

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

LED LCD TV

Model No.	Brand
LHD32K310HUS	Hisense

FCC ID : W9HLCDC0017

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

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Report No. : ACI-F12189  
Date of Test : Nov 08 – 15, 2012  
Date of Report : Nov 26, 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.	Brand	Power Supply
LHD32K310HUS	Hisense	120V/60Hz

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) which was tested in 3m anechoic chamber Nov 08 – 15, 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.

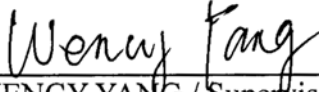
This report contains data that are not covered by the NVLAP accreditation.


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.F12190, a Verification report.***

Date of Test : Nov 08 – 15, 2012 Date of Report : Nov 26, 2012

Producer :   
KATHY WANG / Assistant

Review :   
WENCY YANG / Supervisor

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

Signatory :   
Authorized Signature EMC DIO YANG/ Assistant 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 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	:	<input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-product <input type="checkbox"/> Pro-type
Model No.	:	LHD32K310HUS
Brand	:	Hisense
Applicant	:	Hisense Electric Co., Ltd. No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China
Manufacturer	:	Hisense Electric Co., Ltd. No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China
LCD Panel	:	Manufacturer : Hisense M/N : BE315FH-E78
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:

Bottom Port:

- (1) One component of YPbPr Audio Port  
: Connected with DVD PLAYER
- (2) One component of YPbPr Port  
: Connected with DVD PLAYER
- (3) One HDMI1 Port  
: Connected with PC
- (4) One USB Port  
: Connected with U-Disk
- (5) One Headphone Port  
: Connected with Earphone
- (6) One RJ12 Port  
: Do not open to the customer

## Side Port:

- (7) One VGA Port : Connected with PC
- (8) One PC Audio Port : Connected with PC
- (9) One ANT Port : Connected with ATSC SG / TV SG
- (10) One HDMI2 Port : Connected with DVD PLAYER
- (11) One DIGITAL OUTPUT Port : Connected with PC
- (12) One AV In Port : Connected with DVD PLAYER

## 2.2 Peripherals

### 2.2.1 PC #1

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

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

## 2.2.10 U-DISK

Manufacturer : LG  
Model Number : 1GB

## 2.3 Description of Test Facility

Site Description (No.3 3m Chamber) : Sept. 17, 1998 file on  
Mar 26, 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 = 3.42dB

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

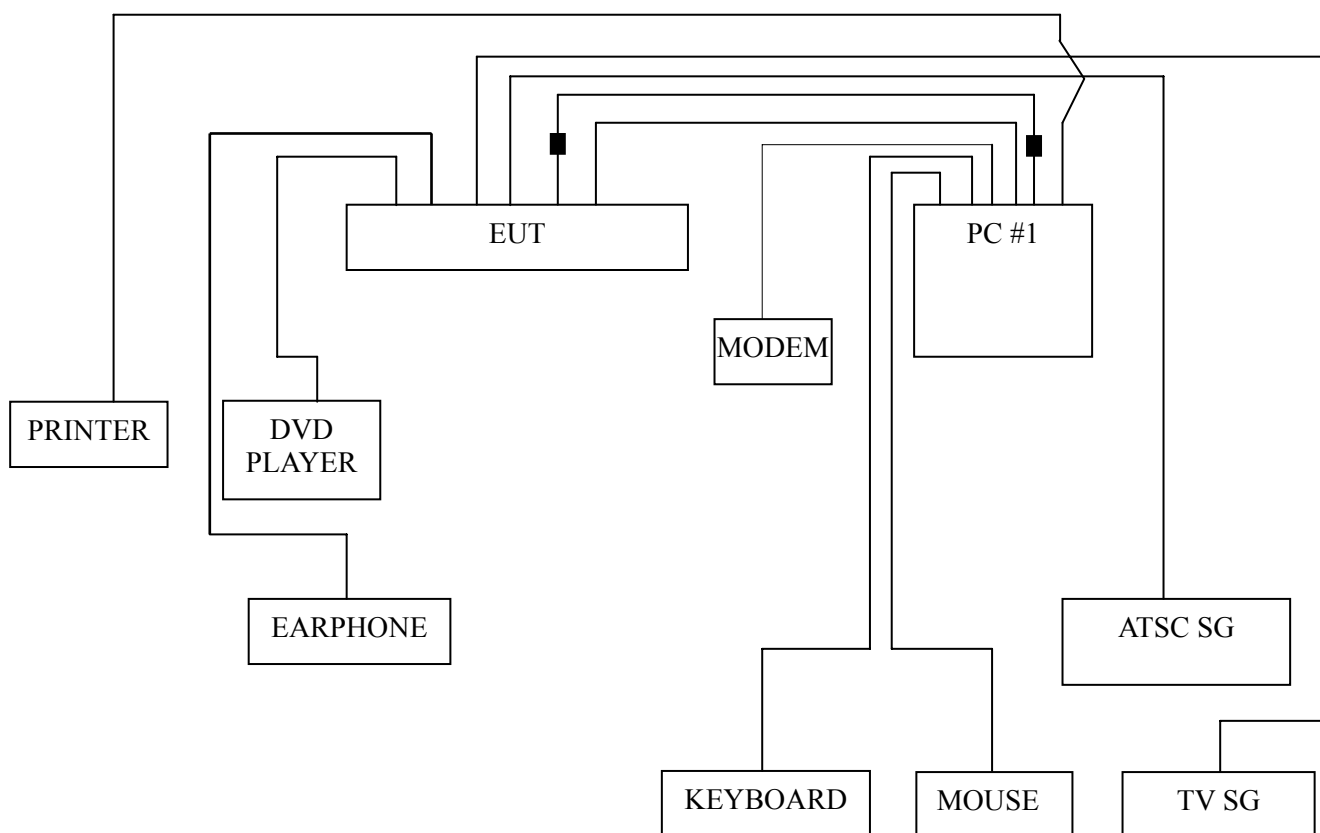
#### 3.1 Test Equipment

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 $\Omega$ 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	--	--

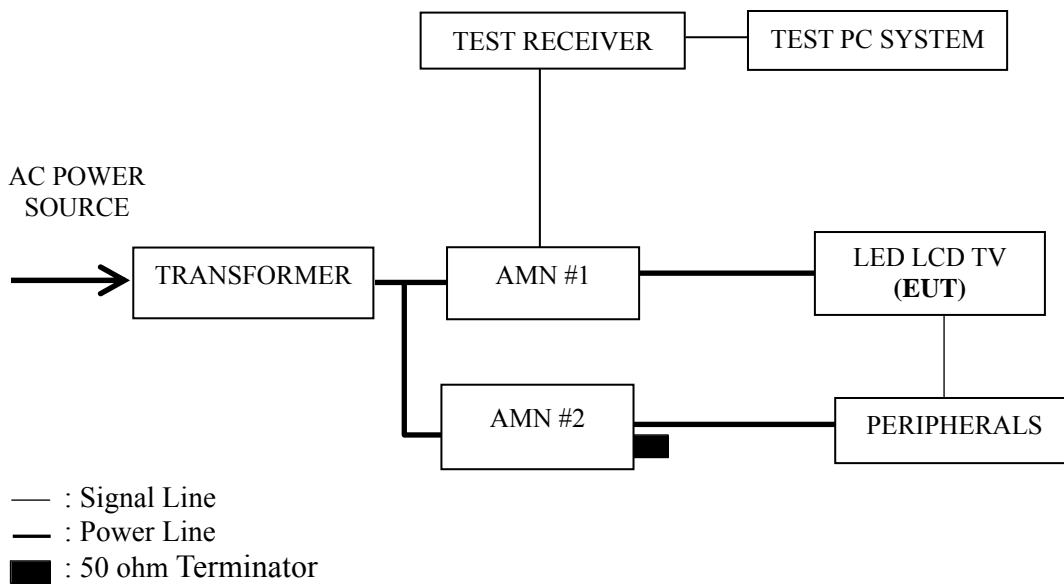
#### 3.2 Block Diagram of Test Setup

##### 3.2.1 EUT & Peripherals



■ : 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 ( $\mu$ 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 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 1024\*768@60Hz test mode. The worst emission is detected at 7.100 MHz (Average Value) with corrected signal level of 32.46 dB (μV) (limit is 50.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K310HUS Humidity : 48%RH

Test Mode : D-Sub 1024\*768@60Hz Date of Test : Nov 08, 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	0.168	40.64	0.24	40.88	65.08	24.20	QP
	0.452	33.90	0.35	34.25	56.85	22.60	
	0.611	33.40	0.23	33.63	56.00	22.37	
	1.210	30.50	0.33	30.83	56.00	25.17	
	7.100	41.59	0.66	42.25	60.00	17.75	
	24.529	32.11	1.16	33.27	60.00	26.73	
	0.168	30.60	0.24	30.84	55.08	24.24	AV
	0.452	23.90	0.35	24.25	46.85	22.60	
	0.611	23.80	0.23	24.03	46.00	21.97	
	1.210	20.80	0.33	21.13	46.00	24.87	
<b>7.100</b>	<b>31.80</b>	<b>0.66</b>	<b>32.46</b>	<b>50.00</b>	<b>17.54</b>		
24.529	22.81	1.16	23.97	50.00	26.03		
Neutral	0.164	41.05	0.13	41.18	65.25	24.07	QP
	0.456	36.13	0.17	36.30	56.76	20.46	
	0.604	34.44	0.18	34.62	56.00	21.38	
	1.210	30.38	0.21	30.59	56.00	25.41	
	7.100	40.29	0.59	40.88	60.00	19.12	
	24.790	31.10	1.06	32.16	60.00	27.84	
	0.164	31.05	0.13	31.18	55.25	24.07	AV
	0.456	26.70	0.17	26.87	46.76	19.89	
	0.604	24.81	0.18	24.99	46.00	21.01	
	1.210	20.81	0.21	21.02	46.00	24.98	
	7.100	30.20	0.59	30.79	50.00	19.21	
	24.790	21.79	1.06	22.85	50.00	27.15	

TEST ENGINEER: SAWEN LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K310HUS Humidity : 48%RH

Test Mode : HDMI 1024\*768@60Hz Date of Test : Nov 08, 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	0.166	40.70	0.24	40.94	65.16	24.22	QP	
	0.452	33.99	0.35	34.34	56.85	22.51		
	0.611	34.19	0.23	34.42	56.00	21.58		
	2.869	30.42	0.41	30.83	56.00	25.17		
	7.100	40.78	0.66	41.44	60.00	18.56		
	23.888	32.07	1.15	33.22	60.00	26.78		
	Line	0.166	30.50	0.24	30.74	55.16	24.42	AV
		0.452	23.90	0.35	24.25	46.85	22.60	
		0.611	24.50	0.23	24.73	46.00	21.27	
		2.869	20.40	0.41	20.81	46.00	25.19	
7.100		30.50	0.66	31.16	50.00	18.84		
23.888		22.50	1.15	23.65	50.00	26.35		
Neutral	0.152	41.95	0.13	42.08	65.91	23.83	QP	
	0.452	36.33	0.17	36.50	56.85	20.35		
	0.614	34.42	0.19	34.61	56.00	21.39		
	1.210	30.28	0.21	30.49	56.00	25.51		
	<b>7.100</b>	<b>41.74</b>	<b>0.59</b>	<b>42.33</b>	<b>60.00</b>	<b>17.67</b>		
	22.535	29.84	0.97	30.81	60.00	29.19		
	Neutral	0.152	31.50	0.13	31.63	55.91	24.28	AV
		0.452	24.90	0.17	25.07	46.85	21.78	
		0.614	24.40	0.19	24.59	46.00	21.41	
		1.210	20.31	0.21	20.52	46.00	25.48	
		7.100	31.50	0.59	32.09	50.00	17.91	
		22.535	19.79	0.97	20.76	50.00	29.24	

TEST ENGINEER: SAWEN LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K310HUS Humidity : 48%RH

Test Mode : D-Sub 800\*600@60Hz Date of Test : Nov 08, 2012

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.168	40.64	0.24	40.88	65.08	24.20	QP
	0.452	33.90	0.35	34.25	56.85	22.60	
	0.611	33.40	0.23	33.63	56.00	22.37	
	1.210	30.50	0.33	30.83	56.00	25.17	
	<b>7.100</b>	<b>41.59</b>	<b>0.66</b>	<b>42.25</b>	<b>60.00</b>	<b>17.75</b>	
	24.529	32.11	1.16	33.27	60.00	26.73	
	0.168	30.80	0.24	31.04	55.08	24.04	AV
	0.452	23.90	0.35	24.25	46.85	22.60	
	0.611	23.80	0.23	24.03	46.00	21.97	
	1.210	20.40	0.33	20.73	46.00	25.27	
	7.100	31.20	0.66	31.86	50.00	18.14	
	24.529	22.81	1.16	23.97	50.00	26.03	
Neutral	0.169	40.37	0.12	40.49	64.99	24.50	QP
	0.456	36.50	0.17	36.67	56.76	20.09	
	0.621	34.53	0.19	34.72	56.00	21.28	
	1.662	30.73	0.17	30.90	56.00	25.10	
	7.100	40.93	0.59	41.52	60.00	18.48	
	24.529	32.14	1.04	33.18	60.00	26.82	
	0.169	30.50	0.12	30.62	54.99	24.37	AV
	0.456	26.80	0.17	26.97	46.76	19.79	
	0.621	24.80	0.19	24.99	46.00	21.01	
	1.662	20.80	0.17	20.97	46.00	25.03	
	7.100	30.90	0.59	31.49	50.00	18.51	
	24.529	22.31	1.04	23.35	50.00	26.65	

TEST ENGINEER: SAWEN LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K310HUS Humidity : 48%RH

Test Mode : D-Sub 640\*480@60Hz Date of Test : Nov 08, 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	39.24	0.24	39.48	65.03	25.55	QP
	0.457	32.90	0.35	33.25	56.75	23.50	
	0.637	32.39	0.22	32.61	56.00	23.39	
	1.208	29.15	0.33	29.48	56.00	26.52	
	7.086	40.35	0.66	41.01	60.00	18.99	
	24.635	31.24	1.18	32.42	60.00	27.58	
	AV	0.169	29.15	0.24	29.39	55.03	25.64
		0.457	22.90	0.35	23.25	46.75	23.50
		0.637	22.79	0.22	23.01	46.00	22.99
		1.208	19.64	0.33	19.97	46.00	26.03
<b>7.086</b>		<b>31.55</b>	<b>0.66</b>	<b>32.21</b>	<b>50.00</b>	<b>17.79</b>	
24.635		21.53	1.18	22.71	50.00	27.29	
Neutral	0.164	41.05	0.13	41.18	65.25	24.07	QP
	0.456	36.13	0.17	36.30	56.76	20.46	
	0.604	34.44	0.18	34.62	56.00	21.38	
	1.210	30.38	0.21	30.59	56.00	25.41	
	7.100	40.29	0.59	40.88	60.00	19.12	
	24.790	31.10	1.06	32.16	60.00	27.84	
	AV	0.164	31.05	0.13	31.18	55.25	24.07
		0.456	26.70	0.17	26.87	46.76	19.89
		0.604	24.81	0.18	24.99	46.00	21.01
		1.210	20.81	0.21	21.02	46.00	24.98
		7.100	30.20	0.59	30.79	50.00	19.21
		24.790	21.79	1.06	22.85	50.00	27.15

TEST ENGINEER: SAWEN LI



EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K310HUS Humidity : 48%RH

Test Mode : USB Play Date of Test : Nov 08, 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	0.164	39.26	0.24	39.50	65.25	25.75	QP
	0.452	32.86	0.35	33.21	56.85	23.64	
	0.627	33.40	0.21	33.61	56.00	22.39	
	1.662	29.74	0.37	30.11	56.00	25.89	
	<b>7.100</b>	<b>39.78</b>	<b>0.66</b>	<b>40.44</b>	<b>60.00</b>	<b>19.56</b>	
	24.529	32.28	1.16	33.44	60.00	26.56	
	0.164	29.80	0.24	30.04	55.25	25.21	AV
	0.452	22.50	0.35	22.85	46.85	24.00	
	0.627	23.51	0.21	23.72	46.00	22.28	
	1.662	19.81	0.37	20.18	46.00	25.82	
	7.100	29.60	0.66	30.26	50.00	19.74	
	24.529	22.61	1.16	23.77	50.00	26.23	
Neutral	0.151	42.44	0.13	42.57	65.96	23.39	QP
	0.452	36.61	0.17	36.78	56.85	20.07	
	0.611	34.47	0.18	34.65	56.00	21.35	
	1.662	31.37	0.17	31.54	56.00	24.46	
	7.100	39.75	0.59	40.34	60.00	19.66	
	22.896	30.29	0.99	31.28	60.00	28.72	
	0.151	32.20	0.13	32.33	55.96	23.63	AV
	0.452	26.80	0.17	26.97	46.85	19.88	
	0.611	24.61	0.18	24.79	46.00	21.21	
	1.662	21.80	0.17	21.97	46.00	24.03	
	7.100	29.80	0.59	30.39	50.00	19.61	
	22.896	20.02	0.99	21.01	50.00	28.99	

TEST ENGINEER: SAWEN LI

## 4 RADIATED EMISSION TEST

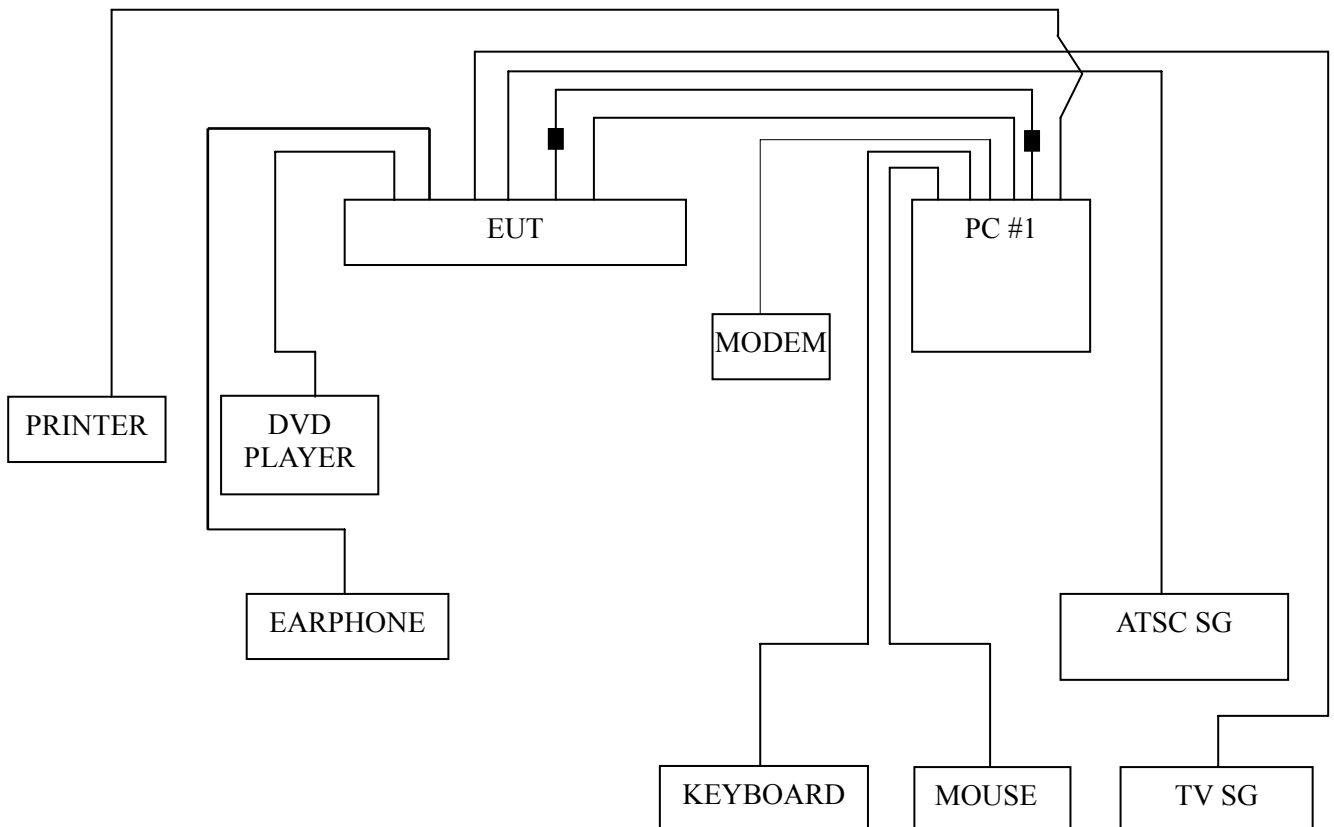
### 4.1 Test Equipment

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	Mar 22, 2012	Mar 22, 2013
2.	Preamplifier	Agilent	8447D	2944A10548	Sep 18, 2012	Mar 18, 2013
3.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 03, 2012	May 03, 2013
4.	Spectrum	Agilent	E7405A	MY45106600	Mar 22, 2012	Mar 22, 2013
5.	50 $\Omega$ Coaxial Switch	Anritsu	MP59B	6200426390	Sep 18, 2012	Mar 18, 2013
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

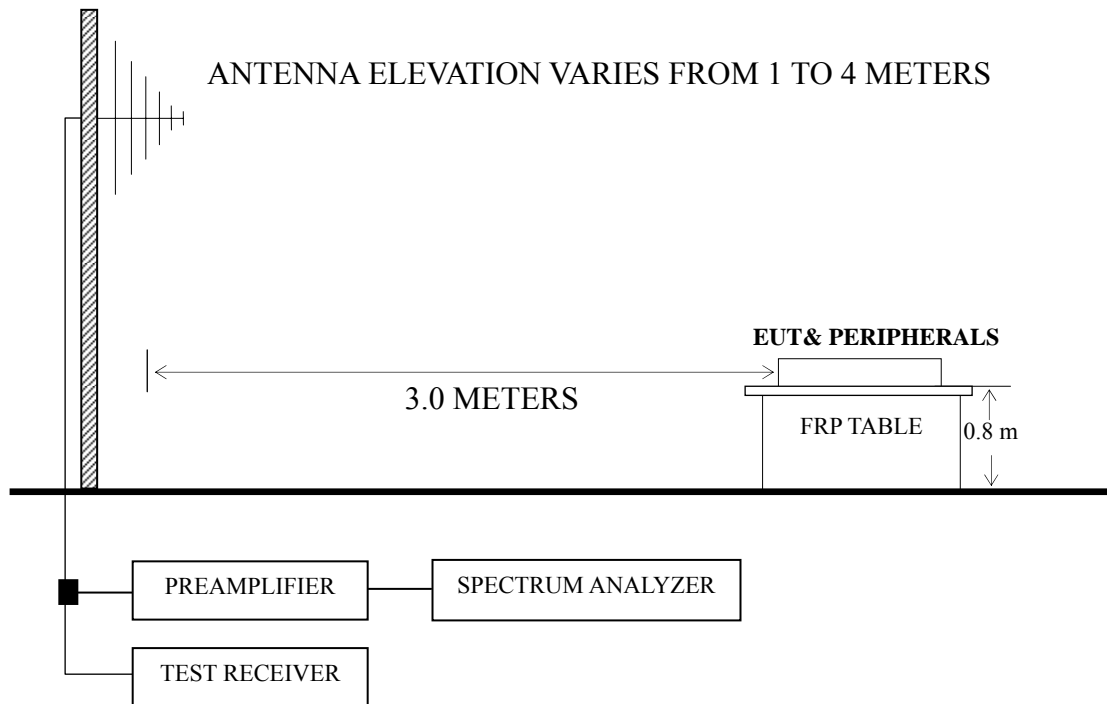
### 4.2 Block Diagram of Test Setup

#### 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	
		( $\mu\text{V/m}$ )	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 ESCI 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 640\*480@60Hz test mode. The worst emission at horizontal polarization was detected at 146.465 MHz with corrected signal level of 40.15 dB ( $\mu\text{V}/\text{m}$ ) (limit is 43.50 dB ( $\mu\text{V}/\text{m}$ )), when the antenna was 1.70 m height and the turntable was at 240°. The worst emission at vertical polarization was detected at 361.740 MHz with corrected signal level of 39.92 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 130°.

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K310HUS Humidity : 60%RH

Test Mode : D-Sub 1024\*768@60Hz Date of Test : Nov 20, 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	114.390	23.08	11.62	1.43	36.13	43.50	7.37
	164.830	26.60	8.40	1.75	36.75	43.50	6.75
	<b>237.580</b>	<b>27.79</b>	<b>10.67</b>	<b>2.15</b>	<b>40.61</b>	<b>46.00</b>	<b>5.39</b>
	293.398	24.11	12.67	2.49	39.27	46.00	6.73
	361.740	21.97	14.97	2.64	39.58	46.00	6.42
	717.730	14.45	19.42	3.56	37.43	46.00	8.57
Vertical	30.970	16.91	17.65	0.67	35.23	40.00	4.77
	<b>146.465</b>	<b>28.10</b>	<b>10.23</b>	<b>1.62</b>	<b>39.95</b>	<b>43.50</b>	<b>3.55</b>
	237.580	23.82	10.67	2.15	36.64	46.00	9.36
	303.540	19.61	12.80	2.56	34.97	46.00	11.03
	441.280	13.69	17.32	2.80	33.81	46.00	12.19
	528.580	14.78	18.38	3.05	36.21	46.00	9.79

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K310HUS Humidity : 60%RH

Test Mode : HDMI 1024\*768@60Hz Date of Test : Nov 20, 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	106.630	19.95	11.50	1.39	32.84	43.50	10.66
	164.830	23.60	8.40	1.75	33.75	43.50	9.75
	<b>293.840</b>	<b>23.89</b>	<b>12.67</b>	<b>2.49</b>	<b>39.05</b>	<b>46.00</b>	<b>6.95</b>
	361.740	18.97	14.97	2.64	36.58	46.00	9.42
	528.580	10.83	18.38	3.05	32.26	46.00	13.74
	717.730	11.45	19.42	3.56	34.43	46.00	11.57
Vertical	30.970	9.91	17.65	0.67	28.23	40.00	11.77
	114.390	20.27	11.62	1.43	33.32	43.50	10.18
	131.850	22.54	11.54	1.55	35.63	43.50	7.87
	<b>145.430</b>	<b>26.17</b>	<b>10.28</b>	<b>1.62</b>	<b>38.07</b>	<b>43.50</b>	<b>5.43</b>
	237.580	16.82	10.67	2.15	29.64	46.00	16.36
	303.540	12.61	12.80	2.56	27.97	46.00	18.03

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K310HUS Humidity : 60%RH

Test Mode : D-Sub 800\*600@60Hz Date of Test : Nov 20, 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	109.540	20.43	11.84	1.40	33.67	43.50	9.83
	133.790	23.05	11.22	1.56	35.83	43.50	7.67
	240.490	25.62	11.03	2.17	38.82	46.00	7.18
	<b>361.740</b>	<b>21.59</b>	<b>14.97</b>	<b>2.64</b>	<b>39.20</b>	<b>46.00</b>	<b>6.80</b>
	536.340	9.35	19.23	3.06	31.64	46.00	14.36
	678.930	13.32	19.00	3.48	35.80	46.00	10.20
Vertical	33.880	18.01	16.12	0.70	34.83	40.00	5.17
	<b>146.465</b>	<b>28.00</b>	<b>10.23</b>	<b>1.62</b>	<b>39.85</b>	<b>43.50</b>	<b>3.65</b>
	240.490	24.32	11.03	2.17	37.52	46.00	8.48
	298.690	20.78	12.52	2.52	35.82	46.00	10.18
	470.380	13.67	17.60	2.90	34.17	46.00	11.83
	678.930	11.54	19.00	3.48	34.02	46.00	11.98

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K310HUS Humidity : 60%RH

Test Mode : D-Sub 640\*480@60Hz Date of Test : Nov 20, 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	33.880	17.92	16.12	0.70	34.74	40.00	5.26
	<b>146.465</b>	<b>28.30</b>	<b>10.23</b>	<b>1.62</b>	<b>40.15</b>	<b>43.50</b>	<b>3.35</b>
	293.840	20.93	12.67	2.49	36.09	46.00	9.91
	473.290	13.37	17.73	2.90	34.00	46.00	12.00
	678.930	11.45	19.00	3.48	33.93	46.00	12.07
	872.930	12.24	20.03	4.20	36.47	46.00	9.53
Vertical	148.340	23.09	10.15	1.63	34.87	43.50	8.63
	196.840	23.63	8.20	1.94	33.77	43.50	9.73
	293.840	19.97	12.67	2.49	35.13	46.00	10.87
	<b>361.740</b>	<b>22.31</b>	<b>14.97</b>	<b>2.64</b>	<b>39.92</b>	<b>46.00</b>	<b>6.08</b>
	678.930	12.40	19.00	3.48	34.88	46.00	11.12
	895.240	14.18	19.47	4.43	38.08	46.00	7.92

TEST ENGINEER: RAVEN JIN



EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32K310HUS Humidity : 60%RH

Test Mode : USB Play Date of Test : Nov 20, 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	113.420	23.07	11.67	1.43	36.17	43.50	7.33
	<b>179.380</b>	<b>29.66</b>	<b>8.22</b>	<b>1.83</b>	<b>39.71</b>	<b>43.50</b>	<b>3.79</b>
	237.580	24.79	10.67	2.15	37.61	46.00	8.39
	293.840	22.89	12.67	2.49	38.05	46.00	7.95
	361.740	17.97	14.97	2.64	35.58	46.00	10.42
	717.730	13.45	19.42	3.56	36.43	46.00	9.57
Vertical	<b>133.790</b>	<b>25.41</b>	<b>11.22</b>	<b>1.56</b>	<b>38.19</b>	<b>43.50</b>	<b>5.31</b>
	237.580	21.82	10.67	2.15	34.64	46.00	11.36
	303.540	17.61	12.80	2.56	32.97	46.00	13.03
	473.290	14.95	17.73	2.90	35.58	46.00	10.42
	528.580	17.78	18.38	3.05	39.21	46.00	6.79
	678.930	12.64	19.00	3.48	35.12	46.00	10.88

TEST ENGINEER: RAVEN JIN

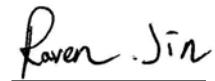
## 5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Ferrite Core	BNF-12\ZCAT1519-0830\ROH	FEELUX	See Internal Figure 17, 18
		Rui Feng Electronic Co., Ltd.	
		Hai An Magnetic Material No.2 Factory	
		JIANGSU LETTALL ELECTRONICS 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.