

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

LED LCD TV

Model No.	Serial No.	Brand
LTDN46K20US	E1201002-01/02	Hisense
F46K20E	--	

FCC ID : W9HLCDE0006

Prepared For : Hisense Electric Co., Ltd.
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Development Zone, Qingdao, China

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Report No. : ACI-F12006
Date of Test : Jan 11 – 12, 2012
Date of Report : Jan 16, 2012

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TEST REPORT FOR FCC CERTIFICATE

Applicant : Hisense Electric Co., Ltd.

Manufacturer : Hisense Electric Co., Ltd.

EUT Description : LED LCD TV

Model No.	Serial No.	Brand	Power Supply
LTDN46K20US	E1201002-01/02	Hisense	120V/60Hz
F46K20E	--		

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2010
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: LTDN46K20US; S/N: E1201002-01/02) which was tested in 3m anechoic chamber Jan 11 – 12, 2012 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.F12005, a Verification report.

Date of Test : Jan 11 – 12, 2012 Date of Report : Jan 16, 2011

Producer : Yenny Yu.
YENNY YU / AssistantReview : DIO YANG
DIO YANG / 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 2010 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2010 AND ANSI C63.4-2003	15.109(a) Class B	Pass

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description	:	LED LCD TV	
Type of EUT	:	<input checked="" type="checkbox"/> Production <input type="checkbox"/> Pre-product <input type="checkbox"/> Pro-type	
Model No.	:	LTDN46K20US	F46K20E
Serial No.	:	E1201002-01/02	--
Note	:	The above models are all the same except for the different model name. The model LTDN46K20US was tested in the report.	
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 : Hisense	
		M/N : HE460FF-B37	
Tuner	:	Manufacturer : XuGuang Tech.Co.,Ltd	
		M/N : DVT-8C/W41F0HS\ROH	
Max Resolution	:	1024*768@60Hz	
D-Sub Cable	:	Shielded, Detachable, 1.85m, with two cores on cable	
HDMI Cable	:	Shielded, Detachable, 1.00m,	
Power Cord	:	Unshielded, Detachable, 1.80m	

Remark:

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

Bottom Port:

- (1) One VGA Port : Connected with PC
- (2) One VGA AUDIO IN Port : Connected with PC
- (3) One HDMI1 Port : Connected with DVD #1
- (4) One HDMI2 Port : Connected with DVD #2
- (5) One HDMI3 Port : Connected with PC
- (6) One Service Port : Do not open to customer
- (7) One DIGITAL AUDIO OUT Port : Connected with DVD #1

Side Port:

- (8) One component of YPbPr Port : Connected with DVD #2
- (9) One component of YPbPr Audio Port : Connected with DVD #2
- (10) One Headphone Port : Connected with Earphone
- (11) One ANT Port : Connected with ATSC SG
- (12) One component of AV Port : Connected with DVD #1

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 : 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
(No.3 3m 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: $U = 3.38\text{dB}$

Radiated Emission Expanded Uncertainty (30-200MHz):

$U = 4.58\text{ dB}$ (horizontal)

$U = 4.70\text{ dB}$ (vertical)

Radiated Emission Expanded Uncertainty (200M-1GHz):

$U = 4.84\text{ dB}$ (horizontal)

$U = 4.70\text{ dB}$ (vertical)

Radiated Emission Expanded Uncertainty (Above 1GHz):

$U = 4.60\text{ dB}$ (Horizontal)

$U = 4.18\text{ dB}$ (Vertical)

3 CONDUCTED EMISSION TEST

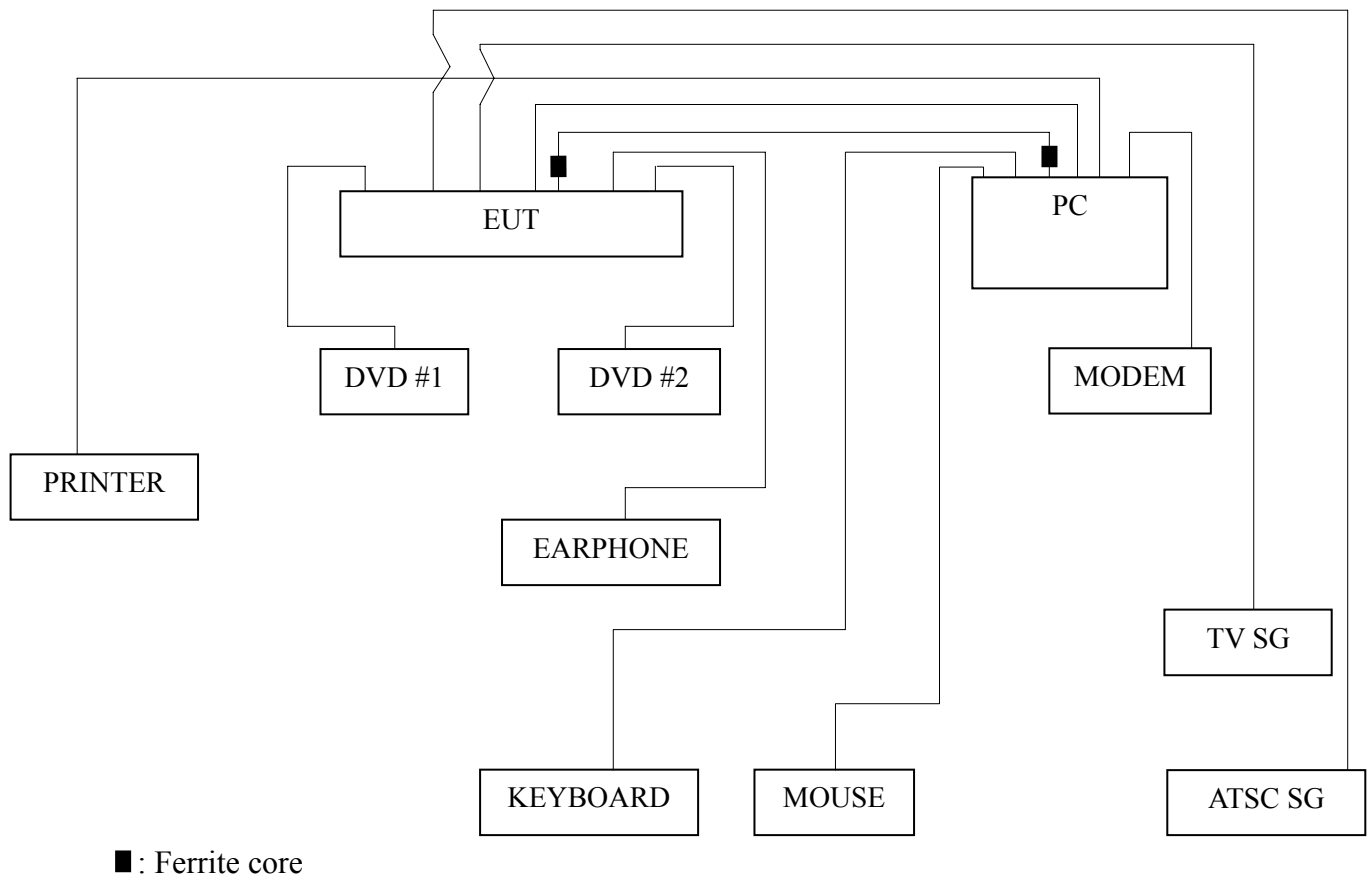
3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

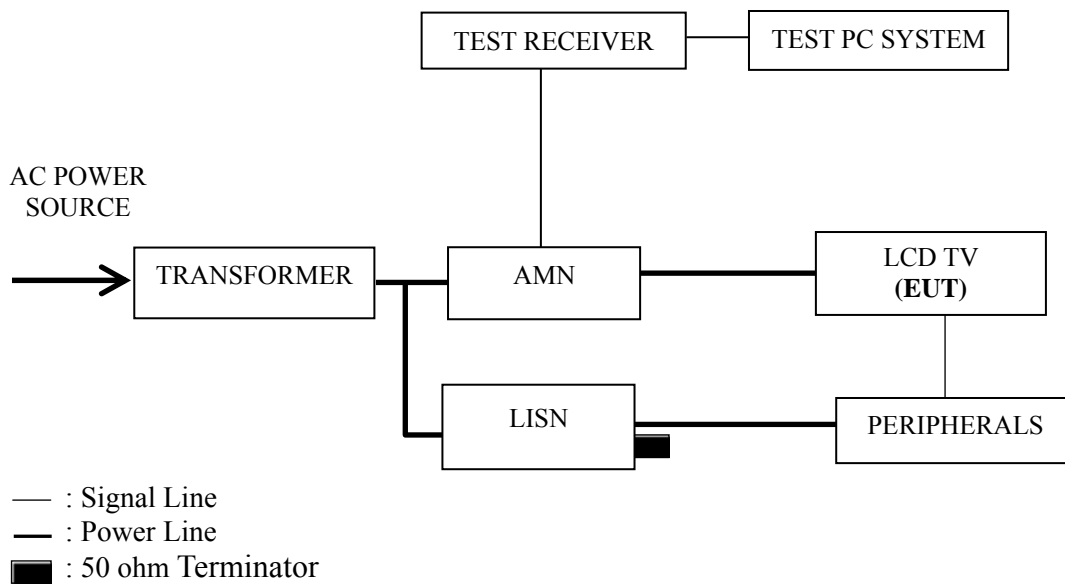
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	100841	Mar 22, 2011	Mar 22, 2012
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Mar 22, 2011	Mar 22, 2012
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 22, 2011	Mar 22, 2012
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Sep 18, 2011	Mar 18, 2012
5.	50 Ω Terminator	Anritsu	BNC	001	Mar 22, 2011	Mar 22, 2012
6.	Software	Audix	E3	SET00200 9804M592	--	--

3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



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	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 1024*768@60Hz test mode. The worst emission is detected at 0.150 MHz (Quasi-Peak Value) with corrected signal level of 49.82 dB (μV) (limit is 66.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 48%RH

Serial No. : E1201002-01/02 Date of Test : Jan 11, 2011

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	0.150	39.56	10.18	49.74	66.00	16.26	QP
	0.371	13.26	9.75	23.01	58.47	35.46	
	0.621	14.28	10.00	24.28	56.00	31.72	
	1.094	19.80	10.20	30.00	56.00	26.00	
	6.186	16.25	10.14	26.39	60.00	33.61	
	13.551	22.38	10.27	32.65	60.00	27.35	
	0.150	28.70	10.18	38.88	56.00	17.12	AV
	0.371	7.39	9.75	17.14	48.47	31.33	
	0.621	7.60	10.00	17.60	46.00	28.40	
	1.094	10.70	10.20	20.90	46.00	25.10	
	6.186	8.40	10.14	18.54	50.00	31.46	
	13.551	12.50	10.27	22.77	50.00	27.23	
Neutral	0.150	39.43	10.18	49.61	66.00	16.39	QP
	0.375	14.82	9.74	24.56	58.39	33.83	
	0.621	13.87	9.81	23.68	56.00	32.32	
	1.106	18.66	9.92	28.58	56.00	27.42	
	6.186	16.61	10.29	26.90	60.00	33.10	
	13.551	22.99	10.22	33.21	60.00	26.79	
	0.150	28.70	10.18	38.88	56.00	17.12	AV
	0.375	7.70	9.74	17.44	48.39	30.95	
	0.621	7.60	9.81	17.41	46.00	28.59	
	1.106	9.50	9.92	19.42	46.00	26.58	
	6.186	8.51	10.29	18.80	50.00	31.20	
	13.551	12.50	10.22	22.72	50.00	27.28	

TEST ENGINEER: Lvy LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 48%RH

Serial No. : E1201002-01/02 Date of Test : Jan 11, 2011

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	0.150	39.53	10.18	49.71	66.00	16.29	QP
	0.371	14.07	9.75	23.82	58.47	34.65	
	0.621	14.95	10.00	24.95	56.00	31.05	
	1.094	18.77	10.20	28.97	56.00	27.03	
	6.252	16.08	10.15	26.23	60.00	33.77	
	13.408	21.33	10.27	31.60	60.00	28.40	
	0.150	28.10	10.18	38.28	56.00	17.72	AV
	0.371	7.69	9.75	17.44	48.47	31.03	
	0.621	8.40	10.00	18.40	46.00	27.60	
	1.094	9.90	10.20	20.10	46.00	25.90	
	6.252	8.50	10.15	18.65	50.00	31.35	
	13.408	11.10	10.27	21.37	50.00	28.63	
Neutral	0.150	39.43	10.18	49.61	66.00	16.39	QP
	0.385	15.32	9.74	25.06	58.17	33.11	
	0.621	13.22	9.81	23.03	56.00	32.97	
	1.094	18.72	9.92	28.64	56.00	27.36	
	6.121	15.78	10.29	26.07	60.00	33.93	
	13.551	21.83	10.22	32.05	60.00	27.95	
	0.150	28.70	10.18	38.88	56.00	17.12	AV
	0.385	8.40	9.74	18.14	48.17	30.03	
	0.621	7.60	9.81	17.41	46.00	28.59	
	1.094	9.70	9.92	19.62	46.00	26.38	
	6.121	8.80	10.29	19.09	50.00	30.91	
	13.551	11.80	10.22	22.02	50.00	27.98	

TEST ENGINEER: Lvy LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 48%RH

Serial No. : E1201002-01/02 Date of Test : Jan 11, 2011

Test Mode : D-Sub 1024*768@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	39.61	10.18	49.79	66.00	16.21	QP
	0.363	14.62	9.74	24.36	58.65	34.29	
	0.627	14.96	10.01	24.97	56.00	31.03	
	1.106	19.02	10.20	29.22	56.00	26.78	
	6.252	16.15	10.15	26.30	60.00	33.70	
	13.551	22.26	10.27	32.53	60.00	27.47	
	0.150	28.30	10.18	38.48	56.00	17.52	AV
	0.363	7.60	9.74	17.34	48.65	31.31	
	0.627	7.45	10.01	17.46	46.00	28.54	
	1.106	10.60	10.20	20.80	46.00	25.20	
	6.252	8.90	10.15	19.05	50.00	30.95	
	13.551	12.40	10.27	22.67	50.00	27.33	
Neutral	0.150	39.50	10.18	49.68	66.00	16.32	QP
	0.371	15.01	9.74	24.75	58.47	33.72	
	0.621	14.02	9.81	23.83	56.00	32.17	
	1.094	18.88	9.92	28.80	56.00	27.20	
	6.252	17.76	10.31	28.07	60.00	31.93	
	13.551	22.32	10.22	32.54	60.00	27.46	
	0.150	28.30	10.18	38.48	56.00	17.52	AV
	0.371	7.90	9.74	17.64	48.47	30.83	
	0.621	7.30	9.81	17.11	46.00	28.89	
	1.094	9.90	9.92	19.82	46.00	26.18	
	6.252	8.20	10.31	18.51	50.00	31.49	
	13.551	12.70	10.22	22.92	50.00	27.08	

TEST ENGINEER: L V Y LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 48%RH

Serial No. : E1201002-01/02 Date of Test : Jan 11, 2011

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	0.150	39.59	10.18	49.77	66.00	16.23	QP
	0.367	14.05	9.74	23.79	58.56	34.77	
	0.641	14.45	10.03	24.48	56.00	31.52	
	1.094	18.90	10.20	29.10	56.00	26.90	
	6.056	17.40	10.13	27.53	60.00	32.47	
	13.551	22.88	10.27	33.15	60.00	26.85	
	0.150	28.50	10.18	38.68	56.00	17.32	AV
	0.367	7.30	9.74	17.04	48.56	31.52	
	0.641	7.80	10.03	17.83	46.00	28.17	
	1.094	9.20	10.20	19.40	46.00	26.60	
	6.056	8.91	10.13	19.04	50.00	30.96	
	13.551	12.30	10.27	22.57	50.00	27.43	
Neutral	0.150	39.48	10.18	49.66	66.00	16.34	QP
	0.385	14.89	9.74	24.63	58.17	33.54	
	0.614	13.71	9.80	23.51	56.00	32.49	
	1.094	18.05	9.92	27.97	56.00	28.03	
	6.056	15.88	10.29	26.17	60.00	33.83	
	13.551	21.96	10.22	32.18	60.00	27.82	
	0.150	28.60	10.18	38.78	56.00	17.22	AV
	0.385	8.80	9.74	18.54	48.17	29.63	
	0.614	7.71	9.80	17.51	46.00	28.49	
	1.094	9.30	9.92	19.22	46.00	26.78	
	6.056	8.50	10.29	18.79	50.00	31.21	
	13.551	10.80	10.22	21.02	50.00	28.98	

TEST ENGINEER: L V Y L V

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 48%RH

Serial No. : E1201002-01/02 Date of Test : Jan 11, 2011

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	0.150	39.63	10.18	49.81	66.00	16.19	QP
	0.367	14.13	9.74	23.87	58.56	34.69	
	0.634	15.36	10.01	25.37	56.00	30.63	
	1.094	19.40	10.20	29.60	56.00	26.40	
	6.186	17.34	10.14	27.48	60.00	32.52	
	13.551	22.03	10.27	32.30	60.00	27.70	
	0.150	28.00	10.18	38.18	56.00	17.82	AV
	0.367	8.70	9.74	18.44	48.56	30.12	
	0.634	8.51	10.01	18.52	46.00	27.48	
	1.094	10.30	10.20	20.50	46.00	25.50	
	6.186	9.30	10.14	19.44	50.00	30.56	
	13.551	11.90	10.27	22.17	50.00	27.83	
Neutral	0.150	39.43	10.18	49.61	66.00	16.39	QP
	0.385	15.16	9.74	24.90	58.17	33.27	
	0.614	14.56	9.80	24.36	56.00	31.64	
	1.094	18.72	9.92	28.64	56.00	27.36	
	6.186	16.50	10.29	26.79	60.00	33.21	
	13.551	23.08	10.22	33.30	60.00	26.70	
	0.150	28.20	10.18	38.38	56.00	17.62	AV
	0.385	8.30	9.74	18.04	48.17	30.13	
	0.614	8.41	9.80	18.21	46.00	27.79	
	1.094	9.70	9.92	19.62	46.00	26.38	
	6.186	8.91	10.29	19.20	50.00	30.80	
	13.551	12.60	10.22	22.82	50.00	27.18	

TEST ENGINEER: Lvy LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 48%RH

Serial No. : E1201002-01/02 Date of Test : Jan 11, 2011

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	0.150	39.64	10.18	49.82	66.00	16.18	QP
	0.371	14.27	9.75	24.02	58.47	34.45	
	0.641	14.88	10.03	24.91	56.00	31.09	
	1.106	18.61	10.20	28.81	56.00	27.19	
	6.252	16.67	10.15	26.82	60.00	33.18	
	13.551	21.38	10.27	31.65	60.00	28.35	
	0.150	28.80	10.18	38.98	56.00	17.02	AV
	0.371	7.69	9.75	17.44	48.47	31.03	
	0.641	8.60	10.03	18.63	46.00	27.37	
	1.106	9.30	10.20	19.50	46.00	26.50	
	6.252	8.30	10.15	18.45	50.00	31.55	
	13.551	11.30	10.27	21.57	50.00	28.43	
Neutral	0.150	39.47	10.18	49.65	66.00	16.35	QP
	0.375	15.17	9.74	24.91	58.39	33.48	
	0.641	13.65	9.82	23.47	56.00	32.53	
	1.094	19.24	9.92	29.16	56.00	26.84	
	6.121	15.94	10.29	26.23	60.00	33.77	
	13.408	22.64	10.22	32.86	60.00	27.14	
	0.150	28.10	10.18	38.28	56.00	17.72	AV
	0.375	8.90	9.74	18.64	48.39	29.75	
	0.641	7.20	9.82	17.02	46.00	28.98	
	1.094	9.60	9.92	19.52	46.00	26.48	
	6.121	8.40	10.29	18.69	50.00	31.31	
	13.408	12.30	10.22	22.52	50.00	27.48	

TEST ENGINEER: LUY LV

4 RADIATED EMISSION TEST

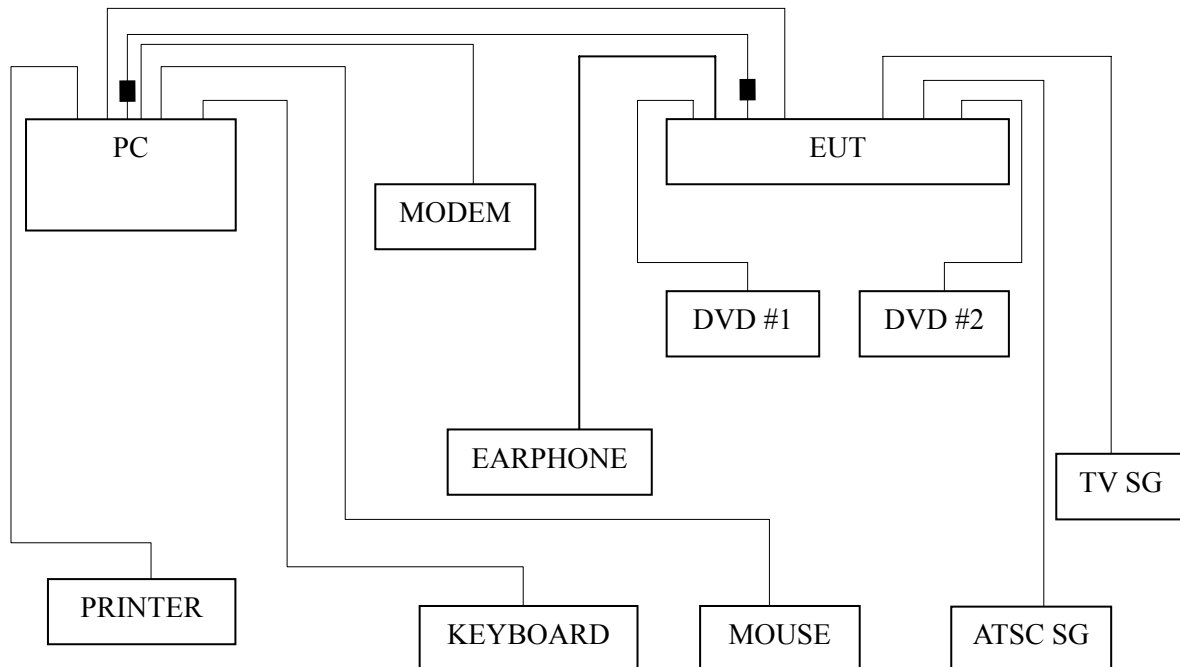
4.1 Test Equipment

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

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESVS10	844594/001	Mar 22, 2011	Mar 22, 2012
2.	Preamplifier	Agilent	8447D	2944A10548	Sep 18, 2011	Mar 18, 2012
3.	Bi-log Antenna	TESEQ	CBL6112D	23192	Dec 01, 2011	Dec 01, 2012
4.	Spectrum Analyzer	Agilent	E7405A	MY45106600	Mar 22, 2011	Mar 22, 2012
5.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426390	Sep 18, 2011	Mar 18, 2012
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

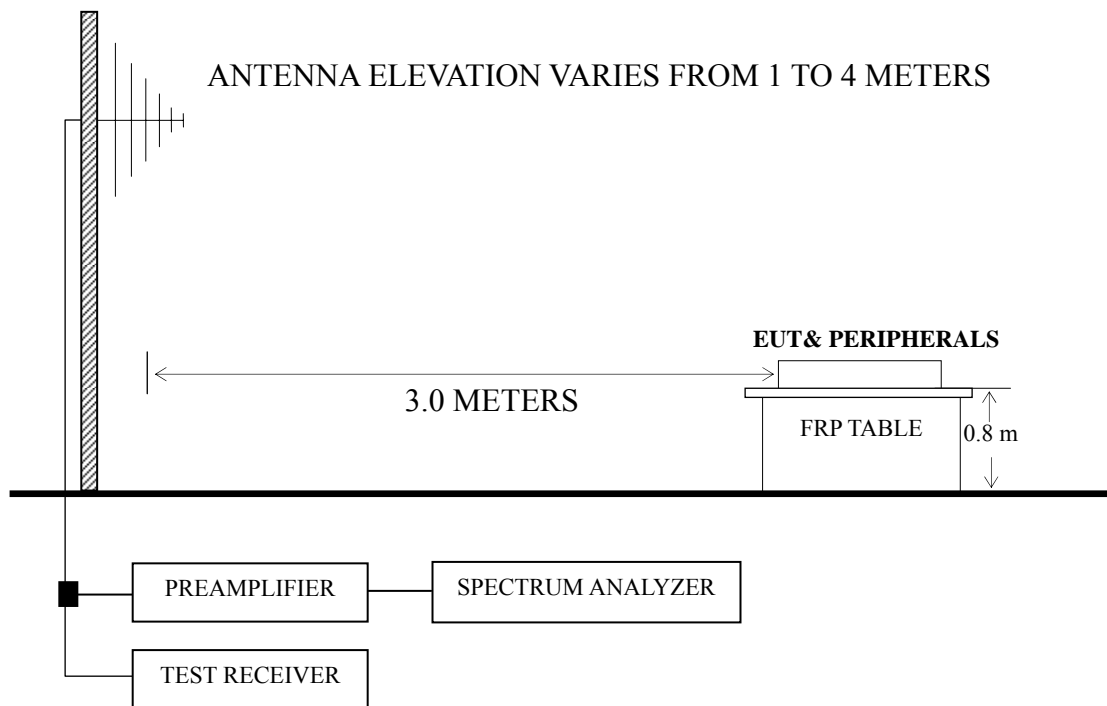
4.2 Block Diagram of Test Setup

4.2.1 EUT and Peripherals



■: Ferrite core

4.2.2 Radiated emission test setup



■ : 50 ohm Coaxial Switch

4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)]

Frequency (MHz)	Distance (m)	Field strength limits	
		($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level dB ($\mu\text{V/m}$) = 20 log Emission Level ($\mu\text{V/m}$)

NOTE 2 - The tighter limit applies at the band edges.

NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

NOTE 4 - The limits shown are based on Quasi-peak value detector.

4.4 Test Configuration

The configuration of the EUT and peripherals are same as those used in conducted emission test.

Please refer to Sec.3.4.

4.5 Operating Condition of EUT

Same as conducted emission test which is listed in Sec.3.5, except for the test setup replaced by Sec.4.2.

4.6 Test Procedures

The EUT and peripherals were placed on a FRP turntable that is 0.8 meter above ground. The FRP turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. Broadband antenna (Calibrated Bilog Antenna) was used as receiving antenna. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.4:2003 requirements during radiated emission test.

The I.F. bandwidth of Test Receiver R&S ESVS10 was set at 120 kHz.

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

The test modes were done on radiated disturbance test and all the test results are listed in Sec.4.7.

4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

Test Mode	Data Page
D-Sub 640*480@60Hz	P24
D-Sub 800*600@60Hz	P25
D-Sub 1024*768@60Hz	P26
HDMI 640*480@60Hz	P27
HDMI 800*600@60Hz	P28
HDMI 1024*768@60Hz	P29

NOTE 1 – Emission Level = Antenna Factor + Cable Loss + Meter Reading.

NOTE 2 – All readings are Quasi-Peak values.

NOTE 3 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

NOTE 4 – The worst case is for HDMI 1024*768@60Hz test mode. The worst emission at horizontal polarization was detected at 85.200MHz with corrected signal level of 35.87 dB (μV/m) (limit is 40.00 dB (μV/m)), when the antenna was 1.00 m height and the turntable was at 200°. The worst emission at vertical polarization was detected at 238.600 MHz with corrected signal level of 43.03 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.50 m height and the turntable was at 150°.

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 60%RH

Serial No. : E1201002-01/02 Date of Test : Jan 12, 2011

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	21.81	10.88	0.98	33.67	40.00	6.33
	174.530	21.51	10.06	1.35	32.92	43.50	10.58
	218.180	23.44	10.52	1.51	35.47	46.00	10.53
	281.230	24.81	13.17	1.70	39.68	46.00	6.32
	347.190	19.81	15.04	1.91	36.76	46.00	9.24
	366.590	17.22	15.57	1.98	34.77	46.00	11.23
Vertical	33.880	15.39	16.26	0.67	32.32	40.00	7.68
	61.040	23.50	9.21	0.85	33.56	40.00	6.44
	167.740	24.98	10.14	1.32	36.44	43.50	7.06
	240.490	27.01	11.55	1.58	40.14	46.00	5.86
	366.590	23.01	15.57	1.98	40.56	46.00	5.44
	547.980	17.96	17.90	2.35	38.21	46.00	7.79

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 60%RH

Serial No. : E1201002-01/02 Date of Test : Jan 12, 2011

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	80.440	52.17	10.56	0.95	35.75	40.00	4.25
	87.230	52.56	10.88	0.98	36.52	40.00	3.48
	153.190	48.85	10.36	1.25	32.95	43.50	10.55
	303.540	49.60	13.80	1.78	38.27	46.00	7.73
	366.590	47.73	15.57	1.98	37.93	46.00	8.07
	412.180	44.17	16.45	2.09	35.11	46.00	10.89
Vertical	58.130	24.10	9.02	0.83	33.95	40.00	6.05
	174.530	24.18	10.06	1.35	35.59	43.50	7.91
	240.490	27.24	11.55	1.58	40.37	46.00	5.63
	281.230	19.36	13.17	1.70	34.23	46.00	11.77
	366.590	14.26	15.57	1.98	31.81	46.00	14.19
	458.740	14.48	17.09	2.18	33.75	46.00	12.25

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 60%RH

Serial No. : E1201002-01/02 Date of Test : Jan 12, 2011

Test Mode : D-Sub 1024*768@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	75.590	21.30	10.27	0.92	32.49	40.00	7.51
	95.960	14.01	11.22	1.02	26.25	43.50	17.25
	173.560	23.28	10.07	1.35	34.70	43.50	8.80
	224.970	25.08	10.84	1.53	37.45	46.00	8.55
	298.690	17.27	13.67	1.76	32.70	46.00	13.30
	373.380	19.46	15.72	1.99	37.17	46.00	8.83
Vertical	60.070	23.48	9.14	0.84	33.46	40.00	6.54
	76.560	20.97	10.34	0.93	32.24	40.00	7.76
	86.260	25.07	10.83	0.98	36.88	40.00	3.12
	164.830	21.90	10.18	1.31	33.39	43.50	10.11
	240.490	27.43	11.55	1.58	40.56	46.00	5.44
	366.590	19.68	15.57	1.98	37.23	46.00	8.77

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 60%RH

Serial No. : E1201002-01/02 Date of Test : Jan 12, 2011

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	33.880	15.39	16.26	0.67	32.32	40.00	7.68
	43.580	17.89	10.86	0.74	29.49	40.00	10.51
	167.740	24.98	10.14	1.32	36.44	43.50	7.06
	184.230	25.31	9.95	1.39	36.65	43.50	6.85
	547.980	17.96	17.90	2.35	38.21	46.00	7.79
	870.990	10.82	20.38	2.98	34.18	46.00	11.82
Vertical	87.230	21.81	10.88	0.98	33.67	40.00	6.33
	174.530	21.51	10.06	1.35	32.92	43.50	10.58
	218.180	23.44	10.52	1.51	35.47	46.00	10.53
	281.230	24.81	13.17	1.70	39.68	46.00	6.32
	303.540	22.51	13.80	1.78	38.09	46.00	7.91
	347.190	19.81	15.04	1.91	36.76	46.00	9.24

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 60%RH

Serial No. : E1201002-01/02 Date of Test : Jan 12, 2011

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	62.980	18.52	9.36	0.86	28.74	40.00	11.26
	133.790	20.13	10.74	1.18	32.05	43.50	11.45
	182.290	26.26	9.97	1.38	37.61	43.50	5.89
	332.640	24.05	14.62	1.87	40.54	46.00	5.46
	366.590	16.97	15.57	1.98	34.52	46.00	11.48
	683.780	10.84	19.30	2.65	32.79	46.00	13.21
Vertical	53.280	23.42	8.70	0.80	32.92	40.00	7.08
	92.080	23.40	11.08	1.00	35.48	43.50	8.02
	182.290	28.14	9.97	1.38	39.49	43.50	4.01
	332.640	18.84	14.62	1.87	35.33	46.00	10.67
	368.530	19.51	15.61	1.98	37.10	46.00	8.90
	547.980	10.19	17.90	2.35	30.44	46.00	15.56

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 60%RH

Serial No. : E1201002-01/02 Date of Test : Jan 12, 2011

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	31.940	14.81	17.29	0.65	32.75	40.00	7.25
	43.580	18.64	10.86	0.74	30.24	40.00	9.76
	61.040	18.84	9.21	0.85	28.90	40.00	11.10
	85.200	24.10	10.80	0.97	35.87	40.00	4.13
	172.590	25.98	10.08	1.35	37.41	43.50	6.09
	237.580	28.27	11.41	1.57	41.25	46.00	4.75
Vertical	62.980	20.24	9.36	0.86	30.46	40.00	9.54
	150.280	24.89	10.41	1.24	36.54	43.50	6.96
	172.500	28.39	10.08	1.35	39.82	43.50	3.68
	238.600	30.00	11.46	1.57	43.03	46.00	2.97
	332.640	23.27	14.62	1.87	39.76	46.00	6.24
	434.490	18.93	16.74	2.13	37.80	46.00	8.20

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
EMI Tape	35X0.7X41mm\VGA\ROH	Qingdao Joinset S&T Co., Ltd.	See Appendix Figure 22
Gasket	DAA25X20X150\ROH	Qingdao Joinset S&T Co., Ltd.	See Appendix Figure 19, 20
		TAT ELECTRONIC TECH CO.,LTD.	
Gasket	DAA1002\ROH	Qingdao Joinset S&T Co., Ltd.	See Appendix Figure 21
		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)