

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

LED LCD TV

Model No.	Serial No.	Brand
LTDN46K20US	E1207817-02/02	Hisense
F46K20E	--	

FCC ID : W9HLCDE0009

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

Prepared By : Audix Technology (Shanghai) Co., Ltd.
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Report No. : ACI-F12122
Date of Test : Jul 05 – 10, 2012
Date of Report : Jul 19, 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	E1207817-02/02	Hisense	120V/60Hz
F46K20E	--		

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 Jul 05 – 10, 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.F12123, a Verification report.

Date of Test : Jul 05 – 10, 2012 Date of Report : Jul 19, 2012

Producer : Yenny Yu.
YENNY YU / AssistantReview : 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
LTDN46K20US	E1207817-02/02	Hisense
F46K20E	--	

Note : The above models are all the same except for the different model name.
The LTDN46K20US 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 : HE460FF-B38\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, Detachable, 1.80m

Remark:

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

Bottom Port:

- (1) One Headphone Port : Connected with Earphone
- (2) One USB Port : Connected with U-Disk
- (3) One HDMI1 Port : Connected with PC
- (4) One HDMI2 Port : Connected with DVD PLAYER #1
- (5) One component of YPbPr Port : Connected with DVD PLAYER #1
- (6) One component of YPbPr Audio Port : Connected with DVD PLAYER #1

Bottom Port:

- (7) One ANT/CABLE IN Port : Connected with ATSC SG / TV SG
- (8) One VGA Port : Connected with PC
- (9) One PC/DVI Audio In Port : Connected with PC
- (10) One DIGITAL AUDIO OUT Port : Connected with DVD PLAYER #1
- (11) One HDMI3 Port : Connected with DVD PLAYER #2
- (12) One component of AV 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 = 3.43 dB

Radiated Emission Expanded Uncertainty (30-200MHz):
U = 4.67 dB (Horizontal)
U = 4.72 dB (Vertical)

Radiated Emission Expanded Uncertainty (200M-1GHz):
U = 4.81 dB (Horizontal)
U = 4.69 dB (Vertical)

3 CONDUCTED EMISSION TEST

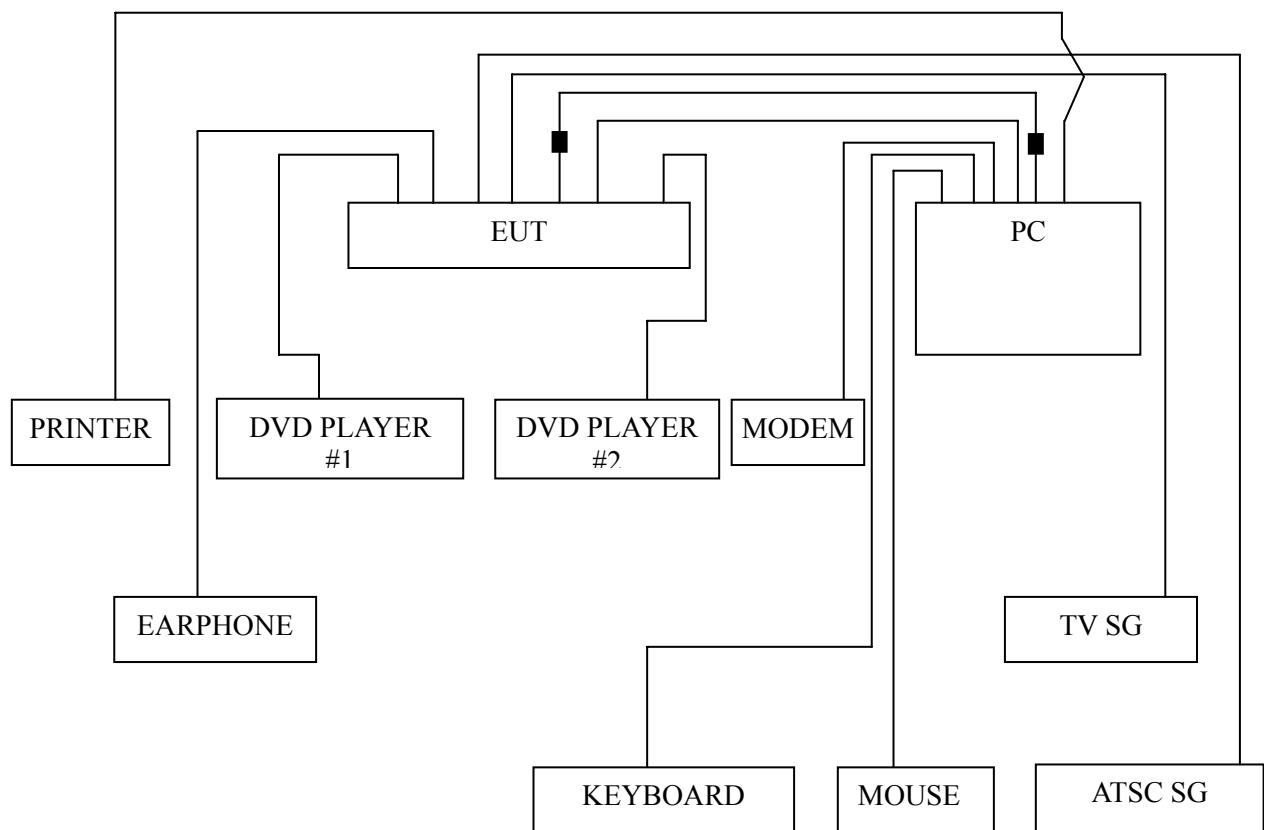
3.1 Test Equipment

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.	50 Ω Terminator	Anritsu	BNC	001	Mar 22, 2012	Mar 22, 2013
6.	Software	Audix	E3	SET00200 9804M592	--	--

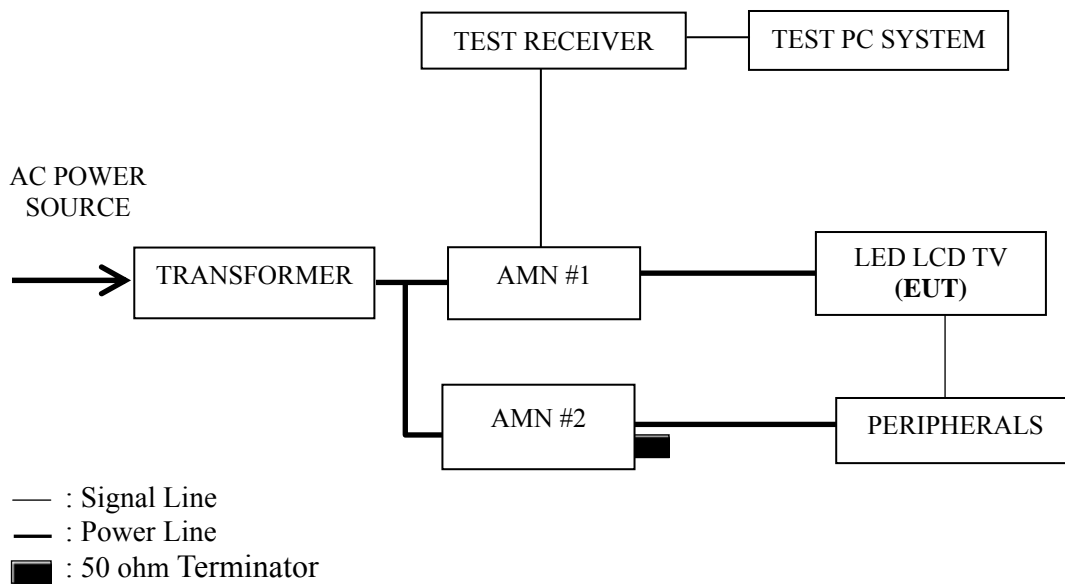
3.2 Block Diagram of Test Setup

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 (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 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 640*480@60Hz test mode. The worst emission is detected at 0.176 MHz (Quasi-Peak Value) with corrected signal level of 56.53 dB (μV) (limit is 64.68 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. : E1207817-02/02 Date of Test : Jul 05, 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	56.22	0.24	56.46	64.77	8.31	QP
	0.233	41.47	0.25	41.72	62.35	20.63	
	0.880	37.07	0.30	37.37	56.00	18.63	
	2.622	39.87	0.40	40.27	56.00	15.73	
	5.774	39.04	0.55	39.59	60.00	20.41	
	18.820	46.01	0.92	46.93	60.00	13.07	
	0.174	44.70	0.24	44.94	54.77	9.83	AV
	0.233	30.90	0.25	31.15	52.35	21.20	
	0.880	26.79	0.30	27.09	46.00	18.91	
	2.622	29.40	0.40	29.80	46.00	16.20	
	5.774	28.80	0.55	29.35	50.00	20.65	
	18.820	36.79	0.92	37.71	50.00	12.29	
Neutral	0.176	55.97	0.12	56.09	64.68	8.59	QP
	0.233	40.58	0.11	40.69	62.35	21.66	
	0.871	35.92	0.22	36.14	56.00	19.86	
	2.581	38.72	0.20	38.92	56.00	17.08	
	5.867	38.14	0.49	38.63	60.00	21.37	
	18.622	42.59	0.81	43.40	60.00	16.60	
	0.176	44.02	0.12	44.14	54.68	10.54	AV
	0.233	29.70	0.11	29.81	52.35	22.54	
	0.871	24.50	0.22	24.72	46.00	21.28	
	2.581	27.70	0.20	27.90	46.00	18.10	
	5.867	27.30	0.49	27.79	50.00	22.21	
	18.622	31.60	0.81	32.41	50.00	17.59	

TEST ENGINEER: LVY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 48%RH

Serial No. : E1207817-02/02 Date of Test : Jul 05, 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	0.176	55.90	0.24	56.14	64.68	8.54	QP
	0.237	41.21	0.25	41.46	62.22	20.76	
	0.880	36.43	0.30	36.73	56.00	19.27	
	2.500	38.56	0.40	38.96	56.00	17.04	
	5.774	38.82	0.55	39.37	60.00	20.63	
	18.820	44.81	0.92	45.73	60.00	14.27	
	0.176	44.20	0.24	44.44	54.68	10.24	AV
	0.237	30.40	0.25	30.65	52.22	21.57	
	0.880	25.79	0.30	26.09	46.00	19.91	
	2.500	27.70	0.40	28.10	46.00	17.90	
	5.774	28.30	0.55	28.85	50.00	21.15	
	18.820	33.19	0.92	34.11	50.00	15.89	
Neutral	0.174	55.88	0.12	56.00	64.77	8.77	QP
	0.233	40.87	0.11	40.98	62.35	21.37	
	0.871	35.37	0.22	35.59	56.00	20.41	
	2.554	38.36	0.20	38.56	56.00	17.44	
	5.867	39.51	0.49	40.00	60.00	20.00	
	18.820	43.58	0.81	44.39	60.00	15.61	
	0.174	44.20	0.12	44.32	54.77	10.45	AV
	0.233	30.10	0.11	30.21	52.35	22.14	
	0.871	25.30	0.22	25.52	46.00	20.48	
	2.554	27.50	0.20	27.70	46.00	18.30	
	5.867	28.10	0.49	28.59	50.00	21.41	
	18.820	32.80	0.81	33.61	50.00	16.39	

TEST ENGINEER: LVY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 48%RH

Serial No. : E1207817-02/02 Date of Test : Jul 05, 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	0.176	56.24	0.24	56.48	64.68	8.20	QP
	0.233	41.99	0.25	42.24	62.35	20.11	
	0.871	36.28	0.29	36.57	56.00	19.43	
	2.622	38.87	0.40	39.27	56.00	16.73	
	5.929	39.62	0.57	40.19	60.00	19.81	
	18.820	44.86	0.92	45.78	60.00	14.22	
	0.176	45.20	0.24	45.44	54.68	9.24	AV
	0.233	32.20	0.25	32.45	52.35	19.90	
	0.871	26.50	0.29	26.79	46.00	19.21	
	2.622	28.36	0.40	28.76	46.00	17.24	
	5.929	28.90	0.57	29.47	50.00	20.53	
	18.820	33.89	0.92	34.81	50.00	15.19	
Neutral	0.176	55.86	0.12	55.98	64.68	8.70	QP
	0.233	41.23	0.11	41.34	62.35	21.01	
	0.933	35.47	0.22	35.69	56.00	20.31	
	2.678	38.40	0.20	38.60	56.00	17.40	
	5.929	38.20	0.49	38.69	60.00	21.31	
	19.326	42.52	0.82	43.34	60.00	16.66	
	0.176	45.30	0.12	45.42	54.68	9.26	AV
	0.233	30.69	0.11	30.80	52.35	21.55	
	0.933	25.60	0.22	25.82	46.00	20.18	
	2.678	28.91	0.20	29.11	46.00	16.89	
	5.929	27.60	0.49	28.09	50.00	21.91	
	19.326	31.90	0.82	32.72	50.00	17.28	

TEST ENGINEER: Lvy LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 48%RH

Serial No. : E1207817-02/02 Date of Test : Jul 05, 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	0.176	56.29	0.24	56.53	64.68	8.15	QP
	0.237	40.97	0.25	41.22	62.22	21.00	
	0.871	36.39	0.29	36.68	56.00	19.32	
	2.678	39.34	0.40	39.74	56.00	16.26	
	5.867	39.62	0.56	40.18	60.00	19.82	
	18.820	45.07	0.92	45.99	60.00	14.01	
	0.176	45.60	0.24	45.84	54.68	8.84	AV
	0.237	31.40	0.25	31.65	52.22	20.57	
	0.871	26.90	0.29	27.19	46.00	18.81	
	2.678	28.81	0.40	29.21	46.00	16.79	
	5.867	29.60	0.56	30.16	50.00	19.84	
	18.820	34.79	0.92	35.71	50.00	14.29	
Neutral	0.176	55.71	0.12	55.83	64.68	8.85	QP
	0.233	40.94	0.11	41.05	62.35	21.30	
	0.871	36.78	0.22	37.00	56.00	19.00	
	2.581	38.82	0.20	39.02	56.00	16.98	
	5.867	38.60	0.49	39.09	60.00	20.91	
	18.820	43.27	0.81	44.08	60.00	15.92	
	0.176	45.10	0.12	45.22	54.68	9.46	AV
	0.233	30.50	0.11	30.61	52.35	21.74	
	0.871	26.30	0.22	26.52	46.00	19.48	
	2.581	28.20	0.20	28.40	46.00	17.60	
	5.867	27.90	0.49	28.39	50.00	21.61	
	18.820	33.74	0.81	34.55	50.00	15.45	

TEST ENGINEER: LVY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 48%RH

Serial No. : E1207817-02/02 Date of Test : Jul 05, 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	0.176	56.14	0.24	56.38	64.68	8.30	QP
	0.234	41.84	0.25	42.09	62.30	20.21	
	0.871	36.66	0.29	36.95	56.00	19.05	
	2.594	38.89	0.40	39.29	56.00	16.71	
	5.774	39.31	0.55	39.86	60.00	20.14	
	19.021	45.26	0.92	46.18	60.00	13.82	
	0.176	45.10	0.24	45.34	54.68	9.34	AV
	0.234	30.60	0.25	30.85	52.30	21.45	
	0.871	25.80	0.29	26.09	46.00	19.91	
	2.594	27.50	0.40	27.90	46.00	18.10	
	5.774	28.60	0.55	29.15	50.00	20.85	
	19.021	34.39	0.92	35.31	50.00	14.69	
Neutral	0.174	55.38	0.12	55.50	64.77	9.27	QP
	0.233	41.20	0.11	41.31	62.35	21.04	
	0.871	36.62	0.22	36.84	56.00	19.16	
	2.622	38.86	0.20	39.06	56.00	16.94	
	5.774	38.69	0.48	39.17	60.00	20.83	
	18.820	43.28	0.81	44.09	60.00	15.91	
	0.174	44.50	0.12	44.62	54.77	10.15	AV
	0.233	30.90	0.11	31.01	52.35	21.34	
	0.871	26.10	0.22	26.32	46.00	19.68	
	2.622	27.80	0.20	28.00	46.00	18.00	
	5.774	27.79	0.48	28.27	50.00	21.73	
	18.820	32.30	0.81	33.11	50.00	16.89	

TEST ENGINEER: LUY LV

4 RADIATED EMISSION TEST

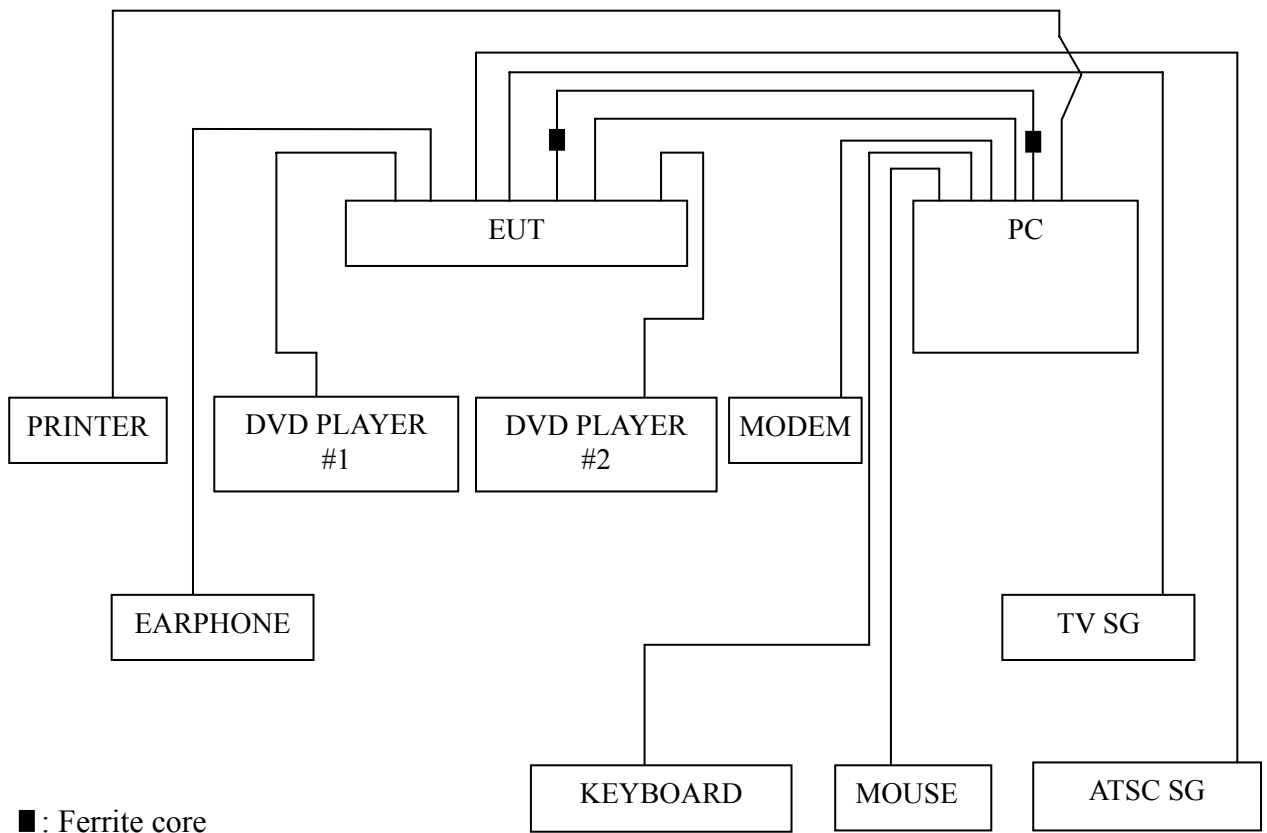
4.1 Test Equipment

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

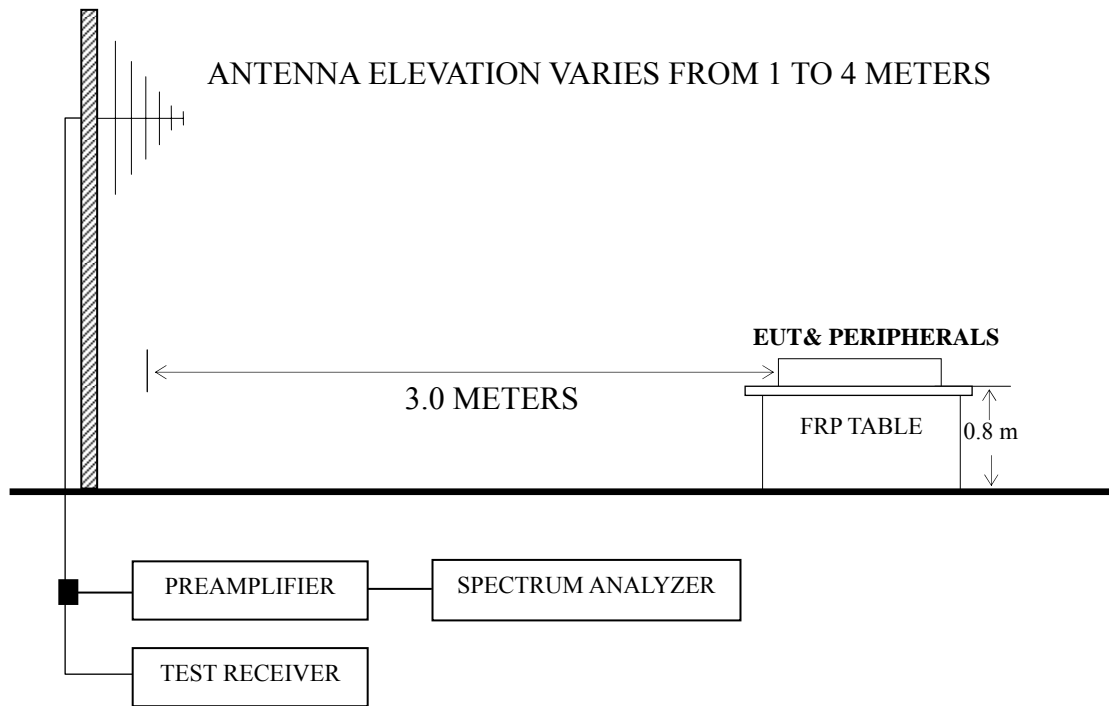
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESVS10	844594/001	Mar 22, 2012	Mar 22, 2013
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 18, 2012	Sep 18, 2012
3.	Bi-log Antenna	TESEQ	CBL6112D	23192	Dec 01, 2011	Dec 01, 2012
4.	Spectrum	Agilent	E7405A	MY45106600	Mar 22, 2012	Mar 22, 2013
5.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426390	Mar 18, 2012	Sep 18, 2012
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

4.2 Block Diagram of Test Setup

4.2.1 EUT and Peripherals



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.

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
HDMI 800*600@60Hz	P23
HDMI 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 USB Play test mode. The worst emission at horizontal polarization was detected at 79.470 MHz with corrected signal level of 30.35 dB (μV/m) (limit is 40.00 dB (μV/m)), when the antenna was 2.10 m height and the turntable was at 140°. The worst emission at vertical polarization was detected at 741.980 MHz with corrected signal level of 39.24 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 2.10 m height and the turntable was at 300°.

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 60%RH

Serial No. : E1207817-02/02 Date of Test : Jul 10, 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	65.890	21.41	9.55	1.32	32.28	40.00	7.72
	144.460	14.23	10.52	2.19	26.94	43.50	16.56
	204.600	17.77	9.97	2.44	30.18	43.50	13.32
	343.310	16.23	14.91	2.86	34.00	46.00	12.00
	494.630	4.66	17.53	3.25	25.44	46.00	20.56
	913.670	9.36	20.36	5.05	34.77	46.00	11.23
Vertical	64.920	17.68	9.49	1.30	28.47	40.00	11.53
	204.600	17.85	9.97	2.44	30.26	43.50	13.24
	230.790	18.61	11.10	2.55	32.26	46.00	13.74
	282.200	16.43	13.21	2.71	32.35	46.00	13.65
	343.310	17.32	14.91	2.86	35.09	46.00	10.91
	572.230	6.51	18.05	3.40	27.96	46.00	18.04

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 60%RH

Serial No. : E1207817-02/02 Date of Test : Jul 10, 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	64.920	20.74	9.49	1.30	31.53	40.00	8.47
	149.310	21.13	10.43	2.23	33.79	43.50	9.71
	185.200	20.01	9.94	2.38	32.33	43.50	11.17
	296.750	16.58	13.63	2.75	32.96	46.00	13.04
	445.160	18.79	16.90	3.11	38.80	46.00	7.20
	593.570	10.70	18.17	3.45	32.32	46.00	13.68
Vertical	64.920	21.96	9.49	1.30	32.75	40.00	7.25
	149.310	17.07	10.43	2.23	29.73	43.50	13.77
	223.030	20.49	10.76	2.51	33.76	46.00	12.24
	296.750	20.74	13.63	2.75	37.12	46.00	8.88
	371.440	12.13	15.68	2.93	30.74	46.00	15.26
	668.260	10.57	19.12	3.62	33.31	46.00	12.69

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 60%RH

Serial No. : E1207817-02/02 Date of Test : Jul 10, 2012

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	65.890	20.30	9.55	1.32	31.17	40.00	8.83
	149.310	17.42	10.43	2.23	30.08	43.50	13.42
	223.030	20.50	10.76	2.51	33.77	46.00	12.23
	296.750	21.09	13.63	2.75	37.47	46.00	8.53
	343.310	16.92	14.91	2.86	34.69	46.00	11.31
	446.130	10.39	16.92	3.11	30.42	46.00	15.58
Vertical	58.130	17.96	9.02	1.14	28.12	40.00	11.88
	155.130	18.02	10.33	2.25	30.60	43.50	12.90
	230.790	21.45	11.10	2.55	35.10	46.00	10.90
	346.220	18.08	15.00	2.88	35.96	46.00	10.04
	508.210	7.38	17.65	3.28	28.31	46.00	17.69
	671.170	11.67	19.15	3.62	34.44	46.00	11.56

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 60%RH

Serial No. : E1207817-02/02 Date of Test : Jul 10, 2012

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	80.440	17.18	10.56	1.59	29.33	40.00	10.67
	152.220	16.80	10.37	2.24	29.41	43.50	14.09
	207.510	20.08	10.11	2.45	32.64	43.50	10.86
	343.310	15.10	14.91	2.86	32.87	46.00	13.13
	508.210	10.50	17.65	3.28	31.43	46.00	14.57
	806.970	14.56	20.58	3.99	39.13	46.00	6.87
Vertical	58.130	18.08	9.02	1.14	28.24	40.00	11.76
	96.930	11.37	11.24	1.82	24.43	43.50	19.07
	154.160	16.72	10.34	2.25	29.31	43.50	14.19
	232.730	21.02	11.19	2.55	34.76	46.00	11.24
	343.310	17.91	14.91	2.86	35.68	46.00	10.32
	447.100	10.50	16.92	3.11	30.53	46.00	15.47

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K20US Humidity : 60%RH

Serial No. : E1207817-02/02 Date of Test : Jul 10, 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	79.470	18.26	10.51	1.58	30.35	40.00	9.65
	152.220	17.93	10.37	2.24	30.54	43.50	12.96
	210.420	17.50	10.22	2.46	30.18	43.50	13.32
	323.910	11.88	14.38	2.82	29.08	46.00	16.92
	461.650	10.54	17.14	3.17	30.85	46.00	15.15
	575.140	13.90	18.06	3.42	35.38	46.00	10.62
Vertical	58.130	20.14	9.02	1.14	30.30	40.00	9.70
	149.310	18.53	10.43	2.23	31.19	43.50	12.31
	223.030	19.91	10.76	2.51	33.18	46.00	12.82
	343.310	20.83	14.91	2.86	38.60	46.00	7.40
	518.880	13.33	17.72	3.31	34.36	46.00	11.64
	741.980	15.48	19.98	3.78	39.24	46.00	6.76

TEST ENGINEER: RAVEN JIN

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Gasket	DAA25X20X150\ROH	Qingdao Joinset S&T Co., Ltd.	See Internal Photos Figure 16
		TAT ELECTRONIC TECH CO.,LTD.	
Gasket	DAA1002\ROH	Qingdao Joinset S&T Co., Ltd.	See Internal Photos Figure 15
		TAT ELECTRONIC TECH CO.,LTD.	
Gasket	35X0.7X41mm\VGA\ROH	Qingdao Joinset S&T Co., Ltd.	See Internal Photos Figure 17

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)

6 DEVIATION TO TEST SPECIFICATIONS

None.