

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

LED LCD TV

Model No.	Brand
LTDN50K610GWUS	Hisense
50K610GW	

FCC ID : W9HLCDF0014

Prepared For : Hisense Electric Co., Ltd.  
No.218 Qianwangang Road, Economy & Technology  
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Report No. : ACI-F13003  
Date of Test : Dec 26 – 28, 2012  
Date of Report : Jan 06, 2013

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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.	Brand	Power Supply
LTDN50K610GWUS	Hisense	120V/60Hz
50K610GW		

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2012  
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) which was tested in 3m anechoic chamber Dec 26 – 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.

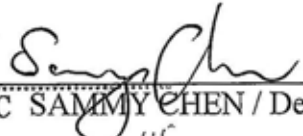
***The test results for EUT's TV functions are contained in No.F13002, a Verification report.***

Date of Test : Dec 26 – 28, 2012 Date of Report : Jan 06, 2013

Producer :   
KATHY WANG / Assistant

Review :   
DIO YANG / Assistant Manager

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

Signatory :   
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:

<b>Description of Test Item</b>	<b>Standard</b>	<b>Limits</b>	<b>Results</b>
<b>EMISSION</b>			
Conducted Disturbance at the Mains Terminal	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2012 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2012 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 type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-product <input type="checkbox"/> Pro-type		
Model No.	:	<table border="1"> <tr> <td>LTDN50K610GWUS</td> <td>50K610GW</td> </tr> </table>	LTDN50K610GWUS	50K610GW
LTDN50K610GWUS	50K610GW			
Bread Name	:	Hisense		
Note	:	The above models are identical except for the different model name. The LTDN50K610GWUS was tested and reported 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 : HE500HF-B52\PW2		
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		

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

Side Port:

- (1) One HDMI2 Port : Connected with DVD PLAYER #1
- (2) One HDMI1 Port : Connected with PC
- (3) One DIGITAL AUDIO OUT Port : Connected with PC
- (4) One Headphone Port : Connected with Earphone
- (5) One ANT/CABLE IN Port : Connected with ATSC SG / TV SG

- (6) One component of YPbPr Port  
: Connected with DVD PLAYER #1
- (7) One component of AV Port  
: Connected with DVD PLAYER #1
- Bottom Port:
- (8) One LAN Port  
: Connected with Internet
- (9) One USB1 Port  
: Connected with U-Disk#1
- (10) One USB2 Port  
: Connected with U-Disk#2
- (11) One VGA Port  
: Connected with PC
- (12) One PC/DVI Audio In Port  
: Connected with PC
- (13) One HDMI3 Port  
: Connected with DVD PLAYER #2
- (14) One HDMI4 Port  
: Connected with DVD PLAYER #3

## 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 DVD PLAYER #3

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

## 2.2.12 U-DISK #1 #2

Manufacturer : LG  
Model Number : 1GB

## 2.3 Description of Test Facility

Site Description (No.3 3m Chamber) : Sept. 17, 1998 file on  
Mar 16, 2012 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 = 3.42 dB

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

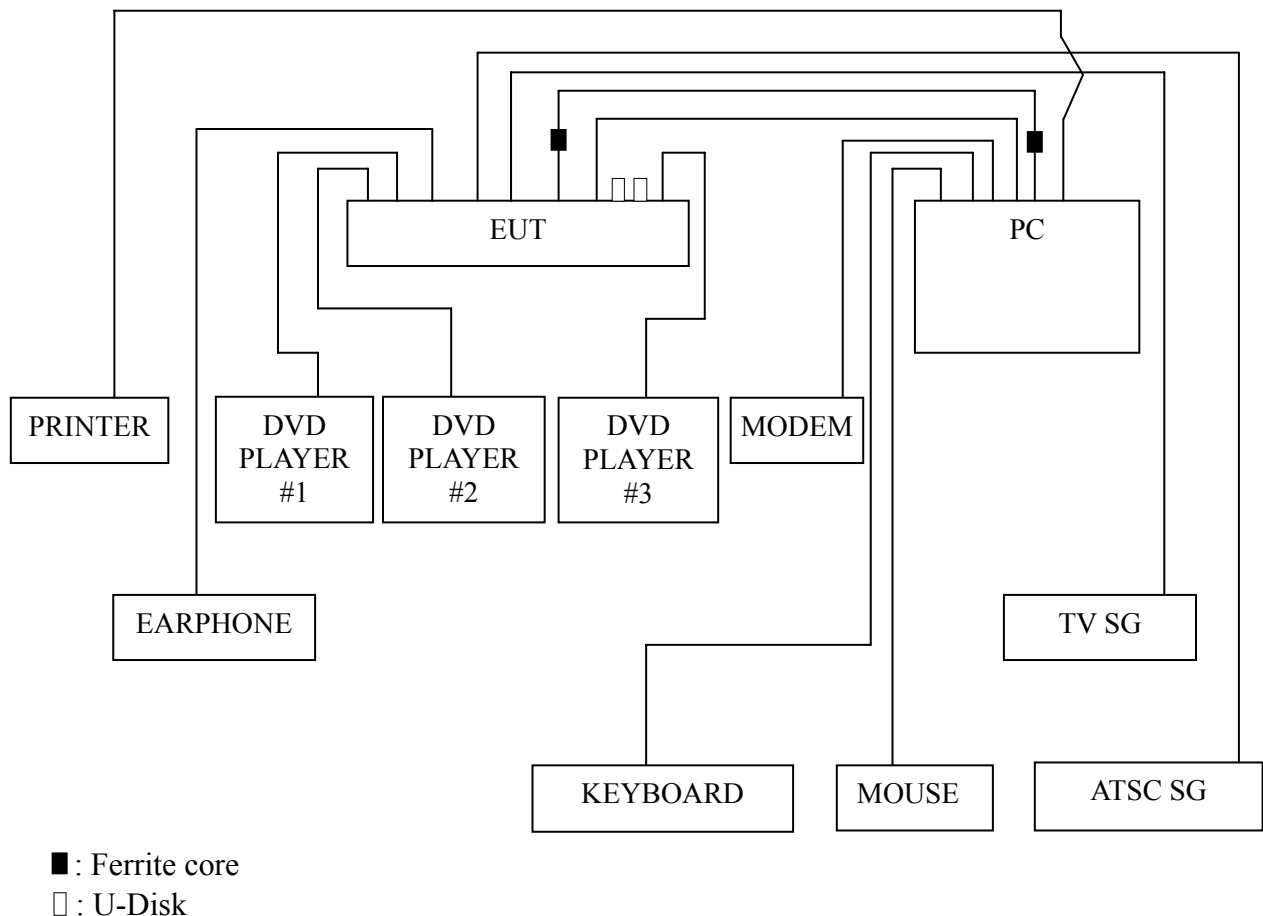
#### 3.1 Test Equipment

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

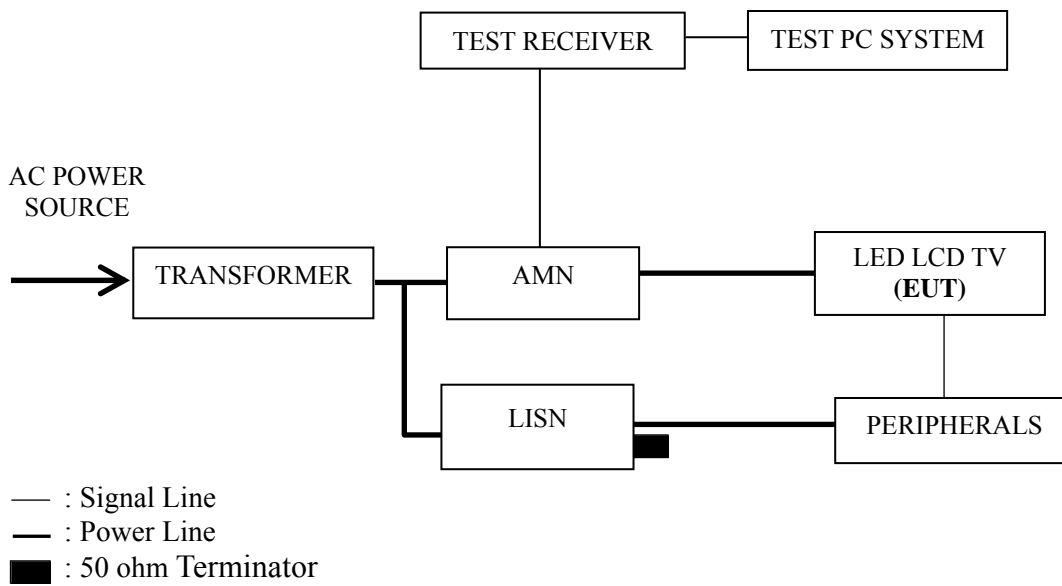
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	100841	Mar 22, 2012	Mar 22, 2013
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Feb 13, 2012	Feb 13, 2013
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 22, 2012	Mar 22, 2013
4.	50 $\Omega$ Coaxial Switch	Anritsu	MP59B	6200426389	Sep 18, 2012	Mar 18, 2013
5.	50 $\Omega$ 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



### 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 ( $\mu$ 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 In LAN mode, set the EUT play digital media through LAN port.
- 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
HDMI 800*600@60Hz
HDMI 640*480@60Hz
USB Play
LAN

### 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
HDMI 800*600@60Hz	P15
HDMI 640*480@60Hz	P16
USB Play	P17
LAN	P18

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 USB Play test mode. The worst emission is detected at 0.169 MHz (Quasi-Peak Value) with corrected signal level of 53.51 dB ( $\mu$ V) (limit is 64.99 dB ( $\mu$ V)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C  
 Model No. : LTDN50K610GWUS Humidity : 48%RH  
 Test Mode : D-Sub 1024\*768@60Hz Date of Test : Dec 26, 2012

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	<b>0.169</b>	<b>52.23</b>	<b>0.24</b>	<b>52.47</b>	<b>64.99</b>	<b>12.52</b>	QP
	0.634	41.05	0.21	41.26	56.00	14.74	
	1.129	40.22	0.32	40.54	56.00	15.46	
	2.678	38.95	0.40	39.35	56.00	16.65	
	4.224	39.77	0.49	40.26	56.00	15.74	
	18.622	35.28	0.91	36.19	60.00	23.81	
	AV	0.169	42.20	0.24	42.44	54.99	12.55
		0.634	31.00	0.21	31.21	46.00	14.79
		1.129	30.20	0.32	30.52	46.00	15.48
		2.678	28.51	0.40	28.91	46.00	17.09
4.224		29.70	0.49	30.19	46.00	15.81	
18.622		25.30	0.91	26.21	50.00	23.79	
Neutral	0.168	51.25	0.13	51.38	65.08	13.70	QP
	0.614	41.34	0.19	41.53	56.00	14.47	
	1.129	38.88	0.22	39.10	56.00	16.90	
	2.594	39.20	0.20	39.40	56.00	16.60	
	3.436	39.08	0.33	39.41	56.00	16.59	
	18.039	36.44	0.80	37.24	60.00	22.76	
	AV	0.168	41.49	0.13	41.62	55.08	13.46
		0.614	31.30	0.19	31.49	46.00	14.51
		1.129	28.80	0.22	29.02	46.00	16.98
		2.594	29.30	0.20	29.50	46.00	16.50
	3.436	29.60	0.33	29.93	46.00	16.07	
	18.039	26.30	0.80	27.10	50.00	22.90	

TEST ENGINEER: LVY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K610GWUS Humidity : 48%RH

Test Mode : HDMI 1024\*768@60Hz Date of Test : Dec 26, 2012

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark	
Line	0.169	53.10	0.24	53.34	64.99	11.65	QP	
	0.634	41.17	0.21	41.38	56.00	14.62		
	1.071	39.66	0.32	39.98	56.00	16.02		
	2.678	39.08	0.40	39.48	56.00	16.52		
	4.224	40.06	0.49	40.55	56.00	15.45		
	17.849	36.30	0.90	37.20	60.00	22.80		
		<b>0.169</b>	<b>43.20</b>	<b>0.24</b>	<b>43.44</b>	<b>54.99</b>	<b>11.55</b>	AV
		0.634	31.50	0.21	31.71	46.00	14.29	
		1.071	29.50	0.32	29.82	46.00	16.18	
		2.678	29.61	0.40	30.01	46.00	15.99	
		4.224	30.20	0.49	30.69	46.00	15.31	
		17.849	26.80	0.90	27.70	50.00	22.30	
Neutral	0.169	51.41	0.12	51.53	64.99	13.46	QP	
	0.627	40.56	0.19	40.75	56.00	15.25		
	1.071	38.78	0.22	39.00	56.00	17.00		
	2.650	38.86	0.20	39.06	56.00	16.94		
	3.436	38.98	0.33	39.31	56.00	16.69		
	17.755	35.87	0.79	36.66	60.00	23.34		
		0.169	41.50	0.12	41.62	54.99	13.37	AV
		0.627	30.50	0.19	30.69	46.00	15.31	
		1.071	28.90	0.22	29.12	46.00	16.88	
		2.650	28.50	0.20	28.70	46.00	17.30	
		3.436	28.30	0.33	28.63	46.00	17.37	
		17.755	25.40	0.79	26.19	50.00	23.81	

TEST ENGINEER: LVY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K610GWUS Humidity : 48%RH

Test Mode : HDMI 800\*600@60Hz Date of Test : Dec 26, 2012

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark	
Line	0.169	52.28	0.24	52.52	64.99	12.47	QP	
	0.621	40.33	0.22	40.55	56.00	15.45		
	1.106	39.06	0.32	39.38	56.00	16.62		
	2.678	38.39	0.40	38.79	56.00	17.21		
	6.420	39.55	0.62	40.17	60.00	19.83		
	17.755	35.32	0.89	36.21	60.00	23.79		
		<b>0.169</b>	<b>42.60</b>	<b>0.24</b>	<b>42.84</b>	<b>54.99</b>	<b>12.15</b>	AV
		0.621	30.50	0.22	30.72	46.00	15.28	
		1.106	29.20	0.32	29.52	46.00	16.48	
		2.678	29.51	0.40	29.91	46.00	16.09	
		6.420	29.39	0.62	30.01	50.00	19.99	
		17.755	25.61	0.89	26.50	50.00	23.50	
Neutral	0.168	51.37	0.13	51.50	65.08	13.58	QP	
	0.634	40.96	0.19	41.15	56.00	14.85		
	1.106	39.90	0.22	40.12	56.00	15.88		
	2.678	37.69	0.20	37.89	56.00	18.11		
	3.364	38.30	0.32	38.62	56.00	17.38		
	18.039	36.32	0.80	37.12	60.00	22.88		
		0.168	41.49	0.13	41.62	55.08	13.46	AV
		0.634	30.50	0.19	30.69	46.00	15.31	
		1.106	29.50	0.22	29.72	46.00	16.28	
		2.678	27.41	0.20	27.61	46.00	18.39	
		3.364	28.30	0.32	28.62	46.00	17.38	
		18.039	26.50	0.80	27.30	50.00	22.70	

TEST ENGINEER: LVY LV

EUT : LED LCD TV Temperature : 22°C  
 Model No. : LTDN50K610GWUS Humidity : 48%RH  
 Test Mode : HDMI 640\*480@60Hz Date of Test : Dec 26, 2012

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark	
Line	0.169	52.28	0.24	52.52	64.99	12.47	QP	
	0.627	40.13	0.21	40.34	56.00	15.66		
	1.106	39.92	0.32	40.24	56.00	15.76		
	2.678	39.39	0.40	39.79	56.00	16.21		
	3.364	39.32	0.43	39.75	56.00	16.25		
	17.568	35.64	0.89	36.53	60.00	23.47		
		<b>0.169</b>	<b>42.60</b>	<b>0.24</b>	<b>42.84</b>	<b>54.99</b>	<b>12.15</b>	AV
		0.627	30.11	0.21	30.32	46.00	15.68	
		1.106	29.90	0.32	30.22	46.00	15.78	
		2.678	29.61	0.40	30.01	46.00	15.99	
		3.364	29.31	0.43	29.74	46.00	16.26	
		17.568	25.90	0.89	26.79	50.00	23.21	
Neutral	0.169	51.81	0.12	51.93	64.99	13.06	QP	
	0.634	40.93	0.19	41.12	56.00	14.88		
	1.117	40.14	0.22	40.36	56.00	15.64		
	2.765	38.28	0.21	38.49	56.00	17.51		
	3.547	39.13	0.36	39.49	56.00	16.51		
	17.568	36.45	0.79	37.24	60.00	22.76		
		0.169	41.50	0.12	41.62	54.99	13.37	AV
		0.634	30.80	0.19	30.99	46.00	15.01	
		1.117	29.80	0.22	30.02	46.00	15.98	
		2.765	28.90	0.21	29.11	46.00	16.89	
		3.547	29.26	0.36	29.62	46.00	16.38	
		17.568	26.50	0.79	27.29	50.00	22.71	

TEST ENGINEER: LVY LV



EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K610GWUS Humidity : 48%RH

Test Mode : USB Play Date of Test : Dec 26, 2012

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	<b>0.169</b>	<b>53.27</b>	<b>0.24</b>	<b>53.51</b>	<b>64.99</b>	<b>11.48</b>	QP
	0.627	41.95	0.21	42.16	56.00	13.84	
	1.106	40.13	0.32	40.45	56.00	15.55	
	1.959	40.27	0.39	40.66	56.00	15.34	
	3.293	38.98	0.43	39.41	56.00	16.59	
	17.568	34.68	0.89	35.57	60.00	24.43	
	0.169	43.20	0.24	43.44	54.99	11.55	AV
	0.627	30.71	0.21	30.92	46.00	15.08	
	1.106	30.10	0.32	30.42	46.00	15.58	
	1.959	30.10	0.39	30.49	46.00	15.51	
	3.293	28.60	0.43	29.03	46.00	16.97	
	17.568	24.30	0.89	25.19	50.00	24.81	
Neutral	0.169	51.33	0.12	51.45	64.99	13.54	QP
	0.634	41.83	0.19	42.02	56.00	13.98	
	1.129	38.75	0.22	38.97	56.00	17.03	
	2.594	37.88	0.20	38.08	56.00	17.92	
	3.364	39.74	0.32	40.06	56.00	15.94	
	17.849	36.08	0.79	36.87	60.00	23.13	
	0.169	41.20	0.12	41.32	54.99	13.67	AV
	0.634	30.20	0.19	30.39	46.00	15.61	
	1.129	28.60	0.22	28.82	46.00	17.18	
	2.594	27.50	0.20	27.70	46.00	18.30	
	3.364	29.30	0.32	29.62	46.00	16.38	
	17.849	26.11	0.79	26.90	50.00	23.10	

TEST ENGINEER: LVY LV

EUT : LED LCD TV Temperature : 22°C  
 Model No. : LTDN50K610GWUS Humidity : 48%RH  
 Test Mode : LAN Date of Test : Dec 26, 2012

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.168	51.42	0.24	51.66	65.08	13.42	QP
	0.608	39.17	0.23	39.40	56.00	16.60	
	1.117	42.49	0.32	42.81	56.00	13.19	
	2.765	42.28	0.40	42.68	56.00	13.32	
	7.062	38.99	0.66	39.65	60.00	20.35	
	16.839	36.51	0.86	37.37	60.00	22.63	
	0.168	38.56	0.24	38.80	55.08	16.28	AV
	0.608	27.59	0.23	27.82	46.00	18.18	
	1.117	30.25	0.32	30.57	46.00	15.43	
	2.765	29.59	0.40	29.99	46.00	16.01	
7.062	26.54	0.66	27.20	50.00	22.80		
16.839	24.23	0.86	25.09	50.00	24.91		
Neutral	<b>0.168</b>	<b>52.51</b>	<b>0.13</b>	<b>52.64</b>	<b>65.08</b>	<b>12.44</b>	QP
	0.611	43.30	0.18	43.48	56.00	12.52	
	1.800	41.14	0.17	41.31	56.00	14.69	
	4.114	40.56	0.40	40.96	56.00	15.04	
	7.062	37.81	0.59	38.40	60.00	21.60	
	17.383	38.45	0.79	39.24	60.00	20.76	
	0.168	38.77	0.13	38.90	55.08	16.18	AV
	0.611	30.22	0.18	30.40	46.00	15.60	
	1.800	28.12	0.17	28.29	46.00	17.71	
	4.114	28.17	0.40	28.57	46.00	17.43	
	7.062	25.47	0.59	26.06	50.00	23.94	
	17.383	26.24	0.79	27.03	50.00	22.97	

TEST ENGINEER: LVY LV

## 4 RADIATED EMISSION TEST

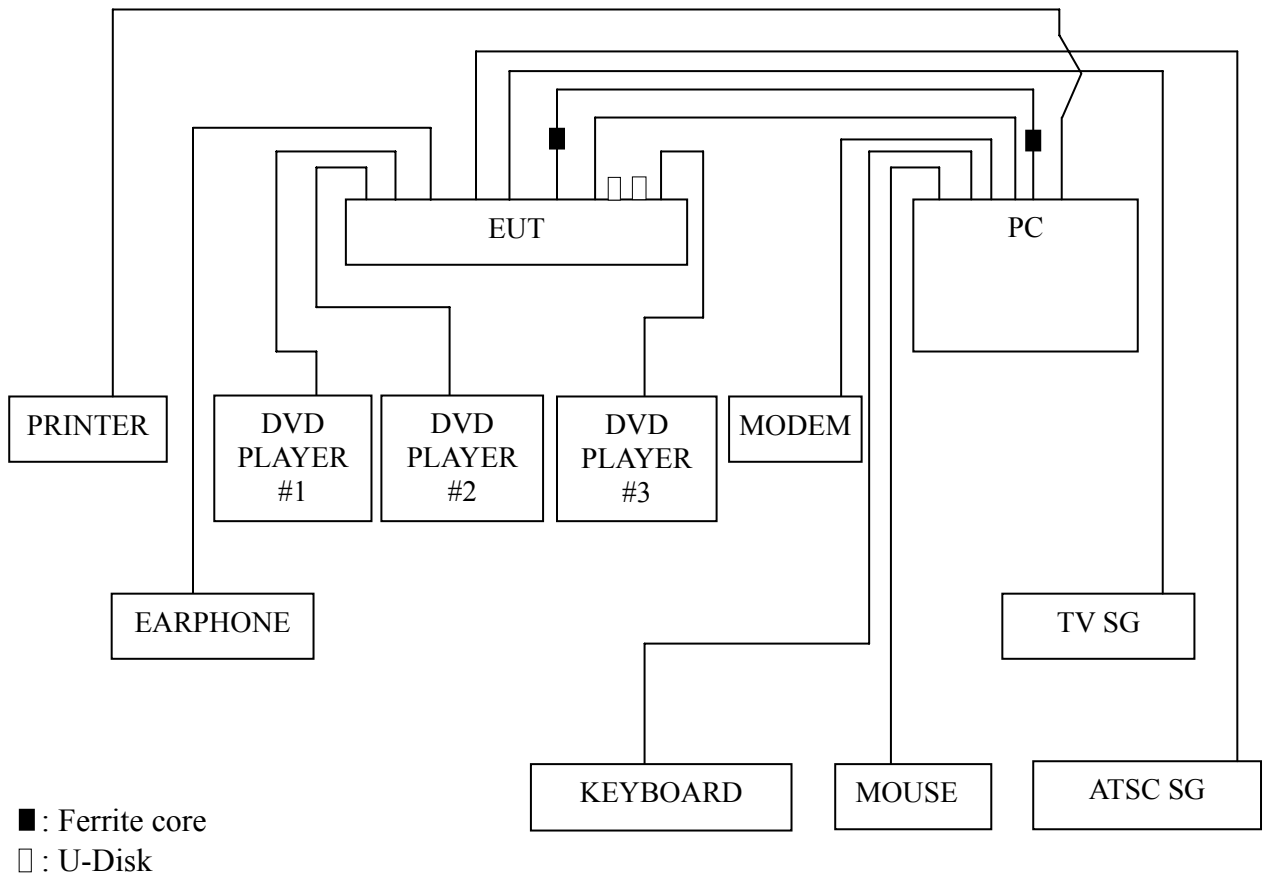
### 4.1 Test Equipment

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	ESCI	101302	Sep 11, 2012	Sep 11, 2013
2.	Preamplifier	Agilent	8447D	2944A10548	Sep 18, 2012	Mar 18, 2013
3.	Preamplifier	HP	8449B	3008A00864	Mar 22, 2012	Mar 22, 2013
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 03, 2012	May 03, 2013
5.	Horn Antenna	EMCO	3115	96074878	May 06, 2012	May 06, 2013
6.	Spectrum	Agilent	E7405A	MY45106600	Mar 22, 2012	Mar 22, 2013
7.	50 $\Omega$ Coaxial Switch	Anritsu	MP59B	6200426390	Sep 18, 2012	Mar 18, 2013
8.	Software	Audix	E3	SET00200 9912M295-2	--	--

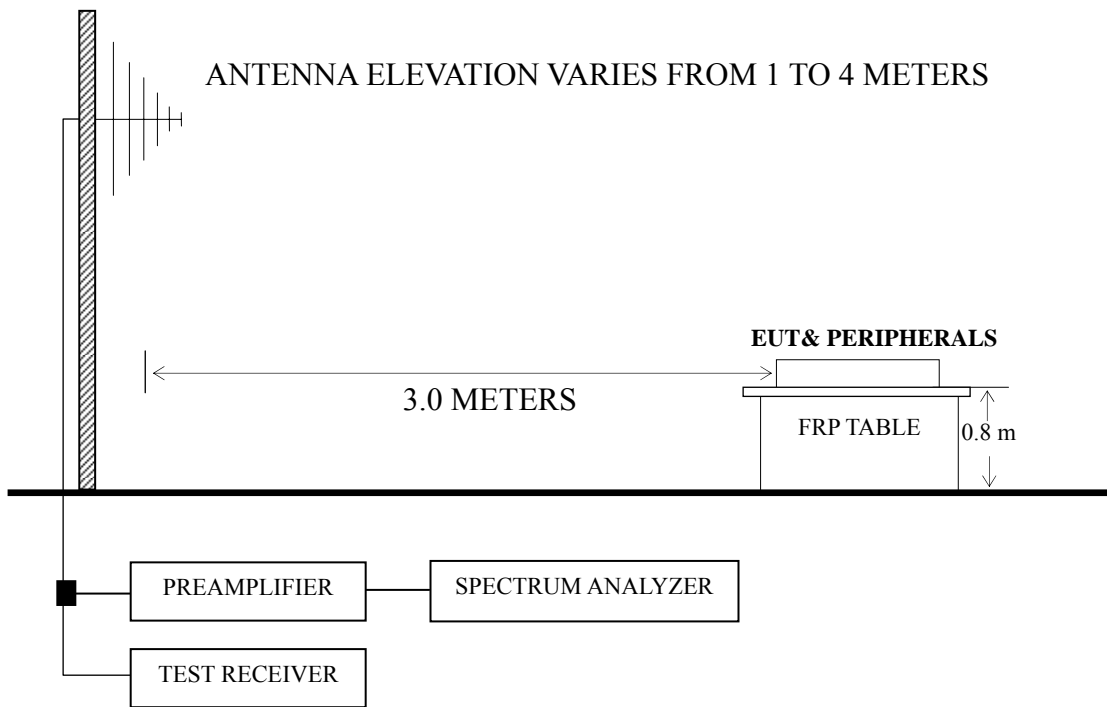
### 4.2 Block Diagram of Test Setup

#### 4.2.1 EUT and Peripherals



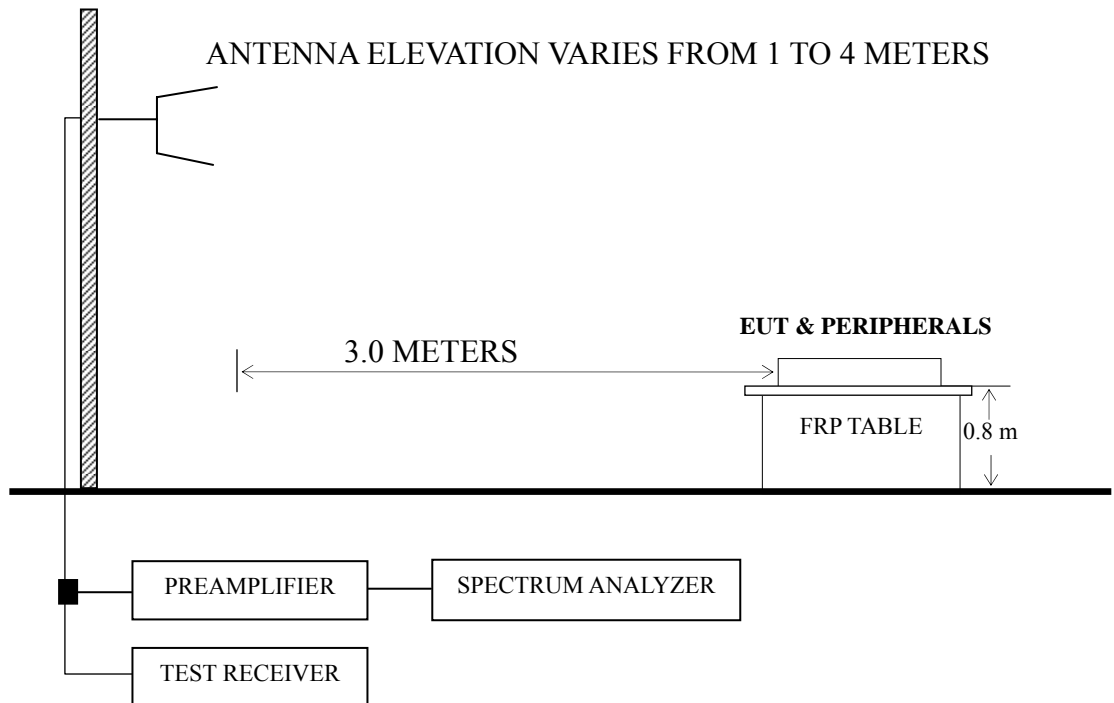
### 4.2.2 Radiated emission test setup

#### 4.2.2.1 Below 1GHz



■ : 50 ohm Coaxial Switch

#### 4.2.2.2 Above 1GHz



■ : 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 or Horn 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 ESCI was set at 120 kHz 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 24 GHz was checked for maximum resolution 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	P23 – P24
HDMI 1024*768@60Hz	P25
D-Sub 800*600@60Hz	P26
D-Sub 640*480@60Hz	P27
USB Play	P28
LAN	P29

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

NOTE 2 – All readings are Quasi-Peak values below or equal to 1GHz, Peak and Average values above 1GHz.

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 900.090 MHz with corrected signal level of 43.52 dB ( $\mu\text{V}/\text{m}$ ) (limit is 46.00 dB ( $\mu\text{V}/\text{m}$ )), when the antenna was 2.00 m height and the turntable was at 260°. The worst emission at vertical polarization was detected at 817.490 MHz with corrected signal level of 43.93 dB ( $\mu\text{V}/\text{m}$ ) (limit is 46.00 dB ( $\mu\text{V}/\text{m}$ )), when the antenna was 2.00 m height and the turntable was at 110°.

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K610GWUS Humidity : 60%RH

Test Mode : D-Sub 1024\*768@60Hz Date of Test : Dec 28, 2012

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	42.610	18.04	11.30	0.79	--	30.13	40.00	9.87	QP
	148.340	27.49	10.15	1.63	--	39.27	43.50	4.23	
	332.640	15.51	14.53	2.60	--	32.64	46.00	13.36	
	594.540	20.70	18.50	3.20	--	42.40	46.00	3.60	
	816.670	17.93	20.53	3.80	--	42.26	46.00	3.74	
	<b>900.090</b>	<b>19.67</b>	<b>19.30</b>	<b>4.55</b>	--	<b>43.52</b>	<b>46.00</b>	<b>2.48</b>	
	1120.000	53.08	25.42	4.50	37.17	45.83	70.00	24.17	PK
	1370.000	50.89	26.60	4.54	36.61	45.42	70.00	24.58	
	1600.000	51.11	27.08	4.56	36.10	46.65	70.00	23.35	
	2060.000	49.98	27.66	4.90	35.58	46.96	70.00	23.04	
	2415.000	47.96	29.30	5.39	35.49	47.16	70.00	22.84	
	3175.000	46.93	31.97	6.30	35.24	49.96	74.00	24.04	
	1120.000	44.08	25.42	4.50	37.17	36.83	50.00	13.17	AV
	1370.000	39.89	26.60	4.54	36.61	34.42	50.00	15.58	
	1600.000	39.11	27.08	4.56	36.10	34.65	50.00	15.35	
	2060.000	37.98	27.66	4.90	35.58	34.96	50.00	15.04	
	2415.000	39.96	29.30	5.39	35.49	39.16	50.00	10.84	
	3175.000	38.93	31.97	6.30	35.24	41.96	54.00	12.04	

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K610GWUS Humidity : 60%RH

Test Mode : D-Sub 1024\*768@60Hz Date of Test : Dec 28, 2012

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	87.230	23.30	7.74	1.18	--	32.22	40.00	7.78	QP
	153.190	26.72	9.79	1.65	--	38.16	43.50	5.34	
	298.690	25.30	12.52	2.52	--	40.34	46.00	5.66	
	446.130	19.16	17.07	2.82	--	39.05	46.00	6.95	
	669.230	20.18	19.45	3.44	--	43.07	46.00	2.93	
	<b>817.490</b>	<b>19.60</b>	<b>20.53</b>	<b>3.80</b>	--	<b>43.93</b>	<b>46.00</b>	<b>2.07</b>	
	1335.000	52.24	26.47	4.53	36.70	46.54	70.00	23.46	PK
	1765.000	51.40	27.23	4.58	35.86	47.35	70.00	22.65	
	2260.000	47.52	28.63	5.18	35.53	45.80	70.00	24.20	
	3090.000	44.88	31.94	6.21	35.27	47.76	74.00	26.24	
	3640.000	46.01	32.45	7.14	35.15	50.45	74.00	23.55	
	4105.000	44.79	33.41	7.56	35.09	50.67	74.00	23.33	
	1335.000	44.24	26.47	4.53	36.70	38.54	50.00	11.46	AV
	1765.000	39.40	27.23	4.58	35.86	35.35	50.00	14.65	
	2260.000	35.52	28.63	5.18	35.53	33.80	50.00	16.20	
	3090.000	33.88	31.94	6.21	35.27	36.76	54.00	17.24	
	3640.000	39.01	32.45	7.14	35.15	43.45	54.00	10.55	
	4105.000	36.79	33.41	7.56	35.09	42.67	54.00	11.33	

TEST ENGINEER: RAVEN JIN



EUT : LED LCD TV Temperature : 22°C  
 Model No. : LTDN50K610GWUS Humidity : 60%RH  
 Test Mode : HDMI 1024\*768@60Hz Date of Test : Dec 28, 2012

Polarization	Frequency (MHz)	Meter Reading dB ( $\mu$ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB ( $\mu$ V/m)	Limits dB ( $\mu$ V/m)	Margin (dB)
Horizontal	87.230	26.30	7.74	1.18	35.22	40.00	4.78
	108.570	25.65	11.72	1.40	38.77	43.50	4.73
	152.220	25.66	9.85	1.65	37.16	43.50	6.34
	288.990	24.14	12.73	2.46	39.33	46.00	6.67
	552.830	17.42	19.30	3.10	39.82	46.00	6.18
	<b>823.460</b>	<b>17.64</b>	<b>20.63</b>	<b>3.80</b>	<b>42.07</b>	<b>46.00</b>	<b>3.93</b>
Vertical	53.280	24.47	6.46	0.86	31.79	40.00	8.21
	108.570	23.50	11.72	1.40	36.62	43.50	6.88
	282.200	23.31	12.35	2.43	38.09	46.00	7.91
	714.820	16.13	19.55	3.56	39.24	46.00	6.76
	773.020	18.77	18.17	3.60	40.54	46.00	5.46
	<b>817.640</b>	<b>16.85</b>	<b>20.53</b>	<b>3.80</b>	<b>41.18</b>	<b>46.00</b>	<b>4.82</b>

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K610GWUS Humidity : 60%RH

Test Mode : D-Sub 800\*600@60Hz Date of Test : Dec 28, 2012

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	41.640	17.78	11.88	0.79	30.45	40.00	9.55
	56.190	23.23	6.00	0.87	30.10	40.00	9.90
	259.890	17.21	12.90	2.27	32.38	46.00	13.62
	449.040	19.02	16.98	2.84	38.84	46.00	7.16
	710.940	14.97	19.68	3.55	38.20	46.00	7.80
	<b>895.240</b>	<b>15.89</b>	<b>19.47</b>	<b>4.43</b>	<b>39.79</b>	<b>46.00</b>	<b>6.21</b>
Vertical	87.230	22.53	7.74	1.18	31.45	40.00	8.55
	<b>150.280</b>	<b>27.46</b>	<b>10.04</b>	<b>1.64</b>	<b>39.14</b>	<b>43.50</b>	<b>4.36</b>
	300.630	23.55	12.60	2.55	38.70	46.00	7.30
	449.040	18.51	16.98	2.84	38.33	46.00	7.67
	596.480	19.40	18.40	3.20	41.00	46.00	5.00
	969.930	16.25	20.80	4.78	41.83	54.00	12.17

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K610GWUS Humidity : 60%RH

Test Mode : D-Sub 640\*480@60Hz Date of Test : Dec 28, 2012

Polarization	Frequency (MHz)	Meter Reading dB ( $\mu$ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB ( $\mu$ V/m)	Limits dB ( $\mu$ V/m)	Margin (dB)
Horizontal	87.230	22.57	7.74	1.18	31.49	40.00	8.51
	148.340	27.66	10.15	1.63	39.44	43.50	4.06
	298.690	25.00	12.52	2.52	40.04	46.00	5.96
	446.130	20.72	17.07	2.82	40.61	46.00	5.39
	<b>594.540</b>	<b>20.95</b>	<b>18.50</b>	<b>3.20</b>	<b>42.65</b>	<b>46.00</b>	<b>3.35</b>
	817.640	18.09	20.53	3.80	42.42	46.00	3.58
Vertical	36.790	14.33	14.92	0.74	29.99	40.00	10.01
	<b>148.340</b>	<b>26.96</b>	<b>10.15</b>	<b>1.63</b>	<b>38.74</b>	<b>43.50</b>	<b>4.76</b>
	298.690	17.83	12.52	2.52	32.87	46.00	13.13
	431.580	12.53	17.55	2.78	32.86	46.00	13.14
	594.540	17.29	18.50	3.20	38.99	46.00	7.01
	890.390	14.04	19.80	4.43	38.27	46.00	7.73

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K610GWUS Humidity : 60%RH

Test Mode : USB Play Date of Test : Dec 28, 2012

Polarization	Frequency (MHz)	Meter Reading dB ( $\mu$ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB ( $\mu$ V/m)	Limits dB ( $\mu$ V/m)	Margin (dB)
Horizontal	80.440	19.46	6.84	1.08	27.38	40.00	12.62
	152.220	24.24	9.85	1.65	35.74	43.50	7.76
	174.530	22.91	8.31	1.80	33.02	43.50	10.48
	284.140	19.07	12.27	2.43	33.77	46.00	12.23
	528.580	19.52	18.38	3.05	40.95	46.00	5.05
	<b>817.640</b>	<b>18.81</b>	<b>20.53</b>	<b>3.80</b>	<b>43.14</b>	<b>46.00</b>	<b>2.86</b>
Vertical	36.790	10.73	14.92	0.74	26.39	40.00	13.61
	<b>148.340</b>	<b>27.67</b>	<b>10.15</b>	<b>1.63</b>	<b>39.45</b>	<b>43.50</b>	<b>4.05</b>
	446.130	10.00	17.07	2.82	29.89	46.00	16.11
	594.540	16.70	18.50	3.20	38.40	46.00	7.60
	816.670	13.93	20.53	3.80	38.26	46.00	7.74
	900.090	15.67	19.30	4.55	39.52	46.00	6.48

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K610GWUS Humidity : 60%RH

Test Mode : LAN Date of Test : Dec 28, 2012

Polarization	Frequency (MHz)	Meter Reading dB ( $\mu$ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB ( $\mu$ V/m)	Limits dB ( $\mu$ V/m)	Margin (dB)
Horizontal	87.230	19.12	7.74	1.18	28.04	40.00	11.96
	153.190	20.33	9.79	1.65	31.77	43.50	11.73
	218.180	21.94	7.95	2.04	31.93	46.00	14.07
	446.130	15.58	17.07	2.82	35.47	46.00	10.53
	594.540	16.95	18.50	3.20	38.65	46.00	7.35
	<b>817.640</b>	<b>14.72</b>	<b>20.53</b>	<b>3.80</b>	<b>39.05</b>	<b>46.00</b>	<b>6.95</b>
Vertical	48.430	16.33	7.98	0.84	25.15	40.00	14.85
	<b>153.190</b>	<b>27.76</b>	<b>9.79</b>	<b>1.65</b>	<b>39.20</b>	<b>43.50</b>	<b>4.30</b>
	218.180	22.71	7.95	2.04	32.70	46.00	13.30
	446.130	21.35	17.07	2.82	41.24	46.00	4.76
	599.390	14.71	18.30	3.22	36.23	46.00	9.77
	672.140	12.94	19.60	3.44	35.98	46.00	10.02

TEST ENGINEER: RAVEN JIN

## 5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Ferrite Core	ZCAT2132-1130\ROH	FEELUX	See Internal Photos Figure 21
		Rui Feng Electronic Co., Ltd.	
		Hai An Magnetic Material No.2 Factory	
		JIANGSU LETTALL ELECTRONICS CO., LTD.	
Gasket	35X0.7X41mm\VGA\ROH	Qingdao Joinset S&T Co., Ltd.	See Internal Photos Figure 22

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.