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

LCD TV

Model No.	Serial No.	Brand
LTDN40V87NUS	--	Hisense
ELCHW402	E2010042001	ELEMENT

FCC ID : W9HLCDX0004

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-F10052
Date of Test : Apr 22, 2010
Date of Report : Apr 28, 2010

TABLE OF CONTENTS

Page

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
LTDN40V87NUS	--	Hisense	120V/60Hz
ELCHW402	E2010042001	ELEMENT	

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 Apr 22, 2010 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.F10053, a Verification report.

Date of Test : Apr 22, 2010 Date of Report : Apr 28, 2010

Producer : Kathy Wang
KATHY WANG / Assistant

Review : Sammy Chen
SAMMY CHEN/ Assistant Manager

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

Signatory : Byron Kwo
Authorized Signature EMC BYRON KWO/ 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.	Serial No.	Brand
LTDN40V87NUS	--	Hisense
ELCHW402	E2010042001	ELEMENT

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

Note 2 : The ELCHW402 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 : SHARP
M/N : LK400D3LA14

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, 1.85m, without core on cable

Power Cord : Unshielded, Detachable, 1.80m

Remark:

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

Side View:

(1) One HDMI1 Port
: Connected with DVD #1

(2) One VGA Port
: Connected with PC

(3) One VGA Audio Port
: Connected with PC

(4) One Component of AV Port
: Connected with DVD #1

(5) One Component of YPbPr Port
: Connected with DVD #1

(6) One ANT Port
: Connected with ATSC SG/TV SG

(7) One Headphone Port
: Connected with Earphone

(8) One Service Port
: Do not open to customer

Back View:

(9) One HDMI2 Port
: Connected with DVD #2

(10) One Digital Audio Out Port:
: Connected with DVD #2

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 #1

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

2.2.10 DVD#2

Manufacturer	:	DGT RONIK
Model Number	:	DV-A340
Serial Number	:	10004184-C
Certificate	:	FCC DoC, CE/EMC, CCC

2.3 Description of Test Facility

Site Description (Semi-Anechoic 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 = 1.26 dB
Radiated Emission Expanded Uncertainty	:	U = 3.02 dB

3 CONDUCTED EMISSION TEST

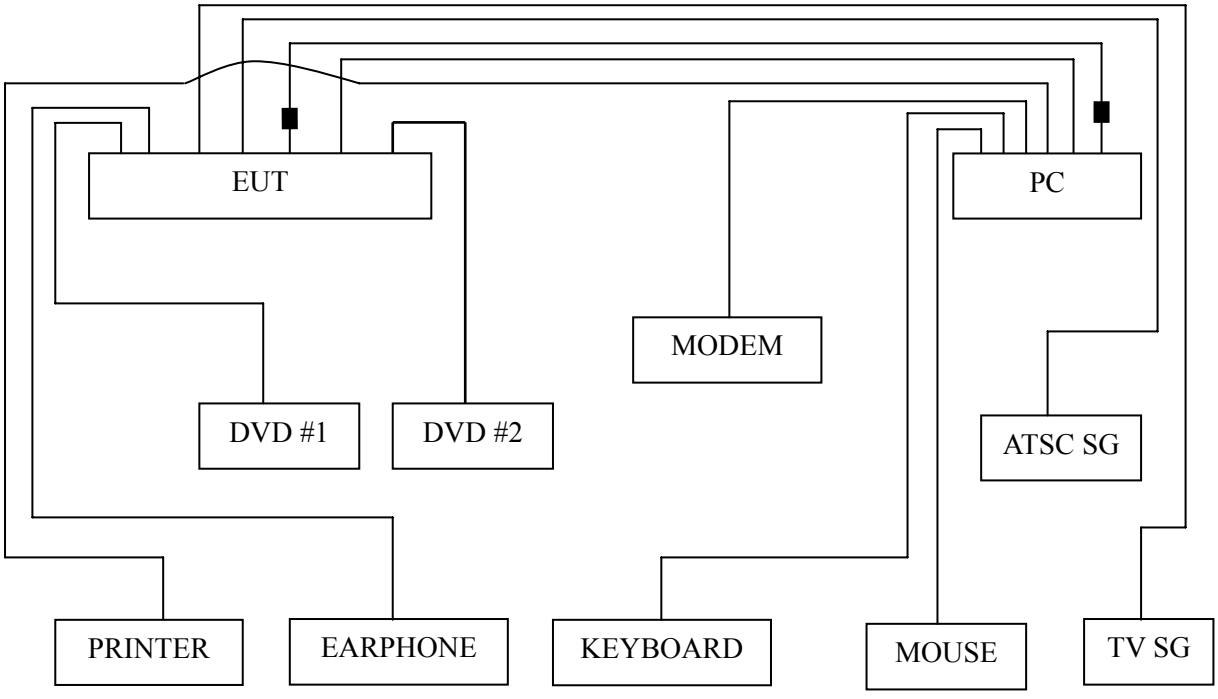
3.1 Test Equipment

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, 2009	Oct 15, 2010
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 19, 2010	Sep 19, 2010
5.	50Ω Terminator	Anritsu	BNC	001	Apr 02, 2010	Apr 02, 2011
6.	Software	Audix	E3	SET00200 9804M592	--	--

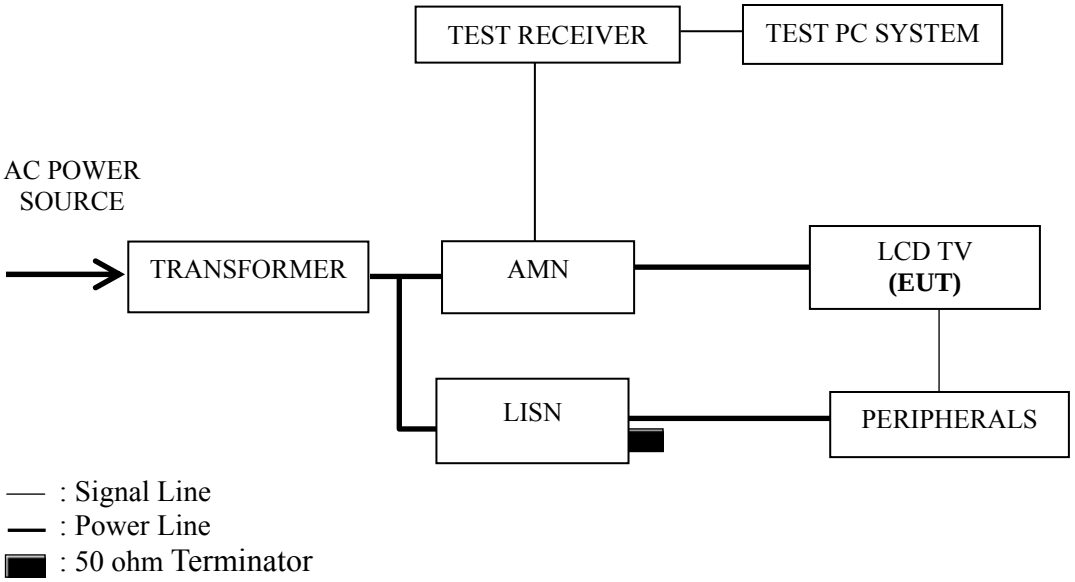
3.2 Block Diagram of Test Setup

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 (μV)	
	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
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 HDMI 1024*768@60Hz test mode. The worst emission is detected at 0.152 MHz (Quasi-Peak value) with corrected signal level of 50.46 dB (μV) (limit is 65.91 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT	:	LCD TV	Temperature :	22℃	
Model No.	:	ELCHW402	Humidity :	48%RH	
Serial No.	:	E2010042001	Date of Test :	Apr 20, 2010	
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	**0.152**	**48.33**	**0.26**	**48.59**	**65.91**	**17.32**	QP
	0.303	30.86	0.37	31.23	60.15	28.92	
	0.516	20.47	0.48	20.95	56.00	35.05	
	4.874	23.10	0.64	23.74	56.00	32.26	
	5.535	24.78	0.66	25.44	60.00	34.56	
	16.055	32.72	0.96	33.68	60.00	26.32	
	0.152	26.96	0.26	27.22	55.91	28.69	AV
	0.303	18.86	0.37	19.23	50.15	30.92	
	0.516	8.86	0.48	9.34	46.00	36.66	
	4.874	9.07	0.64	9.71	46.00	36.29	
	5.535	11.14	0.66	11.80	50.00	38.20	
	16.055	22.75	0.96	23.71	50.00	26.29	
Neutral	0.152	47.98	0.23	48.21	65.91	17.70	QP
	0.322	31.50	0.36	31.86	59.66	27.80	
	0.541	22.79	0.45	23.24	56.00	32.76	
	4.926	23.11	0.65	23.76	56.00	32.24	
	6.878	26.72	0.70	27.42	60.00	32.58	
	16.839	33.92	0.96	34.88	60.00	25.12	
	0.152	20.56	0.23	20.79	55.91	35.12	AV
	0.322	24.89	0.36	25.25	49.66	24.41	
	0.541	16.36	0.45	16.81	46.00	29.19	
	4.926	14.09	0.65	14.74	46.00	31.26	
	6.878	15.85	0.70	16.55	50.00	33.45	
	16.839	22.77	0.96	23.73	50.00	26.27	

TEST ENGINEER: TED ZHU

EUT	:	LCD TV	Temperature :	22℃	
Model No.	:	ELCHW402	Humidity :	48%RH	
Serial No.	:	E2010042001	Date of Test :	Apr 20, 2010	
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	0.155	46.09	0.26	46.35	65.74	19.39	QP
	0.303	31.97	0.37	32.34	60.15	27.81	
	0.529	20.09	0.48	20.57	56.00	35.43	
	4.926	22.47	0.64	23.11	56.00	32.89	
	6.420	24.46	0.67	25.13	60.00	34.87	
	16.398	33.20	0.98	34.18	60.00	25.82	
	0.155	25.29	0.26	25.55	55.74	30.19	AV
	0.303	18.03	0.37	18.40	50.15	31.75	
	0.529	10.13	0.48	10.61	46.00	35.39	
	4.926	11.44	0.64	12.08	46.00	33.92	
	6.420	13.12	0.67	13.79	50.00	36.21	
	16.398	24.16	0.98	25.14	50.00	24.86	
Neutral	**0.153**	**49.21**	**0.23**	**49.44**	**65.82**	**16.38**	QP
	0.325	31.66	0.36	32.02	59.57	27.55	
	0.546	21.28	0.45	21.73	56.00	34.27	
	4.926	22.99	0.65	23.64	56.00	32.36	
	6.627	26.37	0.70	27.07	60.00	32.93	
	16.055	32.32	0.92	33.24	60.00	26.76	
	0.153	28.23	0.23	28.46	55.82	27.36	AV
	0.325	25.82	0.36	26.18	49.57	23.39	
	0.546	15.78	0.45	16.23	46.00	29.77	
	4.926	11.54	0.65	12.19	46.00	33.81	
	6.627	15.18	0.70	15.88	50.00	34.12	
	16.055	23.64	0.92	24.56	50.00	25.44	

TEST ENGINEER: TED ZHU

EUT	:	LCD TV	Temperature :	22℃	
Model No.	:	ELCHW402	Humidity :	48%RH	
Serial No.	:	E2010042001	Date of Test :	Apr 20, 2010	
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	0.153	47.24	0.26	47.50	65.82	18.32	QP
	0.300	31.82	0.37	32.19	60.24	28.05	
	0.521	21.11	0.48	21.59	56.00	34.41	
	4.772	20.23	0.64	20.87	56.00	35.13	
	5.713	24.42	0.66	25.08	60.00	34.92	
	16.398	33.42	0.98	34.40	60.00	25.60	
	0.153	21.51	0.26	21.77	55.82	34.05	AV
	0.300	14.14	0.37	14.51	50.24	35.73	
	0.521	10.63	0.48	11.11	46.00	34.89	
	4.772	7.88	0.64	8.52	46.00	37.48	
	5.713	12.51	0.66	13.17	50.00	36.83	
	16.398	25.21	0.98	26.19	50.00	23.81	
Neutral	**0.152**	**48.42**	**0.23**	**48.65**	**65.91**	**17.26**	QP
	0.325	32.75	0.36	33.11	59.57	26.46	
	0.541	22.92	0.45	23.37	56.00	32.63	
	4.926	22.19	0.65	22.84	56.00	33.16	
	5.713	26.51	0.67	27.18	60.00	32.82	
	16.398	32.89	0.95	33.84	60.00	26.16	
	0.152	19.31	0.23	19.54	55.91	36.37	AV
	0.325	26.79	0.36	27.15	49.57	22.42	
	0.541	16.96	0.45	17.41	46.00	28.59	
	4.926	10.75	0.65	11.40	46.00	34.60	
	5.713	12.38	0.67	13.05	50.00	36.95	
	16.398	25.24	0.95	26.19	50.00	23.81	

TEST ENGINEER: TED ZHU

EUT	:	LCD TV	Temperature :	22℃	
Model No.	:	ELCHW402	Humidity :	48%RH	
Serial No.	:	E2010042001	Date of Test :	Apr 20, 2010	
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	0.152	46.76	0.26	47.02	65.91	18.89	QP
	0.310	30.31	0.37	30.68	59.97	29.29	
	0.505	20.34	0.48	20.82	56.00	35.18	
	4.952	21.95	0.64	22.59	56.00	33.41	
	5.929	24.03	0.67	24.70	60.00	35.30	
	15.885	33.56	0.95	34.51	60.00	25.49	
	0.152	19.76	0.26	20.02	55.91	35.89	AV
	0.310	14.31	0.37	14.68	49.97	35.29	
	0.505	7.49	0.48	7.97	46.00	38.03	
	4.952	13.88	0.64	14.52	46.00	31.48	
	5.929	13.26	0.67	13.93	50.00	36.07	
	15.885	23.18	0.95	24.13	50.00	25.87	
Neutral	**0.152**	**47.99**	**0.23**	**48.22**	**65.91**	**17.69**	QP
	0.329	31.08	0.36	31.44	59.49	28.05	
	0.647	21.88	0.46	22.34	56.00	33.66	
	4.926	22.17	0.65	22.82	56.00	33.18	
	6.121	26.80	0.68	27.48	60.00	32.52	
	15.885	33.30	0.92	34.22	60.00	25.78	
	0.152	28.96	0.23	29.19	55.91	26.72	AV
	0.329	21.12	0.36	21.48	49.49	28.01	
	0.647	11.92	0.46	12.38	46.00	33.62	
	4.926	9.99	0.65	10.64	46.00	35.36	
	6.121	14.82	0.68	15.50	50.00	34.50	
	15.885	23.06	0.92	23.98	50.00	26.02	

TEST ENGINEER: TED ZHU

EUT	:	LCD TV	Temperature :	22℃	
Model No.	:	ELCHW402	Humidity :	48%RH	
Serial No.	:	E2010042001	Date of Test :	Apr 20, 2010	
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	**0.155**	**47.95**	**0.26**	**48.21**	**65.74**	**17.53**	QP
	0.307	32.47	0.37	32.84	60.06	27.22	
	0.541	20.86	0.48	21.34	56.00	34.66	
	4.721	21.72	0.64	22.36	56.00	33.64	
	5.713	24.33	0.66	24.99	60.00	35.01	
	16.398	33.82	0.98	34.80	60.00	25.20	
	0.155	25.55	0.26	25.81	55.74	29.93	AV
	0.307	14.38	0.37	14.75	50.06	35.31	
	0.541	11.04	0.48	11.52	46.00	34.48	
	4.721	9.71	0.64	10.35	46.00	35.65	
	5.713	13.81	0.66	14.47	50.00	35.53	
	16.398	26.77	0.98	27.75	50.00	22.25	
Neutral	0.152	44.33	0.23	44.56	65.91	21.35	QP
	0.303	31.53	0.35	31.88	60.15	28.27	
	0.541	23.95	0.45	24.40	56.00	31.60	
	4.952	22.65	0.65	23.30	56.00	32.70	
	6.121	26.94	0.68	27.62	60.00	32.38	
	22.298	29.25	1.06	30.31	60.00	29.69	
	0.152	20.83	0.23	21.06	55.91	34.85	AV
	0.303	16.65	0.35	17.00	50.15	33.15	
	0.541	18.40	0.45	18.85	46.00	27.15	
	4.952	9.14	0.65	9.79	46.00	36.21	
	6.121	12.74	0.68	13.42	50.00	36.58	
	22.298	19.56	1.06	20.62	50.00	29.38	

TEST ENGINEER: TED ZHU

EUT	:	LCD TV	Temperature	:	22℃
Model No.	:	ELCHW402	Humidity	:	48%RH
Serial No.	:	E2010042001	Date of Test	:	Apr 20, 2010
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	0.153	48.31	0.26	48.57	65.82	17.25	QP
	0.300	31.27	0.37	31.64	60.24	28.60	
	0.654	21.47	0.46	21.93	56.00	34.07	
	5.005	23.02	0.64	23.66	60.00	36.34	
	5.774	24.75	0.67	25.42	60.00	34.58	
	16.226	33.70	0.96	34.66	60.00	25.34	
	0.153	20.60	0.26	20.86	55.82	34.96	AV
	0.300	15.10	0.37	15.47	50.24	34.77	
	0.654	11.24	0.46	11.70	46.00	34.30	
	5.005	10.81	0.64	11.45	50.00	38.55	
	5.774	14.23	0.67	14.90	50.00	35.10	
	16.226	24.88	0.96	25.84	50.00	24.16	
Neutral	**0.152**	**50.23**	**0.23**	**50.46**	**65.91**	**15.45**	QP
	0.325	30.61	0.36	30.97	59.57	28.60	
	0.541	21.92	0.45	22.37	56.00	33.63	
	4.926	22.62	0.65	23.27	56.00	32.73	
	6.285	26.42	0.68	27.10	60.00	32.90	
	16.661	33.19	0.95	34.14	60.00	25.86	
	0.152	21.51	0.23	21.74	55.91	34.17	AV
	0.325	24.54	0.36	24.90	49.57	24.67	
	0.541	13.93	0.45	14.38	46.00	31.62	
	4.926	10.66	0.65	11.31	46.00	34.69	
	6.285	12.45	0.68	13.13	50.00	36.87	
	16.661	25.37	0.95	26.32	50.00	23.68	

TEST ENGINEER: TED ZHU

4 RADIATED EMISSION TEST

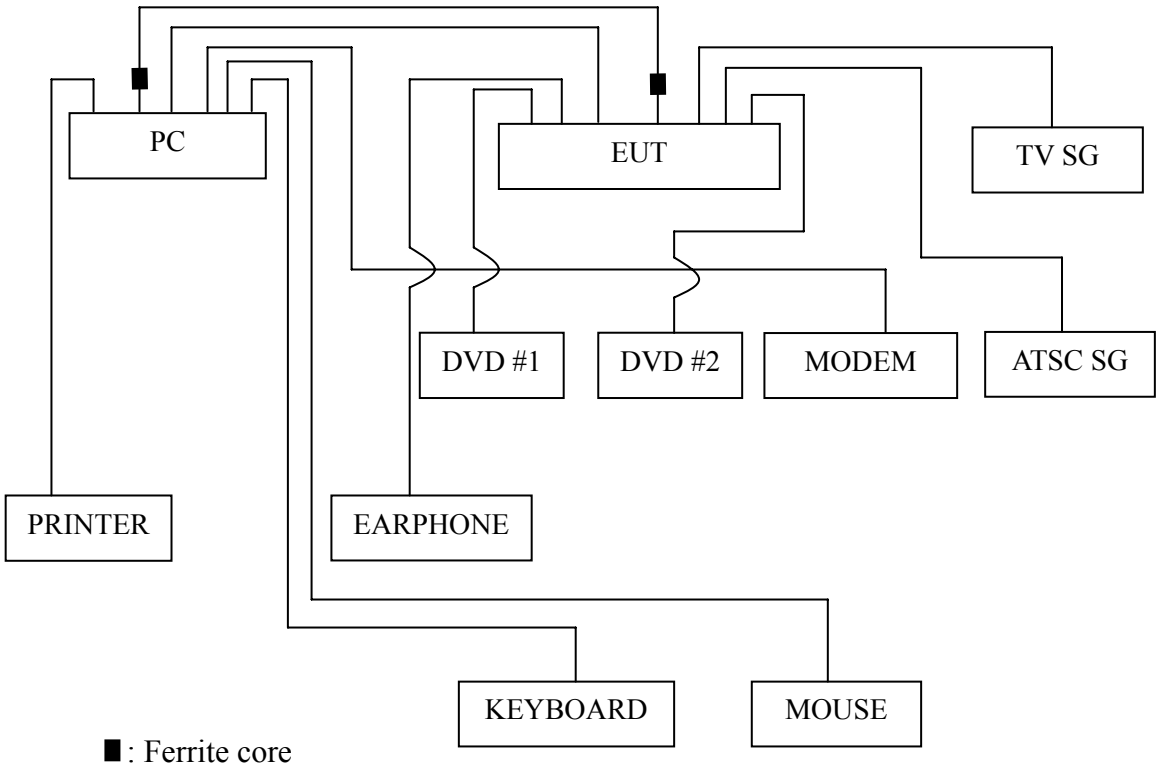
4.1 Test Equipment

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, 2010	Mar 07, 2011
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 19, 2010	Sep 19, 2010
3.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 14, 2008	May 14, 2010
4.	Spectrum Analyzer	Agilent	E7405A	MY45106600	May 19, 2009	May 19, 2010
5.	Software	Audix	E3	SET00200 9912M295-2	--	--

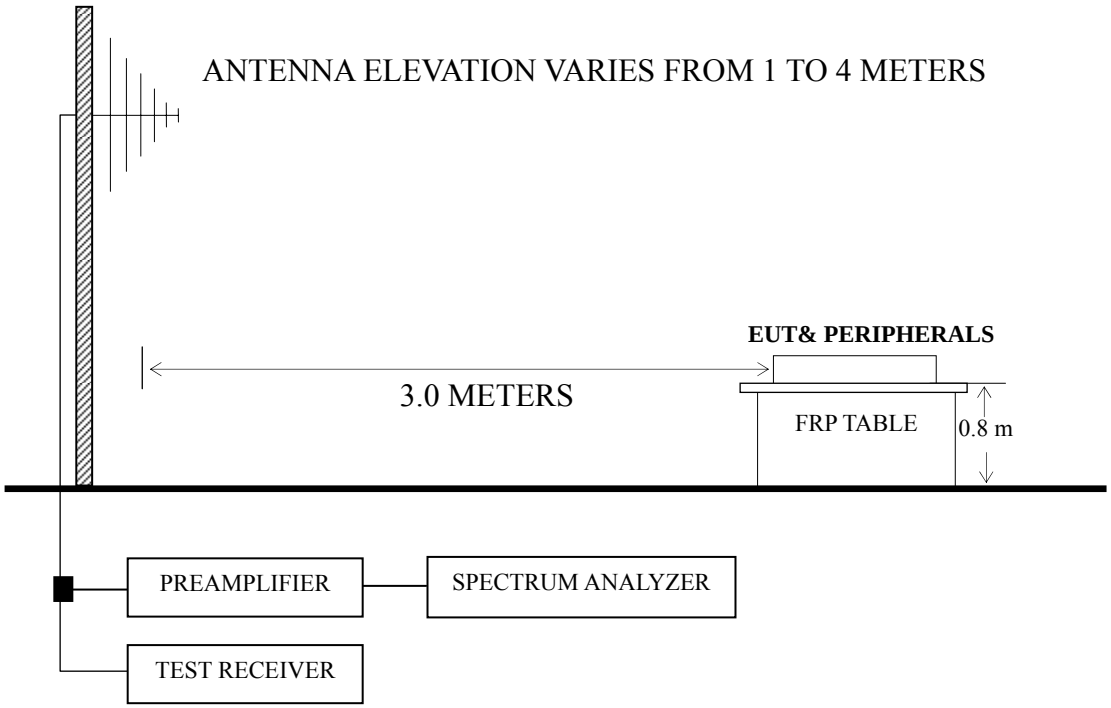
4.2 Block Diagram of Test Setup

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	
		(μV/m)	dB (μV/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 (μV/m) = 20 log Emission Level (μV/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 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	P22
D-Sub 800*600@60Hz	P23
D-Sub 1024*768@60Hz	P24
HDMI 640*480@60Hz	P25
HDMI 800*600@60Hz	P26
HDMI 1024*768@60Hz	P27

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 HDMI 800*600@60Hz test mode. The worst emission at horizontal polarization was detected at 741.980 MHz with corrected signal level of 39.87dB (μV/m) (limit is 46.00dB (μV/m)), when the antenna was 1.30 m height and the turntable was at 45°. The worst emission at vertical polarization was detected at 153.190 MHz with corrected signal level of 40.46 dB (μV/m) (limit is 43.50 dB (μV/m)), when the antenna was 1.30 m height and the turntable was at 180°.

EUT	:	LCD TV	Temperature :	22℃
Model No.	:	ELECHW402	Humidity :	60%RH
Serial No.	:	E2010042001	Date of Test :	Apr 22, 2010
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	90.140	26.10	9.40	1.00	36.50	43.50	7.00
	111.480	23.19	12.43	1.10	36.72	43.50	6.78
	153.190	26.15	11.04	1.25	38.44	43.50	5.06
	218.180	28.09	11.52	1.51	41.12	46.00	4.88
	373.380	24.00	15.92	1.99	41.91	46.00	4.09
	741.980	**19.96**	**20.13**	**2.78**	**42.87**	**46.00**	**3.13**
Vertical	43.580	19.10	11.88	0.74	31.72	40.00	8.28
	90.140	26.47	9.40	1.00	36.87	43.50	6.63
	153.190	**26.17**	**11.04**	**1.25**	**38.46**	**43.50**	**5.04**
	218.180	24.23	11.52	1.51	37.26	46.00	8.74
	373.380	19.52	15.92	1.99	37.43	46.00	8.57
	594.540	18.46	19.14	2.44	40.04	46.00	5.96

TEST ENGINEER: RAVEN JIN

EUT	:	LCD TV	Temperature :	22℃
Model No.	:	ELECHW402	Humidity :	60%RH
Serial No.	:	E2010042001	Date of Test :	Apr 22, 2010
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	90.140	24.10	9.40	1.00	34.50	43.50	9.00
	111.480	21.19	12.43	1.10	34.72	43.50	8.78
	153.190	24.15	11.04	1.25	36.44	43.50	7.06
	218.180	26.09	11.52	1.51	39.12	46.00	6.88
	373.380	22.00	15.92	1.99	39.91	46.00	6.09
	741.980	**17.96**	**20.13**	**2.78**	**40.87**	**46.00**	**5.13**
Vertical	30.970	11.24	19.03	0.64	30.91	40.00	9.09
	90.140	23.47	9.40	1.00	33.87	43.50	9.63
	153.190	23.17	11.04	1.25	35.46	43.50	8.04
	240.490	17.21	12.56	1.58	31.35	46.00	14.65
	373.380	17.52	15.92	1.99	35.43	46.00	10.57
	594.540	**16.46**	**19.14**	**2.44**	**38.04**	**46.00**	**7.96**

TEST ENGINEER: RAVEN JIN

EUT	:	LCD TV	Temperature :	22℃
Model No.	:	ELECHW402	Humidity :	60%RH
Serial No.	:	E2010042001	Date of Test :	Apr 22, 2010
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	90.140	24.10	9.40	1.00	34.50	43.50	9.00
	111.480	21.19	12.43	1.10	34.72	43.50	8.78
	153.190	24.15	11.04	1.25	36.44	43.50	7.06
	218.180	25.09	11.52	1.51	38.12	46.00	7.88
	373.380	21.00	15.92	1.99	38.91	46.00	7.09
	741.980	**16.96**	**20.13**	**2.78**	**39.87**	**46.00**	**6.13**
Vertical	30.970	11.24	19.03	0.64	30.91	40.00	9.09
	90.140	22.47	9.40	1.00	32.87	43.50	10.63
	111.480	20.23	12.43	1.10	33.76	43.50	9.74
	218.180	22.23	11.52	1.51	35.26	46.00	10.74
	373.380	17.52	15.92	1.99	35.43	46.00	10.57
	594.540	**16.46**	**19.14**	**2.44**	**38.04**	**46.00**	**7.96**

TEST ENGINEER: RAVEN JIN

EUT	:	LCD TV	Temperature :	22℃
Model No.	:	ELECHW402	Humidity :	60%RH
Serial No.	:	E2010042001	Date of Test :	Apr 22, 2010
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	90.140	23.10	9.40	1.00	33.50	43.50	10.00
	111.480	20.19	12.43	1.10	33.72	43.50	9.78
	218.180	25.09	11.52	1.51	38.12	46.00	7.88
	373.380	19.00	15.92	1.99	36.91	46.00	9.09
	686.690	15.62	19.63	2.65	37.90	46.00	8.10
	741.980	**16.96**	**20.13**	**2.78**	**39.87**	**46.00**	**6.13**
Vertical	90.140	24.47	9.40	1.00	34.87	43.50	8.63
	153.190	22.17	11.04	1.25	34.46	43.50	9.04
	218.180	22.23	11.52	1.51	35.26	46.00	10.74
	373.380	15.52	15.92	1.99	33.43	46.00	12.57
	594.540	**16.46**	**19.14**	**2.44**	**38.04**	**46.00**	**7.96**
	814.730	14.25	20.84	2.92	38.01	46.00	7.99

TEST ENGINEER: RAVEN JIN

EUT	:	LCD TV	Temperature :	22℃
Model No.	:	ELECHW402	Humidity :	60%RH
Serial No.	:	E2010042001	Date of Test :	Apr 22, 2010
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	90.140	23.10	9.40	1.00	33.50	43.50	10.00
	111.480	20.19	12.43	1.10	33.72	43.50	9.78
	218.180	25.09	11.52	1.51	38.12	46.00	7.88
	373.380	21.00	15.92	1.99	38.91	46.00	7.09
	686.690	15.62	19.63	2.65	37.90	46.00	8.10
	741.980	**16.96**	**20.13**	**2.78**	**39.87**	**46.00**	**6.13**
Vertical	31.940	14.64	18.49	0.65	33.78	40.00	6.22
	90.140	27.47	9.40	1.00	37.87	43.50	5.63
	153.190	**28.17**	**11.04**	**1.25**	**40.46**	**43.50**	**3.04**
	218.180	26.23	11.52	1.51	39.26	46.00	6.74
	373.380	21.52	15.92	1.99	39.43	46.00	6.57
	594.540	20.46	19.14	2.44	42.04	46.00	3.96

TEST ENGINEER: RAVEN JIN

EUT	:	LCD TV	Temperature :	22℃
Model No.	:	ELECHW402	Humidity :	60%RH
Serial No.	:	E2010042001	Date of Test :	Apr 22, 2010
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	90.140	24.10	9.40	1.00	34.50	43.50	9.00
	111.480	22.19	12.43	1.10	35.72	43.50	7.78
	218.180	27.09	11.52	1.51	40.12	46.00	5.88
	373.380	22.00	15.92	1.99	39.91	46.00	6.09
	741.980	**18.96**	**20.13**	**2.78**	**41.87**	**46.00**	**4.13**
	814.730	15.34	20.84	2.92	39.10	46.00	6.90
Vertical	43.580	15.10	11.88	0.74	27.72	40.00	12.28
	90.140	**23.47**	**9.40**	**1.00**	**33.87**	**43.50**	**9.63**
	218.180	21.23	11.52	1.51	34.26	46.00	11.74
	373.380	16.52	15.92	1.99	34.43	46.00	11.57
	594.540	16.46	19.14	2.44	38.04	46.00	7.96
	814.730	14.25	20.84	2.92	38.01	46.00	7.99

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 Rui Feng Electronic Co., Ltd. Hai An Magnetic Material No.2 Factory	See Internal Photo Figure 21, 22
Ferrite core	ZCAT2132-1130\ROH	FEELUX Rui Feng Electronic Co., Ltd. Hai An Magnetic Material No.2 Factory	See Internal Photo Figure 23

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)