

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

LED LCD TV

Model No.	Brand
50K610GWN	Hisense

FCC ID : W9HLCDF0018

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

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Report No. : ACI-F13060  
Date of Test : Apr 27 – May 22, 2013  
Date of Report : May 09, 2013

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## TEST REPORT FOR FCC CERTIFICATE

Applicant : Hisense Electric Co., Ltd.  
 Manufacturer : Hisense Electric Co., Ltd.  
 Factory #1 : Hisense Electric Co., Ltd.  
 Factory #2 : Tatung Mexico S.A. de C.V.  
 EUT Description : LED LCD TV

Model No.	Brand	Power Supply
50K610GWN	Hisense	120V/60Hz

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 Sec.2.1) which was tested in 3m anechoic chamber Apr 27 – May 22, 2013 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.F13061, a Verification report.***

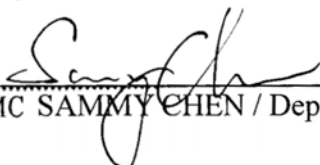
Date of Test : Apr 27 – May 22, 2013 Date of Report : May 09, 2013

Producer :   
 YENNY YU / Assistant

Review :   
 WENCY YANG / Supervisor



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:

Description of Test Item	Standard	Limits	Results
<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.	:	50K610GWN
Bread Name	:	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
Factory #1	:	Hisense Electric Co., Ltd. No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China
Factory #2	:	Tatung Mexico S.A. de C..V. Miguel Catalán 420, Parque Industrial Rio Bravo, Cd. Juarez, Chih., CP 32557
LCD Panel	:	Manufacturer : Hisense M/N : HE500HF-B52(1000)\PW1
Tuner	:	Manufacturer : XuGuang Tech.Co.,Ltd M/N : SDVT-10A/WF2\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 DIGITAL AUDIO OUT Port  
: Connected with DVD PLAYER #1
- (2) One LAN Port  
: Connected with PC

- (3) One HDMI4/ARC Port : Connected with DVD PLAYER #3
- (4) One HDMI3 Port : Connected with DVD PLAYER #2
- (5) One component of Audio/YPbPr Audio Port : Connected with DVD PLAYER #1
- (6) One component of Video/YPbPr Port : Connected with DVD PLAYER #1

Side Port:

- (1) One VGA Port : Connected with PC
- (2) One PC/DVI Audio In Port : Connected with PC
- (3) One ANT/CABLE IN Port : Connected with ATSC SG / TV SG
- (4) One HDMI2/DVI Port : Connected with PC
- (5) One HDMI1 Port : Connected with DVD PLAYER #1
- (6) One USB1 Port : Connected with U-Disk#1
- (7) One USB2 Port : Connected with U-Disk#2
- (8) One USB3 Port : Connected with U-Disk#3
- (9) One AUDIO OUT Port : Connected with SPEAKER

## 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 : 1406  
Serial Number : 0200702302609  
Data Cable : Shielded, undetachable ,1.8m  
Certificate : CE/EMC, FCC DoC, VCCI, MIC, C-Tick,  
BSMI

### 2.2.4 Mouse

Manufacturer : Microsoft  
Model Number : 1405  
Serial Number : 0204603562213  
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 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

### 2.2.7 ATSC Signal Generator

Manufacturer : SENCORE  
Model Number : ATSC997  
Serial Number : 6790071

### 2.2.8 DVD PLAYER #1

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

### 2.2.9 DVD PLAYER #2

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

### 2.2.10 DVD PLAYER #3

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

### 2.2.11 SPEAKER

Model Number : FS-04  
Serial Number : 002

### 2.2.12 U-DISK\*3

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)

Radiated Emission Expanded Uncertainty (Above 1GHz):  
U= 4.50 dB (Horizontal)  
U= 4.16 dB (Vertical)



### 3 CONDUCTED EMISSION TEST

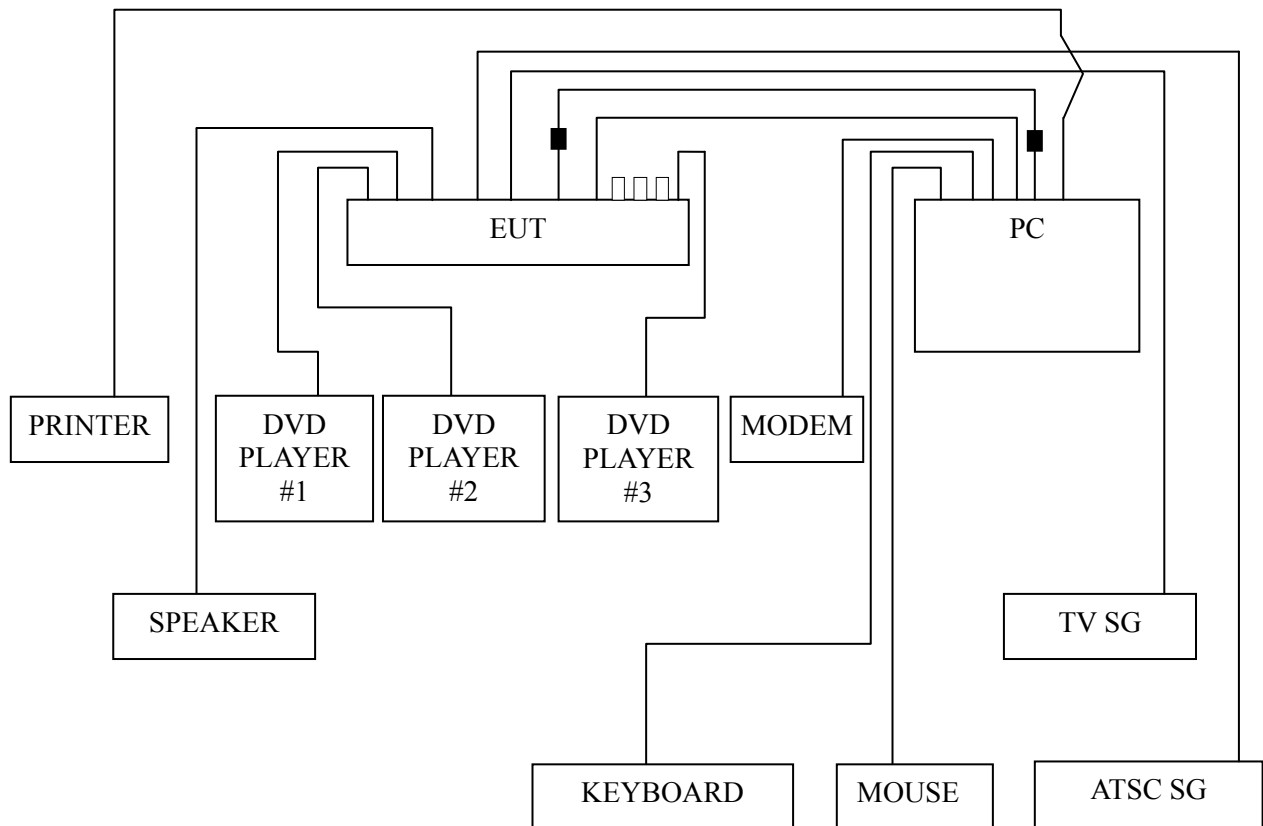
#### 3.1 Test Equipment

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 20, 2013	Mar 20, 2014
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Feb 25, 2013	Feb 25, 2014
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2013	Mar 20, 2014
4.	50 $\Omega$ Coaxial Switch	Anritsu	MP59B	6200426389	Mar 18, 2013	Sep 18, 2013
5.	50 $\Omega$ Terminator	Anritsu	BNC	001	Mar 20, 2013	Mar 20, 2014
6.	Software	Audix	E3	SET00200 9804M592	--	--

#### 3.2 Block Diagram of Test Setup

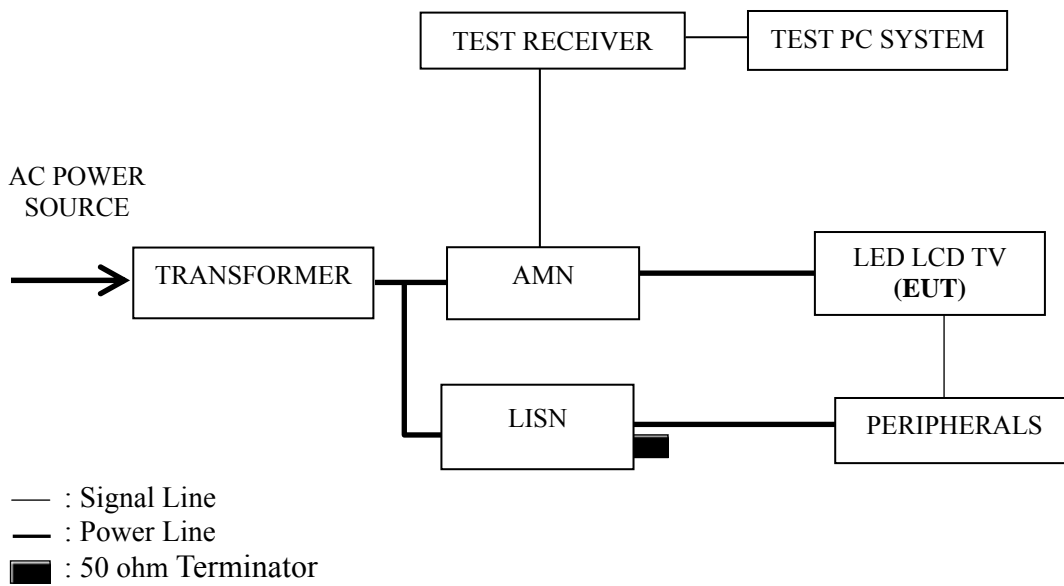
##### 3.2.1 EUT & Peripherals



■ : Ferrite core

□ : U-Disk

### 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 The RF function is enabled and communicating with another PC system.

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

3.5.7 In LAN mode, set the EUT play digital media through LAN port.

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

3.5.9 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 HDMI 1080p mode was tested and recorded in a FCC Verification test report (No. F13061).

NOTE 5 – The worst case is for USB Play test mode. The worst emission is detected at 4.070 MHz (Average Value) with corrected signal level of 29.87 dB ( $\mu$ V) (limit is 46.00 dB ( $\mu$ V)), when the Neutral of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22

Model No. : 50K610GWN Humidity : 48%RH

Test Mode : D-Sub 1024\*768@60Hz Date of Test : Apr 27, 2013

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	0.152	47.00	0.23	47.23	65.91	18.68	QP
	0.621	34.01	0.22	34.23	56.00	21.77	
	2.869	32.16	0.41	32.57	56.00	23.43	
	3.985	38.00	0.49	38.49	56.00	17.51	
	5.594	27.19	0.54	27.73	60.00	32.27	
	18.820	31.45	0.92	32.37	60.00	27.63	
	0.152	36.94	0.23	37.17	55.91	18.74	AV
	0.621	24.89	0.22	25.11	46.00	20.89	
	2.869	22.78	0.41	23.19	46.00	22.81	
	3.985	28.47	0.49	28.96	46.00	17.04	
	5.594	17.50	0.54	18.04	50.00	31.96	
	18.820	21.17	0.92	22.09	50.00	27.91	
Neutral	0.150	45.77	0.13	45.90	66.00	20.10	QP
	0.621	33.46	0.19	33.65	56.00	22.35	
	2.869	31.58	0.23	31.81	56.00	24.19	
	4.070	38.06	0.40	38.46	56.00	17.54	
	5.112	27.11	0.42	27.53	60.00	32.47	
	19.021	33.05	0.82	33.87	60.00	26.13	
	0.150	35.48	0.13	35.61	56.00	20.39	AV
	0.621	23.47	0.19	23.66	46.00	22.34	
	2.869	21.87	0.23	22.10	46.00	23.90	
	<b>4.070</b>	<b>28.64</b>	<b>0.40</b>	<b>29.04</b>	<b>46.00</b>	<b>16.96</b>	
	5.112	17.59	0.42	18.01	50.00	31.99	
	19.021	23.16	0.82	23.98	50.00	26.02	

TEST ENGINEER: LVY LV

EUT : LED LCD TV Temperature : 22

Model No. : 50K610GWN Humidity : 48%RH

Test Mode : HDMI 1024\*768@60Hz Date of Test : Apr 27, 2013

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	0.152	46.96	0.23	47.19	65.91	18.72	QP
	0.621	33.39	0.22	33.61	56.00	22.39	
	2.931	31.98	0.41	32.39	56.00	23.61	
	4.114	38.76	0.49	39.25	56.00	16.75	
	5.333	25.64	0.52	26.16	60.00	33.84	
	14.364	32.13	0.84	32.97	60.00	27.03	
	0.152	36.90	0.23	37.13	55.91	18.78	AV
	0.621	23.87	0.22	24.09	46.00	21.91	
	2.931	21.70	0.41	22.11	46.00	23.89	
	<b>4.114</b>	<b>28.79</b>	<b>0.49</b>	<b>29.28</b>	<b>46.00</b>	<b>16.72</b>	
	5.333	15.96	0.52	16.48	50.00	33.52	
	14.364	22.17	0.84	23.01	50.00	26.99	
Neutral	0.150	45.55	0.13	45.68	66.00	20.32	QP
	0.614	33.86	0.19	34.05	56.00	21.95	
	2.931	30.16	0.23	30.39	56.00	25.61	
	4.114	38.67	0.40	39.07	56.00	16.93	
	6.352	26.63	0.54	27.17	60.00	32.83	
	18.820	32.22	0.81	33.03	60.00	26.97	
	0.150	35.28	0.13	35.41	56.00	20.59	AV
	0.614	23.17	0.19	23.36	46.00	22.64	
	2.931	20.17	0.23	20.40	46.00	25.60	
	4.114	28.42	0.40	28.82	46.00	17.18	
	6.352	16.80	0.54	17.34	50.00	32.66	
	18.820	22.17	0.81	22.98	50.00	27.02	

TEST ENGINEER: LVY LV

EUT : LED LCD TV Temperature : 22

Model No. : 50K610GWN Humidity : 48%RH

Test Mode : HDMI 800\*600@60Hz Date of Test : Apr 27, 2013

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	0.150	47.24	0.23	47.47	66.00	18.53	QP
	0.627	33.58	0.21	33.79	56.00	22.21	
	2.900	31.60	0.41	32.01	56.00	23.99	
	4.114	38.16	0.49	38.65	56.00	17.35	
	5.653	26.06	0.54	26.60	60.00	33.40	
	18.820	31.84	0.92	32.76	60.00	27.24	
	0.150	37.49	0.23	37.72	56.00	18.28	AV
	0.627	23.48	0.21	23.69	46.00	22.31	
	2.900	21.17	0.41	21.58	46.00	24.42	
	<b>4.114</b>	<b>28.67</b>	<b>0.49</b>	<b>29.16</b>	<b>46.00</b>	<b>16.84</b>	
	5.653	16.47	0.54	17.01	50.00	32.99	
	18.820	21.46	0.92	22.38	50.00	27.62	
Neutral	0.150	45.58	0.13	45.71	66.00	20.29	QP
	0.627	33.72	0.19	33.91	56.00	22.09	
	2.931	30.74	0.23	30.97	56.00	25.03	
	4.027	37.77	0.40	38.17	56.00	17.83	
	5.112	26.30	0.42	26.72	60.00	33.28	
	19.021	32.90	0.82	33.72	60.00	26.28	
	0.150	35.64	0.13	35.77	56.00	20.23	AV
	0.627	23.17	0.19	23.36	46.00	22.64	
	2.931	20.79	0.23	21.02	46.00	24.98	
	4.027	27.47	0.40	27.87	46.00	18.13	
	5.112	16.28	0.42	16.70	50.00	33.30	
	19.021	22.16	0.82	22.98	50.00	27.02	

TEST ENGINEER: LVY LV

EUT : LED LCD TV Temperature : 22

Model No. : 50K610GWN Humidity : 48%RH

Test Mode : HDMI 640\*480@60Hz Date of Test : Apr 27, 2013

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	0.150	47.24	0.23	47.47	66.00	18.53	QP
	0.627	33.78	0.21	33.99	56.00	22.01	
	2.931	31.97	0.41	32.38	56.00	23.62	
	4.114	37.46	0.49	37.95	56.00	18.05	
	5.362	26.68	0.52	27.20	60.00	32.80	
	14.364	32.36	0.84	33.20	60.00	26.80	
	0.150	37.18	0.23	37.41	56.00	18.59	AV
	0.627	23.18	0.21	23.39	46.00	22.61	
	2.931	21.92	0.41	22.33	46.00	23.67	
	4.114	27.63	0.49	28.12	46.00	17.88	
	5.362	16.47	0.52	16.99	50.00	33.01	
	14.364	22.46	0.84	23.30	50.00	26.70	
Neutral	0.152	45.19	0.13	45.32	65.91	20.59	QP
	0.627	33.87	0.19	34.06	56.00	21.94	
	2.794	30.64	0.21	30.85	56.00	25.15	
	<b>4.158</b>	<b>37.95</b>	<b>0.40</b>	<b>38.35</b>	<b>56.00</b>	<b>17.65</b>	
	5.653	27.21	0.46	27.67	60.00	32.33	
	18.426	32.75	0.81	33.56	60.00	26.44	
	0.152	35.18	0.13	35.31	55.91	20.60	AV
	0.627	23.94	0.19	24.13	46.00	21.87	
	2.794	20.74	0.21	20.95	46.00	25.05	
	4.158	27.48	0.40	27.88	46.00	18.12	
	5.653	17.48	0.46	17.94	50.00	32.06	
	18.426	22.64	0.81	23.45	50.00	26.55	

TEST ENGINEER: LVY LV



EUT : LED LCD TV Temperature : 22

Model No. : 50K610GWN Humidity : 48%RH

Test Mode : USB Play Date of Test : Apr 27, 2013

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	0.150	47.16	0.23	47.39	66.00	18.61	QP
	0.621	33.72	0.22	33.94	56.00	22.06	
	2.931	31.73	0.41	32.14	56.00	23.86	
	4.070	38.37	0.49	38.86	56.00	17.14	
	5.112	26.83	0.50	27.33	60.00	32.67	
	14.364	31.46	0.84	32.30	60.00	27.70	
	0.150	37.17	0.23	37.40	56.00	18.60	AV
	0.621	23.40	0.22	23.62	46.00	22.38	
	2.931	21.70	0.41	22.11	46.00	23.89	
	4.070	28.40	0.49	28.89	46.00	17.11	
	5.112	16.87	0.50	17.37	50.00	32.63	
	14.364	21.39	0.84	22.23	50.00	27.77	
Neutral	0.150	45.76	0.13	45.89	66.00	20.11	QP
	0.627	34.13	0.19	34.32	56.00	21.68	
	2.839	30.60	0.22	30.82	56.00	25.18	
	4.070	39.23	0.40	39.63	56.00	16.37	
	5.653	27.30	0.46	27.76	60.00	32.24	
	19.021	33.38	0.82	34.20	60.00	25.80	
	0.150	35.47	0.13	35.60	56.00	20.40	AV
	0.627	24.70	0.19	24.89	46.00	21.11	
	2.839	20.70	0.22	20.92	46.00	25.08	
	<b>4.070</b>	<b>29.47</b>	<b>0.40</b>	<b>29.87</b>	<b>46.00</b>	<b>16.13</b>	
	5.653	17.64	0.46	18.10	50.00	31.90	
	19.021	23.83	0.82	24.65	50.00	25.35	

TEST ENGINEER: LVY LV

EUT : LED LCD TV Temperature : 22

Model No. : 50K610GWN Humidity : 48%RH

Test Mode : LAN Date of Test : Apr 27, 2013

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	0.150	47.24	0.23	47.47	66.00	18.53	QP
	0.627	33.78	0.21	33.99	56.00	22.01	
	2.931	31.98	0.41	32.39	56.00	23.61	
	4.114	38.76	0.49	39.25	56.00	16.75	
	5.111	26.83	0.50	27.33	60.00	32.67	
	14.364	31.46	0.84	32.30	60.00	27.70	
	0.150	37.18	0.23	37.41	56.00	18.59	AV
	0.627	23.18	0.21	23.39	46.00	22.61	
	2.931	21.70	0.41	22.11	46.00	23.89	
	<b>4.114</b>	<b>28.79</b>	<b>0.49</b>	<b>29.28</b>	<b>46.00</b>	<b>16.72</b>	
	5.111	16.87	0.50	17.37	50.00	32.63	
	14.364	21.39	0.84	22.23	50.00	27.77	
Neutral	0.150	45.76	0.13	45.89	66.00	20.11	QP
	0.627	34.13	0.19	34.32	56.00	21.68	
	2.931	30.74	0.23	30.97	56.00	25.03	
	4.027	37.77	0.40	38.17	56.00	17.83	
	5.653	27.21	0.46	27.67	60.00	32.33	
	18.426	32.75	0.81	33.56	60.00	26.44	
	0.150	35.47	0.13	35.60	56.00	20.40	AV
	0.627	24.70	0.19	24.89	46.00	21.11	
	2.931	20.79	0.23	21.02	46.00	24.98	
	4.027	27.47	0.40	27.87	46.00	18.13	
	5.653	17.48	0.46	17.94	50.00	32.06	
	18.426	22.64	0.81	23.45	50.00	26.55	

TEST ENGINEER: LVY LV

## 4 RADIATED EMISSION TEST

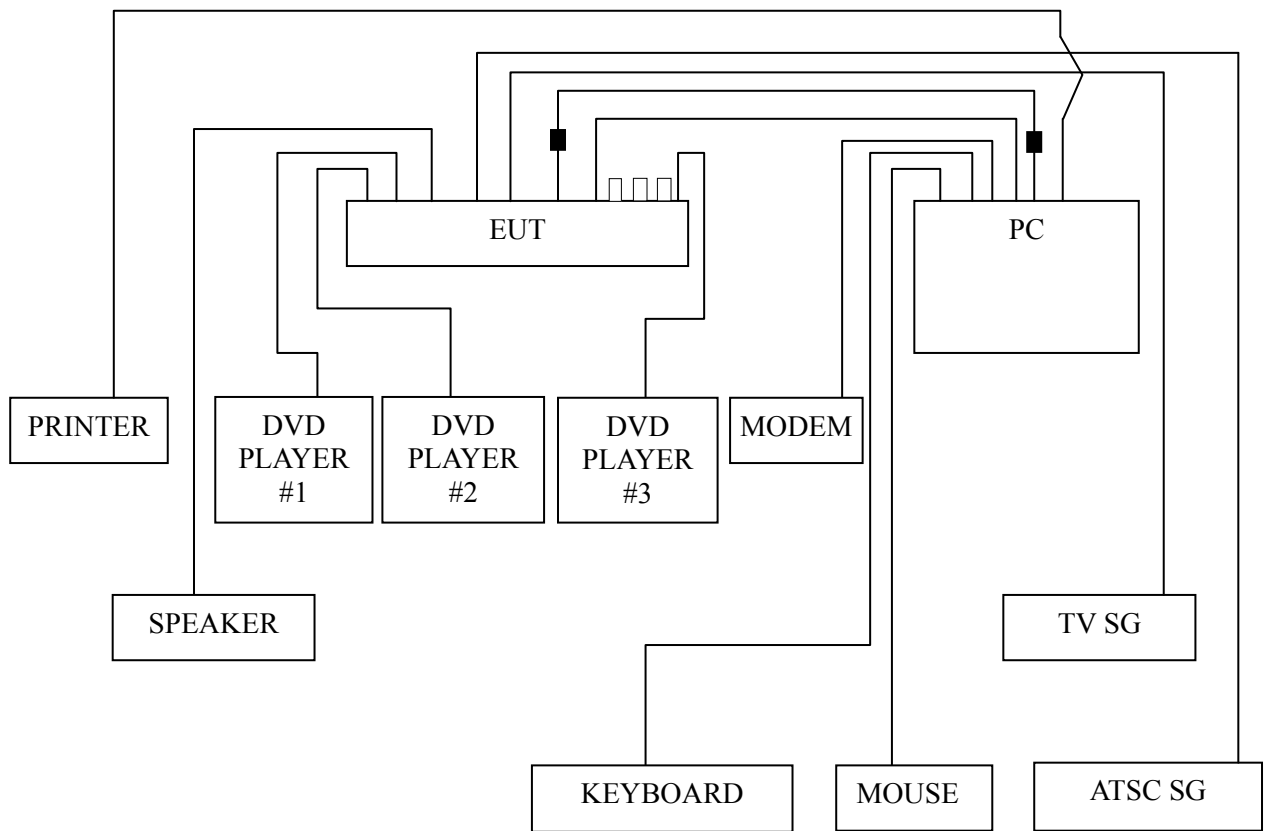
### 4.1 Test Equipment

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	Mar 18, 2013	Sep 18, 2013
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2013	Mar 20, 2014
4.	Bi-log Antenna	TESEQ	CBL6112D	23192	Nov 29, 2012	Nov 29, 2013
5.	Horn Antenna	EMCO	3115	9607-4878	May 11, 2013	May 11, 2014
6.	Spectrum	Agilent	E7405A	MY45106600	Dec 17, 2012	Dec 17, 2013
7.	50 Coaxial Switch	Anritsu	MP59B	6200426390	Mar 18, 2013	Sep 18, 2013
8.	Software	Audix	E3	SET00200 9912M295-2	--	--

### 4.2 Block Diagram of Test Setup

#### 4.2.1 EUT and Peripherals

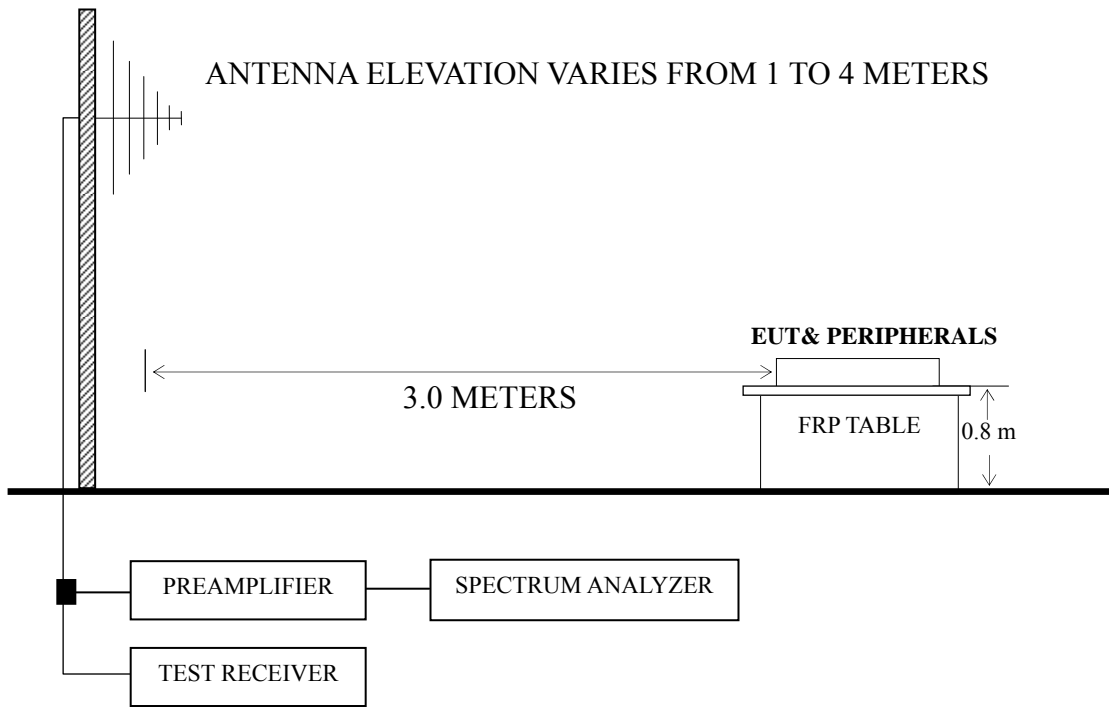


■ : Ferrite core

□ : U-Disk

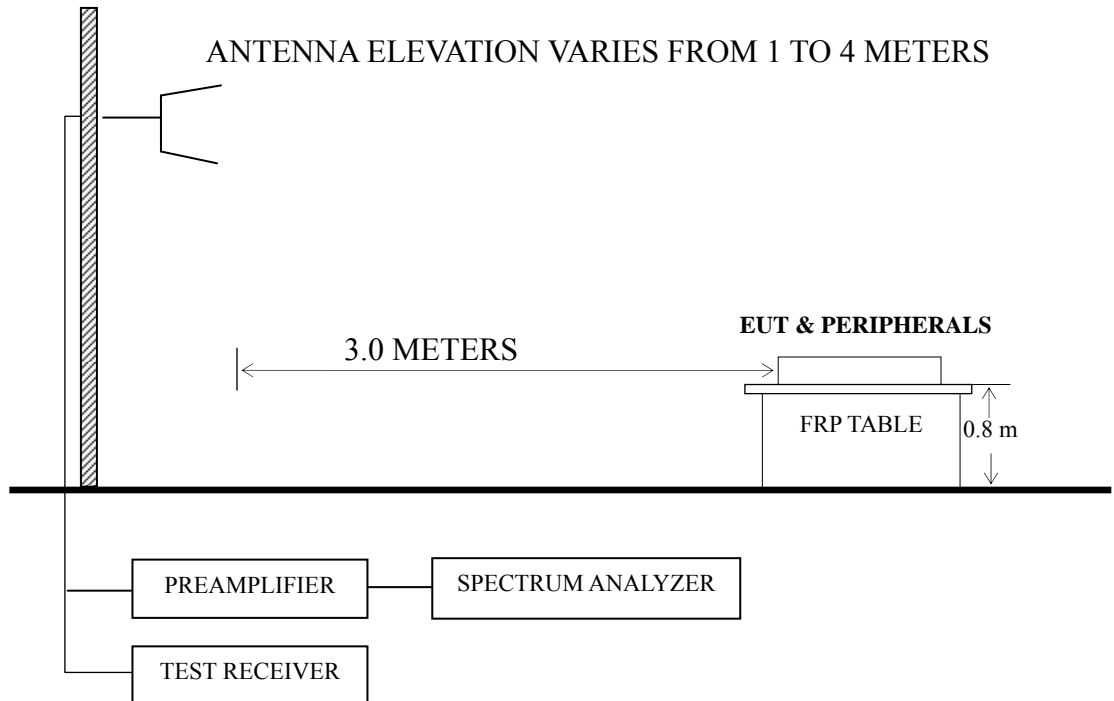
### 4.2.2 Radiated emission test setup

#### 4.2.2.1 Below 1GHz



■ : 50 ohm Coaxial Switch

#### 4.2.2.2 Above 1GHz



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

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

The frequency range from 1 GHz to 25 GHz (Up to 10<sup>th</sup> harmonics from fundamental frequency of the internal 2.4GHz RF module) was checked for worst test mode in 30 - 1000 MHz test.

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.( $< 1$ GHz)
- NOTE 2 – Emission Level = Antenna Factor + Cable Loss – Preamp Factor + Meter Reading.( $> 1$ GHz)
- NOTE 3 – All readings are Quasi-Peak values below or equal to 1GHz, Peak and average values above 1GHz
- NOTE 4 –  $0^\circ$  was the table front facing the antenna. Degree is calculated from  $0^\circ$  clockwise facing the antenna.
- NOTE 5 – The HDMI 1080p mode was tested and recorded in a FCC Verification test report (No. F13061).
- NOTE 6 – The worst case is for D-Sub 1024\*768@60Hz test mode. The worst emission at horizontal polarization was detected at 46.000 MHz with corrected signal level of 37.83 dB ( $\mu\text{V}/\text{m}$ ) (limit is 40.00 dB ( $\mu\text{V}/\text{m}$ )), when the antenna was 1.70 m height and the turntable was at  $250^\circ$ . The worst emission at vertical polarization was detected at 698.700 MHz with corrected signal level of 42.84 dB ( $\mu\text{V}/\text{m}$ ) (limit is 46.00 dB ( $\mu\text{V}/\text{m}$ )), when the antenna was 1.70 m height and the turntable was at  $135^\circ$ .

EUT : LED LCD TV Temperature : 22

Model No. : 50K610GWN Humidity : 60%RH

Test Mode : D-Sub 1024\*768@60Hz Date of Test : May 22, 2013

Polarization	Frequency (MHz)	Meter Reading dB ( $\mu$ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB ( $\mu$ V/m)	Limits dB ( $\mu$ V/m)	Margin (dB)	Remark
Horizontal	<b>46.000</b>	<b>28.00</b>	<b>9.00</b>	<b>0.83</b>	--	<b>37.83</b>	<b>40.00</b>	<b>2.17</b>	QP
	52.200	27.60	6.83	0.86	--	35.29	40.00	4.71	
	155.130	29.49	9.60	1.67	--	40.76	43.50	2.74	
	214.300	27.50	7.60	2.03	--	37.13	43.50	6.37	
	590.660	20.63	18.60	3.18	--	42.41	46.00	3.59	
	964.200	20.00	20.33	4.72	--	45.05	54.00	8.95	
	1045.000	50.21	25.08	5.24	38.10	42.43	74.00	31.57	PK
	1070.000	51.16	25.19	5.26	38.05	43.56	74.00	30.44	
	1110.000	48.89	25.37	5.29	37.97	41.58	74.00	32.42	
	1245.000	55.70	26.07	5.42	37.66	29.53	74.00	24.47	
	1670.000	39.66	27.14	6.03	36.63	36.20	74.00	37.80	
	1865.000	50.17	27.31	6.29	36.35	47.42	74.00	26.58	AV
	1045.000	42.26	25.08	5.24	38.10	34.48	54.00	19.52	
	1070.000	38.16	25.19	5.26	38.05	30.56	54.00	23.44	
	1110.000	37.27	25.37	5.29	37.97	29.96	54.00	24.04	
	1245.000	48.70	26.07	5.42	37.66	42.53	54.00	11.47	
1670.000	28.66	27.14	6.03	36.63	45.20	54.00	28.80		
1865.000	41.59	27.31	6.29	36.35	38.84	54.00	15.16		

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22

Model No. : 50K610GWN Humidity : 60%RH

Test Mode : D-Sub 1024\*768@60Hz Date of Test : May 22, 2013

Polarization	Frequency (MHz)	Meter Reading dB ( $\mu$ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB ( $\mu$ V/m)	Limits dB ( $\mu$ V/m)	Margin (dB)	Remark
Vertical	54.250	23.58	6.18	0.87	--	30.63	40.00	9.37	QP
	128.940	21.41	11.82	1.53	--	34.76	43.50	8.74	
	214.300	28.59	7.60	2.03	--	38.22	43.50	5.28	
	455.830	19.66	17.10	2.86	--	39.62	46.00	6.38	
	<b>698.700</b>	<b>19.00</b>	<b>20.30</b>	<b>3.54</b>	--	<b>42.84</b>	<b>46.00</b>	<b>3.16</b>	
	964.200	22.00	20.33	4.72	--	47.05	54.00	6.95	
	1050.000	45.58	25.11	5.24	38.10	37.83	74.00	36.17	PK
	1240.000	45.77	26.03	5.42	37.67	39.55	74.00	34.45	
	1400.000	43.61	26.70	5.59	37.24	38.66	74.00	35.34	
	1545.000	45.71	27.04	5.86	36.86	41.75	74.00	32.25	
	1665.000	44.35	27.14	6.03	36.64	40.88	74.00	33.12	
	1855.000	42.74	27.31	6.26	36.36	39.95	74.00	34.05	
	1050.000	32.37	25.11	5.24	38.10	34.62	54.00	29.38	AV
	1240.000	32.77	26.03	5.42	37.67	26.55	54.00	27.45	
	1400.000	36.59	26.70	5.59	37.24	31.64	54.00	22.36	
	1545.000	37.48	27.04	5.86	36.86	33.52	54.00	20.48	
1665.000	35.37	27.14	6.03	36.64	31.90	54.00	22.10		
1855.000	33.97	27.31	6.26	36.36	31.18	54.00	22.82		

TEST ENGINEER: RAVEN JIN



EUT : LED LCD TV Temperature : 22

Model No. : 50K610GWN Humidity : 60%RH

Test Mode : HDMI 1024\*768@60Hz Date of Test : May 22, 2013

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	132.820	21.17	11.45	1.56	34.18	43.50	9.32
	<b>191.990</b>	<b>29.21</b>	<b>8.00</b>	<b>1.91</b>	<b>39.12</b>	<b>43.50</b>	<b>4.38</b>
	365.620	18.33	14.90	2.64	35.87	46.00	10.13
	593.570	18.57	18.50	3.20	40.27	46.00	5.73
	699.300	17.40	20.30	3.54	41.24	46.00	4.76
	816.670	10.52	20.53	3.80	34.85	46.00	11.15
Vertical	<b>51.340</b>	<b>26.65</b>	<b>7.20</b>	<b>0.86</b>	<b>34.71</b>	<b>40.00</b>	<b>5.29</b>
	131.850	23.93	11.54	1.55	37.02	43.50	6.48
	153.190	26.51	9.79	1.65	37.95	43.50	5.55
	186.170	27.29	8.17	1.87	37.33	43.50	6.17
	445.160	11.09	17.15	2.82	31.06	46.00	14.94
	667.290	11.92	19.45	3.44	34.81	46.00	11.19

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22

Model No. : 50K610GWN Humidity : 60%RH

Test Mode : D-Sub 800\*600@60Hz Date of Test : May 22, 2013

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	<b>45.520</b>	<b>26.87</b>	<b>9.32</b>	<b>0.82</b>	<b>37.01</b>	<b>40.00</b>	<b>2.99</b>
	118.270	21.54	11.46	1.47	34.47	43.50	9.03
	162.890	24.89	8.85	1.73	35.47	43.50	8.03
	217.210	22.23	7.83	2.04	32.10	46.00	13.90
	445.160	15.77	17.15	2.82	35.74	46.00	10.26
Vertical	593.570	19.91	18.50	3.20	41.61	46.00	4.39
	52.310	18.81	6.83	0.86	26.50	40.00	13.50
	108.570	20.05	11.72	1.40	33.17	43.50	10.33
	<b>166.770</b>	<b>25.85</b>	<b>8.40</b>	<b>1.75</b>	<b>36.00</b>	<b>43.50</b>	<b>7.50</b>
	223.030	24.60	8.43	2.06	35.09	46.00	10.91
	371.440	18.67	14.85	2.66	36.18	46.00	9.82
	592.600	13.57	18.60	3.20	35.37	46.00	10.63

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22

Model No. : 50K610GWN Humidity : 60%RH

Test Mode : D-Sub 640\*480@60Hz Date of Test : May 22, 2013

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	45.520	19.71	9.32	0.82	29.85	40.00	10.15
	110.510	22.16	11.87	1.41	35.44	43.50	8.06
	216.240	26.23	7.72	2.03	35.98	46.00	10.02
	455.830	15.85	17.10	2.86	35.81	46.00	10.19
	<b>551.860</b>	<b>16.55</b>	<b>19.40</b>	<b>3.10</b>	<b>39.05</b>	<b>46.00</b>	<b>6.95</b>
	890.390	13.05	19.80	4.43	37.28	46.00	8.72
Vertical	<b>120.210</b>	<b>20.31</b>	<b>11.41</b>	<b>1.48</b>	<b>33.20</b>	<b>43.50</b>	<b>10.30</b>
	158.040	20.79	9.60	1.70	32.09	43.50	11.41
	216.240	21.86	7.72	2.03	31.61	46.00	14.39
	260.860	15.65	12.90	2.27	30.82	46.00	15.18
	399.570	11.05	16.20	2.69	29.94	46.00	16.06
	504.330	13.37	18.25	3.00	34.62	46.00	11.38

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22

Model No. : 50K610GWN Humidity : 60%RH

Test Mode : USB Play Date of Test : May 22, 2013

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	45.520	13.71	9.32	0.82	23.85	40.00	16.15
	110.510	16.16	11.87	1.41	29.44	43.50	14.06
	129.910	14.62	11.90	1.53	28.05	43.50	15.45
	216.240	20.23	7.72	2.03	29.98	46.00	16.02
	455.830	9.85	17.10	2.86	29.81	46.00	16.19
	<b>699.300</b>	<b>13.35</b>	<b>20.30</b>	<b>3.54</b>	<b>37.19</b>	<b>46.00</b>	<b>8.81</b>
Vertical	<b>45.520</b>	<b>23.52</b>	<b>9.32</b>	<b>0.82</b>	<b>33.66</b>	<b>40.00</b>	<b>6.34</b>
	120.210	18.31	11.41	1.48	31.20	43.50	12.30
	158.040	19.79	9.60	1.70	31.09	43.50	12.41
	274.440	14.76	12.60	2.38	29.74	46.00	16.26
	415.090	11.11	16.75	2.73	30.59	46.00	15.41
	590.660	12.84	18.60	3.18	34.62	46.00	11.38

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22

Model No. : 50K610GWN Humidity : 60%RH

Test Mode : LAN Date of Test : May 22, 2013

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	<b>54.250</b>	<b>23.08</b>	<b>6.18</b>	<b>0.87</b>	<b>30.13</b>	<b>40.00</b>	<b>9.87</b>
	116.330	14.36	11.54	1.46	27.36	43.50	16.14
	371.440	7.39	14.85	2.66	24.90	46.00	21.10
	445.160	7.87	17.15	2.82	27.84	46.00	18.16
	710.940	8.03	19.68	3.55	31.26	46.00	14.74
	964.110	12.11	20.33	4.72	37.16	54.00	16.84
Vertical	160.950	19.20	9.40	1.72	30.32	43.50	13.18
	<b>214.300</b>	<b>21.59</b>	<b>7.60</b>	<b>2.03</b>	<b>31.22</b>	<b>43.50</b>	<b>12.28</b>
	312.270	11.56	13.45	2.57	27.58	46.00	18.42
	455.830	12.66	17.10	2.86	32.62	46.00	13.38
	591.630	9.41	18.60	3.20	31.21	46.00	14.79
	741.980	10.53	18.87	3.57	32.97	46.00	13.03

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	FEELUX	See Appendix Figure 24
		CHANNEL	
Gasket	35X0.7X41mm\VGA	Qingdao Joinset S&T Co., Ltd.	See Appendix Figure 25
		Shenzhen TAT Electronic Technology 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)**

## **6 DEVIATION TO TEST SPECIFICATIONS**

None.