

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

LCD TV

Model No.	Serial No.	Brand
LHDN32V87HUS	E2010020401	Hisense

FCC ID : W9HLCDC0002

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

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Report No. : ACI-F10025
Date of Test : Feb 11-19, 2010
Date of Report : Mar 04, 2010

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TEST REPORT FOR FCC CERTIFICATE

Applicant : Hisense Electric Co., Ltd.
Manufacturer : Hisense Electric Co., Ltd.
EUT Description : LCD TV

Model No.	Serial No.	Brand	Power Supply
LHDN32V87HUS	E2010020401	Hisense	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 Feb 11-19, 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.F10024, a Verification report.

Date of Test : Feb 11-19, 2010 Date of Report : Mar 04, 2010

Producer : Alan He
ALAN HE / Assistant

Review : Dio Yang
DIO YANG / Deputy Assistant Manager

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

Signatory : Sammy Chen
Authorized Signature EMC SAMMY CHEN/ Assistant 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	:	<input checked="" type="checkbox"/> Production <input type="checkbox"/> Pre-product <input type="checkbox"/> Pro-type
Model No.	:	LHDN32V87HUS
Serial No.	:	E2010020401
Brand	:	Hisense
Applicant	:	Hisense Electric Co., Ltd. No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China
Manufacturer	:	Hisense Electric Co., Ltd. No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China
LCD Panel	:	Manufacturer : SAMSUNG M/N : LHDN32V88MH
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 component of YPbPr1 Port | Connected with DVD #1 |
| (2) | One component of YPbPr1 Audio Port | Connected with DVD #1 |
| (3) | One ANT Port | Connected with TV SG/ATSC SG |
| (4) | One VGA Port | Connected with PC |
| (5) | One VGA Audio Port | Connected with PC |
| (6) | One HDMI1 Port | Connected with PC |
| (7) | One Component of AV1 Port | Connected with DVD #1 |
| (8) | One Earphone Port | Connected with Earphone |
| (9) | One USB Port | Only for service, do no open to customer |

Back View:

- | | | |
|------|------------------------------------|------------------------|
| (10) | One component of YPbPr2 Port | Connected with DVD #2 |
| (11) | One component of YPbPr2 Audio Port | Connected with DVD #2 |
| (12) | One HDMI2 Port | Connected with DVD #1 |
| (13) | One HDMI3 Port | Connected with DVD #2 |
| (14) | One Digital Audio Out Port | Connected with DVD #3 |
| (15) | One Audio out Port | Connected with Speaker |
| (16) | One S-Video Port | Connected with DVD #2 |
| (17) | One Component of AV2 Port | Connected with DVD #2 |
| (18) | One RS232 Port | Connected with PC |

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 Earphone

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

2.2.6 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

2.2.7 ATSC Signal Generator

Manufacturer : SENCORE
Model Number : ATSC997
Serial Number : 6790071

2.2.8 DVD #1

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

2.2.9 DVD#2

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

2.2.10 DVD#3

Manufacturer : LG
Model Number : DF9921N
Serial Number : 3850R-N846W
Certificate : FCC DoC, CE/EMC, CCC

2.2.11 Speaker

Manufacturer : DIBA
Model Number : T520
Serial Number : 10628

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

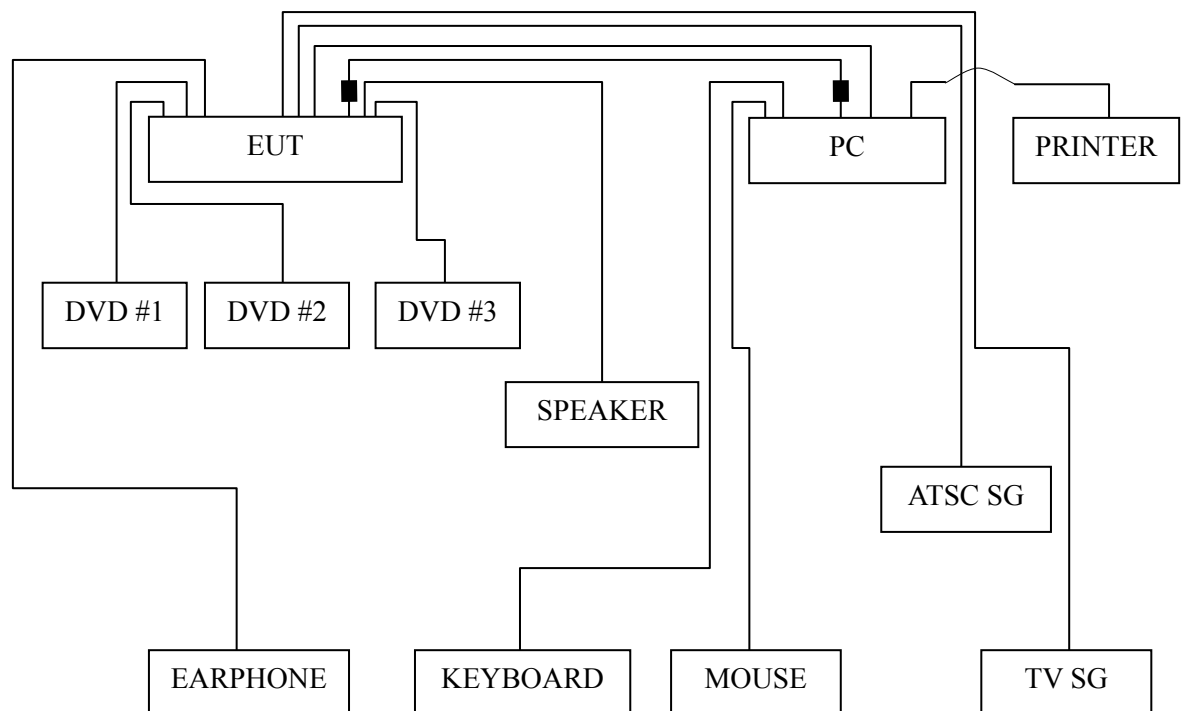
3.1.1 Test Equipment

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, 2009	Apr 02, 2010
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Apr 02, 2009	Apr 02, 2010
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Sep 19, 2009	Mar 19, 2010
5.	50 Ω Terminator	Anritsu	BNC	001	Apr 02, 2009	Apr 02, 2010
6.	Software	Audix	E3	SET00200 9804M592	--	--

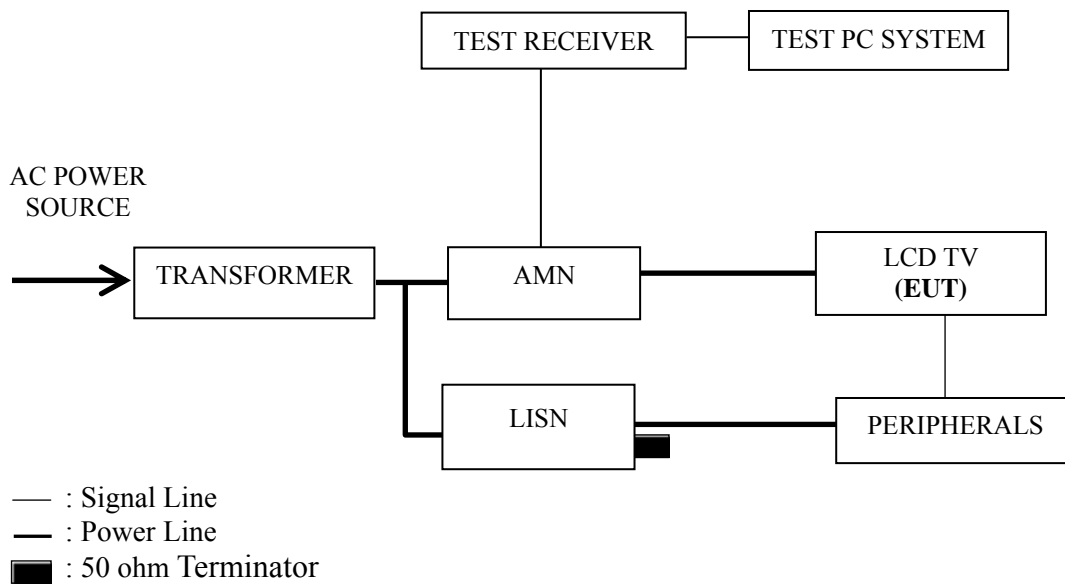
3.2 Block Diagram of Test Setup

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

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 0.180 MHz (Quasi-Peak value) with corrected signal level of 56.72 dB (μV) (limit is 64.50 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LCD TV Temperature : 22°C

Model No. : LHDN32V87HUS Humidity : 48%RH

Serial No. : E2010020401 Date of Test : Feb 11, 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	0.169	55.82	0.24	56.06	64.99	8.93	QP
	0.329	47.04	0.38	47.42	59.49	12.07	
	0.672	39.17	0.45	39.62	56.00	16.38	
	2.809	31.19	0.57	31.76	56.00	24.24	
	5.221	27.73	0.62	28.35	60.00	31.65	
	19.950	45.15	1.12	46.27	60.00	13.73	
	0.169	39.53	0.24	39.77	54.99	15.22	AV
	0.329	34.86	0.38	35.24	49.49	14.25	
	0.672	29.88	0.45	30.33	46.00	15.67	
	2.809	16.57	0.57	17.14	46.00	28.86	
	5.221	12.59	0.62	13.21	50.00	36.79	
	19.950	29.82	1.12	30.94	50.00	19.06	
Neutral	0.166	57.09	0.22	57.31	65.16	7.85	QP
	0.325	46.86	0.34	47.20	59.57	12.37	
	0.521	36.75	0.44	37.19	56.00	18.81	
	4.202	27.92	0.62	28.54	56.00	27.46	
	9.107	25.61	0.74	26.35	60.00	33.65	
	20.162	42.63	1.08	43.71	60.00	16.29	
	0.166	37.05	0.22	37.27	55.16	17.89	AV
	0.325	28.11	0.34	28.45	49.57	21.12	
	0.521	20.31	0.44	20.75	46.00	25.25	
	4.202	16.04	0.62	16.66	46.00	29.34	
	9.107	11.38	0.74	12.12	50.00	37.88	
	20.162	30.52	1.08	31.60	50.00	18.40	

TEST ENGINEER: HUGH HUANG

EUT : LCD TV Temperature : 22°C

Model No. : LHDN32V87HUS Humidity : 48%RH

Serial No. : E2010020401 Date of Test : Feb 11, 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	0.180	55.83	0.24	56.07	64.50	8.43	QP
	0.339	46.82	0.38	47.20	59.22	12.02	
	0.499	42.69	0.47	43.16	56.01	12.85	
	2.033	31.67	0.54	32.21	56.00	23.79	
	5.221	28.80	0.62	29.42	60.00	30.58	
	20.162	45.38	1.12	46.50	60.00	13.50	
	0.180	35.18	0.24	35.42	54.50	19.08	AV
	0.339	28.93	0.38	29.31	49.22	19.91	
	0.499	25.60	0.47	26.07	46.01	19.94	
	2.033	21.18	0.54	21.72	46.00	24.28	
	5.221	17.00	0.62	17.62	50.00	32.38	
	20.162	32.12	1.12	33.24	50.00	16.76	
Neutral	0.168	56.75	0.22	56.97	65.08	8.11	QP
	0.329	45.79	0.35	46.14	59.49	13.35	
	0.541	36.99	0.44	37.43	56.00	18.57	
	4.202	28.79	0.62	29.41	56.00	26.59	
	8.323	22.70	0.72	23.42	60.00	36.58	
	20.162	43.70	1.08	44.78	60.00	15.22	
	0.168	41.58	0.22	41.80	55.08	13.28	AV
	0.329	30.04	0.35	30.39	49.49	19.10	
	0.541	27.24	0.44	27.68	46.00	18.32	
	4.202	15.49	0.62	16.11	46.00	29.89	
	8.323	8.97	0.72	9.69	50.00	40.31	
	20.162	29.84	1.08	30.92	50.00	19.08	

TEST ENGINEER: HUGH HUANG

EUT : LCD TV Temperature : 22°C

Model No. : LHDN32V87HUS Humidity : 48%RH

Serial No. : E2010020401 Date of Test : Feb 11, 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	0.178	56.36	0.22	56.58	64.59	8.01	QP
	0.226	53.56	0.29	53.85	62.61	8.76	
	0.406	44.44	0.41	44.85	57.73	12.88	
	0.871	33.50	0.47	33.97	56.00	22.03	
	4.454	28.22	0.63	28.85	56.00	27.15	
	19.224	41.13	1.07	42.20	60.00	17.80	
	0.178	40.38	0.22	40.60	54.59	13.99	AV
	0.226	35.30	0.29	35.59	52.61	17.02	
	0.406	36.34	0.41	36.75	47.73	10.98	
	0.871	19.62	0.47	20.09	46.00	25.91	
	4.454	13.73	0.63	14.36	46.00	31.64	
	19.224	28.46	1.07	29.53	50.00	20.47	
Neutral	0.178	56.41	0.24	56.65	64.59	7.94	QP
	0.300	46.50	0.36	46.86	60.24	13.38	
	0.510	35.90	0.47	36.37	56.00	19.63	
	4.454	26.94	0.62	27.56	56.00	28.44	
	5.005	26.87	0.62	27.49	60.00	32.51	
	19.224	41.47	1.10	42.57	60.00	17.43	
	0.178	36.42	0.24	36.66	54.59	17.93	AV
	0.300	26.84	0.36	27.20	50.24	23.04	
	0.510	31.74	0.47	32.21	46.00	13.79	
	4.454	13.90	0.62	14.52	46.00	31.48	
	5.005	18.50	0.62	19.12	50.00	30.88	
	19.224	30.20	1.10	31.30	50.00	18.70	

TEST ENGINEER: HUGH HUANG

EUT : LCD TV Temperature : 22°C

Model No. : LHDN32V87HUS Humidity : 48%RH

Serial No. : E2010020401 Date of Test : Feb 11, 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	0.180	56.48	0.24	56.72	64.50	7.78	QP
	0.336	46.79	0.38	47.17	59.31	12.14	
	0.499	42.33	0.47	42.80	56.01	13.21	
	2.839	28.18	0.57	28.75	56.00	27.25	
	5.005	28.84	0.62	29.46	60.00	30.54	
	20.162	44.59	1.12	45.71	60.00	14.29	
	0.180	34.33	0.24	34.57	54.50	19.93	AV
	0.336	25.66	0.38	26.04	49.31	23.27	
	0.499	21.29	0.47	21.76	46.01	24.25	
	2.839	15.50	0.57	16.07	46.00	29.93	
	5.005	18.64	0.62	19.26	50.00	30.74	
	20.162	31.20	1.12	32.32	50.00	17.68	
Neutral	0.180	56.43	0.22	56.65	64.50	7.85	QP
	0.332	47.47	0.35	47.82	59.40	11.58	
	0.541	36.61	0.44	37.05	56.00	18.95	
	4.202	27.43	0.62	28.05	56.00	27.95	
	5.005	26.08	0.63	26.71	60.00	33.29	
	19.950	41.59	1.09	42.68	60.00	17.32	
	0.180	34.13	0.22	34.35	54.50	20.15	AV
	0.332	23.23	0.35	23.58	49.40	25.82	
	0.541	27.36	0.44	27.80	46.00	18.20	
	4.202	15.42	0.62	16.04	46.00	29.96	
	5.005	14.61	0.63	15.24	50.00	34.76	
	19.950	27.72	1.09	28.81	50.00	21.19	

TEST ENGINEER: HUGH HUANG

EUT : LCD TV Temperature : 22°C

Model No. : LHDN32V87HUS Humidity : 48%RH

Serial No. : E2010020401 Date of Test : Feb 11, 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	0.178	55.37	0.24	55.61	64.59	8.98	QP
	0.336	46.75	0.38	47.13	59.31	12.18	
	0.672	36.84	0.45	37.29	56.00	18.71	
	3.642	29.38	0.60	29.98	56.00	26.02	
	5.005	28.84	0.62	29.46	60.00	30.54	
	19.224	43.88	1.10	44.98	60.00	15.02	
	0.178	33.21	0.24	33.45	54.59	21.14	AV
	0.336	22.95	0.38	23.33	49.31	25.98	
	0.672	28.44	0.45	28.89	46.00	17.11	
	3.642	13.48	0.60	14.08	46.00	31.92	
	5.005	18.27	0.62	18.89	50.00	31.11	
	19.224	32.37	1.10	33.47	50.00	16.53	
Neutral	0.170	56.65	0.22	56.87	64.94	8.07	QP
	0.406	44.44	0.41	44.85	57.73	12.88	
	0.672	34.70	0.45	35.15	56.00	20.85	
	4.202	26.21	0.62	26.83	56.00	29.17	
	9.107	24.75	0.74	25.49	60.00	34.51	
	19.950	43.53	1.09	44.62	60.00	15.38	
	0.170	37.85	0.22	38.07	54.94	16.87	AV
	0.406	38.33	0.41	38.74	47.73	8.99	
	0.672	25.64	0.45	26.09	46.00	19.91	
	4.202	16.21	0.62	16.83	46.00	29.17	
	9.107	10.10	0.74	10.84	50.00	39.16	
	19.950	27.65	1.09	28.74	50.00	21.26	

TEST ENGINEER: HUGH HUANG

EUT : LCD TV Temperature : 22°C

Model No. : LHDN32V87HUS Humidity : 48%RH

Serial No. : E2010020401 Date of Test : Feb 11, 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	0.174	56.21	0.24	56.45	64.77	8.32	QP
	0.336	48.01	0.38	48.39	59.31	10.92	
	0.499	41.77	0.47	42.24	56.01	13.77	
	2.839	31.05	0.57	31.62	56.00	24.38	
	5.221	28.81	0.62	29.43	60.00	30.57	
	19.950	44.66	1.12	45.78	60.00	14.22	
	0.174	39.58	0.24	39.82	54.77	14.95	AV
	0.336	36.27	0.38	36.65	49.31	12.66	
	0.499	30.27	0.47	30.74	46.01	15.27	
	2.839	17.57	0.57	18.14	46.00	27.86	
	5.221	22.14	0.62	22.76	50.00	27.24	
	19.950	30.62	1.12	31.74	50.00	18.26	
Neutral	0.178	56.33	0.22	56.55	64.59	8.04	QP
	0.226	49.40	0.29	49.69	62.61	12.92	
	0.406	42.47	0.41	42.88	57.73	14.85	
	0.871	32.50	0.47	32.97	56.00	23.03	
	4.454	28.99	0.63	29.62	56.00	26.38	
	19.224	41.70	1.07	42.77	60.00	17.23	
	0.178	37.35	0.22	37.57	54.59	17.02	AV
	0.226	23.22	0.29	23.51	52.61	29.10	
	0.406	35.54	0.41	35.95	47.73	11.78	
	0.871	19.49	0.47	19.96	46.00	26.04	
	4.454	14.03	0.63	14.66	46.00	31.34	
	19.224	30.58	1.07	31.65	50.00	18.35	

TEST ENGINEER: HUGH HUANG

4 RADIATED EMISSION TEST

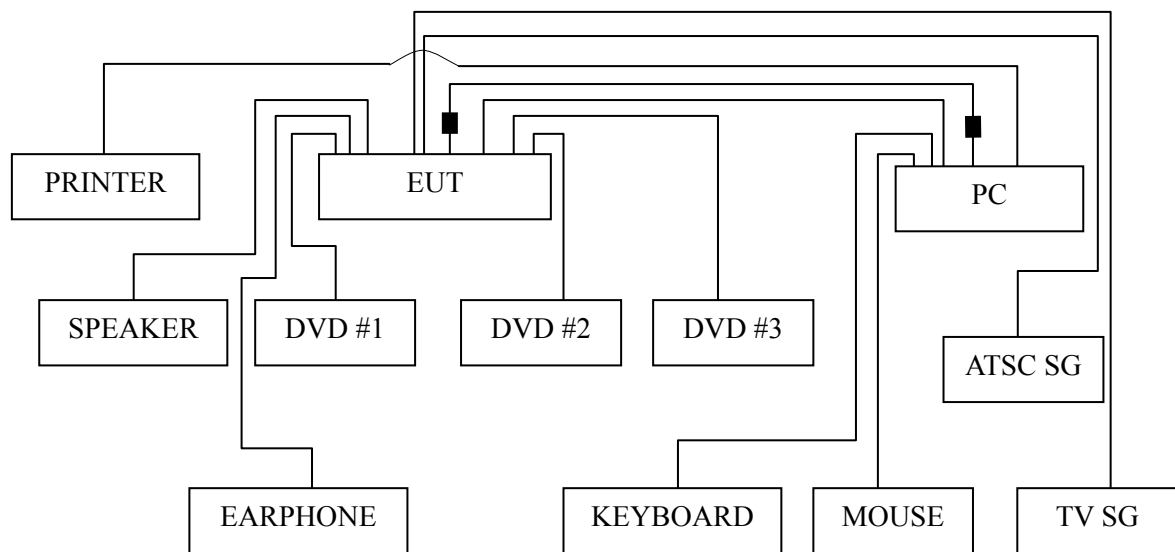
4.1 Test Equipment

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	Sep 19, 2009	Mar 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	--	--

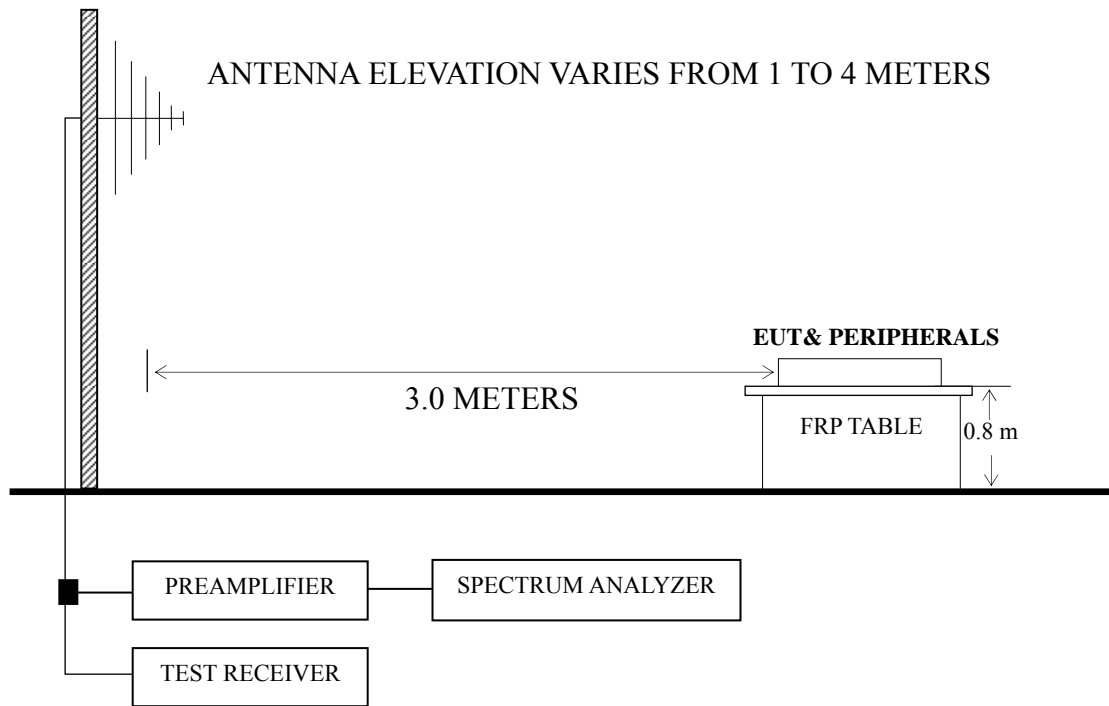
4.2 Block Diagram of Test Setup

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	
		($\mu\text{V/m}$)	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	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 – 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 800*600@60Hz test mode. The worst emission at horizontal polarization was detected at 558.650 MHz with corrected signal level of 42.45dB (μV/m) (limit is 46.00dB (μV/m)), when the antenna was 1.00 m height and the turntable was at 150°. The worst emission at vertical polarization was detected at 798.240 MHz with corrected signal level of 42.85 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.00 m height and the turntable was at 300°.

EUT : LCD TV Temperature : 22°C

Model No. : LHDN32V87HUS Humidity : 60%RH

Serial No. : E2010020401 Date of Test : Feb 19, 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	87.230	25.34	8.96	0.99	35.29	40.00	4.71
	152.220	23.80	11.09	1.24	36.13	43.50	7.37
	217.210	21.50	11.48	1.50	34.48	46.00	11.52
	550.890	20.53	18.58	2.37	41.48	46.00	4.52
	701.240	18.88	19.70	2.68	41.26	46.00	4.74
	979.630	13.38	22.27	3.15	38.80	54.00	15.20
Vertical	34.850	14.98	16.97	0.66	32.61	40.00	7.39
	104.690	23.43	11.88	1.07	36.38	43.50	7.12
	210.420	22.25	11.18	1.46	34.89	43.50	8.61
	582.900	20.98	19.00	2.44	42.42	46.00	3.58
	689.600	19.54	19.65	2.66	41.85	46.00	4.15
	787.570	17.94	20.58	2.86	41.38	46.00	4.62

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LHDN32V87HUS Humidity : 60%RH

Serial No. : E2010020401 Date of Test : Feb 19, 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	33.880	8.09	17.44	0.65	26.18	40.00	13.82
	94.020	19.65	10.27	1.02	30.94	43.50	12.56
	214.300	20.93	11.35	1.49	33.77	43.50	9.73
	315.180	18.58	14.32	1.79	34.69	46.00	11.31
	558.650	21.38	18.68	2.39	42.45	46.00	3.55
	701.240	18.95	19.70	2.68	41.33	46.00	4.67
Vertical	32.910	17.09	17.95	0.64	35.68	40.00	4.32
	106.630	19.56	12.02	1.08	32.66	43.50	10.84
	214.300	21.77	11.35	1.49	34.61	43.50	8.89
	558.650	20.87	18.68	2.39	41.94	46.00	4.06
	701.240	19.97	19.70	2.68	42.35	46.00	3.65
	798.240	19.30	20.67	2.88	42.85	46.00	3.15

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LHDN32V87HUS Humidity : 60%RH

Serial No. : E2010020401 Date of Test : Feb 19, 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	34.850	11.32	16.97	0.66	28.95	40.00	11.05
	184.230	24.18	10.05	1.37	35.60	43.50	7.90
	210.420	23.46	11.18	1.46	36.10	43.50	7.40
	293.840	23.62	13.79	1.74	39.15	46.00	6.85
	583.870	21.24	19.03	2.44	42.71	46.00	3.29
	689.600	19.51	19.65	2.66	41.82	46.00	4.18
Vertical	34.850	17.05	16.97	0.66	34.68	40.00	5.32
	104.690	21.80	11.88	1.07	34.75	43.50	8.75
	210.420	20.96	11.18	1.46	33.60	43.50	9.90
	583.870	19.70	19.03	2.44	41.17	46.00	4.83
	688.630	19.71	19.65	2.66	42.02	46.00	3.98
	787.570	18.61	20.58	2.86	42.05	46.00	3.95

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LHDN32V87HUS Humidity : 60%RH

Serial No. : E2010020401 Date of Test : Feb 19, 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	87.230	25.56	8.96	0.99	35.51	40.00	4.49
	152.220	22.61	11.09	1.24	34.94	43.50	8.56
	217.210	22.37	11.48	1.50	35.35	46.00	10.65
	238.550	24.71	12.48	1.57	38.76	46.00	7.24
	553.800	20.85	18.62	2.37	41.84	46.00	4.16
	700.270	20.16	19.70	2.68	42.54	46.00	3.46
Vertical	34.850	16.79	16.97	0.66	34.42	40.00	5.58
	108.570	22.39	12.17	1.09	35.65	43.50	7.85
	217.210	22.22	11.48	1.50	35.20	46.00	10.80
	550.890	21.16	18.58	2.37	42.11	46.00	3.89
	701.240	19.41	19.70	2.68	41.79	46.00	4.21
	777.870	19.26	20.49	2.84	42.59	46.00	3.41

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LHDN32V87HUS Humidity : 60%RH

Serial No. : E2010020401 Date of Test : Feb 19, 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	82.380	26.79	8.19	0.96	35.94	40.00	4.06
	123.120	21.61	12.86	1.14	35.61	43.50	7.89
	244.370	24.71	12.68	1.60	38.99	46.00	7.01
	277.350	24.36	13.50	1.68	39.54	46.00	6.46
	550.890	21.19	18.58	2.37	42.14	46.00	3.86
	702.210	19.24	19.73	2.68	41.65	46.00	4.35
Vertical	37.760	20.58	15.20	0.69	36.47	40.00	3.53
	82.380	26.22	8.19	0.96	35.37	40.00	4.63
	119.240	21.21	12.97	1.13	35.31	43.50	8.19
	212.360	23.68	11.26	1.47	36.41	43.50	7.09
	550.890	20.49	18.58	2.37	41.44	46.00	4.56
	786.600	19.23	20.58	2.86	42.67	46.00	3.33

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LHDN32V87HUS Humidity : 60%RH

Serial No. : E2010020401 Date of Test : Feb 19, 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	82.380	26.82	8.19	0.96	35.97	40.00	4.03
	114.390	22.03	12.64	1.11	35.78	43.50	7.72
	147.370	22.83	11.51	1.22	35.56	43.50	7.94
	277.350	24.42	13.50	1.68	39.60	46.00	6.40
	553.800	21.31	18.62	2.37	42.30	46.00	3.70
	701.240	19.62	19.70	2.68	42.00	46.00	4.00
Vertical	37.760	18.13	15.20	0.69	34.02	40.00	5.98
	82.380	25.32	8.19	0.96	34.47	40.00	5.53
	114.390	21.79	12.64	1.11	35.54	43.50	7.96
	212.360	23.30	11.26	1.47	36.03	43.50	7.47
	545.070	21.05	18.49	2.36	41.90	46.00	4.10
	786.600	17.87	20.58	2.86	41.31	46.00	4.69

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 Photo Figure 17
		Rui Feng Electronic Co., Ltd.	
		Hai An Magnetic Material No.2 Factory	
Ferrite core	ZCAT2132-1130\ROH	FEELUX	See Internal Photo Figure 18
		Rui Feng Electronic Co., Ltd.	
		Hai An Magnetic Material No.2 Factory	

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)