

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

LCD TV

Model No.	Serial No.	Brand
LTDN42V68US	E2010072308	Hisense
		Emerson

FCC ID : W9HLCDD0005

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-F10093
Date of Test : Jul 29-30, 2010
Date of Report : Aug 03, 2010

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.....	21
5 DEVIATION TO TEST SPECIFICATIONS.....	28
6 DEBUG DESCRIPTION.....	29

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
LTDN42V68US	E2010072308	Hisense Emerson	120V/60Hz

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 Jul 29-30, 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.

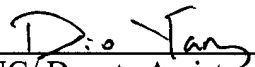
The test results for EUT's TV functions are contained in No.F10094, a Verification report.

Date of Test : Jul 29-30, 2010 Date of Report : Aug 03, 2010

Producer :


CANDY XI / Assistant

Review :


DIO YANG / Deputy Assistant Manager

AUDIX® 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.	Serial No.	Brand
LTDN42V68US	E2010072308	Hisense
		Emerson

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 : Hisense Electric Co., Ltd.
M/N : HC420EF-E01

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:

Bottom Port:

- (1) One HDMI2 Port : Connected with DVD #1
- (2) One HDMI3 Port : Connected with DVD #2
- (3) One VGA Port : Connected with PC
- (4) One VGA Audio Port : Connected with PC
- (5) One Digital Audio Out Port: : Connected with DVD #1

Side Port

- (6) One Component of YPbPr Port : Connected with DVD #1
- (7) One Component of YPbPr Audio Port : Connected with DVD #1
- (8) One Component of AV Port : Connected with DVD #1
- (9) One HDMI1 Port : Connected with PC
- (10) One ANT Port : Connected with ATSC SG/TV SG
- (11) One Headphone Port : Connected with Earphone
- (12) One Service Port : Do not open to customer

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, 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 : LG
Model Number : DF9921N
Serial Number : 3850R-M846W
Certificate : FCC DoC, CE/EMC, CCC

2.3 Description of Test Facility

Site Description : Sept. 17, 1998 file on
(Semi-Anechoic Chamber) 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

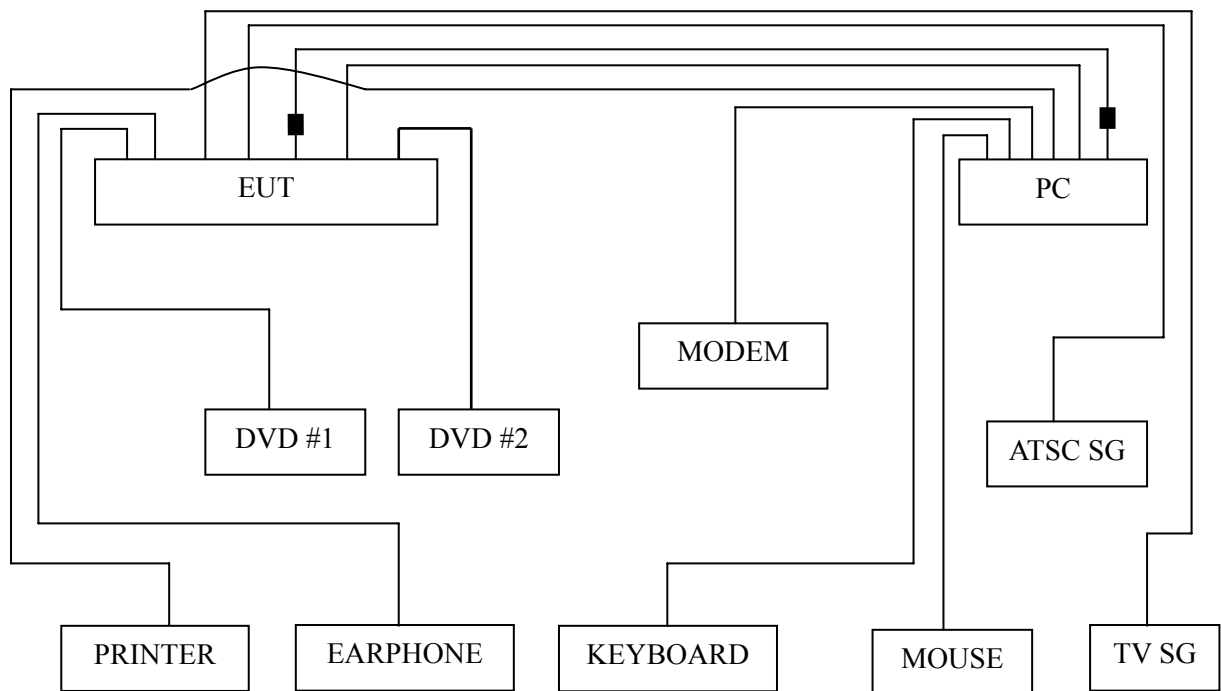
3.1 Test Equipment

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.	50 Ω Terminator	Anritsu	BNC	001	Apr 02, 2010	Apr 02, 2011
6.	Software	Audix	E3	SET00200 9804M592	--	--

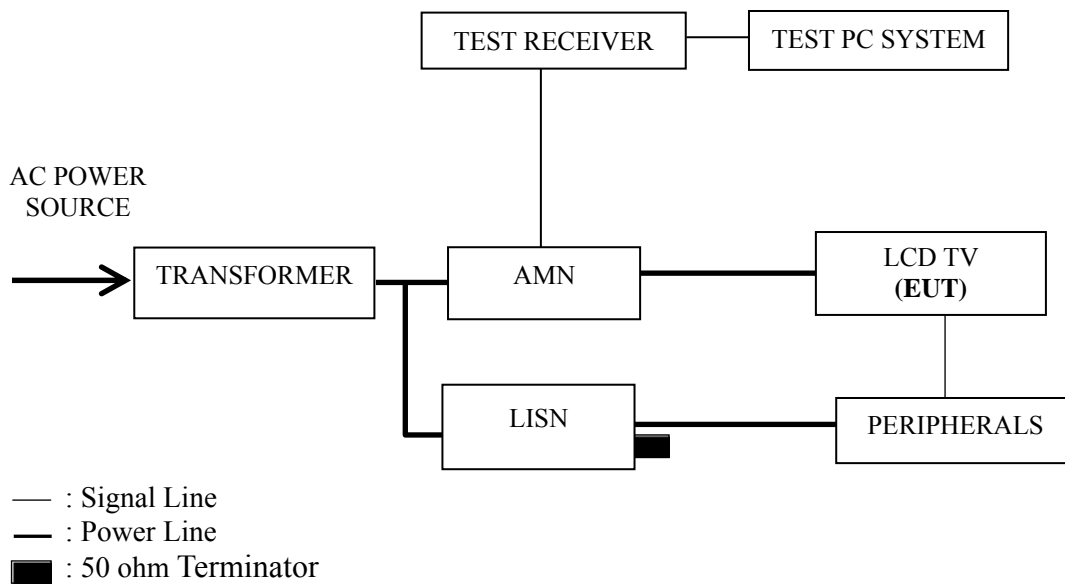
3.2 Block Diagram of Test Setup

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 HDMI 640*480@60Hz test mode. The worst emission is detected at 0.796 MHz (Average value) with corrected signal level of 38.08 dB (μV) (limit is 46.00 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT : LCD TV Temperature : 22°C

Model No. : LTDN42V68US Humidity : 48%RH

Serial No. : E2010072308 Date of Test : Jul 29, 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	0.371	43.31	0.47	43.78	58.47	14.69	QP
	0.481	44.83	0.51	45.34	56.32	10.98	
	0.585	45.03	0.52	45.55	56.00	10.45	
	0.686	43.53	0.52	44.05	56.00	11.95	
	0.796	46.61	0.53	47.14	56.00	8.86	
	22.655	47.47	1.72	49.19	60.00	10.81	
	0.371	33.64	0.47	34.11	48.47	14.36	AV
	0.481	34.57	0.51	35.08	46.32	11.24	
	0.585	34.58	0.52	35.10	46.00	10.90	
	0.686	33.24	0.52	33.76	46.00	12.24	
	0.796	36.47	0.53	37.00	46.00	9.00	
	22.655	37.58	1.72	39.30	50.00	10.70	
Neutral	0.371	42.73	0.43	43.16	58.47	15.31	QP
	0.481	44.70	0.48	45.18	56.32	11.14	
	0.585	44.80	0.49	45.29	56.00	10.71	
	0.796	45.92	0.50	46.42	56.00	9.58	
	1.324	43.87	0.54	44.41	56.00	11.59	
	21.830	45.84	1.81	47.65	60.00	12.35	
	0.371	31.28	0.43	31.71	48.47	16.76	AV
	0.481	34.15	0.48	34.63	46.32	11.69	
	0.585	34.26	0.49	34.75	46.00	11.25	
	0.796	35.27	0.50	35.77	46.00	10.23	
	1.324	33.56	0.54	34.10	46.00	11.90	
	21.830	35.47	1.81	37.28	50.00	12.72	

TEST ENGINEER: TED ZHU

EUT : LCD TV Temperature : 22°C

Model No. : LTDN42V68US Humidity : 48%RH

Serial No. : E2010072308 Date of Test : Jul 29, 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	0.375	42.93	0.47	43.40	58.39	14.99	QP
	0.481	44.86	0.51	45.37	56.32	10.95	
	0.585	45.45	0.52	45.97	56.00	10.03	
	0.686	44.98	0.52	45.50	56.00	10.50	
	0.796	44.53	0.53	45.06	56.00	10.94	
	21.830	46.46	1.69	48.15	60.00	11.85	
	0.375	32.25	0.47	32.72	48.39	15.67	AV
	0.481	34.12	0.51	34.63	46.32	11.69	
	0.585	35.17	0.52	35.69	46.00	10.31	
	0.686	34.25	0.52	34.77	46.00	11.23	
	0.796	33.24	0.53	33.77	46.00	12.23	
	21.830	36.41	1.69	38.10	50.00	11.90	
Neutral	0.371	42.79	0.43	43.22	58.47	15.25	QP
	0.481	44.87	0.48	45.35	56.32	10.97	
	0.585	47.25	0.49	47.74	56.00	8.26	
	0.796	45.98	0.50	46.48	56.00	9.52	
	1.324	43.91	0.54	44.45	56.00	11.55	
	21.600	48.04	1.81	49.85	60.00	10.15	
	0.371	31.24	0.43	31.67	48.47	16.80	AV
	0.481	34.25	0.48	34.73	46.32	11.59	
	0.585	33.21	0.49	33.70	46.00	12.30	
	0.796	35.26	0.50	35.76	46.00	10.24	
	1.324	31.23	0.54	31.77	46.00	14.23	
	21.600	34.16	1.81	35.97	50.00	14.03	

TEST ENGINEER: TED ZHU

EUT : LCD TV Temperature : 22°C

Model No. : LTDN42V68US Humidity : 48%RH

Serial No. : E2010072308 Date of Test : Jul 29, 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	0.375	43.84	0.47	44.31	58.39	14.08	QP
	0.481	41.26	0.51	41.77	56.32	14.55	
	0.580	41.26	0.52	41.78	56.00	14.22	
	0.804	47.37	0.53	47.90	56.00	8.10	
	5.362	36.98	0.82	37.80	60.00	22.20	
	20.814	43.47	1.65	45.12	60.00	14.88	
	0.375	33.61	0.47	34.08	48.39	14.31	AV
	0.481	21.47	0.51	21.98	46.32	24.34	
	0.580	26.31	0.52	26.83	46.00	19.17	
	0.804	36.79	0.53	37.32	46.00	8.68	
	5.362	25.43	0.82	26.25	50.00	23.75	
	20.814	31.28	1.65	32.93	50.00	17.07	
Neutral	0.481	43.65	0.48	44.13	56.32	12.19	QP
	0.585	44.32	0.49	44.81	56.00	11.19	
	0.796	45.18	0.50	45.68	56.00	10.32	
	0.909	43.11	0.51	43.62	56.00	12.38	
	1.324	43.79	0.54	44.33	56.00	11.67	
	21.600	46.85	1.81	48.66	60.00	11.34	
	0.481	33.25	0.48	33.73	46.32	12.59	AV
	0.585	32.15	0.49	32.64	46.00	13.36	
	0.796	35.26	0.50	35.76	46.00	10.24	
	0.909	33.27	0.51	33.78	46.00	12.22	
	1.324	33.25	0.54	33.79	46.00	12.21	
	21.600	35.26	1.81	37.07	50.00	12.93	

TEST ENGINEER: TED ZHU

EUT : LCD TV Temperature : 22°C

Model No. : LTDN42V68US Humidity : 48%RH

Serial No. : E2010072308 Date of Test : Jul 29, 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	0.481	42.92	0.51	43.43	56.32	12.89	QP
	0.585	46.54	0.52	47.06	56.00	8.94	
	0.686	43.95	0.52	44.47	56.00	11.53	
	0.796	45.74	0.53	46.27	56.00	9.73	
	0.909	45.41	0.54	45.95	56.00	10.05	
	22.063	49.18	1.70	50.88	60.00	9.12	
	0.481	32.17	0.51	32.68	46.32	13.64	AV
	0.585	36.58	0.52	37.10	46.00	8.90	
	0.686	33.57	0.52	34.09	46.00	11.91	
	0.796	35.27	0.53	35.80	46.00	10.20	
	0.909	35.27	0.54	35.81	46.00	10.19	
	22.063	39.57	1.70	41.27	50.00	8.73	
Neutral	0.371	43.46	0.43	43.89	58.47	14.58	QP
	0.481	44.06	0.48	44.54	56.32	11.78	
	0.585	43.84	0.49	44.33	56.00	11.67	
	0.796	47.43	0.50	47.93	56.00	8.07	
	1.324	44.50	0.54	45.04	56.00	10.96	
	21.600	47.18	1.81	48.99	60.00	11.01	
	0.371	33.28	0.43	33.71	48.47	14.76	AV
	0.481	32.75	0.48	33.23	46.32	13.09	
	0.585	32.17	0.49	32.66	46.00	13.34	
	0.796	37.58	0.50	38.08	46.00	7.92	
	1.324	34.26	0.54	34.80	46.00	11.20	
	21.600	37.40	1.81	39.21	50.00	10.79	

TEST ENGINEER: TED ZHU

EUT : LCD TV Temperature : 22°C

Model No. : LTDN42V68US Humidity : 48%RH

Serial No. : E2010072308 Date of Test : Jul 29, 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	0.375	43.14	0.47	43.61	58.39	14.78	QP
	0.481	45.41	0.51	45.92	56.32	10.40	
	0.585	44.61	0.52	45.13	56.00	10.87	
	0.796	45.28	0.53	45.81	56.00	10.19	
	0.909	43.23	0.54	43.77	56.00	12.23	
	22.063	48.47	1.70	50.17	60.00	9.83	
	0.375	32.64	0.47	33.11	48.39	15.28	AV
	0.481	35.67	0.51	36.18	46.32	10.14	
	0.585	32.47	0.52	32.99	46.00	13.01	
	0.796	35.74	0.53	36.27	46.00	9.73	
	0.909	33.75	0.54	34.29	46.00	11.71	
	22.063	35.17	1.70	36.87	50.00	13.13	
Neutral	0.375	42.53	0.43	42.96	58.39	15.43	QP
	0.481	43.89	0.48	44.37	56.32	11.95	
	0.585	44.49	0.49	44.98	56.00	11.02	
	0.796	44.52	0.50	45.02	56.00	10.98	
	1.324	43.11	0.54	43.65	56.00	12.35	
	21.830	45.35	1.81	47.16	60.00	12.84	
	0.375	32.57	0.43	33.00	48.39	15.39	AV
	0.481	32.47	0.48	32.95	46.32	13.37	
	0.585	32.17	0.49	32.66	46.00	13.34	
	0.796	32.74	0.50	33.24	46.00	12.76	
	1.324	33.67	0.54	34.21	46.00	11.79	
	21.830	35.27	1.81	37.08	50.00	12.92	

TEST ENGINEER: TED ZHU

EUT : LCD TV Temperature : 22°C

Model No. : LTDN42V68US Humidity : 48%RH

Serial No. : E2010072308 Date of Test : Jul 29, 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	0.375	43.18	0.47	43.65	58.39	14.74	QP
	0.481	43.79	0.51	44.30	56.32	12.02	
	0.585	44.65	0.52	45.17	56.00	10.83	
	0.796	45.59	0.53	46.12	56.00	9.88	
	0.909	43.96	0.54	44.50	56.00	11.50	
	22.063	48.32	1.70	50.02	60.00	9.98	
	0.375	33.26	0.47	33.73	48.39	14.66	AV
	0.481	31.95	0.51	32.46	46.32	13.86	
	0.585	32.78	0.52	33.30	46.00	12.70	
	0.796	35.97	0.53	36.50	46.00	9.50	
	0.909	33.96	0.54	34.50	46.00	11.50	
	22.063	38.57	1.70	40.27	50.00	9.73	
Neutral	0.371	43.56	0.43	43.99	58.47	14.48	QP
	0.481	43.55	0.48	44.03	56.32	12.29	
	0.585	44.96	0.49	45.45	56.00	10.55	
	0.796	45.73	0.50	46.23	56.00	9.77	
	1.433	44.30	0.54	44.84	56.00	11.16	
	21.600	44.18	1.81	45.99	60.00	14.01	
	0.371	33.14	0.43	33.57	48.47	14.90	AV
	0.481	32.58	0.48	33.06	46.32	13.26	
	0.585	31.47	0.49	31.96	46.00	14.04	
	0.796	35.27	0.50	35.77	46.00	10.23	
	1.433	34.58	0.54	35.12	46.00	10.88	
	21.600	31.73	1.81	33.54	50.00	16.46	

TEST ENGINEER: TED ZHU

4 RADIATED EMISSION TEST

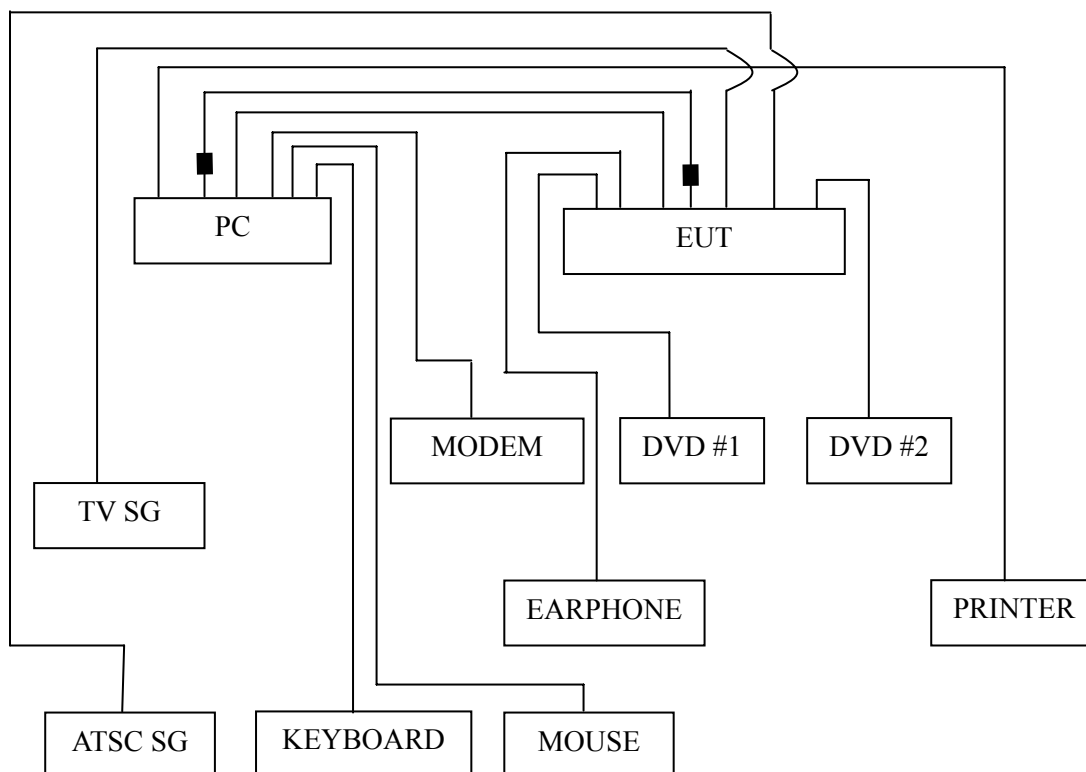
4.1 Test Equipment

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	23192	Dec 01, 2009	Dec 01, 2010
4.	Spectrum Analyzer	Agilent	E7405A	MY45106600	May 19, 2010	May 19, 2011
5.	Software	Audix	E3	SET00200 9912M295-2	--	--

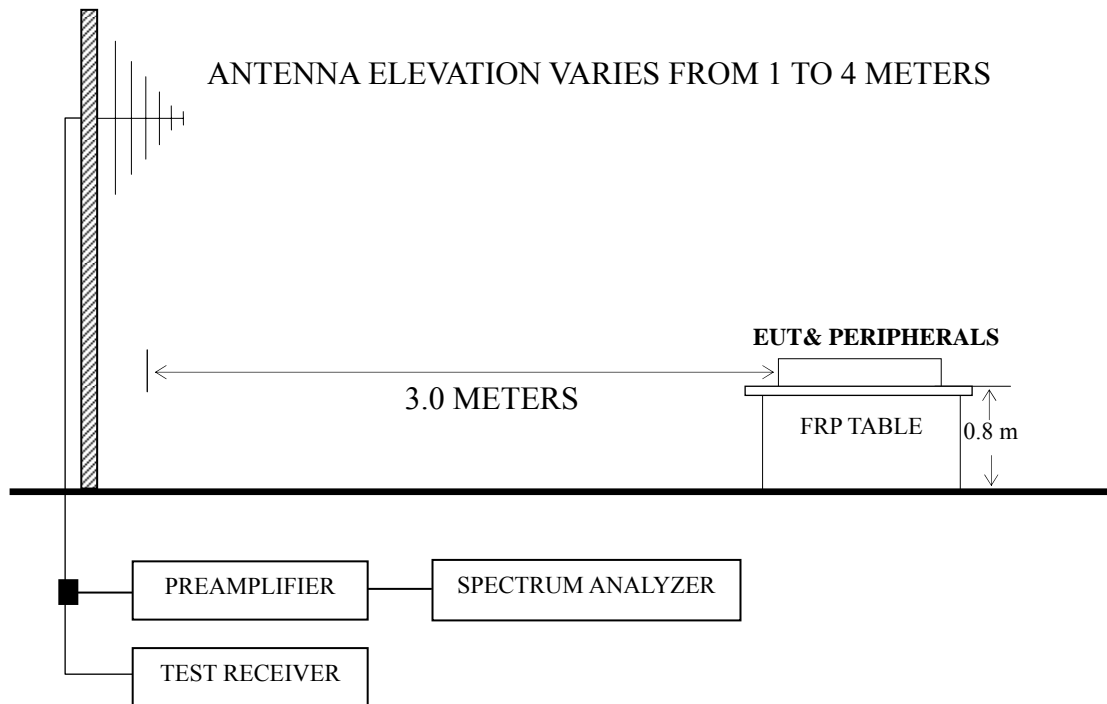
4.2 Block Diagram of Test Setup

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.

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 D-Sub 640*480@60Hz test mode. The worst emission at horizontal polarization was detected at 150.28 MHz with corrected signal level of 41.04dB (μV/m) (limit is 43.50dB (μV/m)), when the antenna was 1.00 m height and the turntable was at 280°. The worst emission at vertical polarization was detected at 50.30 MHz with corrected signal level of 37.74 dB (μV/m) (limit is 40.00 dB (μV/m)), when the antenna was 1.00 m height and the turntable was at 160°.

EUT : LCD TV Temperature : 22°C

Model No. : LTDN42V68US Humidity : 60%RH

Serial No. : E2010072308 Date of Test : Jul 30, 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	56.19	26.77	7.46	0.82	35.05	40.00	4.95
	87.23	24.82	8.96	0.98	34.76	40.00	5.24
	150.28	28.55	11.25	1.24	41.04	43.50	2.46
	195.60	27.10	10.51	1.43	39.04	43.50	4.46
	298.69	25.93	13.88	1.76	41.57	46.00	4.43
	446.13	22.18	17.17	2.16	41.51	46.00	4.49
Vertical	50.30	28.11	8.85	0.78	37.74	40.00	2.26
	86.60	26.10	8.84	0.98	35.92	40.00	4.08
	109.54	24.44	12.25	1.08	37.77	43.50	5.73
	174.53	25.88	10.07	1.35	37.30	43.50	6.20
	295.78	23.74	13.84	1.76	39.34	46.00	6.66
	371.44	22.87	15.88	1.99	40.74	46.00	5.26

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN42V68US Humidity : 60%RH

Serial No. : E2010072308 Date of Test : Jul 30, 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	56.19	26.45	7.46	0.82	34.73	40.00	5.27
	87.23	24.92	8.96	0.98	34.86	40.00	5.14
	196.98	28.40	10.57	1.44	40.41	43.50	3.09
	298.69	25.90	13.88	1.76	41.54	46.00	4.46
	446.13	21.81	17.17	2.16	41.14	46.00	4.86
	683.78	19.53	19.62	2.65	41.80	46.00	4.20
Vertical	51.36	27.10	8.61	0.79	36.50	40.00	3.50
	153.19	25.61	11.04	1.25	37.90	43.50	5.60
	174.53	27.84	10.07	1.35	39.26	43.50	4.24
	218.18	27.26	11.52	1.51	40.29	46.00	5.71
	371.44	22.90	15.88	1.99	40.77	46.00	5.23
	518.88	18.06	18.15	2.30	38.51	46.00	7.49

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN42V68US Humidity : 60%RH

Serial No. : E2010072308 Date of Test : Jul 30, 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	56.19	29.22	7.46	0.82	37.50	40.00	2.50
	87.40	26.72	9.01	0.98	36.71	40.00	3.29
	109.54	24.09	12.25	1.08	37.42	43.50	6.08
	295.78	26.01	13.84	1.76	41.61	46.00	4.39
	683.78	18.54	19.62	2.65	40.81	46.00	5.19
	877.78	14.74	21.49	3.00	39.23	46.00	6.77
Vertical	51.34	27.60	8.61	0.79	37.00	40.00	3.00
	109.54	23.49	12.25	1.08	36.82	43.50	6.68
	174.53	26.71	10.07	1.35	38.13	43.50	5.37
	218.18	25.78	11.52	1.51	38.81	46.00	7.19
	371.44	23.65	15.88	1.99	41.52	46.00	4.48
	492.69	18.88	17.80	2.25	38.93	46.00	7.07

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN42V68US Humidity : 60%RH

Serial No. : E2010072308 Date of Test : Jul 30, 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	62.98	24.90	6.57	0.86	32.33	40.00	7.67
	75.59	25.29	7.24	0.92	33.45	40.00	6.55
	104.69	23.52	11.88	1.06	36.46	43.50	7.04
	191.99	23.68	10.37	1.42	35.47	43.50	8.03
	295.78	18.81	13.84	1.76	34.41	46.00	11.59
	444.19	22.43	17.14	2.16	41.73	46.00	4.27
Vertical	46.49	24.93	10.52	0.76	36.21	40.00	3.79
	67.83	25.99	6.52	0.88	33.39	40.00	6.61
	106.63	21.77	12.02	1.07	34.86	43.50	8.64
	182.29	20.48	9.99	1.38	31.85	43.50	11.65
	293.84	22.58	13.79	1.74	38.11	46.00	7.89
	444.19	18.90	17.14	2.16	38.20	46.00	7.80

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN42V68US Humidity : 60%RH

Serial No. : E2010072308 Date of Test : Jul 30, 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	50.00	27.10	8.90	0.78	36.78	40.00	3.22
	106.63	22.51	12.02	1.07	35.60	43.50	7.90
	182.29	21.28	9.99	1.38	32.65	43.50	10.85
	295.78	21.78	13.84	1.76	37.38	46.00	8.62
	449.04	19.47	17.20	2.17	38.84	46.00	7.16
	683.78	12.39	19.62	2.65	34.66	46.00	11.34
Vertical	53.28	21.54	8.14	0.80	30.48	40.00	9.52
	104.69	20.93	11.88	1.06	33.87	43.50	9.63
	187.14	25.07	10.17	1.40	36.64	43.50	6.86
	293.84	20.64	13.79	1.74	36.17	46.00	9.83
	449.04	20.51	17.20	2.17	39.88	46.00	6.12
	682.00	20.10	19.62	2.63	42.35	46.00	3.65

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN42V68US Humidity : 60%RH

Serial No. : E2010072308 Date of Test : Jul 30, 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	50.00	27.00	8.90	0.78	36.68	40.00	3.32
	109.54	24.82	12.25	1.08	38.15	43.50	5.35
	187.14	21.45	10.17	1.40	33.02	43.50	10.48
	293.84	22.28	13.79	1.74	37.81	46.00	8.19
	446.13	19.48	17.17	2.16	38.81	46.00	7.19
	877.78	16.83	21.49	3.00	41.32	46.00	4.68
Vertical	62.98	26.30	6.57	0.86	33.73	40.00	6.27
	106.63	24.60	12.02	1.07	37.69	43.50	5.81
	191.99	24.59	10.37	1.42	36.38	43.50	7.12
	281.23	22.35	13.57	1.70	37.62	46.00	8.38
	446.13	22.25	17.17	2.16	41.58	46.00	4.42
	688.00	19.40	19.65	2.65	41.70	46.00	4.30

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	ZCAT1519-0830\ROH	FEELUX	See Internal Photos Figure 14
		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
(RAVEN JIN)