

Application for FCC Certificate
On Behalf of
Hisense Electric Co., Ltd.

LCD TV

| Model No. | Serial No. | Brand |
|-------------|----------------|---------|
| LTDN46V86US | E1202211-01/01 | Hisense |

FCC ID : W9HLCDD0017

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Report No. : ACI-F12046
Date of Test : Mar 15 – 19, 2012
Date of Report : Mar 20, 2012

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TEST REPORT FOR FCC CERTIFICATE

Applicant : Hisense Electric Co., Ltd.

Manufacturer : Hisense Electric Co., Ltd.

EUT Description : LCD TV

| Model No. | Serial No. | Brand | Power Supply |
|-------------|----------------|---------|--------------|
| LTDN46V86US | E1202211-01/01 | Hisense | 120V/60Hz |

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2010
AND ANSI C63.4-2003*

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B (Class B) limits both radiated and conducted emissions.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report shows that the EUT (M/N: LTDN46V86US; S/N: E1202211-01/01) which was tested in 3m anechoic chamber Mar 09 – 15, 2012 is technically compliance with the FCC official limits also.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

This report contains data that are not covered by the NVLAP accreditation.


This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

The test results for EUT's TV functions are contained in No.F12045, a Verification report.

Date of Test : Mar 15 – 19, 2012 Date of Report : Mar 20, 2012

Producer : 
KATHY WANG/ Assistant

Review : 
DIO YANG/ Assistant Manager

 For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

Signatory : 
Authorized Signature EMC SAMMY CHEN / Deputy Manager

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:

| Description of Test Item | Standard | Limits | Results |
|---|--|----------------------|----------------|
| EMISSION | | | |
| Conducted Disturbance at the Mains Terminal | FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2010 AND ANSI C63.4-2003 | 15.107(a) Class B | Pass |
| Radiated Disturbance | FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2010 AND ANSI C63.4-2003 | 15.109(a) Class B | Pass |

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description : LCD TV

Type of EUT : Production Pre-product Pro-type

| | | |
|------------|---|----------------|
| Model No. | : | LTDN46V86US |
| Serial No. | : | E1202211-01/01 |

Brand : Hisense

Applicant : Hisense Electric Co., Ltd.
No.218 Qianwangang Road, Economy &
Technology Development Zone, Qingdao, China

Manufacturer : Hisense Electric Co., Ltd.
No.218 Qianwangang Road, Economy &
Technology Development Zone, Qingdao, China

LCD Panel : Manufacturer : CHIMEI INNOLUX
M/N : V460H1 -L12

Max Resolution : 1920*1080@60Hz

D-Sub Cable : Shielded, Detachable, 1.85m,
with two cores on cable

HDMI Cable : Shielded, Detachable, 1.00m,

Power Cord : Unshielded, Detachable, 1.80m

Remark:

The EUT is a LCD TV which input/output ports as follows:

Side Port:

- (1) One HDMI1 Port : Connected with PC
- (2) One HDMI2 Port : Connected with DVD
- (3) One PC Audio Port : Connected with PC
- (4) One VGA Port : Connected with PC
- (5) One component of YPbPr Port : Connected with DVD
- (6) One component of YPbPr Audio Port : Connected with DVD
- (7) One component of AV Port : Connected with DVD
- (8) One DIGITAL AUDIO OUT Port : Connected with DVD
- (9) One Earphone Port : Connected with Earphone
- (10) One ANT Port : Connected with ATSC SG / TV SG
- (11) One Service Port : Do not open to customer

2.2 Peripherals

2.2.1 PC

Manufacturer : HP
Model Number : dx7200MT
Serial Number : CNG622017W
Power Cord : Unshielded, Detachable, 1.8m
Certificate : FCC DoC; CE/EMC; VCCI; C-Tick; UL
BSMI (R33001) 3C (A000111)
MIC (E-A011-04-2659(B))

2.2.2 Printer

Manufacturer : HP
Model Number : C3990A
Serial Number : JPZX020487
Data Cable : Shielded, detachable, 1.5m
Certificate : GS, CE/EMC, C-Tick, FCC DoC

2.2.3 Keyboard

Manufacturer : Microsoft
Model Number : RT2300
Serial Number : 7668200662248
Data Cable : Shielded, undetachable ,1.8m
Certificate : CE/EMC, FCC DoC, VCCI, MIC, C-Tick,
BSMI

2.2.4 Mouse

Manufacturer : Microsoft
Model Number : RT2300
Serial Number : 6965712071551
Data Cable : Shielded, undetachable, 1.8m.
Certificate : CE/EMC, FCC DoC, VCCI, MIC, C-Tick,
BSMI

2.2.5 Modem

Manufacturer : TP-LINK
Model Number : TM-EC5658V
Serial Number : 07123301053
Data Cable : Shielded, Detachable, 1.8m
Certificate : FCC DoC, CE/EMC, CCC

2.2.6 Earphone

Manufacturer : SONY
Model Number : MDR-E808
Serial Number : 1808030805305506

2.2.7 TV Signal Generator

Manufacturer : FLUKE
Model Number : 54200m01
Serial Number : 814008
Data Cable : Shielded, detachable, 2.0m
Power Cord : Unshielded, detachable, 2.0m
Certificate : CE/EMC, FCC DoC, CCC

2.2.8 ATSC Signal Generator

Manufacturer : SENCORE
Model Number : ATSC997
Serial Number : 6790071

2.2.9 DVD

Manufacturer : PHILIPS
Model Number : DVP3986K/93
Serial Number : KX1A0902120108
Certificate : FCC DoC, CE/EMC, CCC

2.3 Description of Test Facility

Site Description (No.3 3m Chamber) : Sept. 17, 1998 file on
Apr 29, 2009 Renewed
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3F 34Bldg 680 Guiping Rd,
Caohejing Hi-Tech Park,
Shanghai 200233, China

NVLAP Lab Code : 200371-0

2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty: U = 3.38dB

Radiated Emission Expanded Uncertainty (30-200MHz):
U = 4.58 dB (horizontal)
U = 4.70 dB (vertical)

Radiated Emission Expanded Uncertainty (200M-1GHz):
U = 4.84 dB (horizontal)
U = 4.70 dB (vertical)

Radiated Emission Expanded Uncertainty (Above 1GHz):
U= 4.60 dB (Horizontal)
U= 4.18 dB (Vertical)

3 CONDUCTED EMISSION TEST

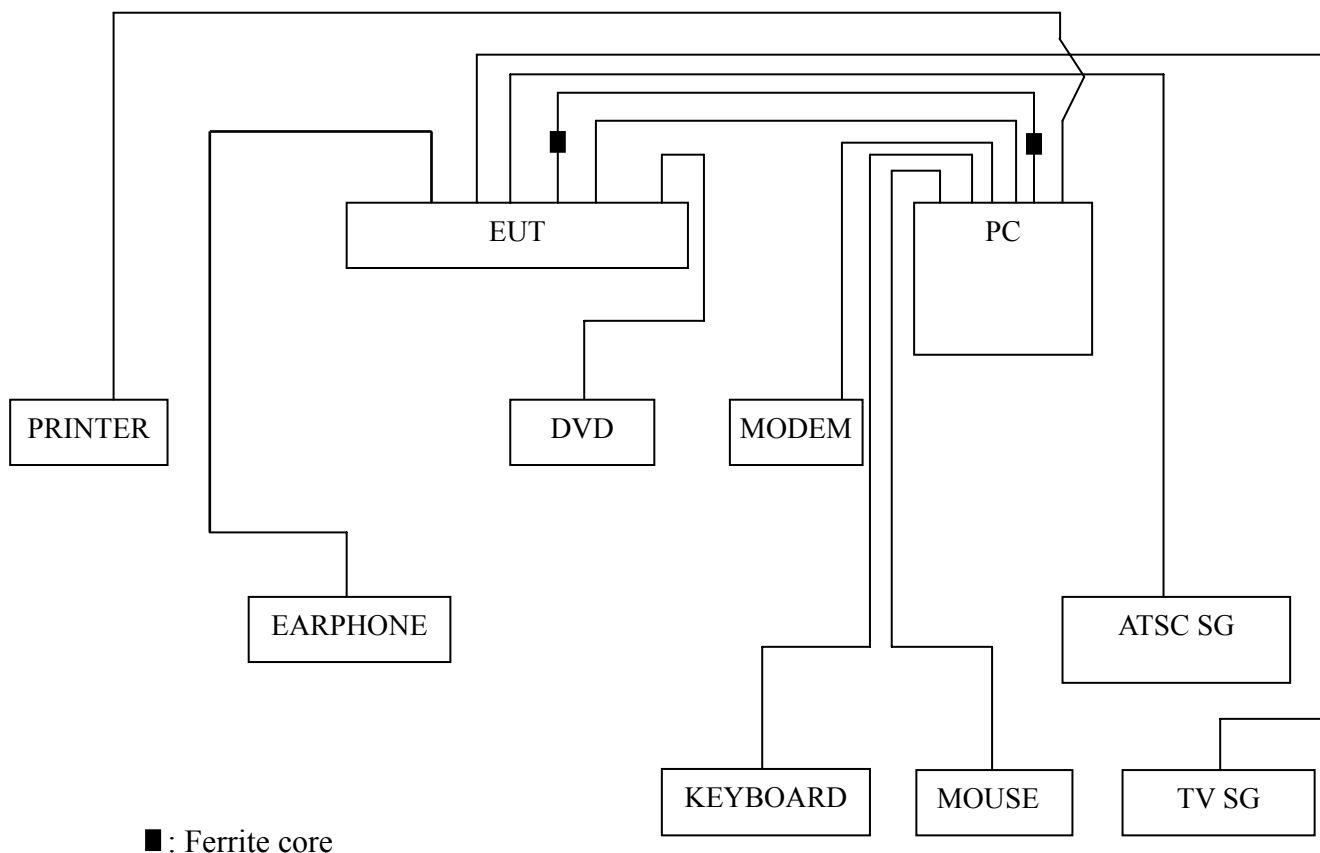
3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

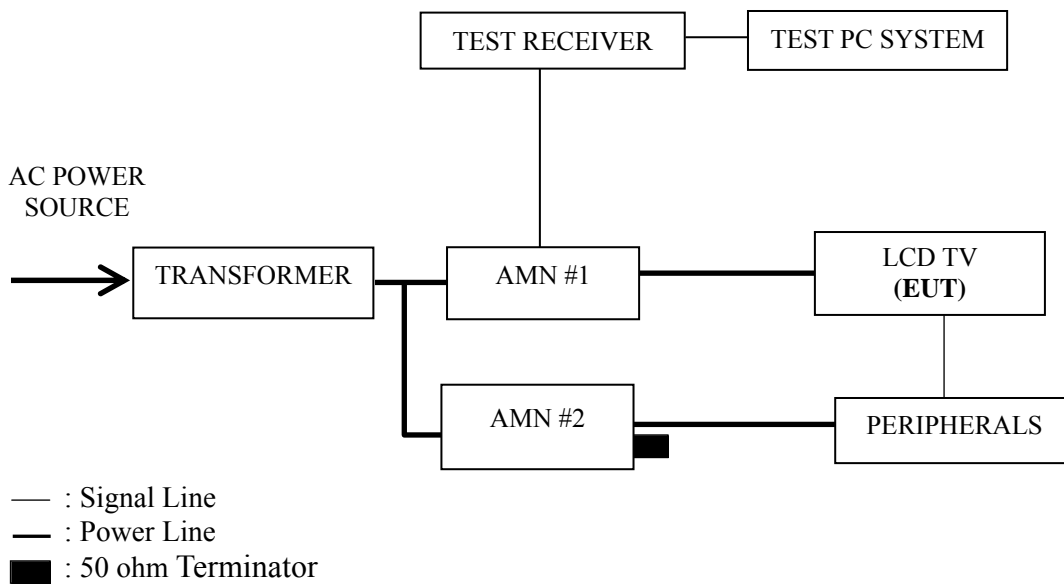
| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|------|-----------------------------------|--------------|-----------|----------------------|--------------|--------------|
| 1. | Test Receiver | R&S | ESCI | 100841 | Mar 22, 2011 | Mar 22, 2012 |
| 2. | Artificial Mains Network (AMN #1) | R&S | ESH2-Z5 | 843890/011 | Mar 22, 2011 | Mar 22, 2012 |
| 3. | Artificial Mains Network (AMN #2) | R&S | ENV4200 | 100125 | Mar 22, 2011 | Mar 22, 2012 |
| 4. | 50 Ω Coaxial Switch | Anritsu | MP59B | 6200426389 | Sep 18, 2011 | Mar 18, 2012 |
| 5. | 50Ω Terminator | Anritsu | BNC | 001 | Mar 22, 2011 | Mar 22, 2012 |
| 6. | Software | Audix | E3 | SET00200 9804M592 | -- | -- |

3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



3.2.2 Conducted Disturbance Test Setup



3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)]

| Frequency Range (MHz) | Limits dB (μ V) | |
|-----------------------|----------------------|---------|
| | Quasi-peak | Average |
| 0.15 ~ 0.5 | 66~56 | 56~46 |
| 0.5 ~ 5 | 56 | 46 |
| 5 ~ 30 | 60 | 50 |

NOTE 1 – The lower limit shall apply at the transition frequencies.
 NOTE 2 – The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz

3.4 Test Configuration

The EUT (listed in Sec.2.1) and the peripherals (listed in Sec 2.2) were installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner that tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

3.5.1 Setup the EUT and peripherals as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipments and the EUT.

3.5.3 Set the contrast & brightness of EUT to maximum.

3.5.4 PC system ran the self-test program “EMC Test” by windows XP and sent “H” characters to EUT through graphic card, the EUT’s screen displayed and filled with “H” pattern by its resolution (Via D-Sub & HDMI Input).

3.5.5 Repeat above procedure 3.5.4 for difference test mode.

3.5.6 The other peripherals devices were driven and operated during the test.

3.5.7 The test modes are as follows:

| Test Mode |
|----------------------|
| D-Sub 1920*1080@60Hz |
| HDMI 1920*1080@60Hz |
| HDMI 1280*1024@60Hz |
| HDMI 640*480@60Hz |
| USB Play |

3.6 Test Procedures

The EUT and peripherals were connected to the power mains through an Artificial Mains Network (AMN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line (Line & Neutral) were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to ANSI C63.4:2003 during conducted emission test.

The bandwidth of R&S Test Receiver ESCI was set at 9 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7.

3.7 Test Results

< **PASS** >

The frequency and amplitude of the highest conducted emission relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

| Test Mode | Data Page |
|----------------------|-----------|
| D-Sub 1920*1080@60Hz | P13 |
| HDMI 1920*1080@60Hz | P14 |
| HDMI 1280*1024@60Hz | P15 |
| HDMI 640*480@60Hz | P16 |
| USB Play | P17 |

NOTE 1 – Factor = Cable Loss + AMN Factor.

NOTE 2 – Emission Level = Meter Reading + Factor.

NOTE 3 – “QP” means “Quasi-Peak” values, “AV” means “Average” values.

NOTE 4 – The worst case is for USB Play test mode. The worst emission is detected at 0.408 MHz (Quasi-Peak Value) with corrected signal level of 39.29 dB (μ V) (limit is 57.68dB (μ V)), when the Neutral of the EUT is connected to AMN.

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46V86US Humidity : 48%RH

Serial No. : E1202211-01/01 Date of Test : Mar 15, 2012

Test Mode : D-Sub 1920*1080@60Hz

| Test Line | Frequency (MHz) | Meter Reading dB(μ V) | Factor (dB) | Emission Level dB(μ V) | Limits dB(μ V) | Margin (dB) | Remark |
|-----------|-----------------|----------------------------|-------------|-----------------------------|---------------------|--------------|--------|
| Line | 0.150 | 43.31 | 0.22 | 43.53 | 66.00 | 22.47 | QP |
| | 0.223 | 38.64 | 0.22 | 38.86 | 62.70 | 23.84 | |
| | 0.389 | 36.89 | 0.29 | 37.18 | 58.08 | 20.90 | |
| | 1.172 | 34.01 | 0.37 | 34.38 | 56.00 | 21.62 | |
| | 4.407 | 30.64 | 0.54 | 31.18 | 56.00 | 24.82 | |
| | 15.885 | 38.38 | 0.87 | 39.25 | 60.00 | 20.75 | |
| | 0.150 | 32.76 | 0.22 | 32.98 | 56.00 | 23.02 | AV |
| | 0.223 | 28.35 | 0.22 | 28.57 | 52.70 | 24.13 | |
| | 0.389 | 26.59 | 0.29 | 26.88 | 48.08 | 21.20 | |
| | 1.172 | 23.55 | 0.37 | 23.92 | 46.00 | 22.08 | |
| | 4.407 | 20.15 | 0.54 | 20.69 | 46.00 | 25.31 | |
| | 15.885 | 27.92 | 0.87 | 28.79 | 50.00 | 21.21 | |
| Neutral | 0.150 | 46.98 | 0.18 | 47.16 | 65.99 | 18.83 | QP |
| | 0.213 | 39.42 | 0.18 | 39.60 | 63.10 | 23.50 | |
| | 0.471 | 36.79 | 0.24 | 37.03 | 56.49 | 19.46 | |
| | 0.909 | 33.71 | 0.42 | 34.13 | 56.00 | 21.87 | |
| | 4.549 | 34.82 | 0.76 | 35.58 | 56.00 | 20.42 | |
| | 22.535 | 37.37 | 1.28 | 38.65 | 60.00 | 21.35 | |
| | 0.150 | 35.85 | 0.18 | 36.03 | 55.99 | 19.96 | AV |
| | 0.213 | 29.42 | 0.18 | 29.60 | 53.10 | 23.50 | |
| | 0.471 | 26.54 | 0.24 | 26.78 | 46.49 | 19.71 | |
| | 0.909 | 23.19 | 0.42 | 23.61 | 46.00 | 22.39 | |
| | 4.549 | 24.17 | 0.76 | 24.93 | 46.00 | 21.07 | |
| | 22.535 | 26.81 | 1.28 | 28.09 | 50.00 | 21.91 | |

TEST ENGINEER: LUY LV

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46V86US Humidity : 48%RH

Serial No. : E1202211-01/01 Date of Test : Mar 15, 2012

Test Mode : HDMI 1920*1080@60Hz

| Test Line | Frequency (MHz) | Meter Reading dB(μ V) | Factor (dB) | Emission Level dB(μ V) | Limits dB(μ V) | Margin (dB) | Remark |
|-----------|-----------------|----------------------------|-------------|-----------------------------|---------------------|--------------|--------|
| Line | 0.150 | 42.18 | 0.22 | 42.40 | 66.00 | 23.60 | QP |
| | 0.216 | 38.73 | 0.22 | 38.95 | 62.96 | 24.01 | |
| | 0.471 | 36.75 | 0.31 | 37.06 | 56.49 | 19.43 | |
| | 1.071 | 34.10 | 0.37 | 34.47 | 56.00 | 21.53 | |
| | 4.407 | 30.11 | 0.54 | 30.65 | 56.00 | 25.35 | |
| | 15.552 | 39.51 | 0.86 | 40.37 | 60.00 | 19.63 | |
| | 0.150 | 31.56 | 0.22 | 31.78 | 56.00 | 24.22 | AV |
| | 0.216 | 28.11 | 0.22 | 28.33 | 52.96 | 24.63 | |
| | 0.471 | 26.31 | 0.31 | 26.62 | 46.49 | 19.87 | |
| | 1.071 | 23.41 | 0.37 | 23.78 | 46.00 | 22.22 | |
| | 4.407 | 19.62 | 0.54 | 20.16 | 46.00 | 25.84 | |
| | 15.552 | 29.01 | 0.86 | 29.87 | 50.00 | 20.13 | |
| Neutral | 0.150 | 43.39 | 0.18 | 43.57 | 65.99 | 22.42 | QP |
| | 0.213 | 39.55 | 0.18 | 39.73 | 63.10 | 23.37 | |
| | 0.476 | 37.41 | 0.24 | 37.65 | 56.41 | 18.76 | |
| | 0.890 | 33.77 | 0.41 | 34.18 | 56.00 | 21.82 | |
| | 4.407 | 34.99 | 0.74 | 35.73 | 56.00 | 20.27 | |
| | 21.147 | 37.68 | 1.21 | 38.89 | 60.00 | 21.11 | |
| | 0.150 | 33.10 | 0.18 | 33.28 | 55.99 | 22.71 | AV |
| | 0.213 | 28.61 | 0.18 | 28.79 | 53.10 | 24.31 | |
| | 0.476 | 27.69 | 0.24 | 27.93 | 46.41 | 18.48 | |
| | 0.890 | 23.18 | 0.41 | 23.59 | 46.00 | 22.41 | |
| | 4.407 | 23.49 | 0.74 | 24.23 | 46.00 | 21.77 | |
| | 21.147 | 27.09 | 1.21 | 28.30 | 50.00 | 21.70 | |

TEST ENGINEER: L V Y L V

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46V86US Humidity : 48%RH

Serial No. : E1202211-01/01 Date of Test : Mar 15, 2012

Test Mode : HDMI 1280*1024@60Hz

| Test Line | Frequency (MHz) | Meter Reading dB(μ V) | Factor (dB) | Emission Level dB(μ V) | Limits dB(μ V) | Margin (dB) | Remark |
|-----------|-----------------|----------------------------|-------------|-----------------------------|---------------------|--------------|--------|
| Line | 0.150 | 45.72 | 0.22 | 45.94 | 66.00 | 20.06 | QP |
| | 0.215 | 38.56 | 0.22 | 38.78 | 63.01 | 24.23 | |
| | 0.471 | 37.16 | 0.31 | 37.47 | 56.49 | 19.02 | |
| | 1.160 | 34.15 | 0.37 | 34.52 | 56.00 | 21.48 | |
| | 4.407 | 30.58 | 0.54 | 31.12 | 56.00 | 24.88 | |
| | 21.830 | 36.73 | 1.04 | 37.77 | 60.00 | 22.23 | |
| | 0.150 | 35.21 | 0.22 | 35.43 | 56.00 | 20.57 | AV |
| | 0.215 | 27.62 | 0.22 | 27.84 | 53.01 | 25.17 | |
| | 0.471 | 26.00 | 0.31 | 26.31 | 46.49 | 20.18 | |
| | 1.160 | 23.59 | 0.37 | 23.96 | 46.00 | 22.04 | |
| | 4.407 | 20.30 | 0.54 | 20.84 | 46.00 | 25.16 | |
| | 21.830 | 25.64 | 1.04 | 26.68 | 50.00 | 23.32 | |
| Neutral | 0.150 | 46.42 | 0.18 | 46.60 | 65.99 | 19.39 | QP |
| | 0.213 | 38.56 | 0.18 | 38.74 | 63.10 | 24.36 | |
| | 0.398 | 37.33 | 0.23 | 37.56 | 57.90 | 20.34 | |
| | 1.082 | 33.04 | 0.44 | 33.48 | 56.00 | 22.52 | |
| | 4.407 | 34.00 | 0.74 | 34.74 | 56.00 | 21.26 | |
| | 22.535 | 37.06 | 1.28 | 38.34 | 60.00 | 21.66 | |
| | 0.150 | 35.82 | 0.18 | 36.00 | 55.99 | 19.99 | AV |
| | 0.213 | 28.31 | 0.18 | 28.49 | 53.10 | 24.61 | |
| | 0.398 | 26.48 | 0.23 | 26.71 | 47.90 | 21.19 | |
| | 1.082 | 22.64 | 0.44 | 23.08 | 46.00 | 22.92 | |
| | 4.407 | 23.65 | 0.74 | 24.39 | 46.00 | 21.61 | |
| | 22.535 | 26.48 | 1.28 | 27.76 | 50.00 | 22.24 | |

TEST ENGINEER: LUY LV

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46V86US Humidity : 48%RH

Serial No. : E1202211-01/01 Date of Test : Mar 15, 2012

Test Mode : HDMI 640*480@60Hz

| Test Line | Frequency (MHz) | Meter Reading dB(μ V) | Factor (dB) | Emission Level dB(μ V) | Limits dB(μ V) | Margin (dB) | Remark |
|-----------|-----------------|----------------------------|-------------|-----------------------------|---------------------|--------------|--------|
| Line | 0.150 | 42.90 | 0.22 | 43.12 | 66.00 | 22.88 | QP |
| | 0.244 | 38.85 | 0.23 | 39.08 | 61.95 | 22.87 | |
| | 0.484 | 36.19 | 0.31 | 36.50 | 56.27 | 19.77 | |
| | 1.160 | 33.65 | 0.37 | 34.02 | 56.00 | 21.98 | |
| | 3.681 | 30.50 | 0.53 | 31.03 | 56.00 | 24.97 | |
| | 15.552 | 37.92 | 0.86 | 38.78 | 60.00 | 21.22 | |
| | 0.150 | 31.57 | 0.22 | 31.79 | 56.00 | 24.21 | AV |
| | 0.244 | 28.42 | 0.23 | 28.65 | 51.95 | 23.30 | |
| | 0.484 | 25.80 | 0.31 | 26.11 | 46.27 | 20.16 | |
| | 1.160 | 23.18 | 0.37 | 23.55 | 46.00 | 22.45 | |
| | 3.681 | 20.15 | 0.53 | 20.68 | 46.00 | 25.32 | |
| | 15.552 | 27.42 | 0.86 | 28.28 | 50.00 | 21.72 | |
| Neutral | 0.150 | 43.91 | 0.18 | 44.09 | 66.00 | 21.91 | QP |
| | 0.242 | 38.97 | 0.18 | 39.15 | 62.04 | 22.89 | |
| | 0.417 | 37.61 | 0.24 | 37.85 | 57.51 | 19.66 | |
| | 1.065 | 34.30 | 0.44 | 34.74 | 56.00 | 21.26 | |
| | 4.407 | 34.28 | 0.74 | 35.02 | 56.00 | 20.98 | |
| | 21.147 | 37.10 | 1.21 | 38.31 | 60.00 | 21.69 | |
| | 0.150 | 32.58 | 0.18 | 32.76 | 56.00 | 23.24 | AV |
| | 0.242 | 28.68 | 0.18 | 28.86 | 52.04 | 23.18 | |
| | 0.417 | 27.50 | 0.24 | 27.74 | 47.51 | 19.77 | |
| | 1.065 | 24.16 | 0.44 | 24.60 | 46.00 | 21.40 | |
| | 4.407 | 23.85 | 0.74 | 24.59 | 46.00 | 21.41 | |
| | 21.147 | 26.53 | 1.21 | 27.74 | 50.00 | 22.26 | |

TEST ENGINEER: L V Y L V

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46V86US Humidity : 48%RH

Serial No. : E1202211-01/01 Date of Test : Mar 15, 2012

Test Mode : USB Play

| Test Line | Frequency (MHz) | Meter Reading dB(μV) | Factor (dB) | Emission Level dB(μV) | Limits dB(μV) | Margin (dB) | Remark | |
|--------------|-----------------|----------------------|--------------|-----------------------|---------------|-------------|--------|----|
| Line | 0.150 | 45.36 | 0.22 | 45.58 | 66.00 | 20.42 | QP | |
| | 0.216 | 39.73 | 0.22 | 39.95 | 62.96 | 23.01 | | |
| | 0.476 | 37.68 | 0.31 | 37.99 | 56.41 | 18.42 | | |
| | 0.862 | 33.91 | 0.38 | 34.29 | 56.00 | 21.71 | | |
| | 4.407 | 30.67 | 0.54 | 31.21 | 56.00 | 24.79 | | |
| | 17.199 | 37.44 | 0.90 | 38.34 | 60.00 | 21.66 | AV | |
| | 0.150 | 35.10 | 0.22 | 35.32 | 56.00 | 20.68 | | |
| | 0.216 | 29.37 | 0.22 | 29.59 | 52.96 | 23.37 | | |
| | 0.476 | 27.41 | 0.31 | 27.72 | 46.41 | 18.69 | | |
| | 0.862 | 23.17 | 0.38 | 23.55 | 46.00 | 22.45 | | |
| 4.407 | 20.38 | 0.54 | 20.92 | 46.00 | 25.08 | QP | | |
| 17.199 | 27.11 | 0.90 | 28.01 | 50.00 | 21.99 | | | |
| 0.150 | 43.18 | 0.18 | 43.36 | 66.00 | 22.64 | | | |
| 0.244 | 39.76 | 0.18 | 39.94 | 61.95 | 22.01 | | | |
| 0.408 | 39.06 | 0.23 | 39.29 | 57.68 | 18.39 | | | |
| Neutral | 0.909 | 34.38 | 0.42 | 34.80 | 56.00 | 21.20 | QP | |
| | 4.407 | 34.43 | 0.74 | 35.17 | 56.00 | 20.83 | | |
| | 22.535 | 36.48 | 1.28 | 37.76 | 60.00 | 22.24 | | |
| | 0.150 | 32.40 | 0.18 | 32.58 | 56.00 | 23.42 | | AV |
| | 0.244 | 29.24 | 0.18 | 29.42 | 51.95 | 22.53 | | |
| | 0.408 | 28.37 | 0.23 | 28.60 | 47.68 | 19.08 | | |
| | 0.909 | 24.00 | 0.42 | 24.42 | 46.00 | 21.58 | | |
| | 4.407 | 24.11 | 0.74 | 24.85 | 46.00 | 21.15 | | |
| | 22.535 | 25.80 | 1.28 | 27.08 | 50.00 | 22.92 | | |

TEST ENGINEER: LUY LV

4 RADIATED EMISSION TEST

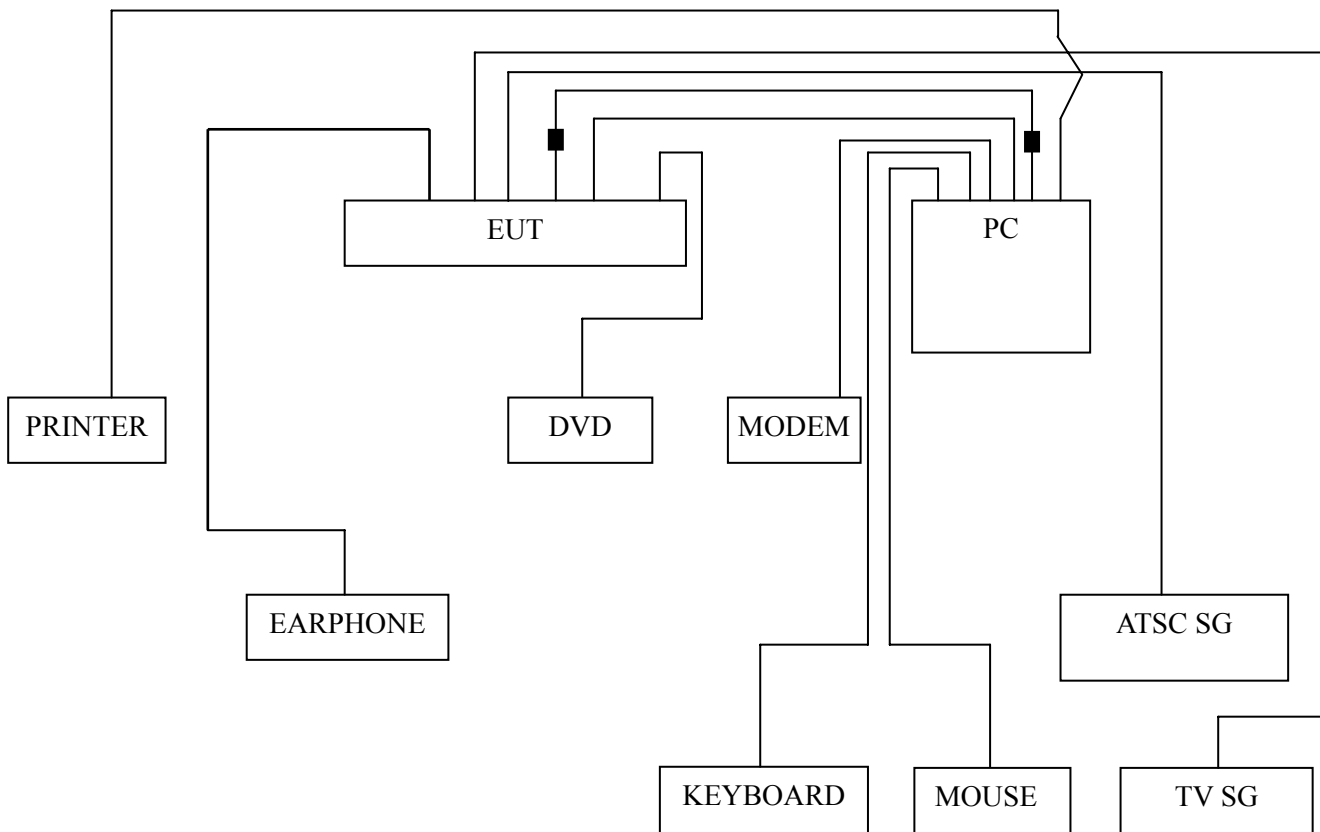
4.1 Test Equipment

The following test equipments are used during the radiated emission test in a semi-anechoic chamber:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|------|--------------------|--------------|-----------|------------------------|--------------|--------------|
| 1. | Test Receiver | R&S | ESVS10 | 844594/001 | Mar 22, 2011 | Mar 22, 2012 |
| 2. | Preamplifier | Agilent | 8447D | 2944A10548 | Sep 18, 2011 | Mar 18, 2012 |
| 3. | Preamplifier | HP | 8449B | 3008A00864 | Mar 22, 2011 | Mar 22, 2012 |
| 4. | Bi-log Antenna | TESEQ | CBL6112D | 23192 | Dec 01, 2011 | Dec 01, 2012 |
| 5. | Horn Antenna | EMCO | 3115 | 9607-4878 | May 06, 2011 | May 06, 2012 |
| 6. | Spectrum | Agilent | E7405A | MY45106600 | Mar 22, 2011 | Mar 22, 2012 |
| 7. | 50Ω Coaxial Switch | Anritsu | MP59B | 6200426390 | Sep 18, 2011 | Mar 18, 2012 |
| 8. | Software | Audix | E3 | SET00200 9912M295-2 | -- | -- |

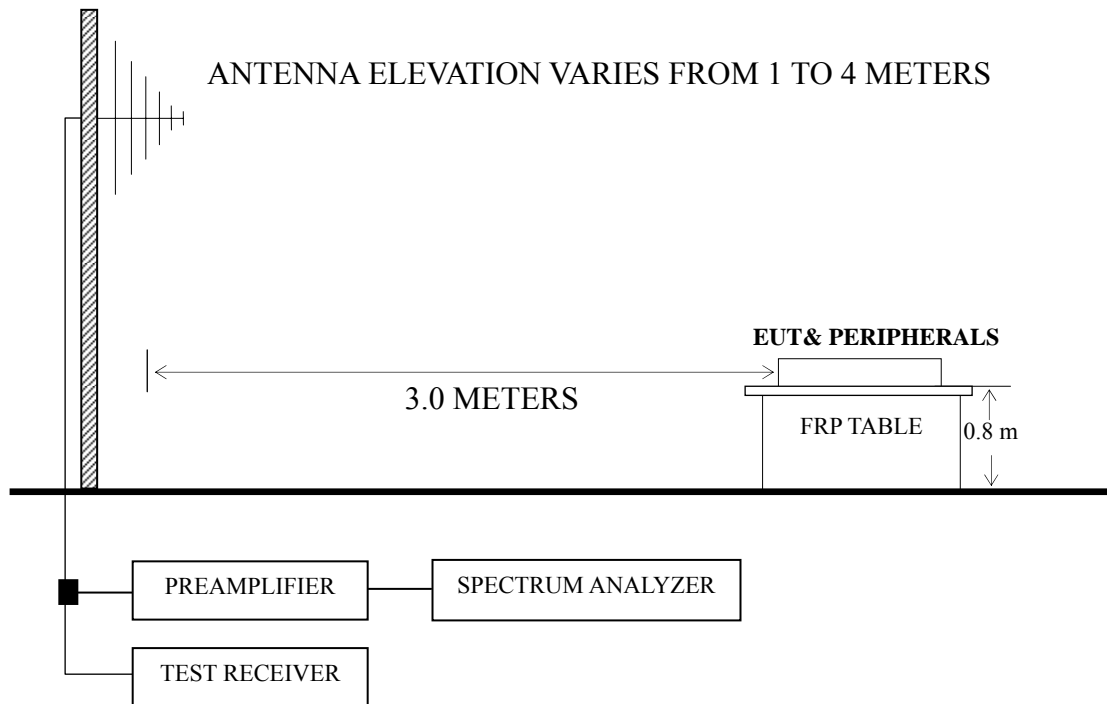
4.2 Block Diagram of Test Setup

4.2.1 EUT and Peripherals



■ : Ferrite core

4.2.2 Radiated emission test setup



■ : 50 ohm Coaxial Switch

4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)]

| Frequency (MHz) | Distance (m) | Field strength limits | |
|-----------------|--------------|-----------------------|------------------------|
| | | ($\mu\text{V/m}$) | dB ($\mu\text{V/m}$) |
| 30 ~ 88 | 3 | 100 | 40.0 |
| 88 ~ 216 | 3 | 150 | 43.5 |
| 216 ~ 960 | 3 | 200 | 46.0 |
| Above 960 | 3 | 500 | 54.0 |

NOTE 1 - Emission Level dB ($\mu\text{V/m}$) = 20 log Emission Level ($\mu\text{V/m}$)

NOTE 2 - The tighter limit applies at the band edges.

NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

NOTE 4 - The limits shown are based on Quasi-peak value detector.

NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT.

4.4 Test Configuration

The configuration of the EUT and peripherals are same as those used in conducted emission test.

Please refer to Sec.3.4.

4.5 Operating Condition of EUT

Same as conducted emission test which is listed in Sec.3.5, except for the test setup replaced by Sec.4.2.

4.6 Test Procedures

The EUT and peripherals were placed on a FRP turntable that is 0.8 meter above ground. The FRP turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. Broadband antenna (Calibrated Bilog Antenna) or Horn Antenna was used as receiving antenna. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.4:2003 requirements during radiated emission test.

The I.F. bandwidth of Test Receiver R&S ESVS10 was set at 120 kHz below 1GHz and The Spectrum Agilent E7405A was set at 1MHz above 1GHz.

The frequency range from 30 MHz to 1000MHz was checked for all test modes.

The frequency range from 1 GHz to 2 GHz was checked for worst test mode in 30 - 1000 MHz test.

The test modes were done on radiated disturbance test and all the test results are listed in Sec.4.7.

4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

| Test Mode | Data Page |
|----------------------|-----------|
| D-Sub 1920*1080@60Hz | P21 – P22 |
| HDMI 1920*1080@60Hz | P23 |
| HDMI 1280*1024@60Hz | P24 |
| HDMI 640*480@60Hz | P25 |
| USB Play | P26 |

NOTE 1 – Emission Level = Antenna Factor + Cable Loss + Meter Reading.

NOTE 2 – All readings are Quasi-Peak values.

NOTE 3 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

NOTE 4 – The worst case is for HDMI 1920*1080@60Hz test mode. The worst emission at horizontal polarization was detected at 669.230 MHz with corrected signal level of 40.19 dB ($\mu\text{V}/\text{m}$) (limit is 46.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.60 m height and the turntable was at 150°. The worst emission at vertical polarization was detected at 816.670 MHz with corrected signal level of 40.00 dB ($\mu\text{V}/\text{m}$) (limit is 46.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.70 m height and the turntable was at 45°.

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46V86US Humidity : 60%RH

Serial No. : E1202211-01/01 Date of Test : Mar 15, 2012

Test Mode : D-Sub 1920*1080@60Hz

| Polarization | Frequency (MHz) | Meter Reading dB (μ V) | Antenna Factor (dB/m) | Cable Loss (dB) | Emission Level dB (μ V/m) | Limits dB (μ V/m) | Margin (dB) |
|--------------|-----------------|-----------------------------|-----------------------|-----------------|--------------------------------|------------------------|--------------|
| Horizontal | 73.650 | 21.33 | 10.15 | 1.49 | 32.97 | 40.00 | 7.03 |
| | 212.360 | 20.64 | 10.29 | 2.47 | 33.40 | 43.50 | 10.10 |
| | 395.690 | 15.37 | 16.20 | 2.98 | 34.55 | 46.00 | 11.45 |
| | 504.330 | 11.48 | 17.62 | 3.28 | 32.38 | 46.00 | 13.62 |
| | 669.230 | 14.45 | 19.12 | 3.62 | 37.19 | 46.00 | 8.81 |
| | 816.670 | 10.49 | 20.55 | 4.11 | 35.15 | 46.00 | 10.85 |
| Vertical | 73.650 | 17.90 | 10.15 | 1.49 | 29.54 | 40.00 | 10.46 |
| | 149.310 | 17.60 | 10.43 | 2.23 | 30.26 | 43.50 | 13.24 |
| | 293.840 | 15.31 | 13.53 | 2.74 | 31.58 | 46.00 | 14.42 |
| | 504.330 | 11.18 | 17.62 | 3.28 | 32.08 | 46.00 | 13.92 |
| | 669.230 | 10.15 | 19.12 | 3.62 | 32.89 | 46.00 | 13.11 |
| | 816.670 | 10.34 | 20.55 | 4.11 | 35.00 | 46.00 | 11.00 |

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46V86US Humidity : 60%RH

Serial No. : E1202211-01/01 Date of Test : Mar 15, 2012

Test Mode : HDMI 1920*1080@60Hz

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|--------------|-----------------|-----------------------|-----------------------|-----------------|--------------------|--------------------------|------------------|-------------|--------|
| Horizontal | 107.600 | 16.54 | 11.22 | 1.92 | -- | 29.68 | 43.50 | 13.82 | QP |
| | 144.460 | 23.68 | 10.52 | 2.19 | -- | 36.39 | 43.50 | 7.11 | |
| | 212.360 | 24.64 | 10.29 | 2.47 | -- | 37.40 | 43.50 | 6.10 | |
| | 276.380 | 21.39 | 13.02 | 2.68 | -- | 37.09 | 46.00 | 8.91 | |
| | 395.690 | 19.37 | 16.20 | 2.98 | -- | 38.55 | 46.00 | 7.45 | |
| | 669.230 | 17.45 | 19.12 | 3.62 | -- | 40.19 | 46.00 | 5.81 | |
| | 1075.000 | 52.88 | 22.16 | 5.27 | 38.04 | 42.27 | 74.00 | 31.73 | PK |
| | 1250.000 | 47.46 | 24.05 | 5.42 | 37.65 | 39.28 | 74.00 | 34.72 | |
| | 1365.000 | 48.43 | 24.80 | 5.55 | 37.33 | 41.45 | 74.00 | 32.55 | |
| | 1465.000 | 43.20 | 26.11 | 5.72 | 37.06 | 37.97 | 74.00 | 36.03 | |
| | 1595.000 | 44.72 | 26.41 | 5.93 | 36.77 | 40.29 | 74.00 | 33.71 | |
| | 1760.000 | 41.18 | 26.96 | 6.17 | 36.49 | 37.82 | 74.00 | 36.18 | |
| | 1075.000 | 41.88 | 22.16 | 5.27 | 38.04 | 31.27 | 54.00 | 22.73 | AV |
| | 1250.000 | 29.46 | 24.05 | 5.42 | 37.65 | 21.28 | 54.00 | 32.72 | |
| | 1365.000 | 36.43 | 24.80 | 5.55 | 37.33 | 29.45 | 54.00 | 24.55 | |
| 1465.000 | 30.20 | 26.11 | 5.72 | 37.06 | 24.97 | 54.00 | 29.03 | | |
| 1595.000 | 35.72 | 26.41 | 5.93 | 36.77 | 31.29 | 54.00 | 22.71 | | |
| 1760.000 | 31.18 | 26.96 | 6.17 | 36.49 | 27.82 | 54.00 | 26.18 | | |

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46V86US Humidity : 60%RH

Serial No. : E1202211-01/01 Date of Test : Mar 15, 2012

Test Mode : HDMI 1920*1080@60Hz

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|--------------|-----------------|-----------------------|-----------------------|-----------------|--------------------|--------------------------|------------------|-------------|--------|
| Vertical | 47.460 | 21.22 | 9.37 | 0.90 | -- | 31.49 | 40.00 | 8.51 | QP |
| | 73.650 | 18.90 | 10.15 | 1.49 | -- | 30.54 | 40.00 | 9.46 | |
| | 149.310 | 22.60 | 10.43 | 2.23 | -- | 35.26 | 43.50 | 8.24 | |
| | 293.840 | 21.31 | 13.53 | 2.74 | -- | 37.58 | 46.00 | 8.42 | |
| | 504.330 | 18.18 | 17.62 | 3.28 | -- | 39.08 | 46.00 | 6.92 | |
| | 816.670 | 15.34 | 20.55 | 4.11 | -- | 40.00 | 46.00 | 6.00 | |
| | 1080.000 | 44.24 | 22.24 | 5.27 | 38.03 | 33.72 | 74.00 | 40.28 | PK |
| | 1170.000 | 42.47 | 23.38 | 5.34 | 37.83 | 33.36 | 74.00 | 40.64 | |
| | 1315.000 | 44.87 | 24.50 | 5.51 | 37.48 | 37.40 | 74.00 | 36.60 | |
| | 1465.000 | 39.26 | 26.11 | 5.72 | 37.06 | 34.03 | 74.00 | 39.97 | |
| | 1600.000 | 42.52 | 26.40 | 5.93 | 36.76 | 38.09 | 74.00 | 35.91 | |
| | 1760.000 | 44.08 | 26.96 | 6.17 | 36.49 | 40.72 | 74.00 | 33.28 | |
| | AV | 1080.000 | 34.24 | 22.24 | 5.27 | 38.03 | 23.72 | 54.00 | 30.28 |
| | | 1170.000 | 32.47 | 23.38 | 5.34 | 37.83 | 23.36 | 54.00 | 30.64 |
| | | 1315.000 | 30.87 | 24.50 | 5.51 | 37.48 | 23.40 | 54.00 | 26.60 |
| 1465.000 | | 24.26 | 26.11 | 5.72 | 37.06 | 19.03 | 54.00 | 34.97 | |
| 1600.000 | | 22.52 | 26.40 | 5.93 | 36.76 | 18.09 | 54.00 | 35.91 | |
| | 1760.000 | 34.08 | 26.96 | 6.17 | 36.49 | 30.72 | 54.00 | 23.28 | |

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46V86US Humidity : 60%RH

Serial No. : E1202211-01/01 Date of Test : Mar 15, 2012

Test Mode : HDMI 1280*1024@60Hz

| Polarization | Frequency (MHz) | Meter Reading dB (μ V) | Antenna Factor (dB/m) | Cable Loss (dB) | Emission Level dB (μ V/m) | Limits dB (μ V/m) | Margin (dB) |
|--------------|-----------------|-----------------------------|-----------------------|-----------------|--------------------------------|------------------------|-------------|
| Horizontal | 73.650 | 21.33 | 10.15 | 1.49 | 32.97 | 40.00 | 7.03 |
| | 144.460 | 20.68 | 10.52 | 2.19 | 33.39 | 43.50 | 10.11 |
| | 212.360 | 23.64 | 10.29 | 2.47 | 36.40 | 43.50 | 7.10 |
| | 294.810 | 19.89 | 13.56 | 2.75 | 36.20 | 46.00 | 9.80 |
| | 395.690 | 19.37 | 16.20 | 2.98 | 38.55 | 46.00 | 7.45 |
| | 669.230 | 16.45 | 19.12 | 3.62 | 39.19 | 46.00 | 6.81 |
| Vertical | 30.970 | 12.39 | 17.78 | 0.81 | 30.98 | 40.00 | 9.02 |
| | 73.650 | 19.90 | 10.15 | 1.49 | 31.54 | 40.00 | 8.46 |
| | 149.310 | 22.60 | 10.43 | 2.23 | 35.26 | 43.50 | 8.24 |
| | 212.360 | 24.42 | 10.29 | 2.47 | 37.18 | 43.50 | 6.32 |
| | 293.840 | 21.31 | 13.53 | 2.74 | 37.58 | 46.00 | 8.42 |
| | 504.330 | 16.18 | 17.62 | 3.28 | 37.08 | 46.00 | 8.92 |

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46V86US Humidity : 60%RH

Serial No. : E1202211-01/01 Date of Test : Mar 15, 2012

Test Mode : HDMI 640*480@60Hz

| Polarization | Frequency (MHz) | Meter Reading dB (μ V) | Antenna Factor (dB/m) | Cable Loss (dB) | Emission Level dB (μ V/m) | Limits dB (μ V/m) | Margin (dB) |
|--------------|-----------------|-----------------------------|-----------------------|-----------------|--------------------------------|------------------------|-------------|
| Horizontal | 72.680 | 19.01 | 10.08 | 1.47 | 30.56 | 40.00 | 9.44 |
| | 149.310 | 13.54 | 10.43 | 2.23 | 26.20 | 43.50 | 17.30 |
| | 211.390 | 20.66 | 10.26 | 2.47 | 33.39 | 43.50 | 10.11 |
| | 268.620 | 20.12 | 12.74 | 2.66 | 35.52 | 46.00 | 10.48 |
| | 403.450 | 16.83 | 16.34 | 2.99 | 36.16 | 46.00 | 9.84 |
| | 668.260 | 15.02 | 19.12 | 3.62 | 37.76 | 46.00 | 8.24 |
| Vertical | 51.340 | 16.00 | 8.58 | 0.95 | 25.53 | 40.00 | 14.47 |
| | 72.680 | 16.63 | 10.08 | 1.47 | 28.18 | 40.00 | 11.82 |
| | 149.310 | 18.22 | 10.43 | 2.23 | 30.88 | 43.50 | 12.62 |
| | 288.020 | 18.48 | 13.39 | 2.72 | 34.59 | 46.00 | 11.41 |
| | 403.450 | 12.69 | 16.34 | 2.99 | 32.02 | 46.00 | 13.98 |
| | 668.260 | 14.21 | 19.12 | 3.62 | 36.95 | 46.00 | 9.05 |

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46V86US Humidity : 60%RH

Serial No. : E1202211-01/01 Date of Test : Mar 15, 2012

Test Mode : USB Play

| Polarization | Frequency (MHz) | Meter Reading dB (μ V) | Antenna Factor (dB/m) | Cable Loss (dB) | Emission Level dB (μ V/m) | Limits dB (μ V/m) | Margin (dB) |
|--------------|-----------------|-----------------------------|-----------------------|-----------------|--------------------------------|------------------------|-------------|
| Horizontal | 80.440 | 15.77 | 10.56 | 1.59 | 27.92 | 40.00 | 12.08 |
| | 107.600 | 17.54 | 11.22 | 1.92 | 30.68 | 43.50 | 12.82 |
| | 144.460 | 21.68 | 10.52 | 2.19 | 34.39 | 43.50 | 9.11 |
| | 212.360 | 23.64 | 10.29 | 2.47 | 36.40 | 43.50 | 7.10 |
| | 395.690 | 19.37 | 16.20 | 2.98 | 38.55 | 46.00 | 7.45 |
| | 504.330 | 16.48 | 17.62 | 3.28 | 37.38 | 46.00 | 8.62 |
| Vertical | 48.430 | 20.49 | 9.02 | 0.90 | 30.41 | 40.00 | 9.59 |
| | 73.650 | 18.90 | 10.15 | 1.49 | 30.54 | 40.00 | 9.46 |
| | 149.310 | 21.60 | 10.43 | 2.23 | 34.26 | 43.50 | 9.24 |
| | 293.840 | 22.31 | 13.53 | 2.74 | 38.58 | 46.00 | 7.42 |
| | 395.690 | 14.58 | 16.20 | 2.98 | 33.76 | 46.00 | 12.24 |
| | 669.230 | 11.15 | 19.12 | 3.62 | 33.89 | 46.00 | 12.11 |

TEST ENGINEER: RAVEN JIN

5 DEVIATION TO TEST SPECIFICATIONS

None.

6 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

| Name | M/N | Manufacturer | Location |
|--------------|------------------------------|---|----------------------------------|
| Ferrite Core | ZCAT2132-1130\ROH | REALFINE | See Internal Photos Figure 13 |
| | | Haian County Magnetic Material No. 2 Factory | |
| | | LETTALL | |
| | | FEELUX | |
| Ferrite Core | BNF-12\ZCAT1519-0830\RO H | REALFINE | See Internal Photos Figure 14 |
| | | Haian County Magnetic Material No. 2 Factory | |
| | | LETTALL | |
| | | FEELUX | |

Note: We had required the applicant and manufacturer that all electrical and mechanical devices employed for spurious radiation suppression, including any modifications made during certification testing, must be incorporated in each unit marked

TEST ENGINEER:

Raven Jin

(RAVEN JIN)