

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

LCD TV

Model No.	Serial No.	Brand
LHD32V77AUS	E1103030-01/01	Hisense
H32V77C	--	
LHD32V78AUS	--	
H32V78C	--	

FCC ID : W9HLCDC0007

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-F11045
Date of Test : Mar 19 – 23, 2011
Date of Report : Apr 08, 2011

TABLE OF CONTENTS

	Page
1 SUMMARY OF STANDARDS AND RESULTS	4
1.1 Description of Standards and Results.....	4
2 GENERAL INFORMATION	5
2.1 Description of Equipment Under Test.....	5
2.2 Peripherals.....	7
2.3 Description of Test Facility.....	8
2.4 Measurement Uncertainty.....	8
3 CONDUCTED EMISSION TEST	9
3.1 Test Equipment.....	9
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
4 RADIATED EMISSION TEST	19
4.1 Test Equipment.....	19
4.2 Block Diagram of Test Setup.....	19
4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)].....	20
4.4 Test Configuration.....	20
4.5 Operating Condition of EUT.....	20
4.6 Test Procedures.....	21
4.7 Test Results.....	22
5 DEVIATION TO TEST SPECIFICATIONS	29
6 DEBUG DESCRIPTION	30

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
LHD32V77AUS	E1103030-01/01	Hisense	120V/60Hz
H32V77C	--		
LHD32V78AUS	--		
H32V78C	--		

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2009
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 Mar 19 – 23, 2011 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.F11044, a Verification report.

Date of Test : Mar 19 – 23, 2011 Date of Report : Apr.08, 2011

Producer : 
KATHY WANG / Assistant

Review : 
DIO YANG / Deputy 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 2009 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2009 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.	LHD32V77AUS	LHD32V78AUS
	H32V77C	H32V78C
Serial No.	E1103030-01/01	--
	--	--
Brand	Hisense	

Note : The above four models are all the same except for the model name. The LHD32V77AUS was tested and recorded in the 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 : LG Display
M/N : LC320WXE

Tuner : Manufacturer : XuGuang Tech. Co., Ltd.
M/N : DVT-8ADC1/W41F2\ROH

Max Resolution : 1024*768@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:

Back Port:

- (1) One HDMI2 Port : Connected with DVD1
- (2) One HDMI3 Port : Connected with DVD2
- (3) One DIGITAL AUDIO OUT Port : Connected with DVD1
- (4) One VGA Port : Connected with PC
- (5) One PC AUDIO Port : Connected with PC

Side Port

- (1) One component of YPbPr Port : Connected with DVD1
- (2) One component of YPbPr Audio Port : Connected with DVD1
- (3) One component of AV Port : Connected with DVD1
- (4) One ANT Port : Connected with ATSC SG
- (5) One Earphone Port : Connected with Earphone
- (6) One USB port : Do not open to customer
- (7) One HDMI1 Port : Connected with PC

2.2 Peripherals

2.2.1 PC

Manufacturer : HP
Model Number : dx7200MT
Serial Number : CNG8130K89
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, undetachable, 1.8m.
Certificate : CE/EMC, FCC DoC, VCCI, MIC, C-Tick,
BSMI

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 #1

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

2.2.10 DVD #2

Manufacturer : LG
 Model Number : DF9921N
 Serial Number : 3850R-M846W
 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)

3 CONDUCTED EMISSION TEST

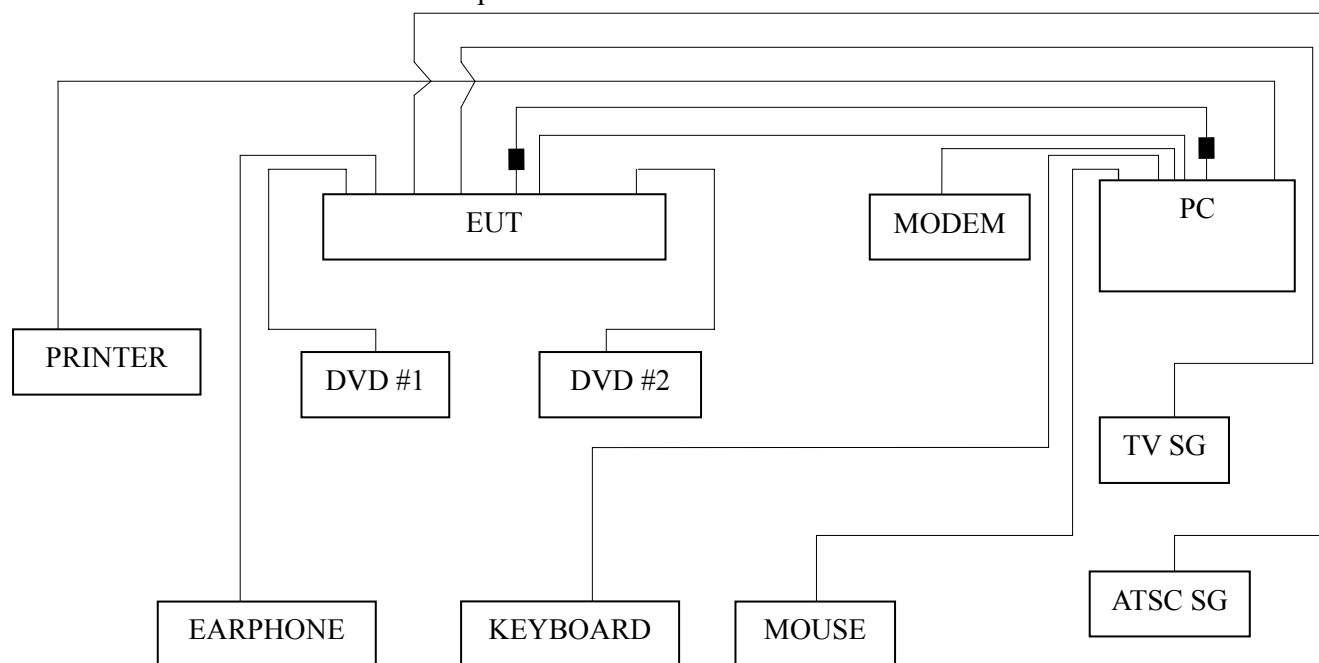
3.1 Test Equipment

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	Oct 15, 2010	Oct 15, 2011
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Apr 02, 2010	Apr 02, 2011
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Apr 02, 2010	Apr 02, 2011
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Mar 18, 2011	Sep 18, 2011
5.	50 Ω Terminator	Anritsu	BNC	001	Apr 02, 2010	Apr 02, 2011
6.	Software	Audix	E3	SET00200 9804M592	--	--

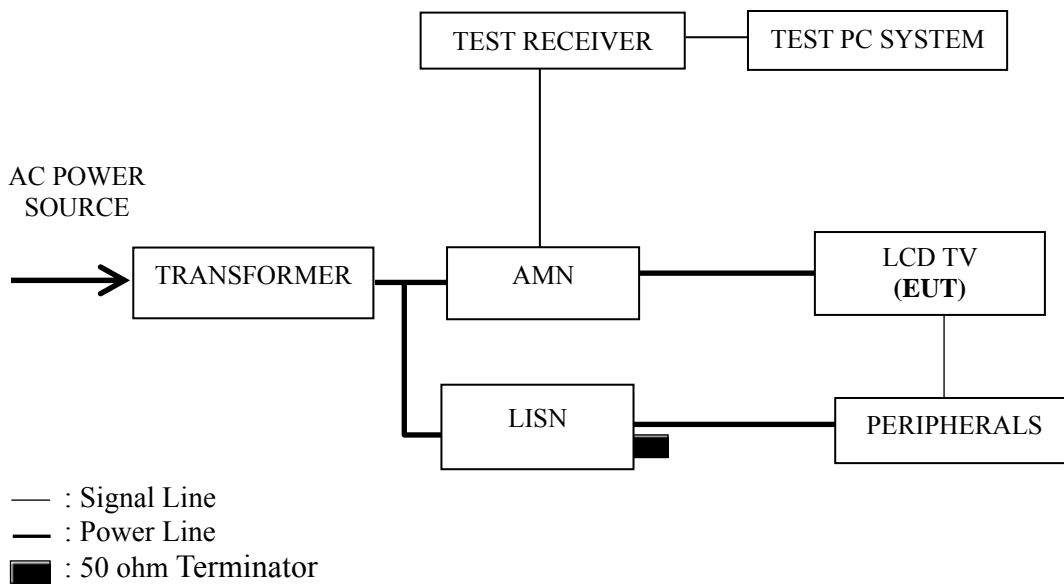
3.2 Block Diagram of Test Setup

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 (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 640*480@60Hz
D-Sub 800*600@60Hz
D-Sub 1024*768@60Hz
HDMI 640*480@60Hz
HDMI 800*600@60Hz
HDMI 1024*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
HDMI 640*480@60Hz	P16
HDMI 800*600@60Hz	P17
HDMI 1024*768@60Hz	P18

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 1024*768@60Hz test mode. The worst emission is detected at 0.300 MHz (Quasi-Peak value) with corrected signal level of 48.13 dB (μ V) (limit is 60.24 dB (μ V)), when the Neutral of the EUT is connected to AMN.

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77AUS Humidity : 48%RH

Serial No. : E1103030-01/01 Date of Test : Mar 19, 2011

Test Mode : D-Sub 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	0.182	51.26	0.38	51.64	64.42	12.78	QP
	0.300	44.50	0.45	44.95	60.24	15.29	
	0.421	44.00	0.49	44.49	57.42	12.93	
	1.262	37.73	0.56	38.29	56.00	17.71	
	3.547	33.90	0.73	34.63	56.00	21.37	
	23.387	38.21	1.74	39.95	60.00	20.05	
	0.182	40.32	0.38	40.70	54.42	13.72	AV
	0.300	33.70	0.45	34.15	50.24	16.09	
	0.421	33.20	0.49	33.69	47.42	13.73	
	1.262	26.81	0.56	27.37	46.00	18.63	
	3.547	23.10	0.73	23.83	46.00	22.17	
	23.387	27.41	1.74	29.15	50.00	20.85	
Neutral	0.182	51.23	0.31	51.54	64.42	12.88	QP
	0.300	47.63	0.39	48.02	60.24	12.22	
	0.421	43.07	0.45	43.52	57.42	13.90	
	1.141	36.82	0.52	37.34	56.00	18.66	
	16.661	33.12	1.57	34.69	60.00	25.31	
	23.140	39.67	1.83	41.50	60.00	18.50	
	0.182	40.60	0.31	40.91	54.42	13.51	AV
	0.300	36.80	0.39	37.19	50.24	13.05	
	0.421	32.40	0.45	32.85	47.42	14.57	
	1.141	25.60	0.52	26.12	46.00	19.88	
	16.661	22.30	1.57	23.87	50.00	26.13	
	23.140	28.40	1.83	30.23	50.00	19.77	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77AUS Humidity : 48%RH

Serial No. : E1103030-01/01 Date of Test : Mar 19, 2011

Test Mode : D-Sub 800*600@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	0.182	51.84	0.38	52.22	64.42	12.20	QP
	0.300	46.45	0.45	46.90	60.24	13.34	
	0.421	44.01	0.49	44.50	57.42	12.92	
	1.021	36.19	0.54	36.73	56.00	19.27	
	1.744	35.57	0.59	36.16	56.00	19.84	
	22.655	35.59	1.72	37.31	60.00	22.69	
	0.182	40.50	0.38	40.88	54.42	13.54	AV
	0.300	35.70	0.45	36.15	50.24	14.09	
	0.421	33.20	0.49	33.69	47.42	13.73	
	1.021	25.30	0.54	25.84	46.00	20.16	
	1.744	24.70	0.59	25.29	46.00	20.71	
	22.655	24.70	1.72	26.42	50.00	23.58	
Neutral	0.182	51.64	0.31	51.95	64.42	12.47	QP
	0.300	47.57	0.39	47.96	60.24	12.28	
	0.421	43.64	0.45	44.09	57.42	13.33	
	1.021	39.29	0.51	39.80	56.00	16.20	
	1.503	36.68	0.54	37.22	56.00	18.78	
	21.830	41.36	1.81	43.17	60.00	16.83	
	0.182	40.80	0.31	41.11	54.42	13.31	AV
	0.300	36.80	0.39	37.19	50.24	13.05	
	0.421	32.80	0.45	33.25	47.42	14.17	
	1.021	28.60	0.51	29.11	46.00	16.89	
	1.503	25.80	0.54	26.34	46.00	19.66	
	21.830	30.60	1.81	32.41	50.00	17.59	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77AUS Humidity : 48%RH

Serial No. : E1103030-01/01 Date of Test : Mar 19, 2011

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	0.182	51.09	0.38	51.47	64.42	12.95	QP
	0.300	47.45	0.45	47.90	60.24	12.34	
	0.421	43.80	0.49	44.29	57.42	13.13	
	0.694	37.50	0.52	38.02	56.00	17.98	
	1.503	38.33	0.57	38.90	56.00	17.10	
	21.830	38.26	1.69	39.95	60.00	20.05	
	0.182	40.60	0.38	40.98	54.42	13.44	AV
	0.300	36.52	0.45	36.97	50.24	13.27	
	0.421	32.90	0.49	33.39	47.42	14.03	
	0.694	26.80	0.52	27.32	46.00	18.68	
	1.503	27.60	0.57	28.17	46.00	17.83	
	21.830	27.60	1.69	29.29	50.00	20.71	
Neutral	0.182	51.18	0.31	51.49	64.42	12.93	QP
	0.300	47.74	0.39	48.13	60.24	12.11	
	0.421	43.80	0.45	44.25	57.42	13.17	
	1.503	39.34	0.54	39.88	56.00	16.12	
	3.547	31.68	0.68	32.36	56.00	23.64	
	21.830	40.83	1.81	42.64	60.00	17.36	
	0.182	40.30	0.31	40.61	54.42	13.81	AV
	0.300	36.40	0.39	36.79	50.24	13.45	
	0.421	32.90	0.45	33.35	47.42	14.07	
	1.503	28.60	0.54	29.14	46.00	16.86	
	3.547	20.80	0.68	21.48	46.00	24.52	
	21.830	29.95	1.81	31.76	50.00	18.24	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77AUS Humidity : 48%RH

Serial No. : E1103030-01/01 Date of Test : Mar 19, 2011

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	0.182	50.67	0.38	51.05	64.42	13.37	QP
	0.300	46.54	0.45	46.99	60.24	13.25	
	0.421	43.78	0.49	44.27	57.42	13.15	
	0.899	36.80	0.54	37.34	56.00	18.66	
	1.269	37.59	0.56	38.15	56.00	17.85	
	22.063	36.98	1.70	38.68	60.00	21.32	
	0.182	39.80	0.38	40.18	54.42	14.24	AV
	0.300	35.50	0.45	35.95	50.24	14.29	
	0.421	32.20	0.49	32.69	47.42	14.73	
	0.899	26.10	0.54	26.64	46.00	19.36	
	1.269	27.40	0.56	27.96	46.00	18.04	
	22.063	25.50	1.70	27.20	50.00	22.80	
Neutral	0.182	51.62	0.31	51.93	64.42	12.49	QP
	0.300	43.83	0.39	44.22	60.24	16.02	
	0.421	42.99	0.45	43.44	57.42	13.98	
	0.779	36.21	0.50	36.71	56.00	19.29	
	1.503	36.40	0.54	36.94	56.00	19.06	
	22.063	39.85	1.81	41.66	60.00	18.34	
	0.182	40.90	0.31	41.21	54.42	13.21	AV
	0.300	33.50	0.39	33.89	50.24	16.35	
	0.421	32.60	0.45	33.05	47.42	14.37	
	0.779	25.50	0.50	26.00	46.00	20.00	
	1.503	25.80	0.54	26.34	46.00	19.66	
	22.063	28.70	1.81	30.51	50.00	19.49	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77AUS Humidity : 48%RH

Serial No. : E1103030-01/01 Date of Test : Mar 19, 2011

Test Mode : HDMI 800*600@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	0.182	50.67	0.38	51.05	64.42	13.37	QP	
	0.300	47.25	0.45	47.70	60.24	12.54		
	0.421	43.37	0.49	43.86	57.42	13.56		
	0.899	37.68	0.54	38.22	56.00	17.78		
	1.503	37.98	0.57	38.55	56.00	17.45		
	22.655	36.88	1.72	38.60	60.00	21.40		
	0.182	39.80	0.38	40.18	54.42	14.24	AV	
	0.300	36.50	0.45	36.95	50.24	13.29		
	0.421	32.60	0.49	33.09	47.42	14.33		
	0.899	26.80	0.54	27.34	46.00	18.66		
	1.503	27.00	0.57	27.57	46.00	18.43		
	22.655	25.93	1.72	27.65	50.00	22.35		
	Neutral	0.182	50.72	0.31	51.03	64.42	13.39	QP
		0.300	46.70	0.39	47.09	60.24	13.15	
0.421		42.84	0.45	43.29	57.42	14.13		
0.694		37.69	0.49	38.18	56.00	17.82		
1.021		38.18	0.51	38.69	56.00	17.31		
22.655		37.99	1.83	39.82	60.00	20.18		
0.182		40.00	0.31	40.31	54.42	14.11	AV	
0.300		35.90	0.39	36.29	50.24	13.95		
0.421		31.70	0.45	32.15	47.42	15.27		
0.694		26.90	0.49	27.39	46.00	18.61		
1.021		27.60	0.51	28.11	46.00	17.89		
22.655		26.99	1.83	28.82	50.00	21.18		

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77AUS Humidity : 48%RH

Serial No. : E1103030-01/01 Date of Test : Mar 19, 2011

Test Mode : HDMI 1024*768@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	0.182	50.92	0.38	51.30	64.42	13.12	QP	
	0.300	47.34	0.45	47.79	60.24	12.45		
	0.421	44.32	0.49	44.81	57.42	12.61		
	0.779	36.59	0.53	37.12	56.00	18.88		
	1.503	37.79	0.57	38.36	56.00	17.64		
	22.063	36.29	1.70	37.99	60.00	22.01		
	0.182	40.10	0.38	40.48	54.42	13.94	AV	
	0.300	36.50	0.45	36.95	50.24	13.29		
	0.421	33.40	0.49	33.89	47.42	13.53		
	0.779	25.80	0.53	26.33	46.00	19.67		
	1.503	26.91	0.57	27.48	46.00	18.52		
	22.063	25.60	1.70	27.30	50.00	22.70		
	Neutral	0.182	50.78	0.31	51.09	64.42	13.33	QP
		0.300	44.49	0.39	44.88	60.24	15.36	
0.421		42.64	0.45	43.09	57.42	14.33		
1.021		37.95	0.51	38.46	56.00	17.54		
1.503		38.00	0.54	38.54	56.00	17.46		
22.063		37.62	1.81	39.43	60.00	20.57		
0.182		39.40	0.31	39.71	54.42	14.71	AV	
0.300		33.60	0.39	33.99	50.24	16.25		
0.421		31.80	0.45	32.25	47.42	15.17		
1.021		26.40	0.51	26.91	46.00	19.09		
1.503		27.00	0.54	27.54	46.00	18.46		
22.063		26.80	1.81	28.61	50.00	21.39		

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

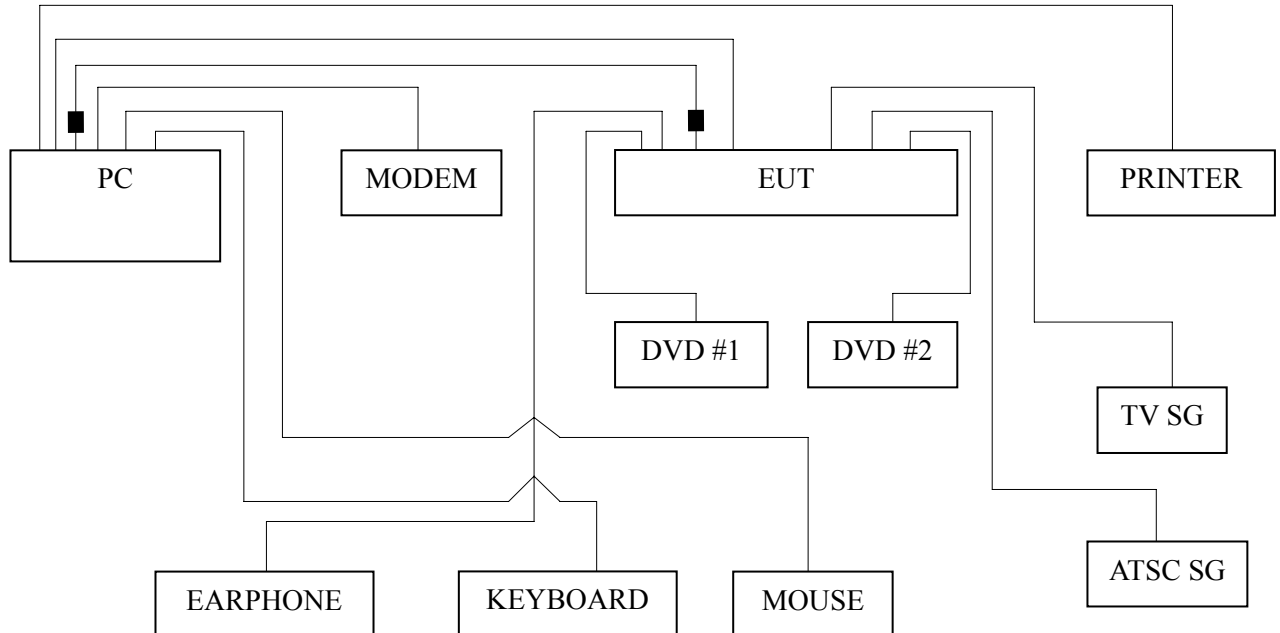
4.1 Test Equipment

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 22, 2011	Mar 22, 2012
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 18, 2011	Sep 18, 2011
3.	Bi-log Antenna	TESEQ	CBL6112D	23192	Dec 01, 2010	Dec 01, 2011
4.	Spectrum Analyzer	Agilent	E7405A	MY45106600	Mar 22, 2011	Mar 22, 2012
5.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426390	Mar 18, 2011	Sep 18, 2011
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

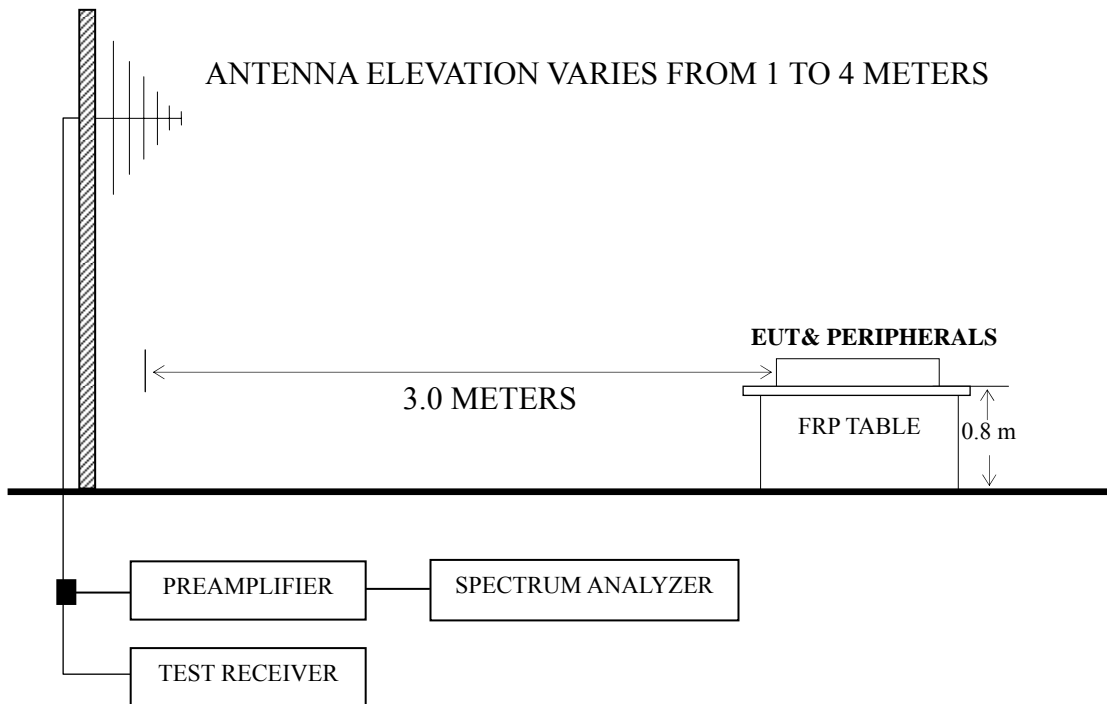
4.2 Block Diagram of Test Setup

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.

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 I.F. 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	P23
D-Sub 800*600@60Hz	P24
D-Sub 1024*768@60Hz	P25
HDMI 640*480@60Hz	P26
HDMI 800*600@60Hz	P27
HDMI 1024*768@60Hz	P28

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 D-Sub 1024*768@60Hz test mode. The worst emission at horizontal polarization was detected at 32.000MHz with corrected signal level of 37.14 dB ($\mu\text{V/m}$) (limit is 40.00 dB ($\mu\text{V/m}$)), when the antenna was 1.00 m height and the turntable was at 300°. The worst emission at vertical polarization was detected at 293.840 MHz with corrected signal level of 38.43 dB ($\mu\text{V/m}$) (limit is 46.00 dB ($\mu\text{V/m}$)), when the antenna was 1.00 m height and the turntable was at 210°.

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77AUS Humidity : 60%RH

Serial No. : E1103030-01/01 Date of Test : Mar 23, 2011

Test Mode : D-Sub 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	56.190	19.36	7.46	0.82	27.64	40.00	12.36
	94.990	19.40	10.45	1.02	30.87	43.50	12.63
	164.830	20.99	10.35	1.31	32.65	43.50	10.85
	213.330	14.83	11.30	1.49	27.62	43.50	15.88
	295.780	19.50	13.84	1.76	35.10	46.00	10.90
	489.780	12.86	17.78	2.25	32.89	46.00	13.11
Vertical	30.970	4.12	19.03	0.64	23.79	40.00	16.21
	61.040	13.31	6.59	0.85	20.75	40.00	19.25
	109.540	16.67	12.25	1.08	30.00	43.50	13.50
	162.890	19.17	10.42	1.30	30.89	43.50	12.61
	255.040	17.56	13.01	1.62	32.19	46.00	13.81
	295.780	23.36	13.84	1.76	38.96	46.00	7.04

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77AUS Humidity : 60%RH

Serial No. : E1103030-01/01 Date of Test : Mar 23, 2011

Test Mode : D-Sub 800*600@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	31.940	6.52	18.49	0.65	25.66	40.00	14.34
	62.980	17.06	6.57	0.86	24.49	40.00	15.51
	109.540	18.99	12.25	1.08	32.32	43.50	11.18
	133.790	19.18	12.35	1.18	32.71	43.50	10.79
	293.840	23.50	13.79	1.74	39.03	46.00	6.97
	877.780	10.88	21.49	3.00	35.37	46.00	10.63
Vertical	58.130	20.48	6.96	0.83	28.27	40.00	11.73
	94.990	17.91	10.45	1.02	29.38	43.50	14.12
	159.980	19.70	10.50	1.28	31.48	43.50	12.02
	295.780	18.04	13.84	1.76	33.64	46.00	12.36
	487.840	11.51	17.75	2.24	31.50	46.00	14.50
	885.540	11.33	21.56	3.00	35.89	46.00	10.11

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77AUS Humidity : 60%RH

Serial No. : E1103030-01/01 Date of Test : Mar 23, 2011

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	32.000	18.00	18.49	0.65	37.14	40.00	2.86
	36.800	17.00	15.80	0.69	33.49	40.00	6.51
	87.230	23.98	8.96	0.98	33.92	40.00	6.08
	164.830	22.33	10.35	1.31	33.99	43.50	9.51
	218.180	20.96	11.52	1.51	33.99	46.00	12.01
	293.840	22.16	13.79	1.74	37.69	46.00	8.31
Vertical	87.230	22.33	8.96	0.98	32.27	40.00	7.73
	109.540	19.74	12.25	1.08	33.07	43.50	10.43
	162.890	21.23	10.42	1.30	32.95	43.50	10.55
	218.180	21.92	11.52	1.51	34.95	46.00	11.05
	293.840	22.90	13.79	1.74	38.43	46.00	7.57
	412.180	15.69	16.67	2.09	34.45	46.00	11.55

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77AUS Humidity : 60%RH

Serial No. : E1103030-01/01 Date of Test : Mar 23, 2011

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	32.910	9.71	17.95	0.66	28.32	40.00	11.68
	56.190	14.36	7.46	0.82	22.64	40.00	17.36
	94.990	13.40	10.45	1.02	24.87	43.50	18.63
	164.830	14.99	10.35	1.31	26.65	43.50	16.85
	295.780	13.50	13.84	1.76	29.10	46.00	16.90
	489.780	9.86	17.78	2.25	29.89	46.00	16.11
Vertical	109.540	15.67	12.25	1.08	29.00	43.50	14.50
	162.890	17.17	10.42	1.30	28.89	43.50	14.61
	295.780	20.36	13.84	1.76	35.96	46.00	10.04
	342.340	13.31	15.11	1.90	30.32	46.00	15.68
	681.840	10.86	19.62	2.63	33.11	46.00	12.89
	880.690	8.67	21.53	3.00	33.20	46.00	12.80

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77AUS Humidity : 60%RH

Serial No. : E1103030-01/01 Date of Test : Mar 23, 2011

Test Mode : HDMI 800*600@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	31.940	9.52	18.49	0.65	28.66	40.00	11.34
	55.220	17.05	7.69	0.81	25.55	40.00	14.45
	64.920	22.10	6.55	0.87	29.52	40.00	10.48
	133.790	21.18	12.35	1.18	34.71	43.50	8.79
	293.840	19.50	13.79	1.74	35.03	46.00	10.97
	688.630	6.53	19.65	2.65	28.83	46.00	17.17
Vertical	58.130	15.48	6.96	0.83	23.27	40.00	16.73
	94.990	12.91	10.45	1.02	24.38	43.50	19.12
	159.980	14.70	10.50	1.28	26.48	43.50	17.02
	187.140	14.14	10.17	1.40	25.71	43.50	17.79
	295.780	13.04	13.84	1.76	28.64	46.00	17.36
	686.690	10.37	19.63	2.65	32.65	46.00	13.35

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77AUS Humidity : 60%RH

Serial No. : E1103030-01/01 Date of Test : Mar 23, 2011

Test Mode : HDMI 1024*768@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	31.940	12.94	18.49	0.65	32.08	40.00	7.92
	87.230	18.98	8.96	0.98	28.92	40.00	11.08
	109.540	13.40	12.25	1.08	26.73	43.50	16.77
	164.830	17.14	10.35	1.31	28.80	43.50	14.70
	293.840	17.16	13.79	1.74	32.69	46.00	13.31
	562.530	6.60	18.75	2.38	27.73	46.00	18.27
Vertical	32.910	6.83	17.95	0.66	25.44	40.00	14.56
	109.540	19.74	12.25	1.08	33.07	43.50	10.43
	126.030	18.70	12.71	1.16	32.57	43.50	10.93
	162.890	18.23	10.42	1.30	29.95	43.50	13.55
	293.840	18.90	13.79	1.74	34.43	46.00	11.57
	412.180	10.69	16.67	2.09	29.45	46.00	16.55

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	ZCAT3035-1330\ROH	FEELUX	See Internal Photos Figure 16
		Rui Feng Electronic Co., Ltd.	
		Hai An Magnetic Material No.2 Factory	
		JIANGSU LETTALL ELECTRONICS CO., LTD.	
Ferrite core	BNF-12\ZCAT1519-0830\ROH	FEELUX	See Internal Photos Figure 14, 15
		Rui Feng Electronic Co., Ltd.	
		Hai An Magnetic Material No.2 Factory	
		JIANGSU LETTALL ELECTRONICS CO., LTD.	

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)