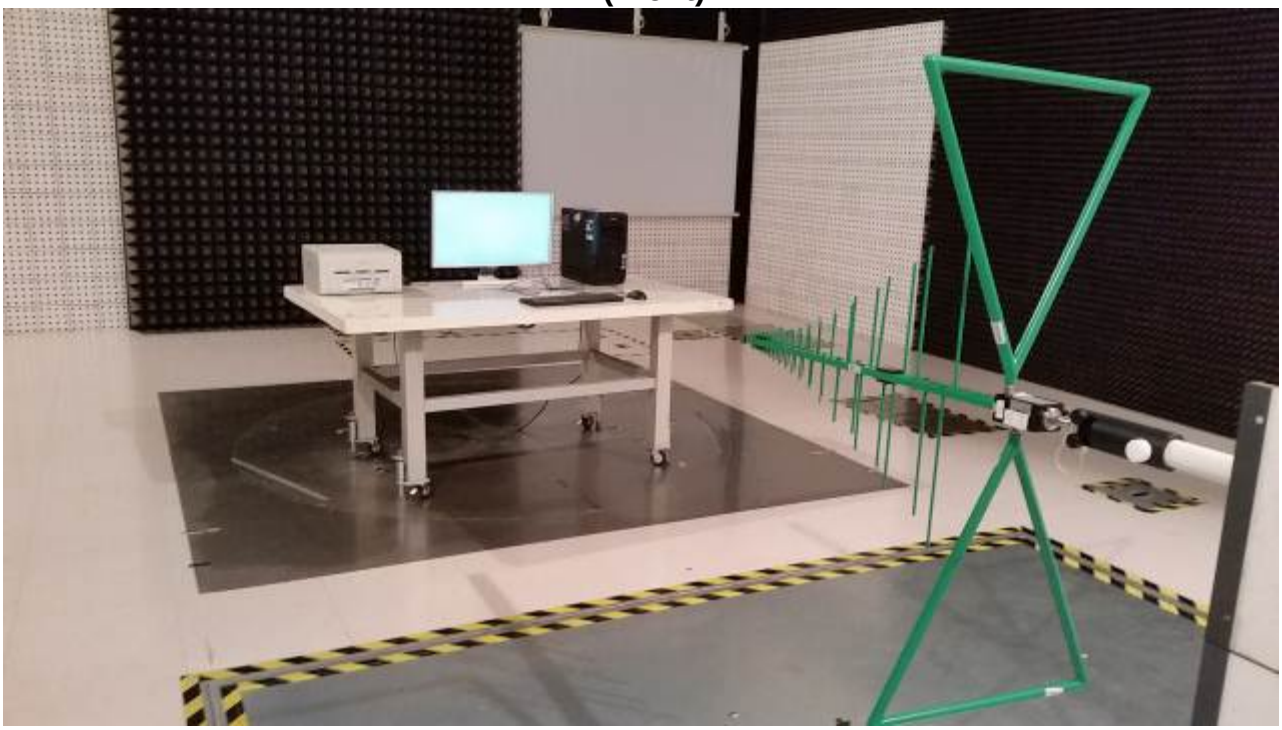
| Test instrumentation | Model name | Manufacturer | Serial or Firmware (No./Ver.) | Calibration | |
|---|---|---|---|---|---|
| | | | | Date | Interval (Month) |
| Test Software | e3 | AUDIX | 6.110709d | N/A | N/A |
| Test Software | EP5/RE | TOYO | V 4.7.10 | N/A | N/A |
| Broad-Band Horn Antenna | BBHA9120B | Schwarzbeck | 520 | 2014.02.19 | 24 |
| EMI Receiver | ESU26 | R&S | 100243 | 2015.03.02 | 12 |
| AMPLIFIER | AMF-4D-00500800-18-13P | TOYO | 0934 | 2014.07.05 | 12 |
| Ant Mast | AUDIX | AUDIX | - | N/A | N/A |


This report must not be reproduced, except in full, without written permission from CSQAL

## 5.2.2 Photograph of the test Configuration

30MHz~1GHz

**(Front)**



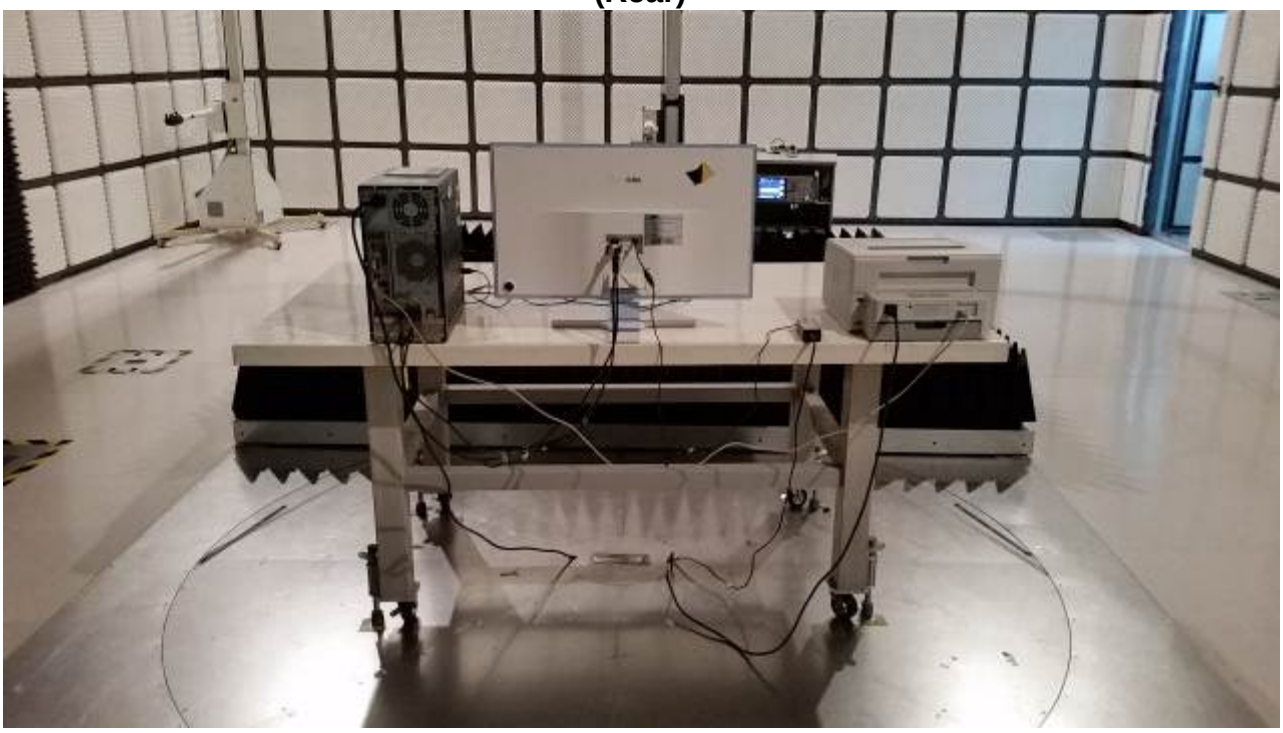
**(Rear)**

This report must not be reproduced, except in full, without written permission from CSQAL

## Above 1GHz

**(Front)**

**(Rear)**





This report must not be reproduced, except in full, without written permission from CSQAL

## 5.2.3 Test results

### 30MHz~1GHz

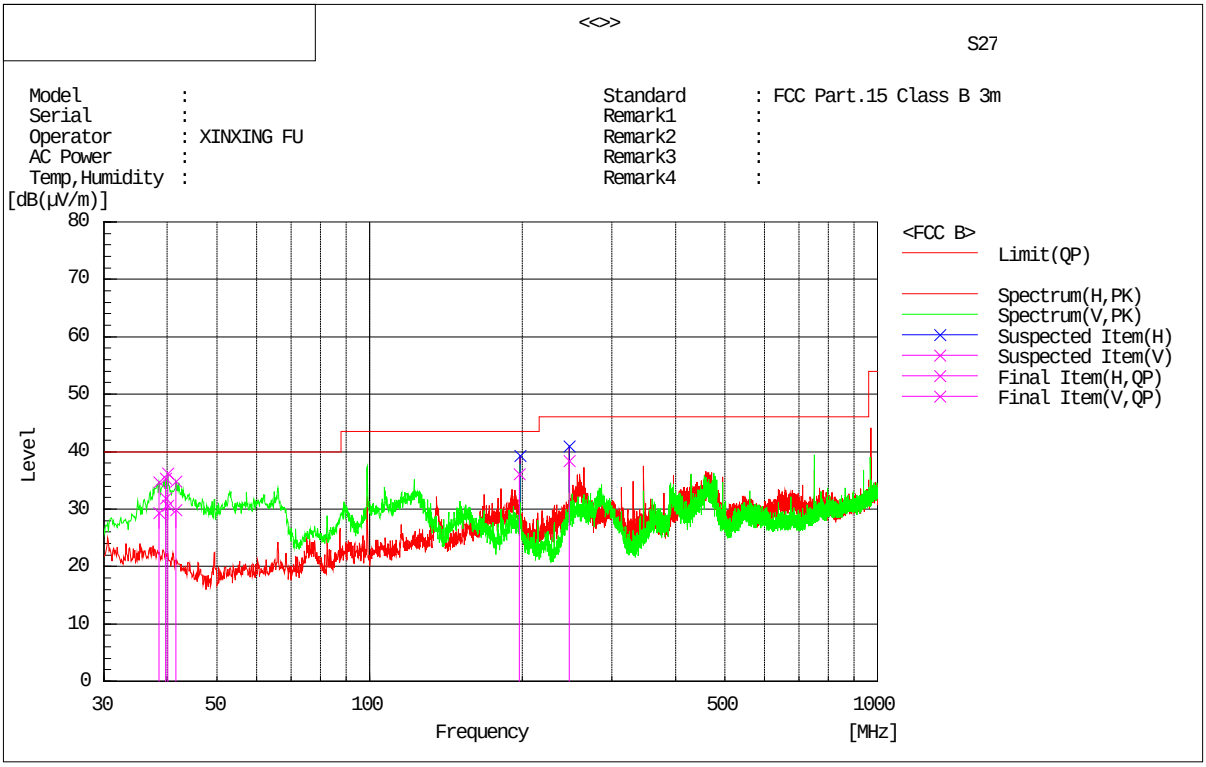
| **Test date** | 2015.03.12 | | **Test engineer** | | Xinxing Fu | |
|---|---|---|---|---|---|---|
| **Climate condition** | **Ambient temperature** | 22±1℃ | **Relative humidity** | 32±0% | **Atmospheric pressure** | 101±0 kPa |
| **Test place** | 3m Semi-Anechoic Chamber | | | | | |

**■ Operating Mode: VGA IN**

Set the brightness control to maximum

Set the contrast control to maximum

Scan three resolutions (800*600@60Hz, 1280*768@60Hz, 1920*1080@60Hz), then choose the worst one (1920*1080@60Hz) for final evaluation.




Final Result

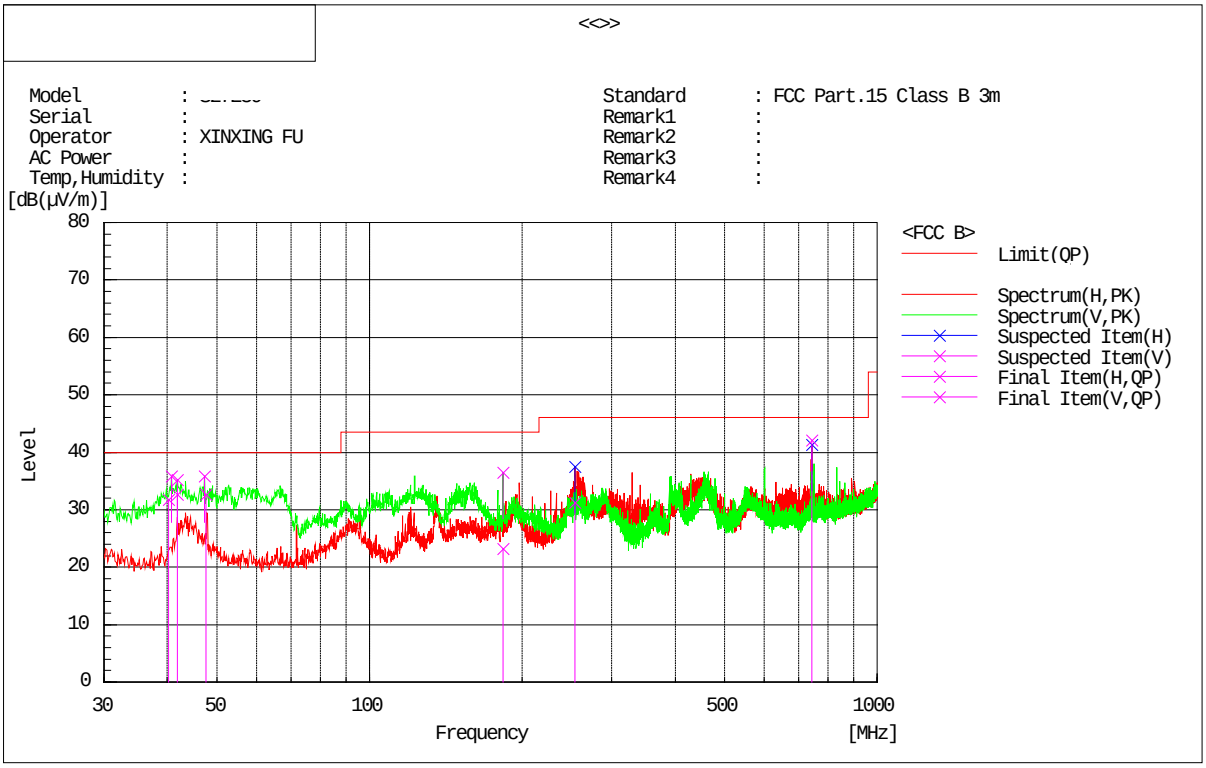
| No. | Frequency [MHz] | (P) | Reading QP [dB(μV)] | c.f [dB(1/m)] | Result QP [dB(μV/m)] | Limit QP [dB(μV/m)] | Margin QP [dB] | Height [cm] | Angle [°] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 40.125 | V | 41.6 | -11.0 | 30.6 | 40.0 | 9.4 | 109.0 | 277.7 | |
| 2 | 197.147 | H | 49.0 | -12.9 | 36.1 | 43.5 | 7.4 | 161.0 | 69.5 | |
| 3 | 39.736 | V | 42.6 | -10.7 | 31.9 | 40.0 | 8.1 | 148.0 | 292.7 | |
| 4 | 247.523 | H | 47.9 | -9.5 | 38.4 | 46.0 | 7.6 | 100.0 | 77.1 | |
| 5 | 41.519 | V | 41.7 | -11.8 | 29.9 | 40.0 | 10.1 | 100.0 | 271.6 | |
| 6 | 38.488 | V | 39.5 | -10.1 | 29.4 | 40.0 | 10.6 | 100.0 | 340.9 | |



This report must not be reproduced, except in full, without written permission from CSQAL

## ■ Operating Mode: HDMI IN

Set the brightness control to maximum
Set the contrast control to maximum
Scan three resolutions (800*600@60Hz, 1280*768@60Hz, 1920*1080@60Hz), then choose the worst one (1920*1080@60Hz) for final evaluation.




Final Result

| No. | Frequency [MHz] | (P) | Reading QP [dB(µV)] | c.f [dB(1/m)] | Result QP [dB(µV/m)] | Limit QP [dB(µV/m)] | Margin QP [dB] | Height [cm] | Angle [°] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 47.635 | V | 47.5 | -14.8 | 32.7 | 40.0 | 7.3 | 103.0 | 301.1 | |
| 2 | 40.157 | V | 42.8 | -11.0 | 31.8 | 40.0 | 8.2 | 118.0 | 243.9 | |
| 3 | 742.547 | H | 41.2 | 0.9 | 42.1 | 46.0 | 3.9 | 214.0 | 130.0 | |
| 4 | 41.821 | V | 44.6 | -12.0 | 32.6 | 40.0 | 7.4 | 106.0 | 74.4 | |
| 5 | 254.191 | H | 39.9 | -8.6 | 31.3 | 46.0 | 14.7 | 100.0 | 159.4 | |
| 6 | 183.018 | V | 36.4 | -13.1 | 23.3 | 43.5 | 20.2 | 100.0 | 6.7 | |

Note) Receiving antenna polarization : Horizontal and/or Vertical

Test Distance : 3m, Antenna Height : 1 to 4 meters

Result (Quasi-Peak) = Reading QP + C.F (Antenna Factor + Cable Loss - Amp. Gain)

Margin QP (Quasi-Peak) = Limit – Level QP



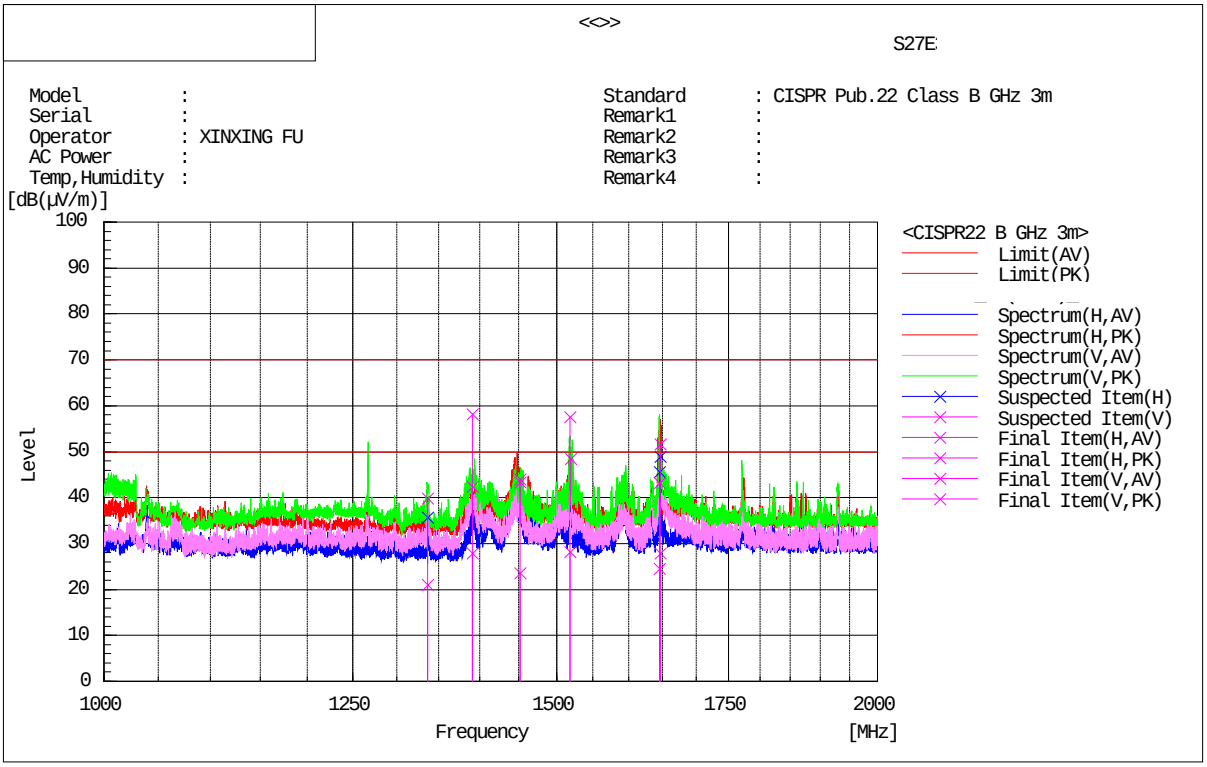
This report must not be reproduced, except in full, without written permission from CSQAL

## Above 1GHz

| | | | | | | |
|---|---|---|---|---|---|---|
| **Test date** | 2015.03.16 | | **Test engineer** | | Xinxing Fu | |
| **Climate condition** | **Ambient temperature** | 23±1℃ | **Relative humidity** | 32±0 % | **Atmospheric pressure** | 100±0 kPa |
| **Test place** | 3m Semi-Anechoic Chamber | | | | | |

### ■ Operating Mode: VGA IN

Set the brightness control to maximum, set the contrast control to maximum
Scan three resolutions (800*600@60Hz, 1280*768@60Hz, 1920*1080@60Hz), then choose the worst one (1920*1080@60Hz) for final evaluation.




Final Result

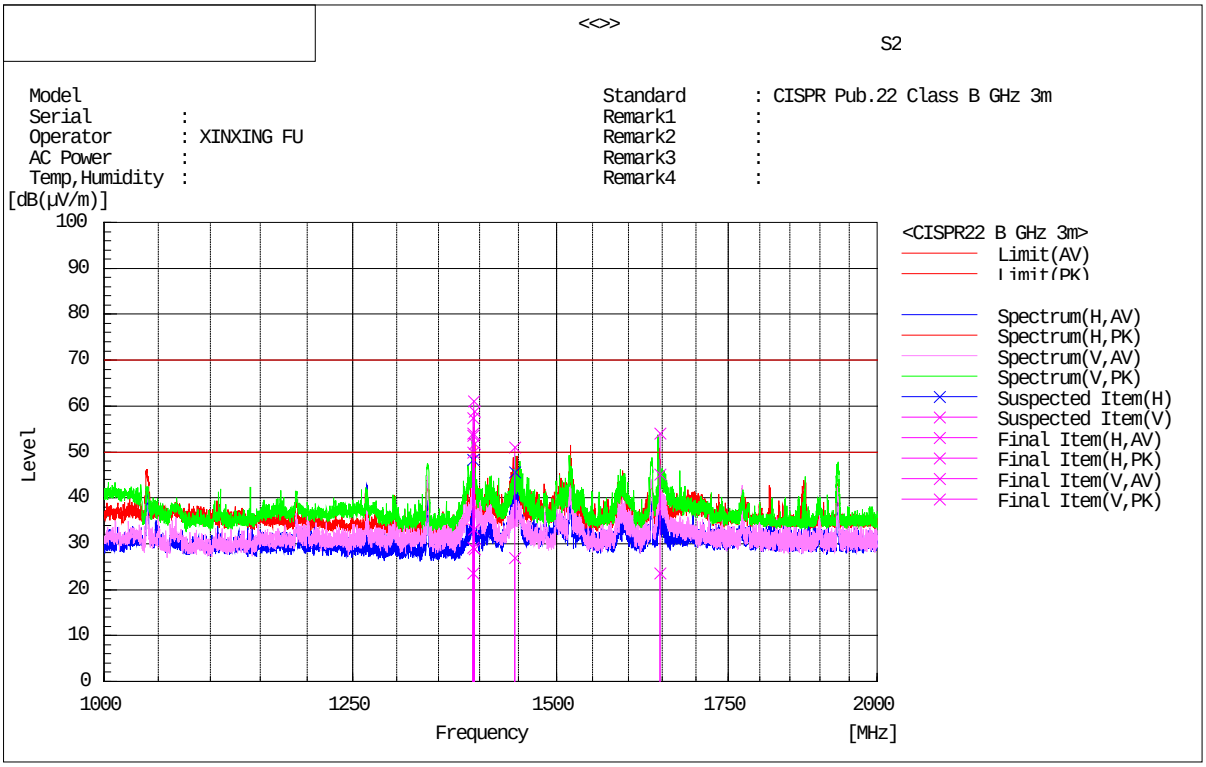
| No. | Frequency [MHz] | (P) | Reading AV [dB(µV)] | Reading PK [dB(µV)] | c.f [dB(1/m)] | Result AV [dB(µV/m)] | Result PK [dB(µV/m)] | Limit AV [dB(µV/m)] | Limit PK [dB(µV/m)] | Margin AV [dB] | Margin PK [dB] | Height [cm] | Angle [°] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1646.200 | H | 43.6 | 67.4 | -15.7 | 27.9 | 51.7 | 50.0 | 70.0 | 22.1 | 18.3 | 206.0 | 322.5 | |
| 2 | 1518.299 | V | 45.2 | 74.4 | -16.9 | 28.3 | 57.5 | 50.0 | 70.0 | 21.7 | 12.5 | 235.0 | 0.2 | |
| 3 | 1644.625 | H | 40.3 | 58.9 | -15.7 | 24.6 | 43.2 | 50.0 | 70.0 | 25.4 | 26.8 | 200.0 | 298.1 | |
| 4 | 1451.625 | V | 40.8 | 60.6 | -17.3 | 23.5 | 43.3 | 50.0 | 70.0 | 26.5 | 26.7 | 100.0 | 11.3 | |
| 5 | 1391.125 | V | 45.5 | 75.8 | -17.7 | 27.8 | 58.1 | 50.0 | 70.0 | 22.2 | 11.9 | 302.0 | 7.9 | |
| 6 | 1336.625 | H | 38.6 | 57.5 | -17.6 | 21.0 | 39.9 | 50.0 | 70.0 | 29.0 | 30.1 | 100.0 | 220.5 | |



This report must not be reproduced, except in full, without written permission from CSQAL

## ■ Operating Mode: HDMI IN

Set the brightness control to maximum, set the contrast control to maximum
Scan three resolutions (800*600@60Hz, 1280*768@60Hz, 1920*1080@60Hz), then choose the worst one (1920*1080@60Hz) for final evaluation.




Final Result

| No. | Frequency [MHz] | (P) | Reading AV [dB(µV)] | Reading PK [dB(µV)] | c.f [dB(1/m)] | Result AV [dB(µV/m)] | Result PK [dB(µV/m)] | Limit AV [dB(µV/m)] | Limit PK [dB(µV/m)] | Margin AV [dB] | Margin PK [dB] | Height [cm] | Angle [°] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1393.164 | V | 50.7 | 78.7 | -17.6 | 33.1 | 61.1 | 50.0 | 70.0 | 16.9 | 8.9 | 103.0 | 36.9 | |
| 2 | 1391.732 | V | 46.8 | 75.0 | -17.6 | 29.2 | 57.4 | 50.0 | 70.0 | 20.8 | 12.6 | 302.0 | 3.7 | |
| 3 | 1393.518 | V | 46.4 | 76.4 | -17.6 | 28.8 | 58.8 | 50.0 | 70.0 | 21.2 | 11.2 | 113.0 | 0.8 | |
| 4 | 1391.625 | H | 41.2 | 67.5 | -17.6 | 23.6 | 49.9 | 50.0 | 70.0 | 26.4 | 20.1 | 302.0 | 3.7 | |
| 5 | 1445.500 | H | 44.3 | 68.5 | -17.4 | 26.9 | 51.1 | 50.0 | 70.0 | 23.1 | 18.9 | 100.0 | 185.8 | |
| 6 | 1646.000 | V | 39.3 | 69.7 | -15.7 | 23.6 | 54.0 | 50.0 | 70.0 | 26.4 | 16.0 | 201.0 | 280.6 | |

Note) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3m, Antenna Height : 1 to 4 meters

Result (Average) = Reading AV + C.F (Antenna Factor + Cable Loss - Amp. Gain)

Margin AV (Average) = Limit – Result AV



This report must not be reproduced, except in full, without written permission from CSQAL

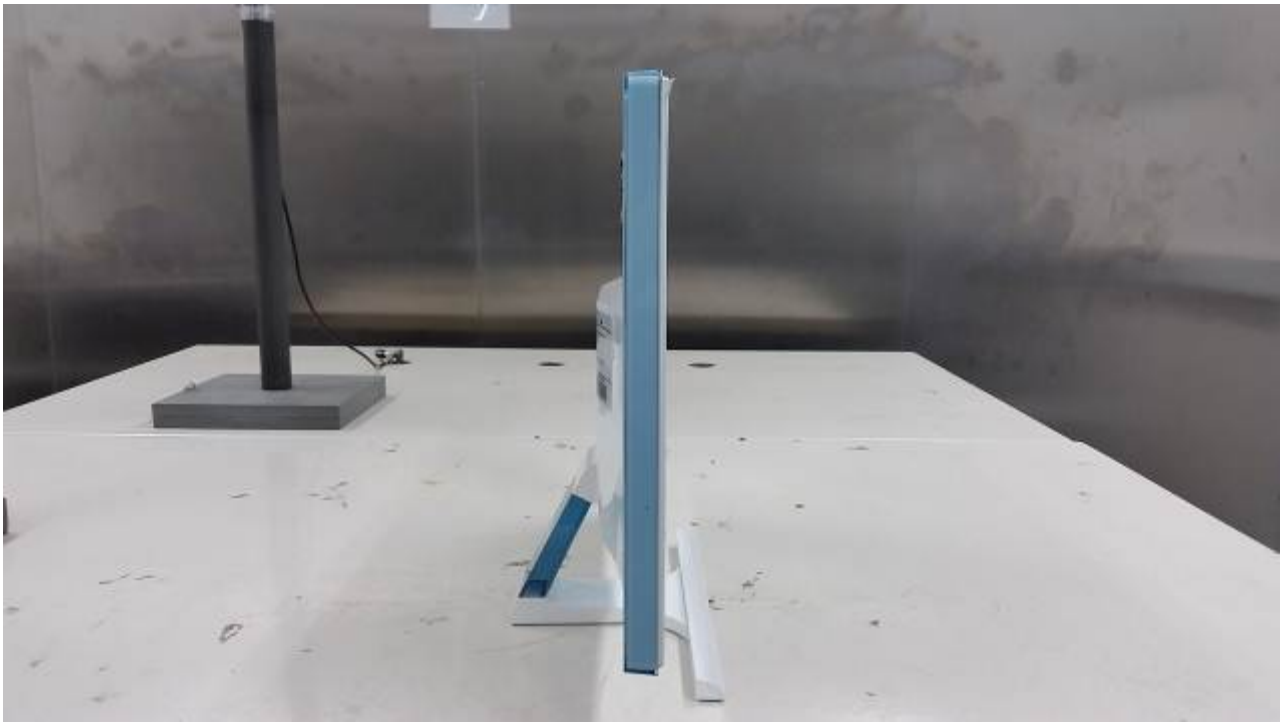
## Appendix A – EUT photography

(Front)

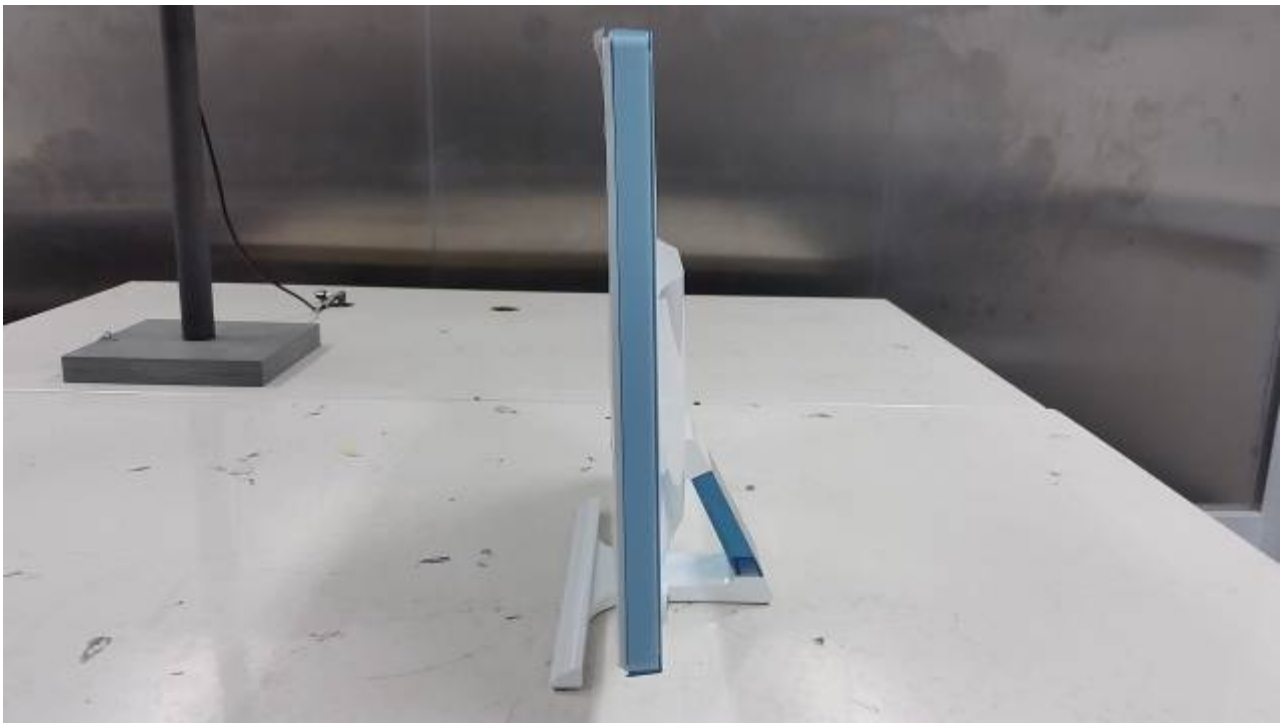
(Rear)

This report must not be reproduced, except in full, without written permission from CSQAL

(Left)



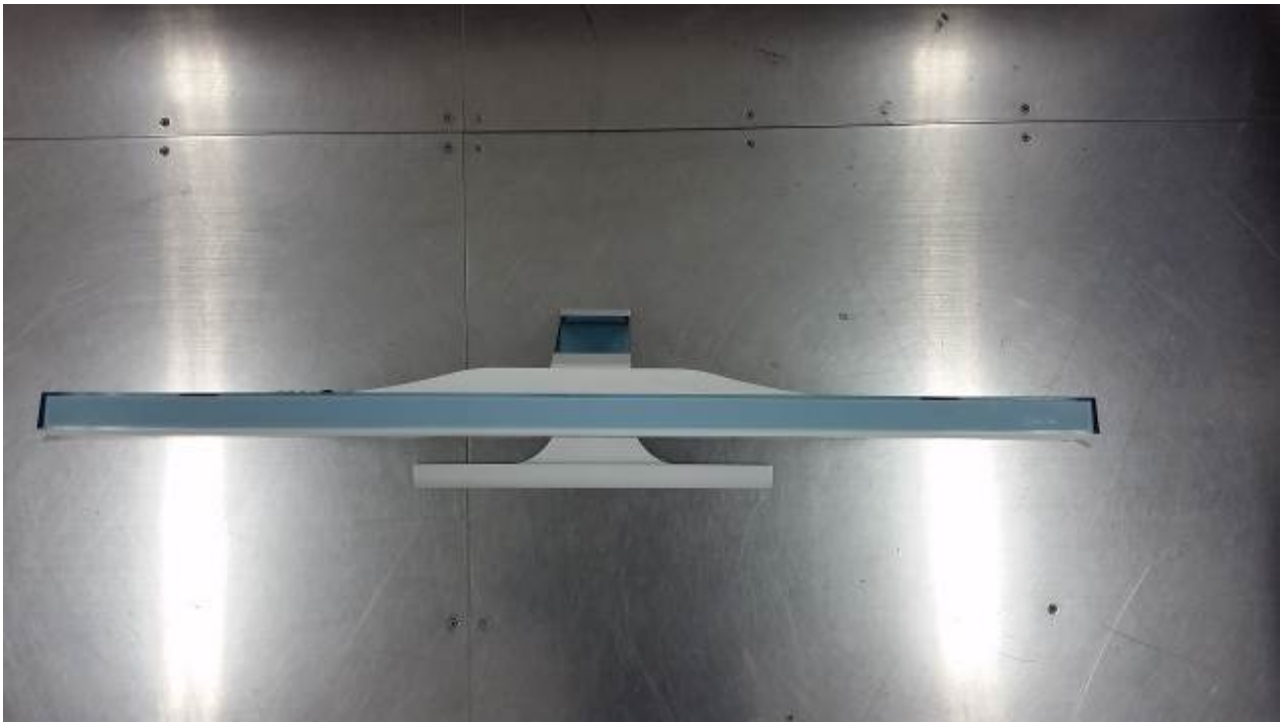
(Right)



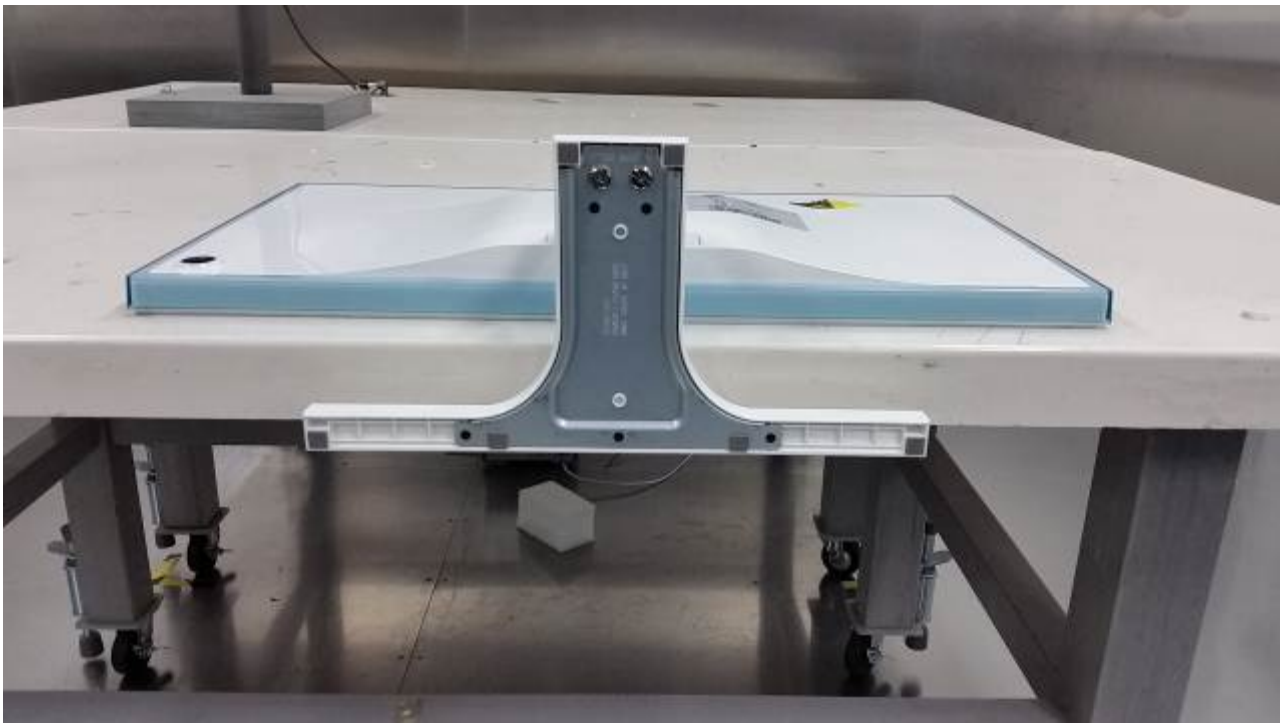


This report must not be reproduced, except in full, without written permission from CSQAL

(Top)



(Bottom)





This report must not be reproduced, except in full, without written permission from CSQAL

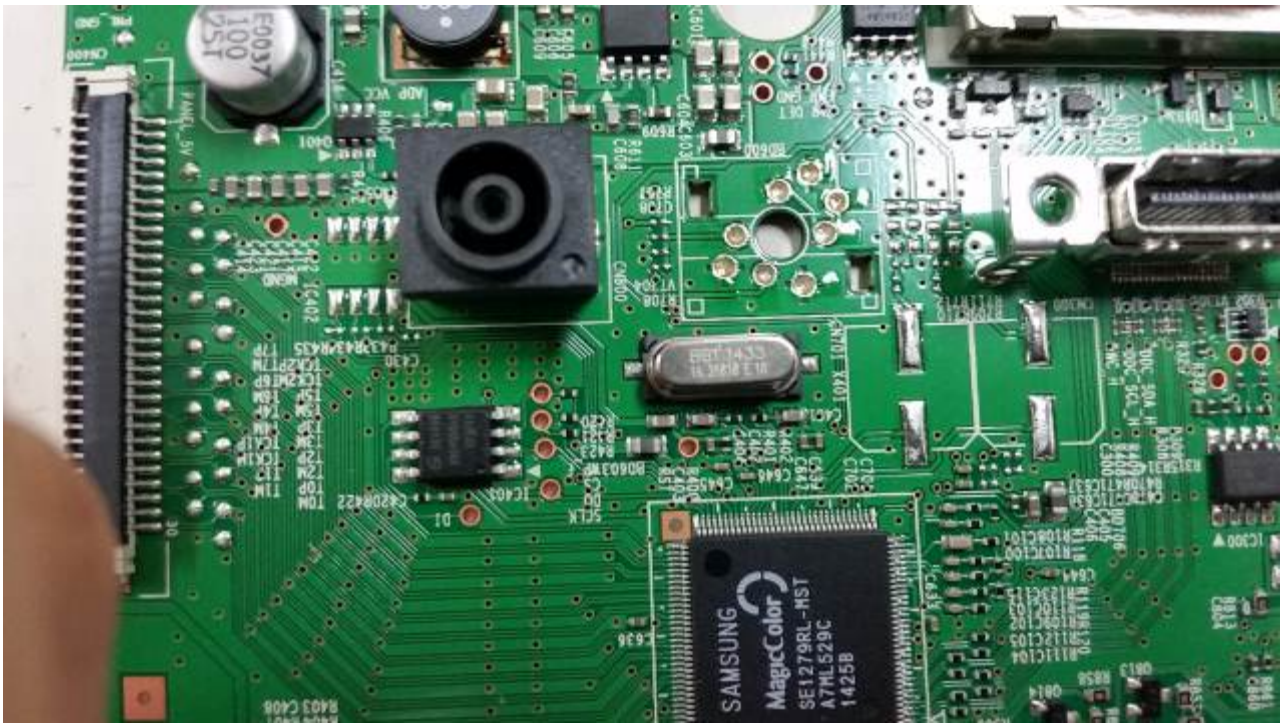
(Panel )

(Main Board )

This report must not be reproduced, except in full, without written permission from CSQAL

( Main Board )

(Crystal Main Board)






This report must not be reproduced, except in full, without written permission from CSQAL

(Adapter)

(Adapter)

This report must not be reproduced, except in full, without written permission from CSQAL