

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

LCD TV

Model No.	Serial No.	Brand
LHD32W57US	E2009033001	Hisense
32LC30S57	--	Proscan
32LC30S60	--	

FCC ID : W9H32LCD001

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

Prepared By : Audix Technology (Shanghai) Co., Ltd.  
3F 34Bldg 680 Guiping Rd,  
Caohejing Hi-Tech Park,  
Shanghai 200233, China

Tel: +86-21-64955500  
Fax: +86-21-64955491

Report No. : ACI-F09031  
Date of Test : Apr 07 – 17, 2009  
Date of Report : Apr 20, 2009

## TABLE OF CONTENTS

	Page
<b>1 SUMMARY OF STANDARDS AND RESULTS.....</b>	<b>4</b>
1.1 Description of Standards and Results.....	4
<b>2 GENERAL INFORMATION.....</b>	<b>5</b>
2.1 Description of Equipment Under Test.....	5
2.2 Peripherals.....	7
2.3 Description of Test Facility.....	8
2.4 Measurement Uncertainty.....	8
<b>3 CONDUCTED EMISSION TEST.....</b>	<b>9</b>
3.2 Block Diagram of Test Setup.....	9
3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)].....	10
3.4 Test Configuration.....	10
3.5 Operating Condition of EUT.....	11
3.6 Test Procedures.....	11
3.7 Test Results.....	12
<b>4 RADIATED EMISSION TEST.....</b>	<b>21</b>
4.1 Test Equipment.....	21
4.2 Block Diagram of Test Setup.....	21
4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)].....	22
4.4 Test Configuration.....	22
4.5 Operating Condition of EUT.....	23
4.6 Test Procedures.....	23
4.7 Test Results.....	24
<b>5 DEVIATION TO TEST SPECIFICATIONS.....</b>	<b>33</b>
<b>6 DEBUG DESCRIPTION.....</b>	<b>34</b>

## 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
LHD32W57US	E2009033001	Hisense	120V/60Hz
32LC30S57	--	Proscan	
32LC30S60	--		

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2008  
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: Refer to Sec.2.1; S/N: Refer to Sec.2.1) which was tested in 3m anechoic chamber Apr 07 – 17, 2009 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 function are contained in No.F09034, a Verification report.***

Date of Test : Apr 07 – 17, 2009 Date of Report : Apr 20, 2009Producer : Zeno Gu  
ZENO GU / AssistantReview : Byron WU  
BYRON WU / Supervisor

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

Signatory : Dio Yang  
Authorized Signature EMC DIO YANG / Supervisor

# 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
<b>EMISSION</b>			
Conducted Disturbance at the Mains Terminal	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2008 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2008 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 Number	Serial Number	Brand
LHD32W57US	E2009033001	Hisense
32LC30S57	--	Proscan
32LC30S60	--	

Note 1 : The above models are all the same except for the different model number and brand.

Note 2 : The LHD32W57US was tested and recorded in this report.

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 : SAMSUNG  
M/N : LTA320AP02  
S/N : 8C9BJ1260R 002

Tuner : Manufacturer : SAMSUNG  
M/N : DTVS205FH201A

Max Resolution : 1360\*768@60Hz

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

HDMI Cable : Shielded, Detachable, 1.85m,  
without core on cable

Power Cord : Unshielded, Detachable, 1.80m

**Remark:**

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

**Rear View:**

- |     |                                    |                       |
|-----|------------------------------------|-----------------------|
| (1) | One HDMI1 Port                     | Connected with DVD #1 |
| (2) | One HDMI2 Port                     | Connected with DVD #2 |
| (3) | One VGA Port                       | Connected with PC     |
| (4) | One VGA Audio In Port              | Connected with PC     |
| (5) | One component of YPbPr1 Port       | Connected with DVD #1 |
| (6) | One component of YPbPr1 Audio Port | Connected with DVD #1 |
| (7) | One component of YPbPr2 Port       | Connected with DVD #2 |
| (8) | One component of YPbPr2 Audio Port | Connected with DVD #2 |
| (9) | One component of AV Out Port       | Connected with TV     |

**Side Port:**

- |      |                          |                              |
|------|--------------------------|------------------------------|
| (10) | One component of AV Port | Connected with DVD #1        |
| (11) | One S-Video Port         | Connected with TV SG/ATSC SG |
| (12) | One Earphone Port        | Connected with Earphone      |
| (13) | One ANT Port             | Connected with TV SG/ATSC SG |
| (14) | One Coaxial Port         | Connected with TV            |

## 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

Manufacturer : SOYEA  
Model Number : V1453 (M)  
Data Cable : Unshielded, Undetachable, 1.5m  
Certificate : FCC DoC, CE/EMC, CCC

### 2.2.8 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

### 2.2.9 ATSC Signal Generator

Manufacturer : SENCORE  
Model Number : ATSC997  
Serial Number : 6790071

### 2.2.10 DVD#1

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

### 2.2.11 DVD#2

Manufacturer : PHILIPS  
Model Number : DVP3986K/93  
Serial Number : KX1A0902120082  
Certificate : FCC DoC, CE/EMC, CCC

## 2.3 Description of Test Facility

Site Description : Sept. 17, 1998 file on  
(Semi-Anechoic Chamber) July 26, 2006 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 = 1.26 dB  
Radiated Emission Expanded Uncertainty : U = 3.02 dB



### 3 CONDUCTED EMISSION TEST

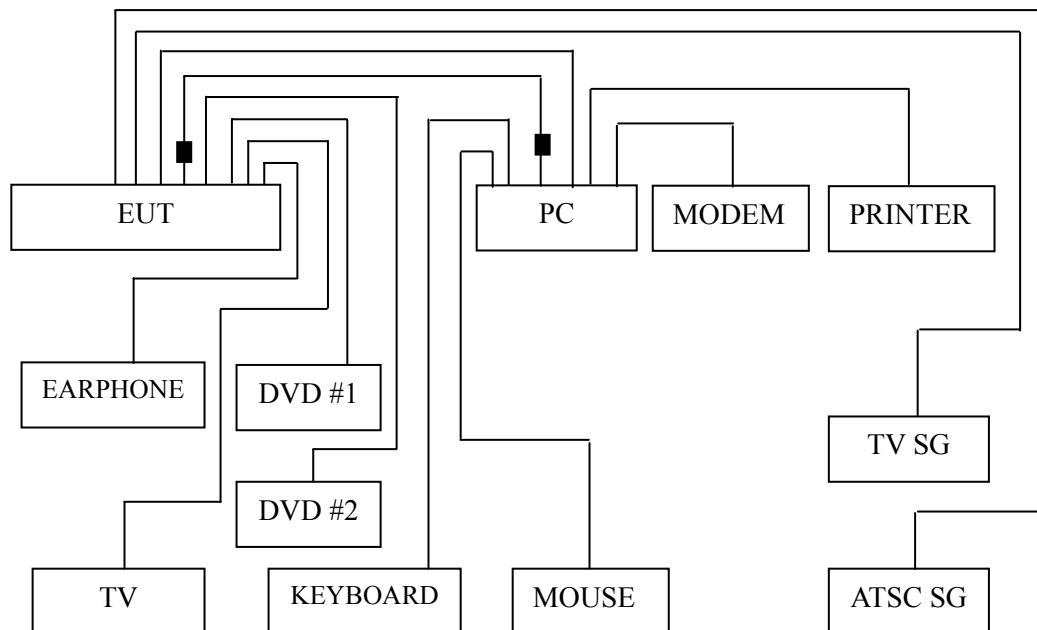
#### 3.1.1 Test Equipment

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	Nov 21, 2008	Nov 21, 2009
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Apr 02, 2009	Apr 02, 2010
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Apr 02, 2009	Apr 02, 2010
4.	50 $\Omega$ Coaxial Switch	Anritsu	MP59B	6200426389	Mar 19, 2009	Sep 19, 2009
5.	50 $\Omega$ Terminator	Anritsu	BNC	001	Apr 02, 2009	Apr 02, 2010
6.	Software	Audix	E3	SET00200 9804M592	--	--

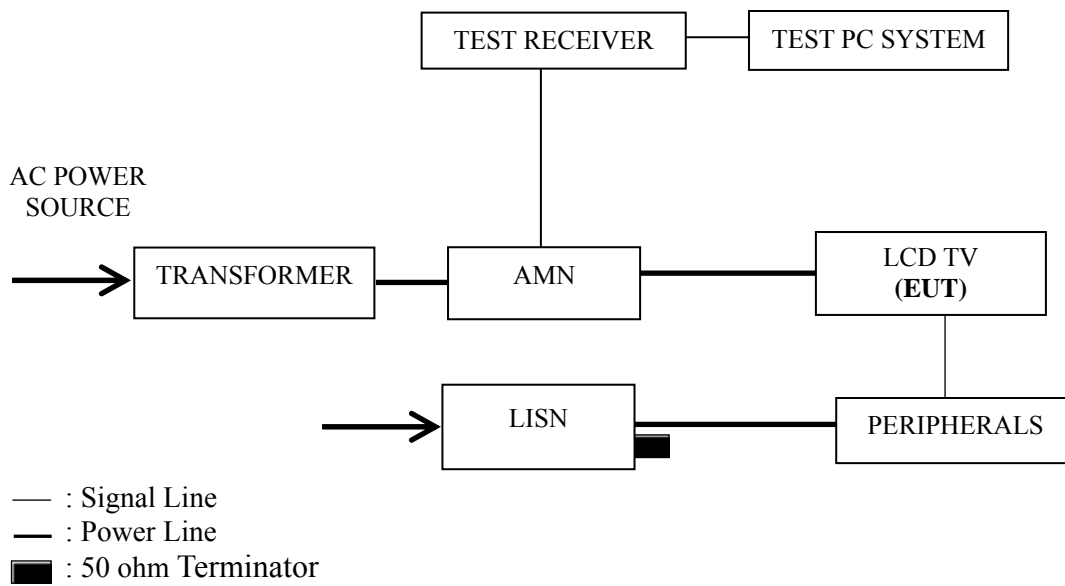
#### 3.2 Block Diagram of Test Setup

##### 3.2.1 EUT & Peripherals



■ : Ferrite core

### 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 ( $\mu$ 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 from 3.5.3 to 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 640*480@60Hz
D-Sub 800*600@60Hz
D-Sub 1024*768@60Hz
D-Sub 1360*768@60Hz
HDMI 640*480@60Hz
HDMI 800*600@60Hz
HDMI 1024*768@60Hz
HDMI 1360*768@60Hz

### 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 640*480@60Hz	P13
D-Sub 800*600@60Hz	P14
D-Sub 1024*768@60Hz	P15
D-Sub 1360*768@60Hz	P16
HDMI 640*480@60Hz	P17
HDMI 800*600@60Hz	P18
HDMI 1024*768@60Hz	P19
HDMI 1360*768@60Hz	P20

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 D-Sub 1360\*768@60Hz test mode. The worst emission is detected at 4.549 MHz (Average) with corrected signal level of 43.48 dB (μV) (limit is 46.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LCD TV Temperature : 20°C

Model No. : LHD32W57US Humidity : 46%RH

Serial No. : E2009033001 Date of Test : Apr 17, 2009

Test Mode : D-Sub 640\*480@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	39.19	0.57	39.76	66.00	26.24	QP
	0.720	27.14	0.51	27.65	56.00	28.35	
	1.762	29.43	0.42	29.85	56.00	26.15	
	4.772	38.70	0.57	39.27	56.00	16.73	
	7.329	39.30	0.58	39.88	60.00	20.12	
	14.063	37.86	0.86	38.72	60.00	21.28	
	0.150	28.95	0.57	29.52	56.00	26.48	AV
	0.720	18.08	0.51	18.59	46.00	27.41	
	1.762	19.18	0.42	19.60	46.00	26.40	
	4.772	29.50	0.57	30.07	46.00	15.93	
	7.329	28.39	0.58	28.97	50.00	21.03	
	14.063	30.34	0.86	31.20	50.00	18.80	
Neutral	0.150	42.42	0.44	42.86	66.00	23.14	QP
	0.914	27.21	0.48	27.69	56.00	28.31	
	3.276	36.55	0.45	37.00	56.00	19.00	
	<b>4.772</b>	<b>40.18</b>	<b>0.46</b>	<b>40.64</b>	<b>56.00</b>	<b>15.36</b>	
	7.329	37.52	0.70	38.22	60.00	21.78	
	14.063	35.61	0.77	36.38	60.00	23.62	
	0.150	31.78	0.44	32.22	56.00	23.78	AV
	0.914	18.09	0.48	18.57	46.00	27.43	
	3.276	27.22	0.45	27.67	46.00	18.33	
	4.772	29.89	0.46	30.35	46.00	15.65	
	7.329	27.15	0.70	27.85	50.00	22.15	
	14.063	29.06	0.77	29.83	50.00	20.17	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 20°C

Model No. : LHD32W57US Humidity : 46%RH

Serial No. : E2009033001 Date of Test : Apr 17, 2009

Test Mode : D-Sub 800\*600@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	41.73	0.57	42.30	66.00	23.70	QP
	0.524	25.81	0.56	26.37	56.00	29.63	
	1.117	24.65	0.46	25.11	56.00	30.89	
	3.399	33.81	0.51	34.32	56.00	21.68	
	5.166	39.84	0.58	40.42	60.00	19.58	
	14.213	38.33	0.87	39.20	60.00	20.80	
	0.150	31.66	0.57	32.23	56.00	23.77	AV
	0.524	18.03	0.56	18.59	46.00	27.41	
	1.117	14.44	0.46	14.90	46.00	31.10	
	3.399	24.49	0.51	25.00	46.00	21.00	
	5.166	29.81	0.58	30.39	50.00	19.61	
	14.213	27.96	0.87	28.83	50.00	21.17	
Neutral	0.150	43.12	0.44	43.56	66.00	22.44	QP
	0.720	27.89	0.50	28.39	56.00	27.61	
	1.054	24.80	0.47	25.27	56.00	30.73	
	3.328	35.63	0.45	36.08	56.00	19.92	
	5.166	39.77	0.48	40.25	60.00	19.75	
	14.213	36.65	0.77	37.42	60.00	22.58	
	0.150	33.04	0.44	33.48	56.00	22.52	AV
	0.720	18.08	0.50	18.58	46.00	27.42	
	1.054	15.13	0.47	15.60	46.00	30.40	
	3.328	25.23	0.45	25.68	46.00	20.32	
	<b>5.166</b>	<b>30.93</b>	<b>0.48</b>	<b>31.41</b>	<b>50.00</b>	<b>18.59</b>	
	14.213	26.77	0.77	27.54	50.00	22.46	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 20°C

Model No. : LHD32W57US Humidity : 46%RH

Serial No. : E2009033001 Date of Test : Apr 17, 2009

Test Mode : D-Sub 1024\*768@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	43.77	0.57	44.34	66.00	21.66	QP
	0.329	25.66	0.60	26.26	59.49	33.23	
	0.720	27.17	0.51	27.68	56.00	28.32	
	4.454	39.01	0.56	39.57	56.00	16.43	
	7.368	39.35	0.58	39.93	60.00	20.07	
	14.213	38.86	0.87	39.73	60.00	20.27	
	0.150	34.11	0.57	34.68	56.00	21.32	AV
	0.329	15.81	0.60	16.41	49.49	33.08	
	0.720	17.09	0.51	17.60	46.00	28.40	
	4.454	29.34	0.56	29.90	46.00	16.10	
	7.368	29.23	0.58	29.81	50.00	20.19	
	14.213	28.63	0.87	29.50	50.00	20.50	
Neutral	0.150	42.01	0.44	42.45	66.00	23.55	QP
	0.524	24.88	0.55	25.43	56.00	30.57	
	1.503	28.29	0.45	28.74	56.00	27.26	
	<b>4.454</b>	<b>46.92</b>	<b>0.46</b>	<b>47.38</b>	<b>56.00</b>	<b>8.62</b>	
	11.438	34.11	0.73	34.84	60.00	25.16	
	19.950	37.22	0.92	38.14	60.00	21.86	
	0.150	31.78	0.44	32.22	56.00	23.78	AV
	0.524	14.81	0.55	15.36	46.00	30.64	
	1.503	18.19	0.45	18.64	46.00	27.36	
	4.454	36.91	0.46	37.37	46.00	8.63	
	11.438	24.21	0.73	24.94	50.00	25.06	
	19.950	26.88	0.92	27.80	50.00	22.20	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 20°C

Model No. : LHD32W57US Humidity : 46%RH

Serial No. : E2009033001 Date of Test : Apr 17, 2009

Test Mode : D-Sub 1360\*768@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	44.81	0.57	45.38	66.00	20.62	QP
	0.524	26.77	0.56	27.33	56.00	28.67	
	1.503	27.21	0.44	27.65	56.00	28.35	
	4.549	52.86	0.57	53.43	56.00	2.57	
	7.368	39.32	0.58	39.90	60.00	20.10	
	14.364	39.68	0.87	40.55	60.00	19.45	
	0.150	34.66	0.57	35.23	56.00	20.77	AV
	0.524	17.03	0.56	17.59	46.00	28.41	
	1.503	17.15	0.44	17.59	46.00	28.41	
	<b>4.549</b>	<b>42.91</b>	<b>0.57</b>	<b>43.48</b>	<b>46.00</b>	<b>2.52</b>	
	7.368	29.23	0.58	29.81	50.00	20.19	
	14.364	30.74	0.87	31.61	50.00	18.39	
Neutral	0.150	44.25	0.44	44.69	66.00	21.31	QP
	0.592	25.19	0.52	25.71	56.00	30.29	
	1.310	30.03	0.45	30.48	56.00	25.52	
	4.454	51.01	0.46	51.47	56.00	4.53	
	7.368	38.02	0.70	38.72	60.00	21.28	
	14.828	36.62	0.78	37.40	60.00	22.60	
	0.150	33.79	0.44	34.23	56.00	21.77	AV
	0.592	14.58	0.52	15.10	46.00	30.90	
	1.310	21.13	0.45	21.58	46.00	24.42	
	4.454	41.02	0.46	41.48	46.00	4.52	
	7.368	28.61	0.70	29.31	50.00	20.69	
	14.828	26.75	0.78	27.53	50.00	22.47	

TEST ENGINEER: WENCY YANG



EUT : LCD TV Temperature : 20°C

Model No. : LHD32W57US Humidity : 46%RH

Serial No. : E2009033001 Date of Test : Apr 17, 2009

Test Mode : HDMI 640\*480@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	35.85	0.57	36.42	66.00	29.58	QP
	0.524	28.69	0.56	29.25	56.00	26.75	
	<b>1.449</b>	<b>51.64</b>	<b>0.44</b>	<b>52.08</b>	<b>56.00</b>	<b>3.92</b>	
	4.772	44.68	0.57	45.25	56.00	10.75	
	9.451	42.36	0.58	42.94	60.00	17.06	
	14.364	36.76	0.87	37.63	60.00	22.37	
	0.150	25.50	0.57	26.07	56.00	29.93	AV
	0.524	18.56	0.56	19.12	46.00	26.88	
	1.449	41.29	0.44	41.73	46.00	4.27	
	4.772	34.17	0.57	34.74	46.00	11.26	
	9.451	32.82	0.58	33.40	50.00	16.60	
	14.364	26.48	0.87	27.35	50.00	22.65	
Neutral	0.150	36.51	0.44	36.95	66.00	29.05	QP
	0.524	26.22	0.55	26.77	56.00	29.23	
	1.449	49.13	0.45	49.58	56.00	6.42	
	4.454	41.85	0.46	42.31	56.00	13.69	
	9.552	42.00	0.71	42.71	60.00	17.29	
	14.986	37.02	0.78	37.80	60.00	22.20	
	0.150	26.39	0.44	26.83	56.00	29.17	AV
	0.524	16.39	0.55	16.94	46.00	29.06	
	1.449	36.28	0.45	36.73	46.00	9.27	
	4.454	31.52	0.46	31.98	46.00	14.02	
	9.552	32.96	0.71	33.67	50.00	16.33	
	14.986	28.65	0.78	29.43	50.00	20.57	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 20°C

Model No. : LHD32W57US Humidity : 46%RH

Serial No. : E2009033001 Date of Test : Apr 17, 2009

Test Mode : HDMI 800\*600@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	32.37	0.57	32.94	66.00	33.06	QP
	0.524	27.69	0.56	28.25	56.00	27.75	
	<b>1.464</b>	<b>51.94</b>	<b>0.44</b>	<b>52.38</b>	<b>56.00</b>	<b>3.62</b>	
	4.772	41.92	0.57	42.49	56.00	13.51	
	9.552	39.34	0.58	39.92	60.00	20.08	
	14.364	39.20	0.87	40.07	60.00	19.93	
	0.150	21.69	0.57	22.26	56.00	33.74	AV
	0.524	17.59	0.56	18.15	46.00	27.85	
	1.464	40.69	0.44	41.13	46.00	4.87	
	4.772	32.65	0.57	33.22	46.00	12.78	
	9.552	28.97	0.58	29.55	50.00	20.45	
	14.364	24.98	0.87	25.85	50.00	24.15	
Neutral	0.150	34.01	0.44	34.45	66.00	31.55	QP
	0.654	28.38	0.50	28.88	56.00	27.12	
	1.465	49.57	0.45	50.02	56.00	5.98	
	4.315	44.66	0.45	45.11	56.00	10.89	
	9.552	40.75	0.71	41.46	60.00	18.54	
	14.986	35.38	0.78	36.16	60.00	23.84	
	0.150	24.36	0.44	24.80	56.00	31.20	AV
	0.654	18.70	0.50	19.20	46.00	26.80	
	1.465	39.65	0.45	40.10	46.00	5.90	
	4.315	34.30	0.45	34.75	46.00	11.25	
	9.552	31.27	0.71	31.98	50.00	18.02	
	14.986	25.39	0.78	26.17	50.00	23.83	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 20°C

Model No. : LHD32W57US Humidity : 46%RH

Serial No. : E2009033001 Date of Test : Apr 17, 2009

Test Mode : HDMI 1024\*768@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	35.20	0.57	35.77	66.00	30.23	QP
	0.329	24.97	0.60	25.57	59.49	33.92	
	<b>1.464</b>	<b>49.88</b>	<b>0.44</b>	<b>50.32</b>	<b>56.00</b>	<b>5.68</b>	
	4.315	40.72	0.55	41.27	56.00	14.73	
	9.302	38.13	0.57	38.70	60.00	21.30	
	14.364	37.80	0.87	38.67	60.00	21.33	
	0.150	24.95	0.57	25.52	56.00	30.48	AV
	0.329	13.69	0.60	14.29	49.49	35.20	
	1.464	37.92	0.44	38.36	46.00	7.64	
	4.315	29.97	0.55	30.52	46.00	15.48	
	9.302	27.99	0.57	28.56	50.00	21.44	
	14.364	24.39	0.87	25.26	50.00	24.74	
Neutral	0.150	33.08	0.44	33.52	66.00	32.48	QP
	0.456	22.31	0.56	22.87	56.76	33.89	
	1.519	49.64	0.45	50.09	56.00	5.91	
	4.721	43.60	0.46	44.06	56.00	11.94	
	9.552	39.85	0.71	40.56	60.00	19.44	
	14.986	35.84	0.78	36.62	60.00	23.38	
	0.150	22.68	0.44	23.12	56.00	32.88	AV
	0.456	11.36	0.56	11.92	46.76	34.84	
	1.519	27.98	0.45	28.43	46.00	17.57	
	4.721	32.48	0.46	32.94	46.00	13.06	
	9.552	28.99	0.71	29.70	50.00	20.30	
	14.986	27.98	0.78	28.76	50.00	21.24	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 20°C

Model No. : LHD32W57US Humidity : 46%RH

Serial No. : E2009033001 Date of Test : Apr 17, 2009

Test Mode : HDMI 1360\*768@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	33.20	0.57	33.77	66.00	32.23	QP
	0.393	26.37	0.59	26.96	57.99	31.03	
	1.568	49.94	0.43	50.37	56.00	5.63	
	4.926	40.52	0.58	41.10	56.00	14.90	
	9.451	38.82	0.58	39.40	60.00	20.60	
	14.364	35.93	0.87	36.80	60.00	23.20	
	0.150	22.65	0.57	23.22	56.00	32.78	AV
	0.393	15.72	0.59	16.31	47.99	31.68	
	1.568	37.95	0.43	38.38	46.00	7.62	
	4.926	30.25	0.58	30.83	46.00	15.17	
	9.451	27.49	0.58	28.07	50.00	21.93	
	14.364	24.68	0.87	25.55	50.00	24.45	
Neutral	0.150	35.06	0.44	35.50	66.00	30.50	QP
	0.283	21.79	0.57	22.36	60.72	38.36	
	<b>1.535</b>	<b>50.80</b>	<b>0.45</b>	<b>51.25</b>	<b>56.00</b>	<b>4.75</b>	
	4.822	42.57	0.46	43.03	56.00	12.97	
	9.552	36.86	0.71	37.57	60.00	22.43	
	15.388	35.71	0.79	36.50	60.00	23.50	
	0.150	24.93	0.44	25.37	56.00	30.63	AV
	0.283	11.36	0.57	11.93	50.72	38.79	
	1.535	40.61	0.45	41.06	46.00	4.94	
	4.822	32.65	0.46	33.11	46.00	12.89	
	9.552	25.64	0.71	26.35	50.00	23.65	
	15.388	24.68	0.79	25.47	50.00	24.53	

TEST ENGINEER: WENCY YANG

## 4 RADIATED EMISSION TEST

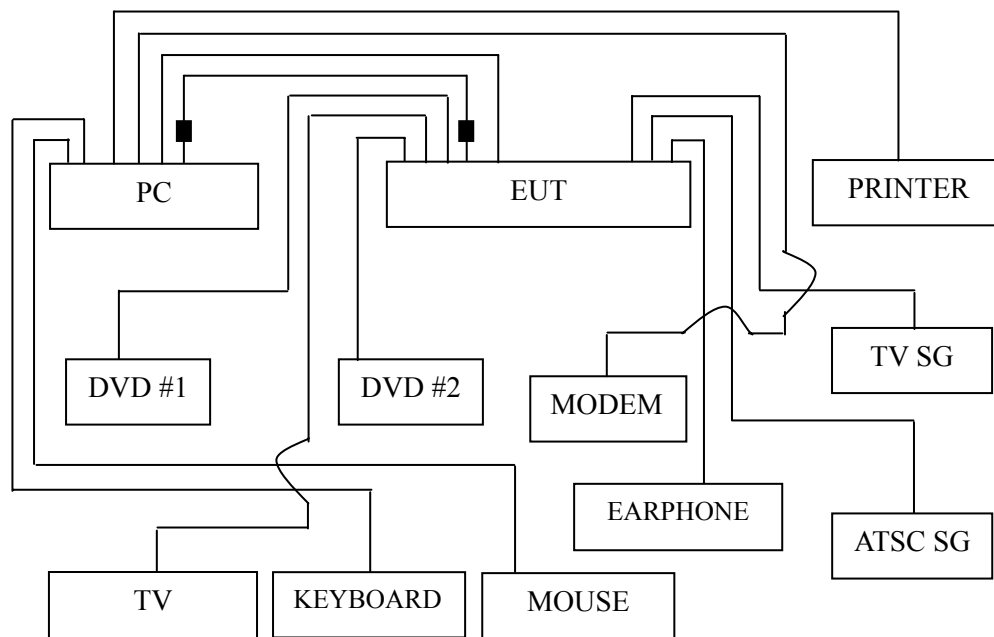
### 4.1 Test Equipment

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 07, 2009	Mar 07, 2010
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 19, 2009	Sep 19, 2009
3.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 14, 2008	May 14, 2009
4.	Spectrum	Agilent	E7405A	MY45106600	May 19, 2008	May 19, 2009
5.	Software	Audix	E3	SET00200 9912M295-2	--	--

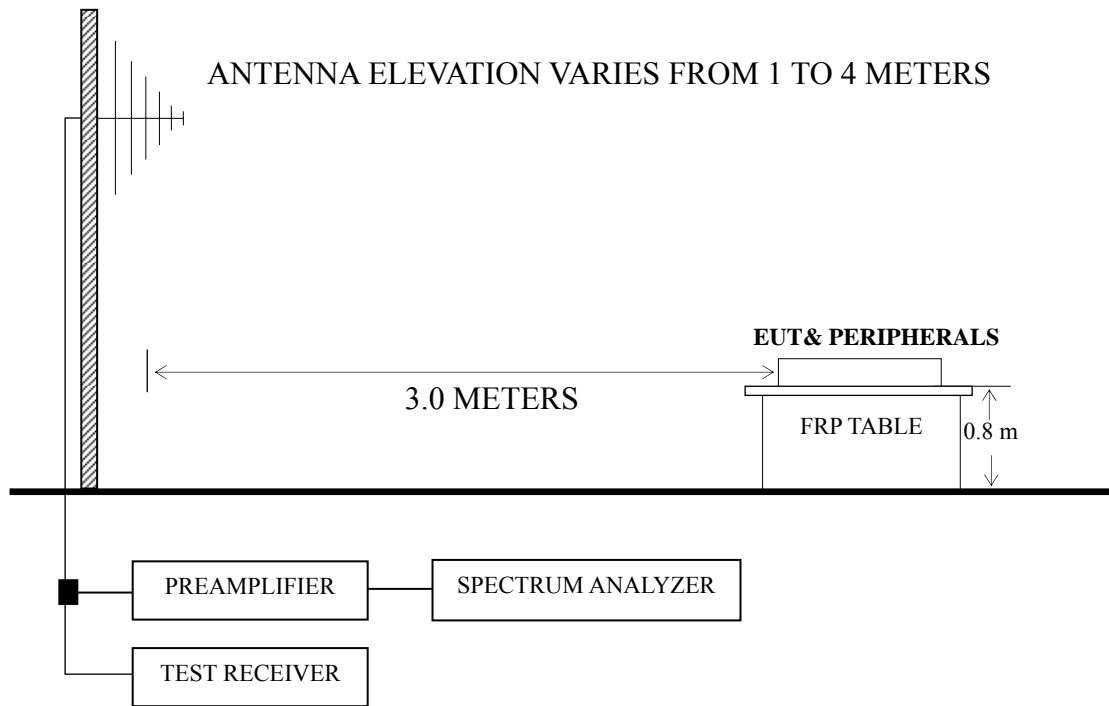
### 4.2 Block Diagram of Test Setup

#### 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 below or equal to 1GHz.

#### 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) 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 bandwidth of Test Receiver R&S ESVS10 was set at 120 kHz.

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

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 640*480@60Hz	P25
D-Sub 800*600@60Hz	P26
D-Sub 1024*768@60Hz	P27
D-Sub 1360*768@60Hz	P28
HDMI 640*480@60Hz	P29
HDMI 800*600@60Hz	P30
HDMI 1024*768@60Hz	P31
HDMI 1360*768@60Hz	P32

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

NOTE 2 – The emission levels that are 20dB below the official limit are not reported.

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 D-Sub 1360\*768@60Hz test mode. The worst emission at horizontal polarization was detected at 567.600 MHz with corrected signal level of 45.03 dB (μV/m) (limit is 46.00dB (μV/m)), when the antenna was 2.00 m height and the turntable was at 70°. The worst emission at vertical polarization was detected at 668.260 MHz with corrected signal level of 44.79 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 2.00 m height and the turntable was at 210°.



EUT : LCD TV Temperature : 22°C

Model No. : LHD32W57US Humidity : 60%RH

Serial No. : E2009033001 Date of Test : Apr 07, 2009

Test Mode : D-Sub 640\*480@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	<b>30.970</b>	<b>17.27</b>	<b>19.03</b>	<b>0.57</b>	<b>36.87</b>	<b>40.00</b>	<b>3.13</b>
	40.670	20.61	13.62	0.69	34.92	40.00	5.08
	60.070	25.71	6.60	0.82	33.13	40.00	6.87
	84.320	26.78	8.48	0.86	36.12	40.00	3.88
	108.570	19.12	12.17	0.86	32.15	43.50	11.35
	569.320	19.04	18.84	2.54	40.42	46.00	5.58
Vertical	106.630	21.82	12.02	0.86	34.70	43.50	8.80
	133.790	24.88	12.35	0.90	38.13	43.50	5.37
	142.520	23.18	11.91	0.91	36.00	43.50	7.50
	553.800	20.97	18.62	2.49	42.08	46.00	3.92
	<b>568.350</b>	<b>22.10</b>	<b>18.81</b>	<b>2.54</b>	<b>43.45</b>	<b>46.00</b>	<b>2.55</b>
	649.830	17.22	19.45	2.83	39.50	46.00	6.50

TEST ENGINEER: TOM SI

EUT : LCD TV Temperature : 22°C

Model No. : LHD32W57US Humidity : 60%RH

Serial No. : E2009033001 Date of Test : Apr 07, 2009

Test Mode : D-Sub 800\*600@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	30.970	16.33	19.03	0.57	35.93	40.00	4.07
	60.070	26.10	6.60	0.82	33.52	40.00	6.48
	<b>84.320</b>	<b>27.13</b>	<b>8.48</b>	<b>0.86</b>	<b>36.47</b>	<b>40.00</b>	<b>3.53</b>
	106.630	21.04	12.02	0.86	33.92	43.50	9.58
	133.790	21.74	12.35	0.90	34.99	43.50	8.51
	568.350	18.97	18.81	2.54	40.32	46.00	5.68
Vertical	80.440	24.44	7.85	0.86	33.15	40.00	6.85
	141.550	20.88	12.01	0.91	33.80	43.50	9.70
	532.460	18.45	18.33	2.45	39.23	46.00	6.77
	<b>562.530</b>	<b>21.30</b>	<b>18.75</b>	<b>2.52</b>	<b>42.57</b>	<b>46.00</b>	<b>3.43</b>
	676.990	19.69	19.59	2.95	42.23	46.00	3.77
	809.880	15.34	20.80	3.34	39.48	46.00	6.52

TEST ENGINEER: TOM SI

EUT : LCD TV Temperature : 22°C

Model No. : LHD32W57US Humidity : 60%RH

Serial No. : E2009033001 Date of Test : Apr 07, 2009

Test Mode : D-Sub 1024\*768@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	<b>30.970</b>	<b>17.63</b>	<b>19.03</b>	<b>0.57</b>	<b>37.23</b>	<b>40.00</b>	<b>2.77</b>
	41.640	20.21	13.02	0.70	33.93	40.00	6.07
	59.100	25.72	6.80	0.82	33.34	40.00	6.66
	84.320	27.50	8.48	0.86	36.84	40.00	3.16
	563.500	18.23	18.75	2.52	39.50	46.00	6.50
	676.990	16.35	19.59	2.95	38.89	46.00	7.11
Vertical	<b>30.970</b>	<b>17.88</b>	<b>19.03</b>	<b>0.57</b>	<b>37.48</b>	<b>40.00</b>	<b>2.52</b>
	40.670	21.40	13.62	0.69	35.71	40.00	4.29
	57.160	26.78	7.18	0.81	34.77	40.00	5.23
	71.710	28.76	6.69	0.87	36.32	40.00	3.68
	415.090	20.80	16.72	2.10	39.62	46.00	6.38
	568.350	21.34	18.81	2.54	42.69	46.00	3.31

TEST ENGINEER: TOM SI

EUT : LCD TV Temperature : 22°C

Model No. : LHD32W57US Humidity : 60%RH

Serial No. : E2009033001 Date of Test : Apr 07, 2009

Test Mode : D-Sub 1360\*768@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	70.740	27.81	6.58	0.87	35.26	40.00	4.74
	321.970	21.22	14.50	1.66	37.38	46.00	8.62
	405.390	19.42	16.57	2.06	38.05	46.00	7.95
	<b>567.600</b>	<b>23.70</b>	<b>18.81</b>	<b>2.52</b>	<b>45.03</b>	<b>46.00</b>	<b>0.97</b>
	648.860	20.50	19.45	2.83	42.78	46.00	3.22
	809.880	20.26	20.80	3.34	44.40	46.00	1.60
Vertical	83.350	25.52	8.30	0.86	34.68	40.00	5.32
	405.390	18.38	16.57	2.06	37.01	46.00	8.99
	558.650	22.42	18.68	2.51	43.61	46.00	2.39
	<b>668.260</b>	<b>22.33</b>	<b>19.55</b>	<b>2.91</b>	<b>44.79</b>	<b>46.00</b>	<b>1.21</b>
	700.270	16.80	19.70	3.07	39.57	46.00	6.43
	809.880	19.30	20.80	3.34	43.44	46.00	2.56

TEST ENGINEER: TOM SI

EUT : LCD TV Temperature : 22°C

Model No. : LHD32W57US Humidity : 60%RH

Serial No. : E2009033001 Date of Test : Apr 07, 2009

Test Mode : HDMI 640\*480@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	54.250	23.97	7.92	0.79	32.68	40.00	7.32
	71.710	26.01	6.69	0.87	33.57	40.00	6.43
	90.140	24.96	9.40	0.86	35.22	43.50	8.28
	107.600	25.15	12.10	0.86	38.11	43.50	5.39
	149.310	26.54	11.35	0.92	38.81	43.50	4.69
	<b>269.590</b>	<b>29.35</b>	<b>13.32</b>	<b>1.38</b>	<b>44.05</b>	<b>46.00</b>	<b>1.95</b>
Vertical	33.880	17.25	17.44	0.61	35.30	40.00	4.70
	<b>44.550</b>	<b>25.67</b>	<b>11.38</b>	<b>0.73</b>	<b>37.78</b>	<b>40.00</b>	<b>2.22</b>
	74.620	21.08	7.11	0.87	29.06	40.00	10.94
	107.600	28.13	12.10	0.86	41.09	43.50	2.41
	126.030	27.21	12.71	0.89	40.81	43.50	2.69
	216.240	28.74	11.43	1.14	41.31	46.00	4.69

TEST ENGINEER: TOM SI

EUT : LCD TV Temperature : 22°C

Model No. : LHD32W57US Humidity : 60%RH

Serial No. : E2009033001 Date of Test : Apr 07, 2009

Test Mode : HDMI 800\*600@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	107.600	25.15	12.10	0.86	38.11	43.50	5.39
	149.310	26.54	11.35	0.92	38.81	43.50	4.69
	216.240	26.34	11.43	1.14	38.91	46.00	7.09
	<b>269.590</b>	<b>28.35</b>	<b>13.32</b>	<b>1.38</b>	<b>43.05</b>	<b>46.00</b>	<b>2.95</b>
	378.230	22.54	16.03	1.93	40.50	46.00	5.50
	485.900	21.86	17.73	2.33	41.92	46.00	4.08
Vertical	33.880	16.25	17.44	0.61	34.30	40.00	5.70
	44.550	22.67	11.38	0.73	34.78	40.00	5.22
	107.600	26.13	12.10	0.86	39.09	43.50	4.41
	216.240	28.74	11.43	1.14	41.31	46.00	4.69
	269.590	26.28	13.32	1.38	40.98	46.00	5.02
	<b>491.720</b>	<b>22.56</b>	<b>17.80</b>	<b>2.35</b>	<b>42.71</b>	<b>46.00</b>	<b>3.29</b>

TEST ENGINEER: TOM SI

EUT : LCD TV Temperature : 22°C

Model No. : LHD32W57US Humidity : 60%RH

Serial No. : E2009033001 Date of Test : Apr 07, 2009

Test Mode : HDMI 1024\*768@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	149.310	25.54	11.35	0.92	37.81	43.50	5.69
	216.240	25.34	11.43	1.14	37.91	46.00	8.09
	<b>269.590</b>	<b>26.35</b>	<b>13.32</b>	<b>1.38</b>	<b>41.05</b>	<b>46.00</b>	<b>4.95</b>
	371.440	21.10	15.88	1.91	38.89	46.00	7.11
	485.900	19.86	17.73	2.33	39.92	46.00	6.08
	589.690	18.86	19.09	2.56	40.51	46.00	5.49
Vertical	<b>33.880</b>	<b>18.25</b>	<b>17.44</b>	<b>0.61</b>	<b>36.30</b>	<b>40.00</b>	<b>3.70</b>
	44.550	23.67	11.38	0.73	35.78	40.00	4.22
	107.600	26.13	12.10	0.86	39.09	43.50	4.41
	194.900	26.23	10.51	1.07	37.81	43.50	5.69
	269.590	25.28	13.32	1.38	39.98	46.00	6.02
	491.720	21.56	17.80	2.35	41.71	46.00	4.29

TEST ENGINEER: TOM SI

EUT : LCD TV Temperature : 22°C

Model No. : LHD32W57US Humidity : 60%RH

Serial No. : E2009033001 Date of Test : Apr 07, 2009

Test Mode : HDMI 1360\*768@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	<b>51.340</b>	<b>27.87</b>	<b>8.61</b>	<b>0.78</b>	<b>37.26</b>	<b>40.00</b>	<b>2.74</b>
	90.140	24.96	9.40	0.86	35.22	43.50	8.28
	107.600	22.15	12.10	0.86	35.11	43.50	8.39
	149.310	24.54	11.35	0.92	36.81	43.50	6.69
	269.590	26.35	13.32	1.38	41.05	46.00	4.95
	342.340	26.08	15.11	1.77	42.96	46.00	3.04
Vertical	107.600	24.13	12.10	0.86	37.09	43.50	6.41
	126.030	25.21	12.71	0.89	38.81	43.50	4.69
	216.240	24.74	11.43	1.14	37.31	46.00	8.69
	371.440	21.07	15.88	1.91	38.86	46.00	7.14
	<b>491.720</b>	<b>22.56</b>	<b>17.80</b>	<b>2.35</b>	<b>42.71</b>	<b>46.00</b>	<b>3.29</b>
	589.690	19.95	19.09	2.56	41.60	46.00	4.40

TEST ENGINEER: TOM SI



## **5 DEVIATION TO TEST SPECIFICATIONS**

None.

## 6 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Specifications (mm)	Manufacturer	Location
Ferrite Core	TDK HF70RH	16*38*9	ROH	See Internal Photo Figure 16
Ferrite Core	TDK HF70RH	16*28*9	ROH	See Internal Photo Figure 17-1, 19
Ferrite Core	TDK HF70RH	16*18*12	ROH	See Internal Photo Figure 17-2