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

LED LCD TV

Model No.	Serial No.	Brand
LTDN46K360US	E12091093-01/02	Hisense
46K360	--	

FCC ID : W9HLCDD0025

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

Prepared By : Audix Technology (Shanghai) Co., Ltd.
3F and 4F, 34Bldg 680 Guiping Rd,
Caohejing Hi-Tech Park,
Shanghai 200233, China

Tel: +86-21-64955500
Fax: +86-21-64955491

Report No. : ACI-F12157
Date of Test : Sep 13 – 28, 2012
Date of Report : Oct 10, 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
LTDN46K360US	E12091093-01/02	Hisense	120V/60Hz
46K360	--		

Test Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2011 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 Sec2.1; S/N: Refer to Sec2.1) which was tested in 3m anechoic chamber Sep 13 – 28, 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.F12158, a Verification report.

Date of Test : Sep 13 – 28, 2012 Date of Report : Oct 10, 2012

Producer : Yenny Yu
YENNY YU / Assistant

Review : Dio Yang
DIO YANG/ Assistant Manager

AUDIX® 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 2011 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2011 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 : ☑ Production ☐ Pre-product ☐ Pro-type

Model No.	Serial No.	Brand
LTDN46K360US	E12091093-01/02	Hisense
46K360	--	

Note : The above models are all the same except for the different model name.
The LTDN46K360US was tested and recorded in the report.

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

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

LCD Panel : Manufacturer : Hisense
M/N : HE460GF-B37\PW1

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, Undetachable, 1.80m

Remark:
The EUT is a LED LCD TV which input/output ports as follows:
Side Port:
(1) One ANT/CABLE Port
: Connected with ATSC SG / TV SG
(2) One VGA Port
: Connected with PC
(3) One PC/DVI Audio In Port
: Connected with PC
(4) One DIGITAL OUTPUT Port
: Connected with DVD PLAYER #1
(5) One HDMI3/DVI Port
: Connected with PC
(6) One component of AV IN Port
: Connected with DVD PLAYER #2

Bottom Port:
(7) One Audio Out Port
Connected with Earphone
(8) One USB Port
: Connected with U-Disk
(9) One HDMI1 ARC Port
: Connected with DVD PLAYER #1
(10) One HDMI2 Port
: Connected with DVD PLAYER #2
(11) One component of YPbPr Port
: Connected with DVD PLAYER #1
(12) One component of YPbPr Audio Port
: Connected with DVD PLAYER #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 PLAYER #1

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

2.2.10 DVD PLAYER #2

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

2.2.11 U-DISK

Manufacturer	:	LG
Model Number	:	1GB

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 = 3.42dB

Radiated Emission Expanded Uncertainty (30-200MHz):

U = 4.14 dB (horizontal)

U = 4.28 dB (vertical)

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

U = 4.18 dB (horizontal)

U = 4.26 dB (vertical)

3 CONDUCTED EMISSION TEST

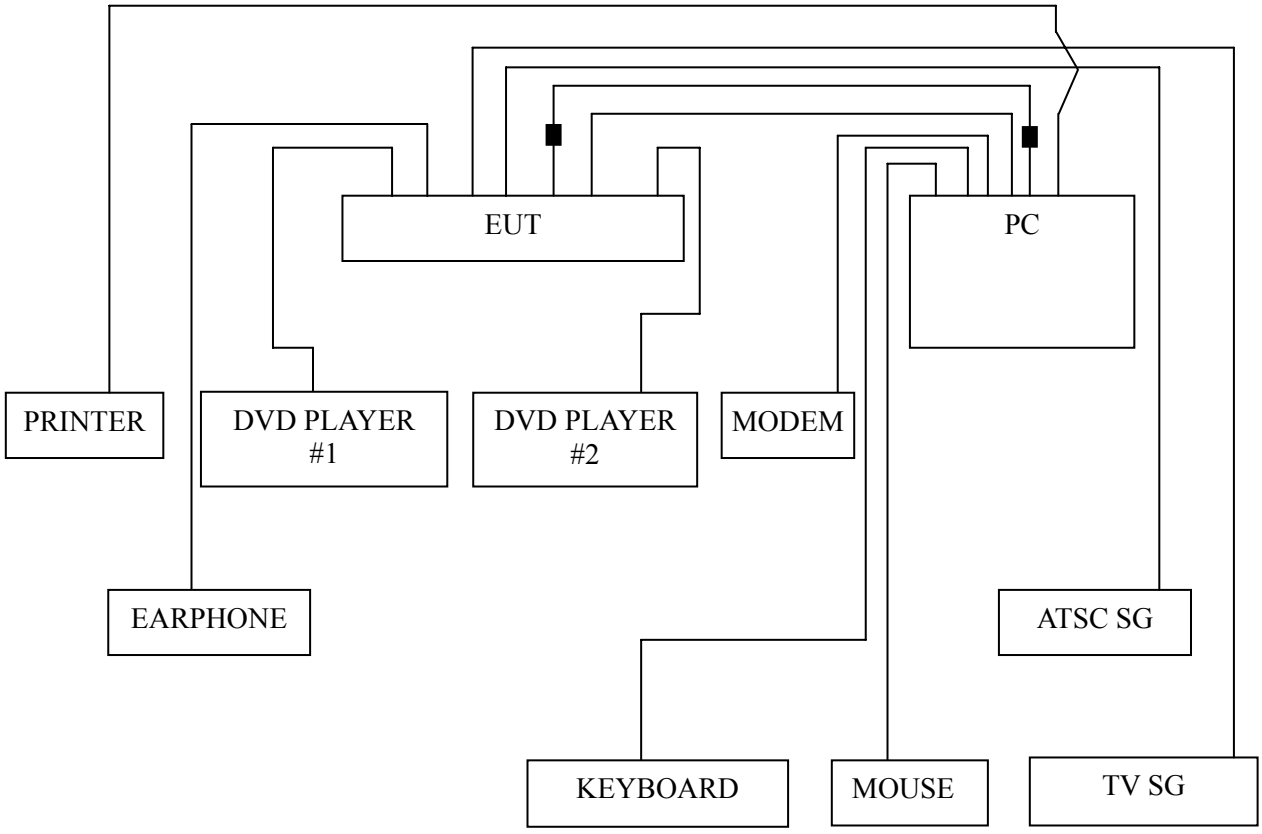
3.1 Test Equipment

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, 2012	Mar 22, 2013
2.	Artificial Mains Network (AMN #1)	R&S	ESH2-Z5	843890/011	Feb 13, 2012	Feb 13, 2013
3.	Artificial Mains Network (AMN #2)	R&S	ENV4200	100125	Mar 22, 2012	Mar 22, 2013
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Mar 18, 2012	Sep 18, 2012
5.	50Ω Terminator	Anritsu	BNC	001	Mar 22, 2012	Mar 22, 2013
6.	Software	Audix	E3	SET00200 9804M592	--	--

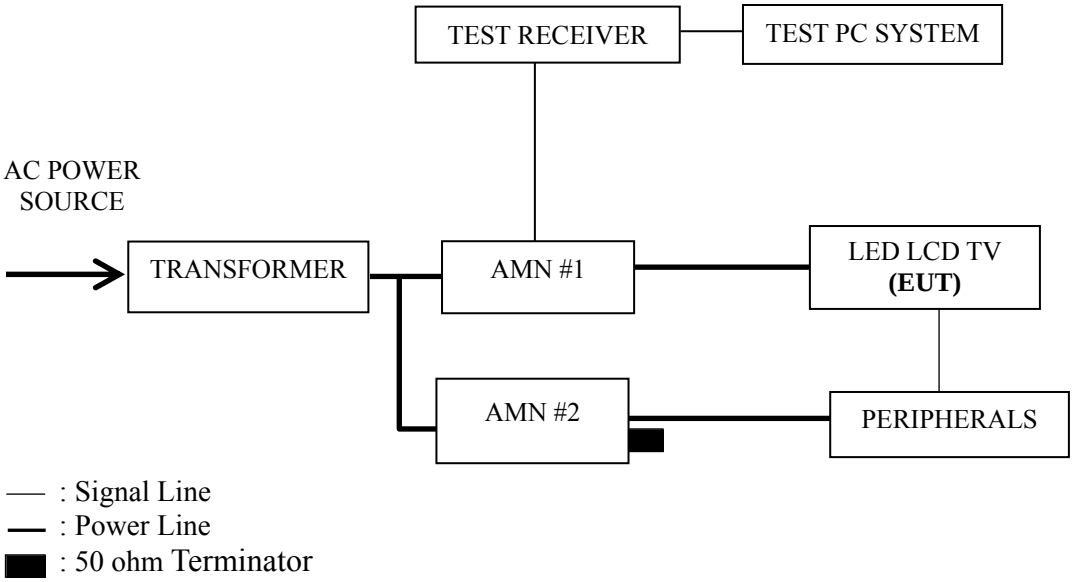
3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



■: Ferrite core

3.2.2 Conducted Disturbance Test Setup



3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)]

Frequency Range (MHz)	Limits dB (μV)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56	56~46
0.5 ~ 5	56	46
5 ~ 30	60	50
NOTE 1 – The lower limit shall apply at the transition frequencies. NOTE 2 – The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz		

3.4 Test Configuration

The EUT (listed in Sec.2.1) and the peripherals (listed in Sec 2.2) were installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner that tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

3.5.1 Setup the EUT and peripherals as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipments and the EUT.

3.5.3 Set the contrast & brightness of EUT to maximum.

3.5.4 PC system ran the self-test program "EMC Test" by windows XP and sent "H" characters to EUT through graphic card, the EUT's screen displayed and filled with "H" pattern by its resolution (Via D-Sub & HDMI Input).

3.5.5 In USB Play mode, set the EUT play digital media from U-Disk.

3.5.6 Repeat above procedure 3.5.5 for difference test mode.

3.5.7 The other peripherals devices were driven and operated during the test.

3.5.8 The test modes are as follows:

Test Mode
D-Sub 1024*768@60Hz
HDMI 1024*768@60Hz
D-Sub 800*600@60Hz
D-Sub 640*480@60Hz
USB Play

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 1024*768@60Hz	P13
HDMI 1024*768@60Hz	P14
D-Sub 800*600@60Hz	P15
D-Sub 640*480@60Hz	P16
USB Play	P17

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 D-Sub 800*600@60Hz test mode. The worst emission is detected at 0.627 MHz (Average Value) with corrected signal level of 35.66 dB (μV) (limit is 46.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LTDN46K360US	Humidity :	48%RH	
Serial No.	:	E12091093-01/02	Date of Test :	Sep 13, 2012	
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	0.174	42.80	0.24	43.04	64.77	21.73	QP
	0.417	37.34	0.34	37.68	57.51	19.83	
	0.627	42.32	0.21	42.53	56.00	13.47	
	1.680	39.20	0.37	39.57	56.00	16.43	
	5.594	42.67	0.54	43.21	60.00	16.79	
	17.018	36.15	0.87	37.02	60.00	22.98	
	0.174	34.56	0.24	34.80	54.77	19.97	AV
	0.417	28.50	0.34	28.84	47.51	18.67	
	0.627	**35.02**	**0.21**	**35.23**	**46.00**	**10.77**	
	1.680	31.51	0.37	31.88	46.00	14.12	
	5.594	34.70	0.54	35.24	50.00	14.76	
	17.018	27.40	0.87	28.27	50.00	21.73	
Neutral	0.176	48.02	0.12	48.14	64.68	16.54	QP
	0.421	36.18	0.17	36.35	57.42	21.07	
	0.621	42.84	0.19	43.03	56.00	12.97	
	2.594	39.05	0.20	39.25	56.00	16.75	
	5.774	42.76	0.48	43.24	60.00	16.76	
	17.199	34.99	0.76	35.75	60.00	24.25	
	0.176	39.50	0.12	39.62	54.68	15.06	AV
	0.421	27.79	0.17	27.96	47.42	19.46	
	0.621	34.78	0.19	34.97	46.00	11.03	
	2.594	30.40	0.20	30.60	46.00	15.40	
	5.774	34.69	0.48	35.17	50.00	14.83	
	17.199	26.71	0.76	27.47	50.00	22.53	

TEST ENGINEER: LVY LV

EUT	:	LED LCD TV	Temperature	:	22℃
Model No.	:	LTDN46K360US	Humidity	:	48%RH
Serial No.	:	E12091093-01/02	Date of Test	:	Sep 13, 2012
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	43.22	0.24	43.46	64.77	21.31	QP
	0.406	37.77	0.33	38.10	57.73	19.63	
	0.621	42.99	0.22	43.21	56.00	12.79	
	1.744	40.35	0.39	40.74	56.00	15.26	
	5.713	42.97	0.55	43.52	60.00	16.48	
	17.018	38.03	0.87	38.90	60.00	21.10	
	0.174	34.68	0.24	34.92	54.77	19.85	AV
	0.406	29.77	0.33	30.10	47.73	17.63	
	0.621	**34.60**	**0.22**	**34.82**	**46.00**	**11.18**	
	1.744	31.81	0.39	32.20	46.00	13.80	
	5.713	34.81	0.55	35.36	50.00	14.64	
	17.018	29.57	0.87	30.44	50.00	19.56	
Neutral	0.174	42.91	0.12	43.03	64.77	21.74	QP
	0.406	37.11	0.16	37.27	57.73	20.46	
	0.627	42.76	0.19	42.95	56.00	13.05	
	2.527	39.72	0.20	39.92	56.00	16.08	
	5.805	42.76	0.48	43.24	60.00	16.76	
	16.055	37.51	0.74	38.25	60.00	21.75	
	0.174	34.49	0.12	34.61	54.77	20.16	AV
	0.406	28.94	0.16	29.10	47.73	18.63	
	0.627	33.78	0.19	33.97	46.00	12.03	
	2.527	31.68	0.20	31.88	46.00	14.12	
	5.805	34.66	0.48	35.14	50.00	14.86	
	16.055	29.59	0.74	30.33	50.00	19.67	

TEST ENGINEER: LVY LV

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LTDN46K360US	Humidity	:	48%RH
Serial No.	:	E12091093-01/02	Date of Test	:	Sep 13, 2012
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	0.174	42.92	0.24	43.16	64.77	21.61	QP
	0.421	38.27	0.34	38.61	57.42	18.81	
	0.627	42.91	0.21	43.12	56.00	12.88	
	1.680	39.42	0.37	39.79	56.00	16.21	
	5.713	43.09	0.55	43.64	60.00	16.36	
	16.226	36.69	0.85	37.54	60.00	22.46	
	0.174	34.80	0.24	35.04	54.77	19.73	AV
	0.421	29.58	0.34	29.92	47.42	17.50	
	0.627	**35.45**	**0.21**	**35.66**	**46.00**	**10.34**	
	1.680	31.41	0.37	31.78	46.00	14.22	
	5.713	34.89	0.55	35.44	50.00	14.56	
	16.226	28.78	0.85	29.63	50.00	20.37	
Neutral	0.178	47.47	0.12	47.59	64.59	17.00	QP
	0.421	36.27	0.17	36.44	57.42	20.98	
	0.621	42.81	0.19	43.00	56.00	13.00	
	1.680	39.67	0.17	39.84	56.00	16.16	
	5.774	42.94	0.48	43.42	60.00	16.58	
	16.226	34.84	0.74	35.58	60.00	24.42	
	0.178	38.50	0.12	38.62	54.59	15.97	AV
	0.421	27.88	0.17	28.05	47.42	19.37	
	0.621	35.33	0.19	35.52	46.00	10.48	
	1.680	31.58	0.17	31.75	46.00	14.25	
	5.774	34.64	0.48	35.12	50.00	14.88	
	16.226	26.58	0.74	27.32	50.00	22.68	

TEST ENGINEER: LVY LV

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LTDN46K360US	Humidity	:	48%RH
Serial No.	:	E12091093-01/02	Date of Test	:	Sep 13, 2012
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	0.174	42.85	0.24	43.09	64.77	21.68	QP
	0.406	37.78	0.33	38.11	57.73	19.62	
	0.614	42.42	0.22	42.64	56.00	13.36	
	1.698	38.28	0.38	38.66	56.00	17.34	
	5.653	42.26	0.54	42.80	60.00	17.20	
	16.226	37.83	0.85	38.68	60.00	21.32	
	0.174	34.66	0.24	34.90	54.77	19.87	AV
	0.406	29.79	0.33	30.12	47.73	17.61	
	0.614	33.02	0.22	33.24	46.00	12.76	
	1.698	29.58	0.38	29.96	46.00	16.04	
	5.653	33.65	0.54	34.19	50.00	15.81	
	16.226	29.65	0.85	30.50	50.00	19.50	
Neutral	0.174	46.69	0.12	46.81	64.77	17.96	QP
	0.393	37.01	0.16	37.17	57.99	20.82	
	0.614	42.92	0.19	43.11	56.00	12.89	
	1.680	39.78	0.17	39.95	56.00	16.05	
	5.774	43.76	0.48	44.24	60.00	15.76	
	17.199	33.26	0.76	34.02	60.00	25.98	
	0.174	38.95	0.12	39.07	54.77	15.70	AV
	0.393	28.56	0.16	28.72	47.99	19.27	
	0.614	**35.45**	**0.19**	**35.64**	**46.00**	**10.36**	
	1.680	31.79	0.17	31.96	46.00	14.04	
	5.774	35.44	0.48	35.92	50.00	14.08	
	17.199	25.61	0.76	26.37	50.00	23.63	

TEST ENGINEER: LVY LV

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LTDN46K360US	Humidity	:	48%RH
Serial No.	:	E12091093-01/02	Date of Test	:	Sep 13, 2012
Test Mode	:	USB Play			

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.178	46.93	0.25	47.18	64.59	17.41	QP
	0.398	37.38	0.33	37.71	57.90	20.19	
	0.611	42.54	0.23	42.77	56.00	13.23	
	1.744	39.83	0.39	40.22	56.00	15.78	
	5.805	43.07	0.56	43.63	60.00	16.37	
	16.055	34.70	0.85	35.55	60.00	24.45	
	0.178	38.94	0.25	39.19	54.59	15.40	AV
	0.398	28.54	0.33	28.87	47.90	19.03	
	0.611	**34.23**	**0.23**	**34.46**	**46.00**	**11.54**	
	1.744	31.58	0.39	31.97	46.00	14.03	
	5.805	34.58	0.56	35.14	50.00	14.86	
	16.055	26.49	0.85	27.34	50.00	22.66	
Neutral	0.176	42.95	0.12	43.07	64.68	21.61	QP
	0.413	37.81	0.17	37.98	57.59	19.61	
	0.621	42.53	0.19	42.72	56.00	13.28	
	1.744	39.25	0.18	39.43	56.00	16.57	
	5.805	42.30	0.48	42.78	60.00	17.22	
	15.885	36.98	0.74	37.72	60.00	22.28	
	0.176	34.58	0.12	34.70	54.68	19.98	AV
	0.413	29.78	0.17	29.95	47.59	17.64	
	0.621	33.90	0.19	34.09	46.00	11.91	
	1.744	31.77	0.18	31.95	46.00	14.05	
	5.805	33.46	0.48	33.94	50.00	16.06	
	15.885	28.99	0.74	29.73	50.00	20.27	

TEST ENGINEER: LVY LV

4 RADIATED EMISSION TEST

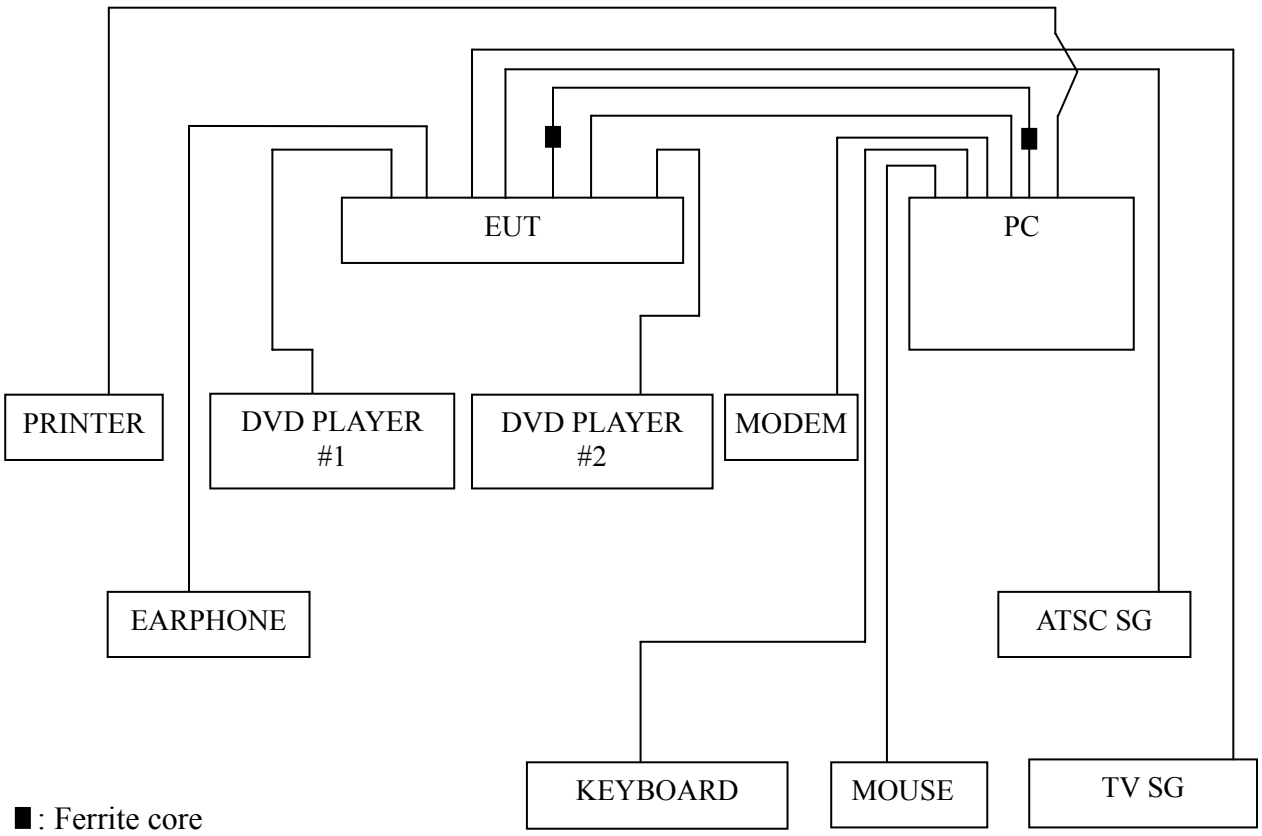
4.1 Test Equipment

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, 2012	Mar 22, 2013
2.	Preamplifier	Agilent	8447D	2944A10548	Sep 18, 2012	Mar 18, 2013
3.	Bi-log Antenna	TESEQ	CBL6112D	23192	May 03, 2012	May 03, 2013
4.	Spectrum	Agilent	E7405A	MY45106600	Mar 22, 2012	Mar 22, 2013
5.	50Ω Coaxial Switch	Anritsu	MP59B	6200426390	Sep 18, 2012	Mar 18, 2013
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

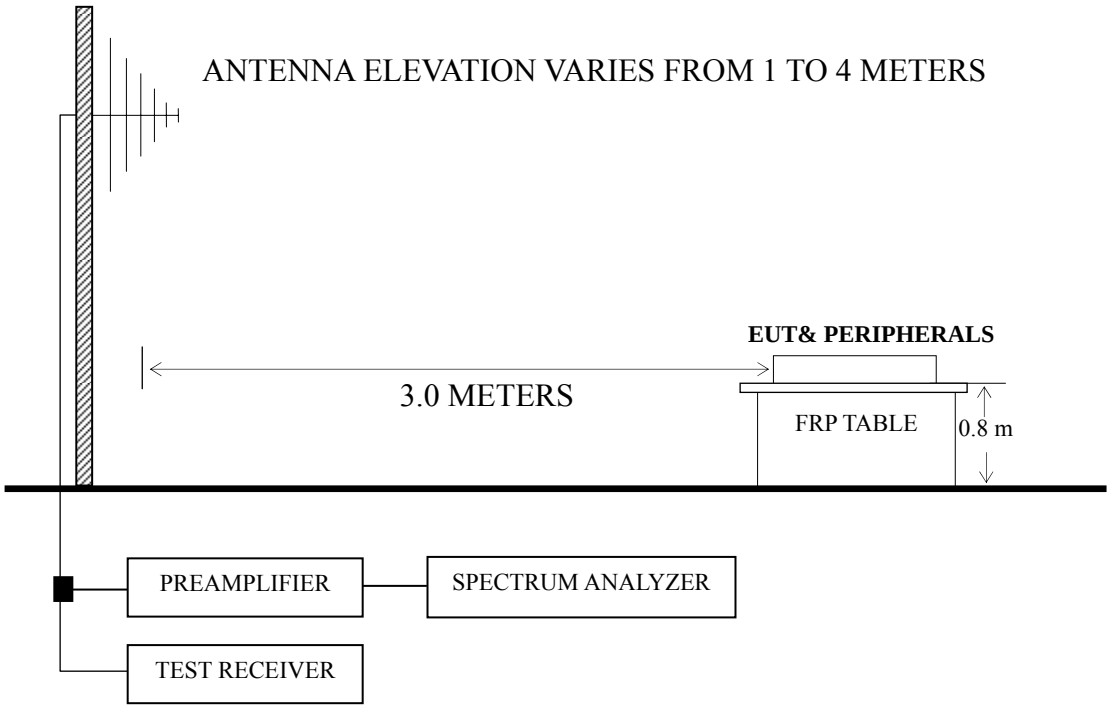
4.2 Block Diagram of Test Setup

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	
		(μV/m)	dB (μV/m)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level dB (μV/m) = 20 log Emission Level (μV/m)
NOTE 2 - The tighter limit applies at the band edges.
NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
NOTE 4 - The limits shown are based on Quasi-peak value detector.
NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT.

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 1024*768@60Hz	P21
HDMI 1024*768@60Hz	P22
D-Sub 800*600@60Hz	P23
D-Sub 640*480@60Hz	P24
USB Play	P25

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 D-Sub 1024*768@60Hz test mode. The worst emission at horizontal polarization was detected at 167.740 MHz with corrected signal level of 38.08 dB (μV/m) (limit is 43.50 dB (μV/m)), when the antenna was 1.80 m height and the turntable was at 245°. The worst emission at vertical polarization was detected at 72.680 MHz with corrected signal level of 37.42 dB (μV/m) (limit is 40.00 dB (μV/m)), when the antenna was 1.50 m height and the turntable was at 157°.

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LTDN46K360US	Humidity :	60%RH
Serial No.	:	E12091093-01/02	Date of Test :	Sep 28, 2012
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	36.790	15.79	14.57	0.85	31.21	40.00	8.79
	72.680	22.07	10.08	1.47	33.62	40.00	6.38
	119.240	18.48	11.02	2.01	31.51	43.50	11.99
	167.740	**25.63**	**10.14**	**2.31**	**38.08**	**43.50**	**5.42**
	252.130	16.71	12.09	2.62	31.42	46.00	14.58
	373.380	20.43	15.72	2.93	39.08	46.00	6.92
Vertical	58.130	17.21	9.02	1.14	27.37	40.00	12.63
	72.680	**25.87**	**10.08**	**1.47**	**37.42**	**40.00**	**2.58**
	109.540	16.34	11.19	1.93	29.46	43.50	14.04
	155.130	24.25	10.33	2.25	36.83	43.50	6.67
	373.380	21.53	15.72	2.93	40.18	46.00	5.82
	594.540	18.57	18.17	3.45	40.19	46.00	5.81

TEST ENGINEER: RAVEN JIN

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LTDN46K360US	Humidity :	60%RH
Serial No.	:	E12091093-01/02	Date of Test :	Sep 28, 2012
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	61.040	15.50	9.21	1.21	25.92	40.00	14.08
	119.240	16.48	11.02	2.01	29.51	43.50	13.99
	167.740	**23.63**	**10.14**	**2.31**	**36.08**	**43.50**	**7.42**
	288.990	13.63	13.39	2.72	29.74	46.00	16.26
	373.380	18.43	15.72	2.93	37.08	46.00	8.92
	446.130	17.91	16.92	3.11	37.94	46.00	8.06
Vertical	72.680	19.87	10.08	1.47	31.42	40.00	8.58
	182.290	**25.10**	**9.97**	**2.36**	**37.43**	**43.50**	**6.07**
	252.130	24.87	12.09	2.62	39.58	46.00	6.42
	288.990	23.15	13.39	2.72	39.26	46.00	6.74
	446.130	19.23	16.92	3.11	39.26	46.00	6.74
	669.230	15.29	19.12	3.62	38.03	46.00	7.97

TEST ENGINEER: RAVEN JIN

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LTDN46K360US	Humidity :	60%RH
Serial No.	:	E12091093-01/02	Date of Test :	Sep 28, 2012
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	**174.530**	**27.56**	**10.06**	**2.33**	**39.95**	**43.50**	**3.55**
	218.180	24.42	10.52	2.50	37.44	46.00	8.56
	376.290	19.73	15.79	2.93	38.45	46.00	7.55
	444.190	16.98	16.90	3.11	36.99	46.00	9.01
	478.140	16.37	17.34	3.21	36.92	46.00	9.08
	800.180	14.95	20.60	3.88	39.43	46.00	6.57
Vertical	53.280	19.48	8.70	1.01	29.19	40.00	10.81
	90.140	22.17	11.00	1.73	34.90	43.50	8.60
	126.030	24.62	10.89	2.07	37.58	43.50	5.92
	169.680	**25.64**	**10.11**	**2.32**	**38.07**	**43.50**	**5.43**
	376.290	**21.85**	**15.79**	**2.93**	**40.57**	**46.00**	**5.43**
	528.580	13.45	17.77	3.33	34.55	46.00	11.45

TEST ENGINEER: RAVEN JIN

EUT	:	LED LCD TV	Temperature	:	22℃
Model No.	:	LTDN46K360US	Humidity	:	60%RH
Serial No.	:	E12091093-01/02	Date of Test	:	Sep 28, 2012
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	92.080	18.37	11.08	1.75	31.20	43.50	12.30
	223.030	24.62	10.76	2.51	37.89	46.00	8.11
	371.440	**22.24**	**15.68**	**2.93**	**40.85**	**46.00**	**5.15**
	446.130	18.63	16.92	3.11	38.66	46.00	7.34
	669.230	13.97	19.12	3.62	36.71	46.00	9.29
	741.980	15.81	19.98	3.78	39.57	46.00	6.43
Vertical	92.080	19.20	11.08	1.75	32.03	43.50	11.47
	130.880	**25.03**	**10.80**	**2.11**	**37.94**	**43.50**	**5.56**
	172.590	22.65	10.08	2.33	35.06	43.50	8.44
	223.030	20.02	10.76	2.51	33.29	46.00	12.71
	371.440	21.05	15.68	2.93	39.66	46.00	6.34
	594.540	12.76	18.17	3.45	34.38	46.00	11.62

TEST ENGINEER: RAVEN JIN

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LTDN46K360US	Humidity :	60%RH
Serial No.	:	E12091093-01/02	Date of Test :	Sep 28, 2012
Test Mode	:	USB Play		

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	92.080	18.40	11.08	1.75	31.23	43.50	12.27
	169.680	**25.20**	**10.11**	**2.32**	**37.63**	**43.50**	**5.87**
	371.440	18.15	15.68	2.93	36.76	46.00	9.24
	446.130	18.89	16.92	3.11	38.92	46.00	7.08
	594.540	12.99	18.17	3.45	34.61	46.00	11.39
	817.640	13.23	20.55	4.11	37.89	46.00	8.11
Vertical	90.140	18.41	11.00	1.73	31.14	43.50	12.36
	130.880	**22.96**	**10.80**	**2.11**	**35.87**	**43.50**	**7.63**
	172.590	22.96	10.08	2.33	35.37	43.50	8.13
	223.030	17.77	10.76	2.51	31.04	46.00	14.96
	594.540	10.96	18.17	3.45	32.58	46.00	13.42
	870.990	11.95	20.38	4.60	36.93	46.00	9.07

TEST ENGINEER: RAVEN JIN

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Ferrite Core	BNF-12\ZCAT1519-0830\ROH	FEELUX	See Internal photos Figure 17
		Rui Feng Electronic Co., Ltd.	
		Hai An Magnetic Material No.2 Factory	
		JIANGSU LETTALL ELECTRONICS CO., LTD.	
Gasket	35X0.7X41mm\VGA\ROH	JOINSET	See Internal photos Figure 18

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)

6 DEVIATION TO TEST SPECIFICATIONS

None.