

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

LCD TV

Model No.	Serial No.	Brand
LTDN46K15US	E2010102805	Hisense

FCC ID : W9HLCDE0005

Prepared For : Hisense Electric Co., Ltd.
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Report No. : ACI-F10157
Date of Test : Nov 10-15, 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
LTDN46K15US	E2010102805	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: LTDN46K15US; S/N: E2010102805) which was tested in 3m anechoic chamber Nov 10-15, 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.F10156, a Verification report.

Date of Test : Nov 10-15, 2010 Date of Report : Nov 22, 2010

Producer :

Candy Xi
CANDY XI / Assistant

Review :

Dio Yang
DIO YANG / Deputy Assistant Manager



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

Signatory :

Sammy Chen
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. : LTDN46K15US

Serial No. : E2010102805

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 : LTA460HM04

Max Resolution : 1280*1024@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 HDMI4 Port : Connected with DVD #3
- (4) One VGA Port : Connected with PC
- (5) One Digital Audio Port : Connected with SPEAKER
- (6) One PC Audio Port: : Connected with PC

Side Port

- (7) One HDMI1 Port : Connected with PC
- (8) One AV In Port : Connected with DVD #1
- (9) One ANT Port : Connected with ATSC SG/TV SG
- (10) One Component of YPbPr Port : Connected with DVD #1
- (11) One Component of YPbPr Audio Port : Connected with DVD #1
- (12) One Headphone Port : Connected with Earphone
- (13) 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 : KU-0459
Serial Number : 7691402450604
Data Cable : Shielded, Undetachable, 1.8m
Certificate : CE/EMC, FCC DoC, VCCI, MIC,
C-Tick, BSMI

2.2.4 Mouse

Manufacturer : DELL
Model Number : MO56UO
Serial Number : 443048231
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

2.2.11 DVD#3

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

2.2.12 SPEAKER

Manufacturer : DIBA
Model Number : FS-04
Serial Number : 002

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 = 1.26 dB
Radiated Emission Expanded Uncertainty :	U = 3.02 dB

3 CONDUCTED EMISSION TEST

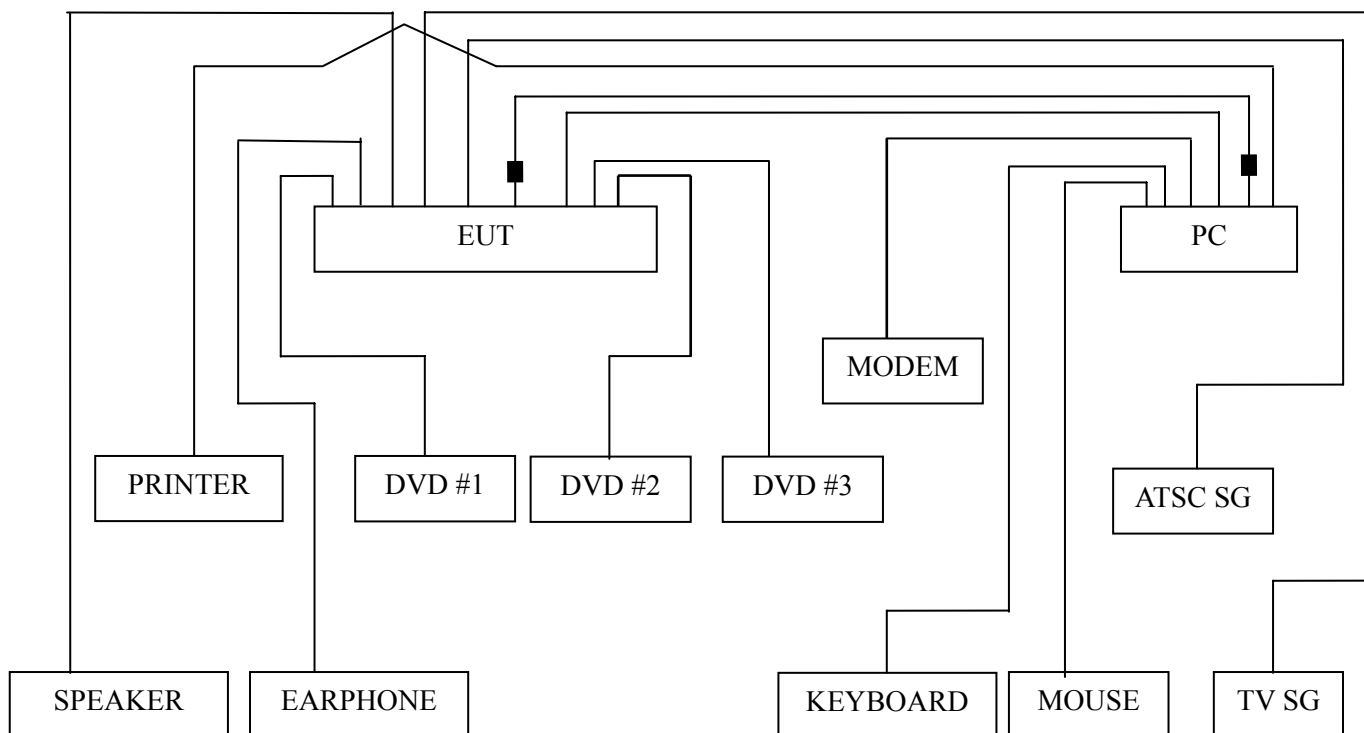
3.1 Test Equipment

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

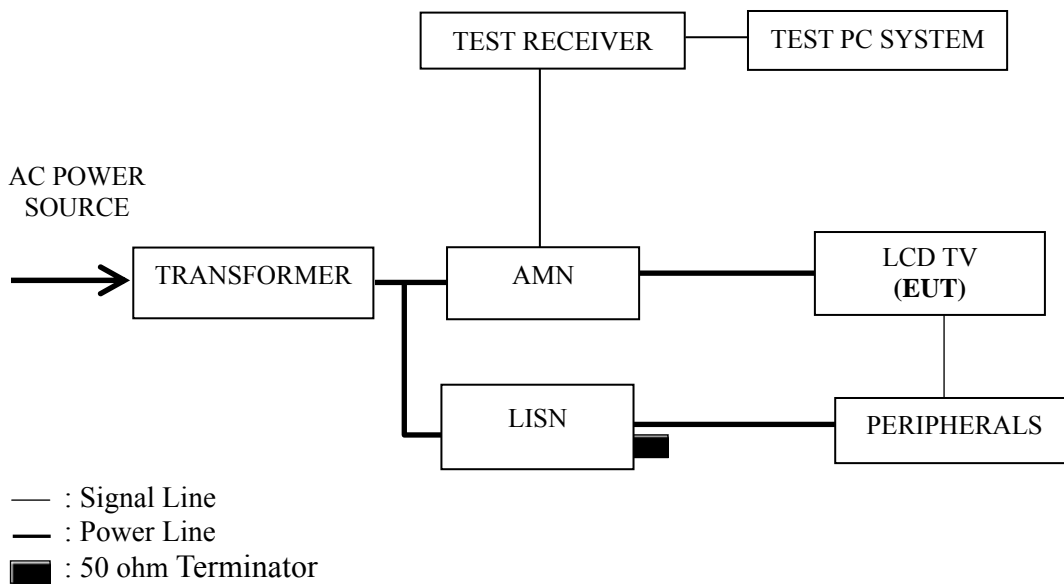
3.2 Block Diagram of Test Setup

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 1280*1024@60Hz
HDMI 640*480@60Hz
HDMI 800*600@60Hz
HDMI 1280*1024@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 1280*1024@60Hz	P16
HDMI 640*480@60Hz	P17
HDMI 800*600@60Hz	P18
HDMI 1280*1024@60Hz	P19

NOTE 1 – **The bold test mode** listed above means the worst test mode.

NOTE 2 – Factor = Cable Loss + AMN Factor.

NOTE 3 – Emission Level = Meter Reading + Factor.

NOTE 4 – “QP” means “Quasi-Peak” values, “AV” means “Average” values.

NOTE 5 – The worst case is for D-Sub 1280*1024@60Hz test mode. The worst emission is detected at 9.107 MHz (Average value) with corrected signal level of 43.59 dB (μV) (limit is 50.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46K15US Humidity : 48%RH

Serial No. : E2010102805 Date of Test : Nov 10, 2010

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	0.150	43.31	0.37	43.68	66.00	22.32	QP
	0.558	37.56	0.52	38.08	56.00	17.92	
	0.923	41.25	0.54	41.79	56.00	14.21	
	2.396	40.40	0.66	41.06	56.00	14.94	
	9.107	51.75	1.02	52.77	60.00	7.23	
	28.302	43.55	1.87	45.42	60.00	14.58	
	0.150	33.65	0.37	34.02	56.00	21.98	AV
	0.558	24.57	0.52	25.09	46.00	20.91	
	0.923	31.29	0.54	31.83	46.00	14.17	
	2.396	31.53	0.66	32.19	46.00	13.81	
	9.107	41.68	1.02	42.70	50.00	7.30	
	28.302	33.58	1.87	35.45	50.00	14.55	
Neutral	0.150	41.16	0.32	41.48	66.00	24.52	QP
	0.558	37.08	0.49	37.57	56.00	18.43	
	0.943	41.37	0.51	41.88	56.00	14.12	
	4.501	39.58	0.72	40.30	56.00	15.70	
	8.822	51.39	0.97	52.36	60.00	7.64	
	27.708	45.67	1.91	47.58	60.00	12.42	
	0.150	31.65	0.32	31.97	56.00	24.03	AV
	0.558	25.48	0.49	25.97	46.00	20.03	
	0.943	31.87	0.51	32.38	46.00	13.62	
	4.501	28.54	0.72	29.26	46.00	16.74	
	8.822	41.26	0.97	42.23	50.00	7.77	
	27.708	33.62	1.91	35.53	50.00	14.47	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46K15US Humidity : 48%RH

Serial No. : E2010102805 Date of Test : Nov 10, 2010

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	0.252	41.77	0.42	42.19	61.69	19.50	QP
	0.694	38.82	0.52	39.34	56.00	16.66	
	0.923	41.82	0.54	42.36	56.00	13.64	
	2.396	40.45	0.66	41.11	56.00	14.89	
	9.107	52.01	1.02	53.03	60.00	6.97	
	28.302	44.07	1.87	45.94	60.00	14.06	
	0.252	31.58	0.42	32.00	51.69	19.69	AV
	0.694	28.14	0.52	28.66	46.00	17.34	
	0.923	31.26	0.54	31.80	46.00	14.20	
	2.396	30.46	0.66	31.12	46.00	14.88	
	9.107	42.18	1.02	43.20	50.00	6.80	
	28.302	32.51	1.87	34.38	50.00	15.62	
Neutral	0.150	43.52	0.32	43.84	66.00	22.16	QP
	0.694	38.31	0.49	38.80	56.00	17.20	
	0.923	41.12	0.51	41.63	56.00	14.37	
	4.501	39.61	0.72	40.33	56.00	15.67	
	9.107	51.84	0.98	52.82	60.00	7.18	
	26.841	43.68	1.89	45.57	60.00	14.43	
	0.150	33.68	0.32	34.00	56.00	22.00	AV
	0.694	21.47	0.49	21.96	46.00	24.04	
	0.923	31.57	0.51	32.08	46.00	13.92	
	4.501	25.48	0.72	26.20	46.00	19.80	
	9.107	41.57	0.98	42.55	50.00	7.45	
	26.841	33.26	1.89	35.15	50.00	14.85	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46K15US Humidity : 48%RH

Serial No. : E2010102805 Date of Test : Nov 10, 2010

Test Mode : D-Sub 1280*1024@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	0.249	42.47	0.42	42.89	61.78	18.89	QP
	0.672	37.05	0.52	37.57	56.00	18.43	
	0.984	41.50	0.54	42.04	56.00	13.96	
	2.678	40.30	0.67	40.97	56.00	15.03	
	9.107	52.46	1.02	53.48	60.00	6.52	
	27.708	43.12	1.86	44.98	60.00	15.02	
	0.249	32.53	0.42	32.95	51.78	18.83	AV
	0.672	27.48	0.52	28.00	46.00	18.00	
	0.984	31.48	0.54	32.02	46.00	13.98	
	2.678	31.29	0.67	31.96	46.00	14.04	
	9.107	42.57	1.02	43.59	50.00	6.41	
	27.708	33.54	1.86	35.40	50.00	14.60	
Neutral	0.150	43.71	0.32	44.03	66.00	21.97	QP
	0.672	37.43	0.49	37.92	56.00	18.08	
	0.943	40.87	0.51	41.38	56.00	14.62	
	4.315	39.92	0.71	40.63	56.00	15.37	
	9.107	51.78	0.98	52.76	60.00	7.24	
	27.708	44.38	1.91	46.29	60.00	13.71	
	0.150	33.61	0.32	33.93	56.00	22.07	AV
	0.672	27.54	0.49	28.03	46.00	17.97	
	0.943	31.27	0.51	31.78	46.00	14.22	
	4.315	24.57	0.71	25.28	46.00	20.72	
	9.107	41.26	0.98	42.24	50.00	7.76	
	27.708	32.56	1.91	34.47	50.00	15.53	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46K15US Humidity : 48%RH

Serial No. : E2010102805 Date of Test : Nov 10, 2010

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	0.252	42.27	0.42	42.69	61.69	19.00	QP
	0.558	36.69	0.52	37.21	56.00	18.79	
	0.984	41.20	0.54	41.74	56.00	14.26	
	2.396	39.70	0.66	40.36	56.00	15.64	
	9.302	51.93	1.03	52.96	60.00	7.04	
	28.302	43.70	1.87	45.57	60.00	14.43	
	0.252	31.84	0.42	32.26	51.69	19.43	AV
	0.558	26.48	0.52	27.00	46.00	19.00	
	0.984	31.70	0.54	32.24	46.00	13.76	
	2.396	28.46	0.66	29.12	46.00	16.88	
	9.302	41.57	1.03	42.60	50.00	7.40	
	28.302	33.17	1.87	35.04	50.00	14.96	
Neutral	0.252	41.34	0.35	41.69	61.69	20.00	QP
	0.564	37.04	0.49	37.53	56.00	18.47	
	0.923	40.30	0.51	40.81	56.00	15.19	
	2.839	39.86	0.65	40.51	56.00	15.49	
	9.123	51.03	0.98	52.01	60.00	7.99	
	28.003	42.56	1.91	44.47	60.00	15.53	
	0.252	31.26	0.35	31.61	51.69	20.08	AV
	0.564	25.48	0.49	25.97	46.00	20.03	
	0.923	23.45	0.51	23.96	46.00	22.04	
	2.839	28.56	0.65	29.21	46.00	16.79	
	9.123	35.10	0.98	36.08	50.00	13.92	
	28.003	31.26	1.91	33.17	50.00	16.83	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46K15US Humidity : 48%RH

Serial No. : E2010102805 Date of Test : Nov 10, 2010

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	0.249	42.39	0.42	42.81	61.78	18.97	QP
	0.564	37.49	0.52	38.01	56.00	17.99	
	0.943	40.59	0.54	41.13	56.00	14.87	
	2.396	39.67	0.66	40.33	56.00	15.67	
	9.302	52.00	1.03	53.03	60.00	6.97	
	28.603	42.86	1.87	44.73	60.00	15.27	
	0.249	30.25	0.42	30.67	51.78	21.11	AV
	0.564	25.74	0.52	26.26	46.00	19.74	
	0.943	30.27	0.54	30.81	46.00	15.19	
	2.396	28.44	0.66	29.10	46.00	16.90	
	9.302	41.57	1.03	42.60	50.00	7.40	
	28.603	31.58	1.87	33.45	50.00	16.55	
Neutral	0.150	44.31	0.32	44.63	66.00	21.37	QP
	0.686	37.10	0.49	37.59	56.00	18.41	
	0.923	40.95	0.51	41.46	56.00	14.54	
	4.501	39.82	0.72	40.54	56.00	15.46	
	9.204	51.95	0.98	52.93	60.00	7.07	
	27.708	43.81	1.91	45.72	60.00	14.28	
	0.150	32.58	0.32	32.90	56.00	23.10	AV
	0.686	27.48	0.49	27.97	46.00	18.03	
	0.923	31.57	0.51	32.08	46.00	13.92	
	4.501	28.17	0.72	28.89	46.00	17.11	
	9.204	41.58	0.98	42.56	50.00	7.44	
	27.708	33.27	1.91	35.18	50.00	14.82	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46K15US Humidity : 48%RH

Serial No. : E2010102805 Date of Test : Nov 10, 2010

Test Mode : HDMI 1280*1024@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	41.58	0.37	41.95	66.00	24.05	QP
	0.564	37.66	0.52	38.18	56.00	17.82	
	0.984	41.66	0.54	42.20	56.00	13.80	
	4.501	40.35	0.78	41.13	56.00	14.87	
	9.107	52.23	1.02	53.25	60.00	6.75	
	27.708	42.89	1.86	44.75	60.00	15.25	
	0.150	31.57	0.37	31.94	56.00	24.06	AV
	0.564	28.57	0.52	29.09	46.00	16.91	
	0.984	31.47	0.54	32.01	46.00	13.99	
	4.501	31.26	0.78	32.04	46.00	13.96	
	9.107	41.57	1.02	42.59	50.00	7.41	
	27.708	32.15	1.86	34.01	50.00	15.99	
Neutral	0.150	42.93	0.32	43.25	66.00	22.75	QP
	0.558	36.71	0.49	37.20	56.00	18.80	
	0.923	40.73	0.51	41.24	56.00	14.76	
	2.396	41.04	0.62	41.66	56.00	14.34	
	8.916	52.61	0.97	53.58	60.00	6.42	
	27.416	44.00	1.90	45.90	60.00	14.10	
	0.150	31.28	0.32	31.60	56.00	24.40	AV
	0.558	26.54	0.49	27.03	46.00	18.97	
	0.923	30.27	0.51	30.78	46.00	15.22	
	2.396	31.28	0.62	31.90	46.00	14.10	
	8.916	42.13	0.97	43.10	50.00	6.90	
	27.416	34.18	1.90	36.08	50.00	13.92	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

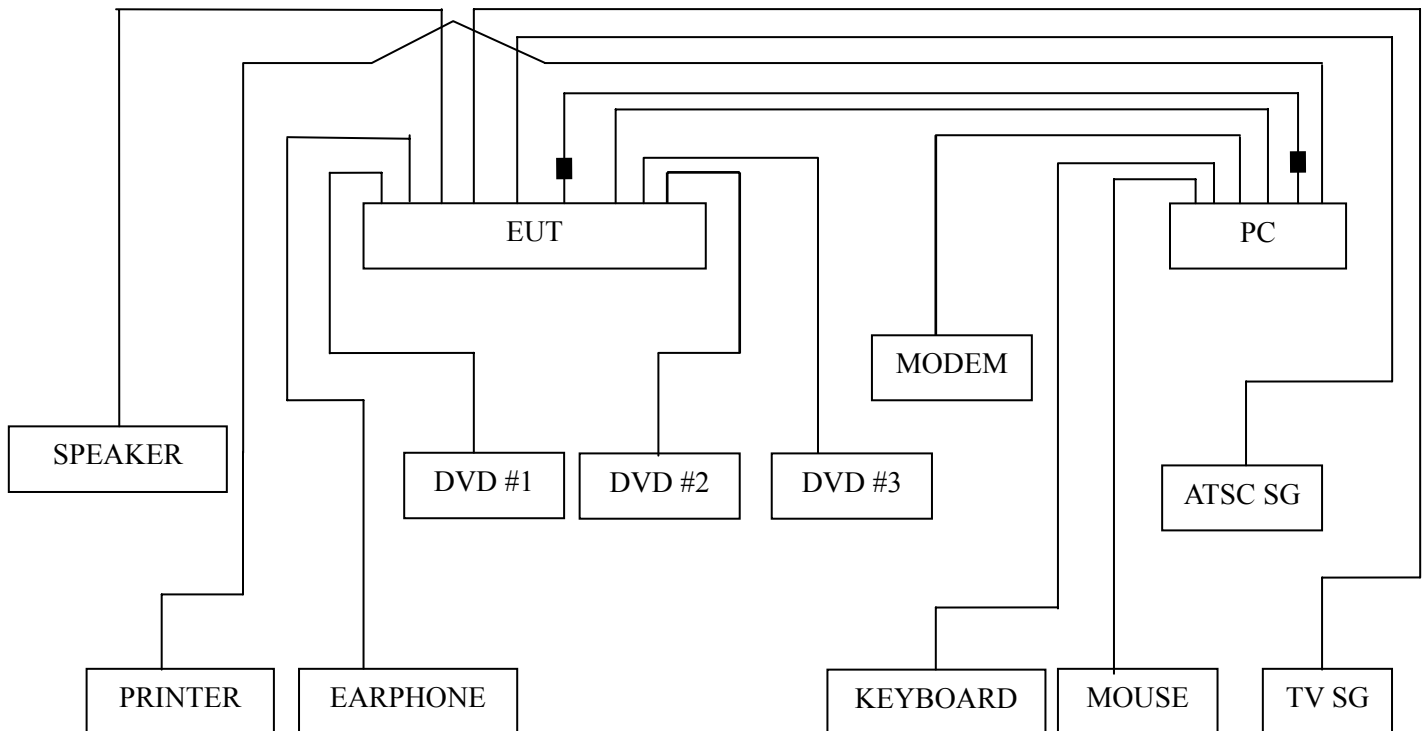
4.1 Test Equipment

The following test equipments are used during the radiated emission test in a semi-anechoic chamber:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESVS10	844594/001	Mar 07, 2010	Mar 07, 2011
2.	Preamplifier	Agilent	8447D	2944A10548	Sep 19, 2010	Mar 19, 2011
3.	Preamplifier	HP	8449B	3008A00864	Apr 29, 2010	Apr 29, 2011
4.	Bi-log Antenna	TESEQ	CBL6112D	23192	Dec 01, 2009	Dec 01, 2010
5.	Spectrum Analyzer	Agilent	E7405A	MY45106600	May 19, 2010	May 19, 2011
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

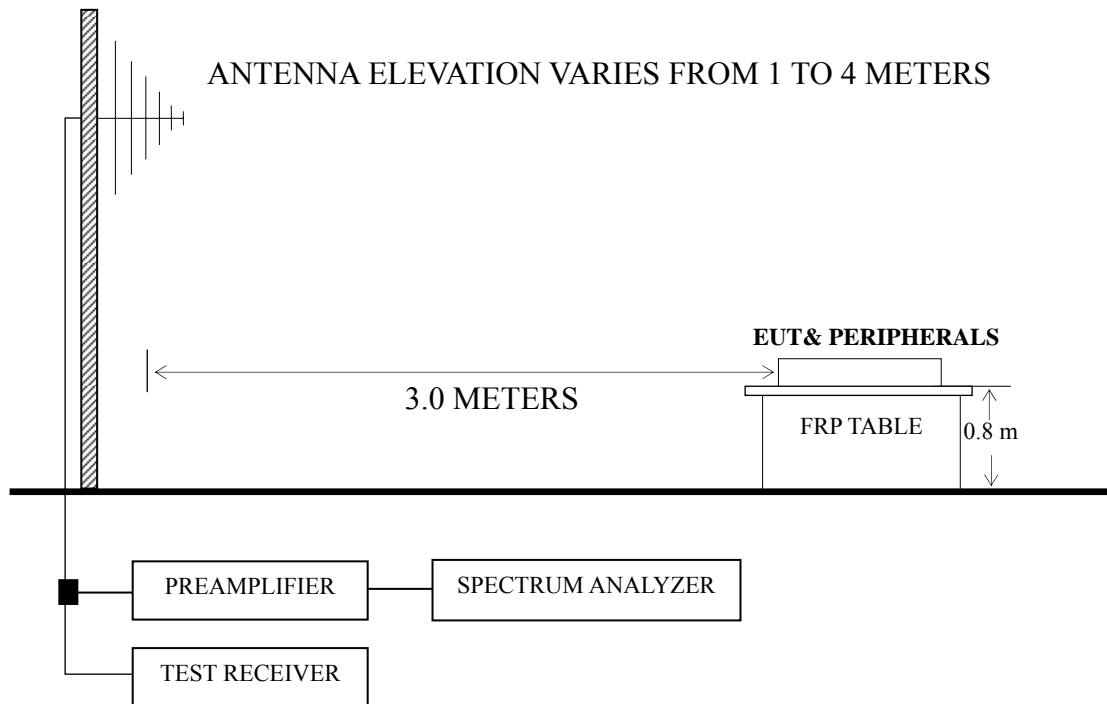
4.2 Block Diagram of Test Setup

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 below 1GHz and The Spectrum Agilent E7405A was set at 1MHz above 1GHz.

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

The frequency range from 1 GHz to 2 GHz was checked for D-Sub/HDMI 1280*1024@60Hz 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	P24
D-Sub 800*600@60Hz	P25
D-Sub 1280*1024@60Hz	P26 – P27
HDMI 640*480@60Hz	P28
HDMI 800*600@60Hz	P29
HDMI 1280*1024@60Hz	P30 – P31

NOTE 1 – **The bold test mode** listed above means the worst test mode.

NOTE 2 – Emission Level = Antenna Factor + Cable Loss + Meter Reading. (< 1GHz)

NOTE 3 – Emission Level = Antenna Factor + Cable Loss – Preamp Factor + Meter Reading. (> 1GHz)

NOTE 4 – 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 – All reading are Quasi-Peak values below or equal to 1GHz, Peak and average values above 1GHz.

NOTE 5 – The worst case is for D-Sub 1280*1024@60Hz test mode. The worst emission at horizontal polarization was detected at 143.000 MHz with corrected signal level of 41.18 dB ($\mu\text{V}/\text{m}$) (limit is 43.50 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.00 m height and the turntable was at 60°. The worst emission at vertical polarization was detected at 877.780 MHz with corrected signal level of 42.42 dB ($\mu\text{V}/\text{m}$) (limit is 46.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.20 m height and the turntable was at 300°.

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46K15US Humidity : 60%RH

Serial No. : E2010102805 Date of Test : Nov 15, 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	70.740	25.07	6.58	0.90	32.55	40.00	7.45
	143.490	25.64	11.81	1.22	38.67	43.50	4.83
	179.380	28.04	9.92	1.37	39.33	43.50	4.17
	252.130	23.94	12.94	1.61	38.49	46.00	7.51
	371.440	21.88	15.88	1.99	39.75	46.00	6.25
	667.290	17.19	19.55	2.61	39.35	46.00	6.65
Vertical	143.490	26.66	11.81	1.22	39.69	43.50	3.81
	179.380	26.43	9.92	1.37	37.72	43.50	5.78
	252.130	22.93	12.94	1.61	37.48	46.00	8.52
	371.440	21.78	15.88	1.99	39.65	46.00	6.35
	444.190	17.12	17.14	2.16	36.42	46.00	9.58
	877.780	17.77	21.49	3.00	42.26	46.00	3.74

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46K15US Humidity : 60%RH

Serial No. : E2010102805 Date of Test : Nov 15, 2010

Test Mode : D-Sub 1280*1024@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	70.740	29.05	6.58	0.90	--	36.53	40.00	3.47	QP
	143.000	28.10	11.86	1.22	--	41.18	43.50	2.32	
	371.440	23.77	15.88	1.99	--	41.64	46.00	4.36	
	667.290	19.38	19.55	2.61	--	41.54	46.00	4.46	
	741.980	16.68	20.13	2.78	--	39.59	46.00	6.41	
	817.640	14.28	20.87	2.92	--	38.07	46.00	7.93	
	1024.000	47.46	22.57	4.49	37.36	37.16	74.00	36.84	PK
	1194.000	46.82	23.67	4.51	37.02	37.98	74.00	36.02	
	1394.000	45.46	25.16	4.54	36.55	38.61	74.00	35.39	
	1597.000	44.27	26.36	4.56	36.10	39.09	74.00	34.91	
	1732.000	44.08	26.74	4.57	35.90	39.49	74.00	34.51	
	1879.000	43.35	27.35	4.67	35.72	39.65	74.00	34.35	AV
	1024.000	37.46	22.57	4.49	37.36	27.16	54.00	26.84	
	1194.000	34.82	23.67	4.51	37.02	25.98	54.00	28.02	
	1394.000	32.46	25.16	4.54	36.55	25.61	54.00	28.39	
1597.000	29.27	26.36	4.56	36.10	24.09	54.00	29.91		
1732.000	29.08	26.74	4.57	35.90	24.49	54.00	29.51		
1879.000	30.35	27.35	4.67	35.72	26.65	54.00	27.35		

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46K15US Humidity : 60%RH

Serial No. : E2010102805 Date of Test : Nov 15, 2010

Test Mode : D-Sub 1280*1024@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	58.130	21.77	6.96	0.83	--	29.56	40.00	10.44	QP
	143.490	26.46	11.81	1.22	--	39.49	43.50	4.01	
	179.380	26.25	9.92	1.37	--	37.54	43.50	5.96	
	371.440	21.40	15.88	1.99	--	39.27	46.00	6.73	
	666.000	20.10	19.54	2.61	--	42.25	46.00	3.75	
	877.780	17.93	21.49	3.00	--	42.42	46.00	3.58	
	1024.000	50.69	22.57	4.49	37.36	40.39	74.00	33.61	PK
	1149.000	50.56	23.42	4.51	37.11	41.38	74.00	32.62	
	1234.000	49.95	23.98	4.52	36.93	41.52	74.00	32.48	
	1399.000	49.92	25.20	4.54	36.54	43.12	74.00	30.88	
	1597.000	48.32	26.36	4.56	36.10	43.14	74.00	30.86	
	1762.000	46.40	26.81	4.58	35.86	41.93	74.00	32.07	
	1024.000	41.69	22.57	4.49	37.36	31.39	54.00	22.61	AV
	1149.000	38.56	23.42	4.51	37.11	29.38	54.00	24.62	
	1234.000	37.95	23.98	4.52	36.93	29.52	54.00	24.48	
	1399.000	36.92	25.20	4.54	36.54	30.12	54.00	23.88	
	1597.000	34.32	26.36	4.56	36.10	29.14	54.00	24.86	
	1762.000	34.40	26.81	4.58	35.86	29.93	54.00	24.07	

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46K15US Humidity : 60%RH

Serial No. : E2010102805 Date of Test : Nov 15, 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	66.860	18.95	6.53	0.88	26.36	40.00	13.64
	185.200	21.53	10.08	1.40	33.01	43.50	10.49
	234.670	21.99	12.32	1.56	35.87	46.00	10.13
	293.840	19.59	13.79	1.74	35.12	46.00	10.88
	371.440	22.49	15.88	1.99	40.36	46.00	5.64
	667.290	11.32	19.55	2.61	33.48	46.00	12.52
Vertical	66.860	27.72	6.53	0.88	35.13	40.00	4.87
	118.270	17.61	12.91	1.12	31.64	43.50	11.86
	167.740	25.77	10.27	1.32	37.36	43.50	6.14
	222.060	23.20	11.75	1.52	36.47	46.00	9.53
	371.440	21.32	15.88	1.99	39.19	46.00	6.81
	814.730	14.49	20.84	2.92	38.25	46.00	7.75

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46K15US Humidity : 60%RH

Serial No. : E2010102805 Date of Test : Nov 15, 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	53.280	22.75	8.14	0.80	31.69	40.00	8.31
	132.820	20.08	12.40	1.18	33.66	43.50	9.84
	224.000	24.02	11.85	1.53	37.40	46.00	8.60
	373.380	19.79	15.92	1.99	37.70	46.00	8.30
	447.100	14.65	17.17	2.16	33.98	46.00	12.02
	819.580	11.55	20.91	2.92	35.38	46.00	10.62
Vertical	66.860	22.65	6.53	0.88	30.06	40.00	9.94
	132.820	16.14	12.40	1.18	29.72	43.50	13.78
	172.590	24.38	10.11	1.35	35.84	43.50	7.66
	306.450	22.08	14.07	1.78	37.93	46.00	8.07
	671.170	15.95	19.57	2.61	38.13	46.00	7.87
	819.580	7.96	20.91	2.92	31.79	46.00	14.21

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46K15US Humidity : 60%RH

Serial No. : E2010102805 Date of Test : Nov 15, 2010

Test Mode : HDMI 1280*1024@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	71.710	28.42	6.69	0.90	--	36.01	40.00	3.99	QP
	143.490	23.77	11.81	1.22	--	36.80	43.50	6.70	
	371.440	24.12	15.88	1.99	--	41.99	46.00	4.01	
	446.130	21.38	17.17	2.16	--	40.71	46.00	5.29	
	668.000	20.40	19.55	2.61	--	42.56	46.00	3.44	
	742.700	20.70	20.13	2.78	--	43.61	46.00	2.39	
	1024.000	54.46	22.57	4.49	37.36	44.16	74.00	29.84	PK
	1127.000	52.99	23.27	4.50	37.15	43.61	74.00	30.39	
	1314.000	52.09	24.62	4.53	36.75	44.49	74.00	29.51	
	1444.000	53.53	25.45	4.55	36.42	47.11	74.00	26.89	
	1597.000	51.27	26.36	4.56	36.10	46.09	74.00	27.91	
	1762.000	51.44	26.81	4.58	35.86	46.97	74.00	27.03	
	1024.000	41.46	22.57	4.49	37.36	31.16	54.00	22.84	AV
	1127.000	39.99	23.27	4.50	37.15	30.61	54.00	23.39	
	1314.000	38.09	24.62	4.53	36.75	30.49	54.00	23.51	
	1444.000	40.52	25.45	4.55	36.42	34.11	54.00	19.89	
	1597.000	38.27	26.36	4.56	36.10	33.09	54.00	20.91	
	1762.000	36.44	26.81	4.58	35.86	31.97	54.00	22.03	

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN46K15US Humidity : 60%RH

Serial No. : E2010102805 Date of Test : Nov 15, 2010

Test Mode : HDMI 1280*1024@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	31.940	17.26	18.49	0.65	--	36.40	40.00	3.60	QP
	71.710	25.48	6.69	0.90	--	33.07	40.00	6.93	
	116.330	21.65	12.78	1.12	--	35.55	43.50	7.95	
	237.580	24.27	12.44	1.57	--	38.28	46.00	7.72	
	371.440	20.97	15.88	1.99	--	38.84	46.00	7.16	
	741.980	18.56	20.13	2.78	--	41.47	46.00	4.53	
	1024.000	54.69	22.57	4.49	37.36	44.39	74.00	29.61	PK
	1149.000	54.56	23.42	4.51	37.11	45.38	74.00	28.62	
	1294.000	53.92	24.45	4.53	36.80	46.10	74.00	27.90	
	1444.000	54.16	25.45	4.55	36.42	47.74	74.00	26.26	
	1597.000	52.32	26.36	4.56	36.10	47.14	74.00	26.86	
	1762.000	50.40	26.81	4.58	35.86	45.93	74.00	28.07	
	1024.000	43.69	22.57	4.49	37.36	33.39	54.00	20.61	AV
	1149.000	41.56	23.42	4.51	37.11	32.38	54.00	21.62	
	1294.000	39.92	24.45	4.53	36.80	32.10	54.00	21.90	
	1444.000	39.16	25.45	4.55	36.42	32.74	54.00	21.26	
	1597.000	37.32	26.36	4.56	36.10	32.14	54.00	21.86	
	1762.000	36.40	26.81	4.58	35.86	31.93	54.00	22.07	

TEST ENGINEER: RAVEN JIN

5 DEVIATION TO TEST SPECIFICATIONS

None.

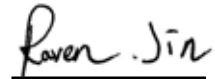
6 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Aluminum foil	35X0.7X41mm\VGA\ ROH	Qingdao Joinset S&T Co., Ltd.	See Internal Photos Figure 17
Conductive foam	DAA1002\ROH	Qingdao Joinset S&T Co., Ltd.	See Internal Photos Figure 18
		TAT ELECTRONIC TECH 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)