

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

LED LCD TV

Model No.	Brand
40H5B	Hisense
40H5B1	

FCC ID : W9HLCDD0047

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

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

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

Report No. : ACI-F15138  
Date of Test : Jul 11-24, 2015  
Date of Report : Jul 27, 2015

## TABLE OF CONTENTS

	Page
<b>1 SUMMARY OF STANDARDS AND RESULTS.....</b>	<b>4</b>
1.1 Description of Standards and Results.....	4
<b>2 GENERAL INFORMATION.....</b>	<b>5</b>
2.1 Description of Equipment Under Test.....	5
2.2 Peripherals.....	6
2.3 Description of Test Facility.....	8
2.4 Measurement Uncertainty.....	8
<b>3 CONDUCTED EMISSION TEST.....</b>	<b>9</b>
3.1 Test Equipment.....	9
3.2 Block Diagram of Test Setup.....	9
3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)].....	10
3.4 Test Configuration.....	10
3.5 Operating Condition of EUT.....	11
3.6 Test Procedures.....	11
3.7 Test Results.....	12
<b>4 RADIATED EMISSION TEST.....</b>	<b>18</b>
4.1 Test Equipment.....	18
4.2 Block Diagram of Test Setup.....	18
4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)].....	20
4.4 Test Configuration.....	20
4.5 Operating Condition of EUT.....	20
4.6 Test Procedures.....	20
4.7 Test Results.....	21
<b>5 DEVIATION TO TEST SPECIFICATIONS.....</b>	<b>28</b>
<b>6 DEBUG DESCRIPTION.....</b>	<b>29</b>

## 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
Refer to Sec2.1	Hisense	120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2014  
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 Jul 11-24, 2015 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.F15140, a Verification report.*

Date of Test : Jul 11-24, 2015 Date of Report : Jul 27, 2015

Producer : Alan He  
ALAN HE / Assistant

Review : Sammy Chen  
SAMMY CHEN / Manager

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

Signatory : Byron Kwo  
Authorized Signature EMC BYRON KWO / Assistant General 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 2014 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2014 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 checked="" type="checkbox"/> Production <input type="checkbox"/> Pre-product <input type="checkbox"/> Pro-type
Model No.	:	40H5B, 40H5B1
Note	:	The above models are all the same except for model name. 40H5B model was tested and recorded in the report.
Brand Name	:	Hisense
Applicant	:	Hisense Electric Co., Ltd. No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China
Manufacturer	:	Same as Applicant
Factory #1	:	Same as Applicant
Factory #2	:	Tatung Mexico S.A. de C.V. Miguel Catalán 420, Parque Industrial Rio Bravo, Cd. Juarez, Chih., CP 32557
LCD Panel	:	Manufacturer : Innolux M/N : V650DJ4
Max Resolution	:	1920*1080@60Hz
HDMI Cable*2 (Lab provide)	:	Shielded, Detachable, 1.00m, with two cores
Power Cord	:	Unshielded, Detachable, 1.80m, without core
AV Cable (Lab provide)	:	Unshielded, Detachable, 1.80m, without core
Ypbpr Cable (Lab provide)	:	Unshielded, Detachable, 2.00m, without core
Audio Cable (Lab provide)	:	Unshielded, Detachable, 1.50m, without core
LAN Cable (Lab provide)	:	Unshielded, Detachable, 1.50m, without core

**Remark:**

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

**Side Port:**

- (1) One HDMI2/ARC Port : Connected with DVD PLAYER
- (2) One HDMI1/DVI Port : Connected with PC
- (3) One DVI AUDIO IN Port : Connected with PC
- (4) One LAN Port : Connected with PC
- (5) One Digital Audio Out Port : Connected with DVD PLAYER
- (6) One ANT/CABLE IN Port : Connected with Antenna or ATSC SG / TV SG

**Back Port:**

- (1) One USB Port : Connected with U-Disk
- (2) One Audio out Port : Connected with Earphone
- (3) One component of YPbPr + Audio Port : Connected with DVD PLAYER

## 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; BSMI, 3C, MIC

### 2.2.2 Printer

Manufacturer : HP  
Model Number : C8060A  
Serial Number : CN3J19564X  
Data Cable : Unshielded, Undetachable, 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 : audio-technica  
Model Number : ATH-CKL200

### 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 : Kingmax  
Model Number : 8G  
Certificate : CE/EMC, FCC DoC, IC

## 2.3 Description of Test Facility

Site Description (No.3 3m Chamber)	:	Sept. 17, 1998 file on Jan.15, 2015 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
FCC registration Number	:	91789
NVLAP Lab Code	:	200371-0

## 2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty :	U = 2.8dB
Radiated Emission Expanded Uncertainty (30-200MHz):	
	U = 4.4dB (Horizontal)
	U = 4.4dB (Vertical)
Radiated Emission Expanded Uncertainty (200M-1GHz):	
	U = 4.4dB (Horizontal)
	U = 5.5dB (Vertical)
Radiated Emission Expanded Uncertainty (1GHz-6GHz):	
	U = 5.1dB



### 3 CONDUCTED EMISSION TEST

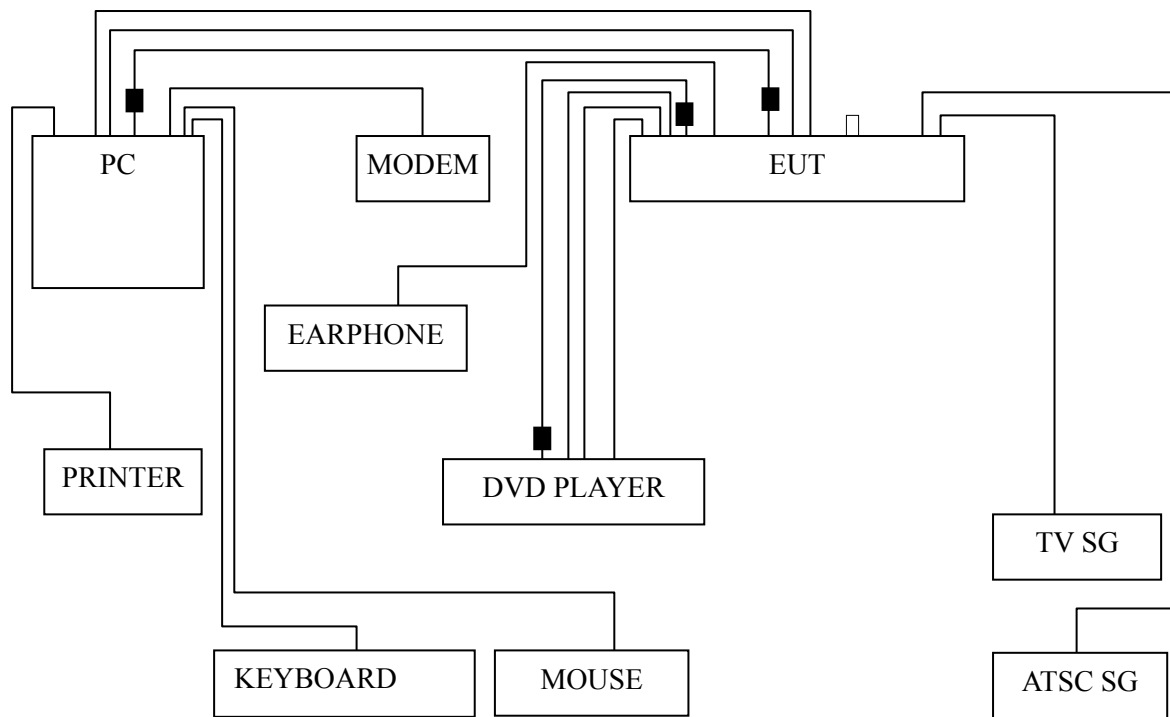
#### 3.1 Test Equipment

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

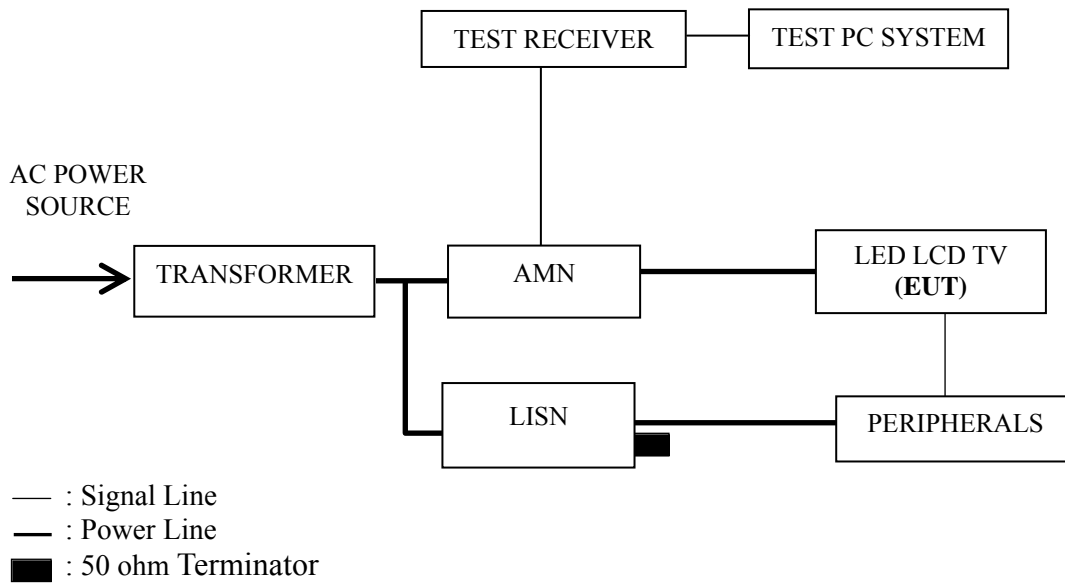
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Apr 27, 2015	Apr 26, 2016
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 25, 2015	Jun 24, 2016
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-5	Mar 20, 2015	Mar 19, 2016
4.	50Ω Coaxial Switch	ANRITSU	MP59B	6200426389	Mar 18, 2015	Sep 17, 2015
5.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2015	Mar 19, 2016
6.	Software	Audix	E3	6.111206	--	--

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

### 3.4 Test Configuration

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

### 3.5 Operating Condition of EUT

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

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

3.5.3 Set the contrast & brightness of EUT to maximum.

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

3.5.5 PC system sent the 1kHz audio signal to EUT through audio port, the EUT speak out 1kHz audio signal.

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

3.5.7 In LAN Play 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
HDMI 1920*1080@60Hz & 1kHz playing
HDMI 1280*1024@60Hz & 1kHz playing
HDMI 640*480@60Hz & 1kHz playing
USB Play
LAN 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
HDMI 1920*1080@60Hz & 1kHz playing	P13
HDMI 1280*1024@60Hz & 1kHz playing	P14
HDMI 640*480@60Hz & 1kHz playing	P15
USB Play	P16
LAN 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 HDMI 1280\*1024@60Hz & 1kHz Playing test mode. The worst emission is detected at 0.151 MHz (QP Value) with corrected signal level of 60.88 dB (μV) (limit is 65.96 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : 40H5B Humidity : 48%RH

Test Mode : HDMI 1920\*1080@60Hz Date of Test : Jul 11, 2015  
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	<b>0.152</b>	<b>49.89</b>	<b>10.59</b>	<b>60.48</b>	<b>65.91</b>	<b>5.43</b>	QP
	0.309	34.51	10.45	44.96	60.00	15.04	
	0.928	28.00	10.38	38.38	56.00	17.62	
	2.119	28.10	10.40	38.50	56.00	17.50	
	3.366	34.40	10.42	44.82	56.00	11.18	
	6.512	29.50	10.45	39.95	60.00	20.05	
	0.152	32.69	10.59	43.28	55.91	12.63	AV
	0.309	33.81	10.45	44.26	50.00	5.74	
	0.928	24.10	10.38	34.48	46.00	11.52	
	2.119	17.90	10.40	28.30	46.00	17.70	
	3.366	23.50	10.42	33.92	46.00	12.08	
	6.512	22.70	10.45	33.15	50.00	16.85	
Neutral	0.151	49.69	10.59	60.28	65.95	5.67	QP
	0.198	39.30	10.51	49.81	63.71	13.90	
	0.309	33.81	10.44	44.25	60.01	15.76	
	0.927	24.90	10.39	35.29	56.00	20.71	
	3.419	30.50	10.47	40.97	56.00	15.03	
	6.783	27.70	10.53	38.23	60.00	21.77	
	0.151	32.79	10.59	43.38	55.95	12.57	AV
	0.198	27.10	10.51	37.61	53.71	16.10	
	0.309	32.91	10.44	43.35	50.01	6.66	
	0.927	22.80	10.39	33.19	46.00	12.81	
	3.419	23.40	10.47	33.87	46.00	12.13	
	6.783	21.60	10.53	32.13	50.00	17.87	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 40H5B Humidity : 48%RH

Test Mode : HDMI 1280\*1024@60Hz Date of Test : Jul 11, 2015  
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	<b>0.151</b>	<b>50.29</b>	<b>10.59</b>	<b>60.88</b>	<b>65.96</b>	<b>5.08</b>	QP
	0.310	34.51	10.45	44.96	59.98	15.02	
	0.596	27.91	10.38	38.29	56.00	17.71	
	1.571	28.20	10.39	38.59	56.00	17.41	
	3.523	33.10	10.42	43.52	56.00	12.48	
	6.591	29.20	10.45	39.65	60.00	20.35	
	0.151	33.19	10.59	43.78	55.96	12.18	AV
	0.310	33.71	10.45	44.16	49.98	5.82	
	0.596	12.51	10.38	22.89	46.00	23.11	
	1.571	16.30	10.39	26.69	46.00	19.31	
	3.523	26.00	10.42	36.42	46.00	9.58	
	6.591	22.30	10.45	32.75	50.00	17.25	
Neutral	0.152	48.69	10.59	59.28	65.87	6.59	QP
	0.199	39.10	10.51	49.61	63.67	14.06	
	0.309	33.91	10.44	44.35	59.99	15.64	
	0.716	24.80	10.38	35.18	56.00	20.82	
	3.208	31.99	10.47	42.46	56.00	13.54	
	6.771	29.20	10.53	39.73	60.00	20.27	
	0.152	30.79	10.59	41.38	55.87	14.49	AV
	0.199	27.60	10.51	38.11	53.67	15.56	
	0.309	32.81	10.44	43.25	49.99	6.74	
	0.716	22.60	10.38	32.98	46.00	13.02	
	3.208	23.19	10.47	33.66	46.00	12.34	
	6.771	22.90	10.53	33.43	50.00	16.57	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 40H5B Humidity : 48%RH

Test Mode : HDMI 640\*480@60Hz & 1kHz Playing Date of Test : Jul 11, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	48.50	10.59	59.09	66.00	6.91	QP
	0.221	35.81	10.50	46.31	62.79	16.48	
	0.311	34.41	10.45	44.86	59.96	15.10	
	0.928	28.20	10.38	38.58	56.00	17.42	
	3.200	33.40	10.42	43.82	56.00	12.18	
	6.577	29.80	10.45	40.25	60.00	19.75	
	0.150	32.60	10.59	43.19	56.00	12.81	AV
	0.221	22.31	10.50	32.81	52.79	19.98	
	0.311	33.61	10.45	44.06	49.96	5.90	
	0.928	24.10	10.38	34.48	46.00	11.52	
	3.200	24.50	10.42	34.92	46.00	11.08	
	6.577	22.90	10.45	33.35	50.00	16.65	
Neutral	<b>0.150</b>	<b>49.90</b>	<b>10.59</b>	<b>60.49</b>	<b>65.98</b>	<b>5.49</b>	QP
	0.169	40.49	10.56	51.05	65.00	13.95	
	0.309	33.81	10.44	44.25	59.99	15.74	
	0.928	25.30	10.39	35.69	56.00	20.31	
	3.215	31.39	10.47	41.86	56.00	14.14	
	6.619	29.30	10.53	39.83	60.00	20.17	
	0.150	33.70	10.59	44.29	55.98	11.69	AV
	0.169	21.59	10.56	32.15	55.00	22.85	
	0.309	32.91	10.44	43.35	49.99	6.64	
	0.928	22.70	10.39	33.09	46.00	12.91	
	3.215	23.79	10.47	34.26	46.00	11.74	
	6.619	22.70	10.53	33.23	50.00	16.77	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 40H5B Humidity : 48%RH

Test Mode : USB Play Date of Test : Jul 11, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	<b>0.150</b>	<b>49.90</b>	<b>10.59</b>	<b>60.49</b>	<b>66.00</b>	<b>5.51</b>	QP
	0.310	34.31	10.45	44.76	59.97	15.21	
	0.928	28.40	10.38	38.78	56.00	17.22	
	2.322	28.90	10.41	39.31	56.00	16.69	
	3.667	32.81	10.42	43.23	56.00	12.77	
	6.198	29.80	10.45	40.25	60.00	19.75	
	0.150	33.10	10.59	43.69	56.00	12.31	AV
	0.310	33.61	10.45	44.06	49.97	5.91	
	0.928	24.00	10.38	34.38	46.00	11.62	
	2.322	19.40	10.41	29.81	46.00	16.19	
	3.667	25.21	10.42	35.63	46.00	10.37	
	6.198	22.00	10.45	32.45	50.00	17.55	
Neutral	0.152	48.09	10.59	58.68	65.91	7.23	QP
	0.196	39.00	10.51	49.51	63.77	14.26	
	0.312	33.71	10.44	44.15	59.93	15.78	
	1.794	25.10	10.42	35.52	56.00	20.48	
	3.353	31.30	10.47	41.77	56.00	14.23	
	6.627	28.60	10.53	39.13	60.00	20.87	
	0.152	32.89	10.59	43.48	55.91	12.43	AV
	0.196	26.70	10.51	37.21	53.77	16.56	
	0.312	32.81	10.44	43.25	49.93	6.68	
	1.794	15.30	10.42	25.72	46.00	20.28	
	3.353	22.60	10.47	33.07	46.00	12.93	
	6.627	22.40	10.53	32.93	50.00	17.07	

TEST ENGINEER: WENCY YANG



EUT : LED LCD TV Temperature : 22°C

Model No. : 40H5B Humidity : 48%RH

Test Mode : LAN Play Date of Test : Jul 11, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	49.29	10.59	59.88	65.98	6.10	QP
	0.193	37.40	10.53	47.93	63.89	15.96	
	0.308	33.61	10.45	44.06	60.04	15.98	
	1.566	28.30	10.39	38.69	56.00	17.31	
	3.216	33.00	10.42	43.42	56.00	12.58	
	6.226	29.60	10.45	40.05	60.00	19.95	
	0.150	32.69	10.59	43.28	55.98	12.70	AV
	0.193	24.20	10.53	34.73	53.89	19.16	
	0.308	32.71	10.45	43.16	50.04	6.88	
	1.566	15.70	10.39	26.09	46.00	19.91	
	3.216	24.70	10.42	35.12	46.00	10.88	
	6.226	22.90	10.45	33.35	50.00	16.65	
Neutral	<b>0.150</b>	<b>49.50</b>	<b>10.59</b>	<b>60.09</b>	<b>66.00</b>	<b>5.91</b>	QP
	0.164	41.29	10.57	51.86	65.28	13.42	
	0.309	33.81	10.44	44.25	59.99	15.74	
	1.939	25.30	10.42	35.72	56.00	20.28	
	3.355	31.00	10.47	41.47	56.00	14.53	
	6.369	29.49	10.53	40.02	60.00	19.98	
	0.150	33.20	10.59	43.79	56.00	12.21	AV
	0.164	19.19	10.57	29.76	55.28	25.52	
	0.309	32.91	10.44	43.35	49.99	6.64	
	1.939	15.60	10.42	26.02	46.00	19.98	
	3.355	22.10	10.47	32.57	46.00	13.43	
	6.369	22.69	10.53	33.22	50.00	16.78	

TEST ENGINEER: WENCY YANG

## 4 RADIATED EMISSION TEST

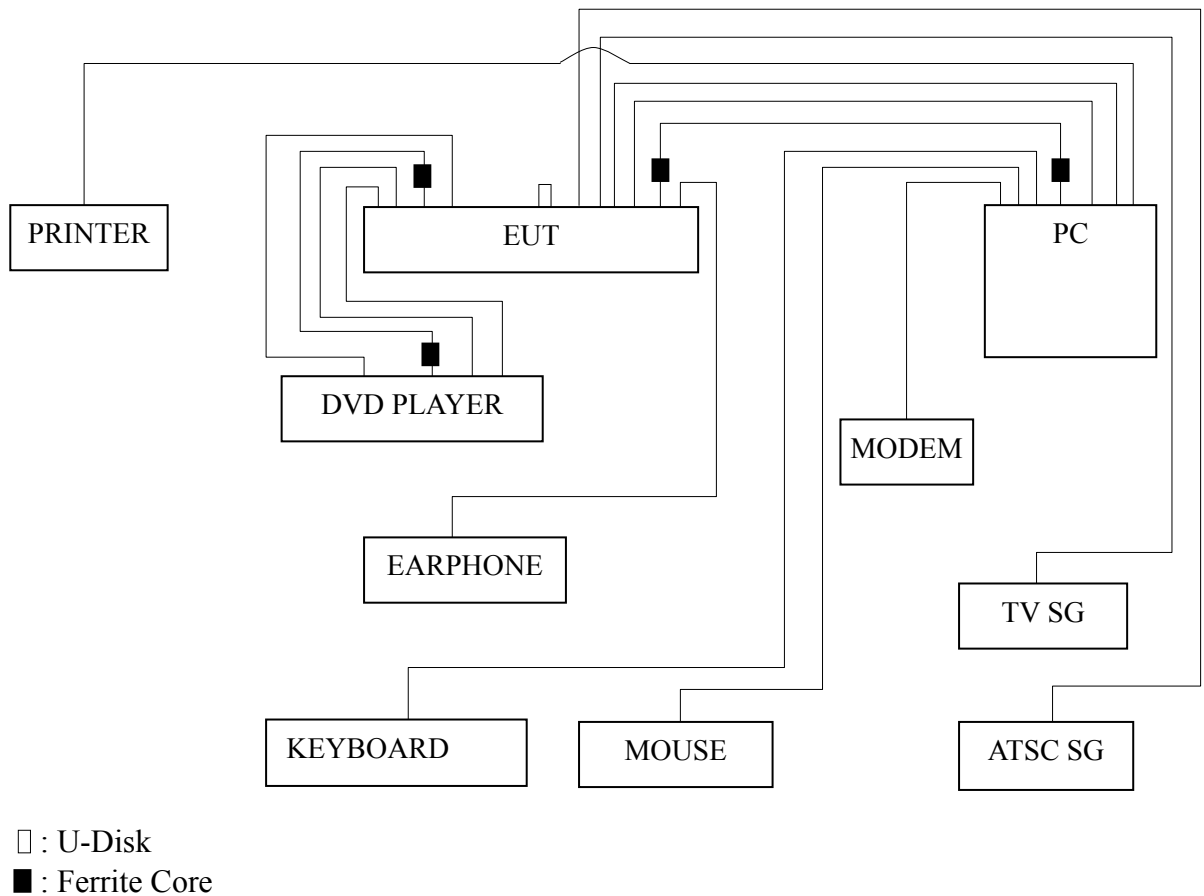
### 4.1 Test Equipment

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	101303	May 07, 2015	May 06, 2016
2.	Preamplifier	Agilent	8447D	2944A06664	Apr 27, 2015	Apr 26, 2016
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2015	Mar 19, 2016
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 15, 2015	May 15, 2016
5.	Horn Antenna	EMCO	3115	00062964	Jun 30, 2015	Jun 29, 2016
6.	Spectrum	Agilent	E7405A	MY45106600	Apr 27, 2015	Apr 26, 2016
7.	50Ω Coaxial Switch	Anritsu	MP59B	6200426390	Mar 18, 2015	Sep 17, 2015
8.	Software	Audix	E3	6.2007-9-10	--	--

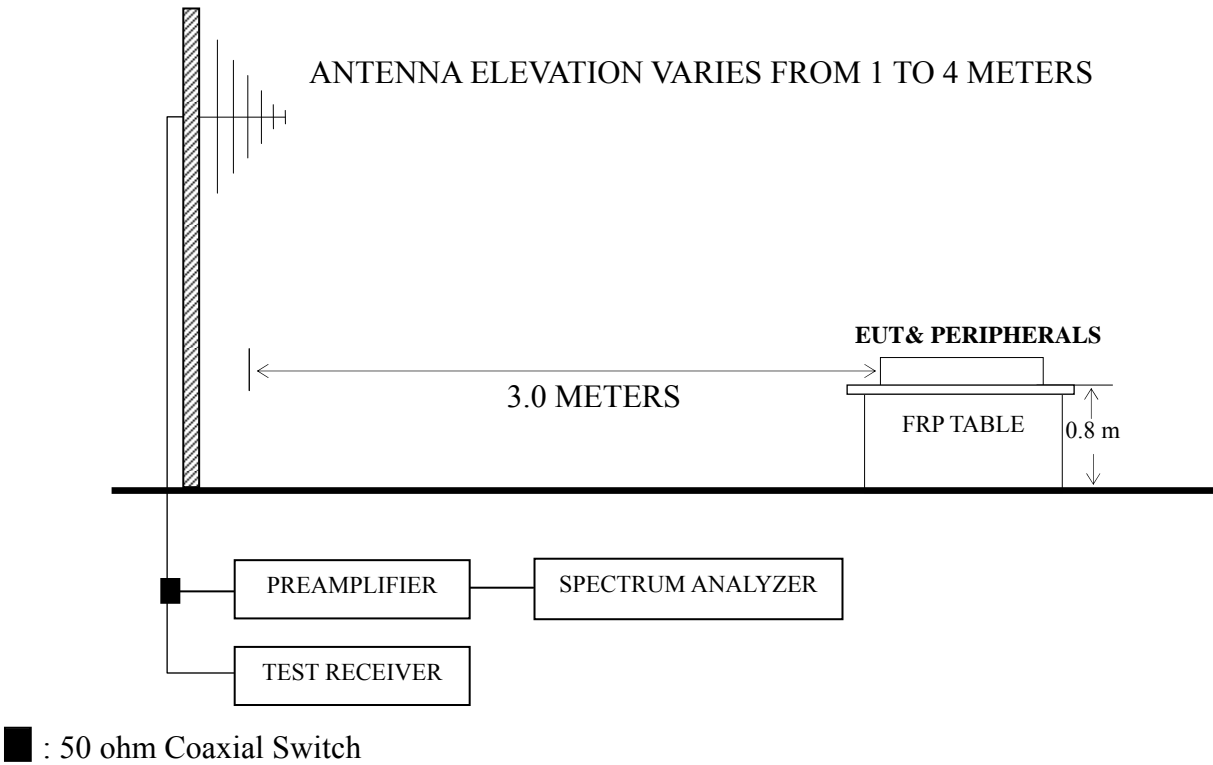
### 4.2 Block Diagram of Test Setup

#### 4.2.1 EUT & Peripherals

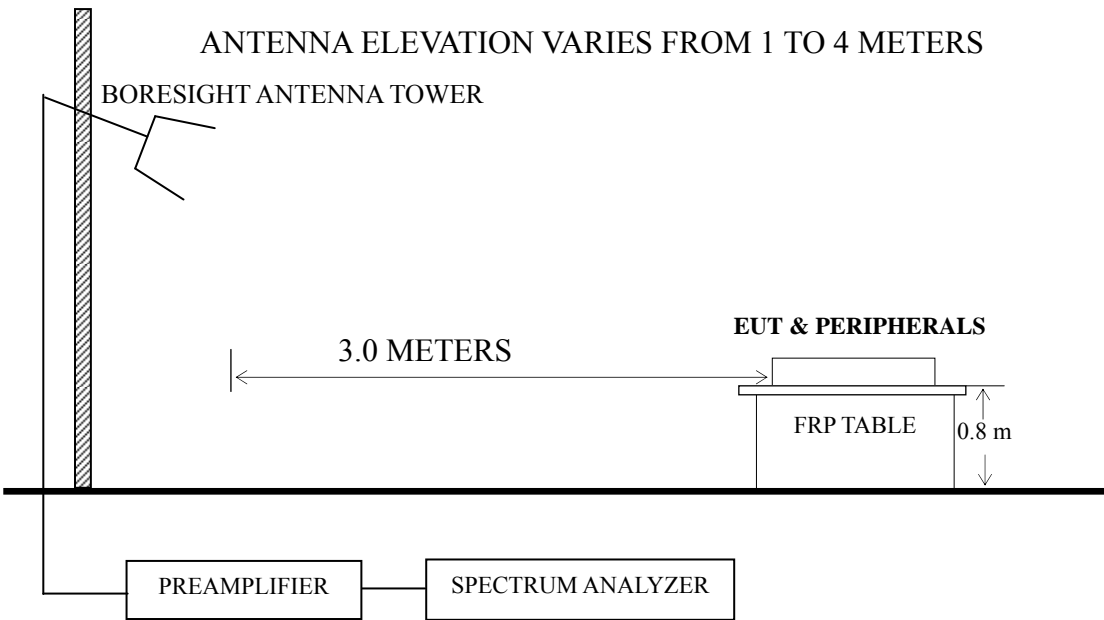


4.2.2 Radiated emission test setup

4.2.2.1 Below 1GHz



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) 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 frequency range from 1 GHz to 2 GHz was checked for the maximum resolution test mode.

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
HDMI 1920*1080@60Hz & 1kHz playing	P22-P23
HDMI 1280*1024@60Hz & 1kHz playing	P24
HDMI 640*480@60Hz & 1kHz playing	P25
USB Play	P26
LAN Play	P27

NOTE 1 – Emission Level = Antenna Factor + Cable Loss + Meter Reading. (< 1GHz);

Emission Level = Antenna Factor + Cable Loss – Preamp Factor + Meter Reading. (> 1GHz)

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 HDMI 640\*480@60Hz & 1kHz Playing test mode. The worst emission at horizontal polarization was detected at 815.720 MHz with corrected signal level of 44.81 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 2.10 m height and the turntable was at 324°. The worst emission at vertical polarization was detected at 813.800 MHz with corrected signal level of 39.91 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.00m height and the turntable was at 122°.

EUT : LED LCD TV Temperature : 22°C

Model No. : 40H5B Humidity : 60%RH

Test Mode : HDMI 1920\*1080@60Hz & 1kHz Playing Date of Test : Jul 24, 2015

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	30.970	2.65	18.15	0.64	--	21.44	40.00	18.56	QP
	119.240	21.36	12.79	1.45	--	35.60	43.50	7.90	
	260.860	19.07	13.12	2.25	--	34.44	46.00	11.56	
	466.500	14.34	17.22	2.87	--	34.43	46.00	11.57	
	<b>700.800</b>	<b>20.30</b>	<b>19.80</b>	<b>3.54</b>	--	<b>43.64</b>	<b>46.00</b>	<b>2.36</b>	
	815.700	15.73	20.63	3.88	--	40.24	46.00	5.76	
	1077.000	51.65	23.89	4.32	36.35	43.51	74.00	30.49	PK
	1271.000	52.50	24.75	3.61	36.02	44.84	74.00	29.16	
	1459.000	50.04	25.47	3.84	35.74	43.61	74.00	30.39	
	1597.000	49.15	26.02	4.01	35.56	43.62	74.00	30.38	
	1777.000	51.84	26.72	4.13	35.34	47.35	74.00	26.65	
	1904.000	52.41	27.18	4.31	35.21	48.69	74.00	25.31	
	1077.000	40.34	23.89	4.32	36.35	32.20	54.00	21.80	AV
	1271.000	41.30	24.75	3.61	36.02	33.64	54.00	20.36	
	1459.000	39.26	25.47	3.84	35.74	32.83	54.00	21.17	
	1597.000	38.79	26.02	4.01	35.56	33.26	54.00	20.74	
	1777.000	42.73	26.72	4.13	35.34	38.24	54.00	15.76	
	1904.000	40.66	27.18	4.31	35.21	36.94	54.00	17.06	

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : 40H5B Humidity : 60%RH

Test Mode : HDMI 1920\*1080@60Hz & 1kHz Playing Date of Test : Jul 24, 2015

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	30.970	2.89	18.15	0.64	--	21.68	40.00	18.32	QP
	119.240	22.16	12.79	1.45	--	36.40	43.50	7.10	
	374.350	18.39	16.39	2.69	--	37.47	46.00	8.53	
	466.500	13.72	17.22	2.87	--	33.81	46.00	12.19	
	<b>698.750</b>	<b>21.20</b>	<b>19.80</b>	<b>3.54</b>	--	<b>44.54</b>	<b>46.00</b>	<b>1.46</b>	
	815.700	17.66	20.63	3.88	--	42.17	46.00	3.83	
	1056.000	54.27	23.78	4.43	36.39	46.09	74.00	27.91	PK
	1121.000	51.07	24.10	3.98	36.27	42.88	74.00	31.12	
	1266.000	49.80	24.73	3.61	36.02	42.12	74.00	31.88	
	1497.000	52.35	25.60	3.89	35.69	46.15	74.00	27.85	
	1716.000	54.06	26.49	4.09	35.41	49.23	74.00	24.77	
	1932.000	53.14	27.27	4.35	35.17	49.59	74.00	24.41	
	1056.000	43.14	23.78	4.43	36.39	34.96	54.00	19.04	AV
	1121.000	40.01	24.10	3.98	36.27	31.82	54.00	22.18	
	1266.000	39.88	24.73	3.61	36.02	32.20	54.00	21.80	
	1497.000	41.24	25.60	3.89	35.69	35.04	54.00	18.96	
	1716.000	42.82	26.49	4.09	35.41	37.99	54.00	16.01	
	1932.000	41.39	27.27	4.35	35.17	37.84	54.00	16.16	

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : 40H5B Humidity : 60%RH

Test Mode : HDMI 1280\*1024@60Hz Date of Test : Jul 24, 2015  
& 1kHz Playing

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	30.970	2.89	18.15	0.64	21.68	40.00	18.32
	119.240	22.16	12.79	1.45	36.40	43.50	7.10
	374.350	18.39	16.39	2.69	37.47	46.00	8.53
	466.500	13.72	17.22	2.87	33.81	46.00	12.19
	<b>698.750</b>	<b>21.20</b>	<b>19.80</b>	<b>3.54</b>	<b>44.54</b>	<b>46.00</b>	<b>1.46</b>
Vertical	815.700	17.66	20.63	3.88	42.17	46.00	3.83
	30.000	13.07	18.90	0.63	32.60	40.00	7.40
	<b>115.600</b>	<b>22.30</b>	<b>12.71</b>	<b>1.43</b>	<b>36.44</b>	<b>43.50</b>	<b>7.06</b>
	194.900	20.28	10.10	1.94	32.32	43.50	11.18
	522.760	11.83	18.18	2.78	32.79	46.00	13.21
	704.390	15.40	19.80	3.56	38.76	46.00	7.24
	815.660	15.50	20.63	3.88	40.01	46.00	5.99

TEST ENGINEER: MARK LI



EUT : LED LCD TV Temperature : 22°C

Model No. : 40H5B Humidity : 60%RH

Test Mode : HDMI 640\*480@60Hz & 1kHz Playing Date of Test : Jul 24, 2015

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	70.740	19.39	7.45	0.95	27.79	40.00	12.21
	119.240	22.84	12.79	1.45	37.08	43.50	6.42
	235.640	17.71	11.48	2.10	31.29	46.00	14.71
	374.350	15.70	16.39	2.69	34.78	46.00	11.22
	699.790	20.10	19.80	3.54	43.44	46.00	2.56
	<b>815.720</b>	<b>20.30</b>	<b>20.63</b>	<b>3.88</b>	<b>44.81</b>	<b>46.00</b>	<b>1.19</b>
Vertical	30.970	13.69	18.15	0.64	32.48	40.00	7.52
	119.240	21.38	12.79	1.45	35.62	43.50	7.88
	194.900	21.33	10.10	1.94	33.37	43.50	10.13
	260.860	16.67	13.12	2.25	32.04	46.00	13.96
	698.740	16.20	19.80	3.54	39.54	46.00	6.46
	<b>813.800</b>	<b>15.40</b>	<b>20.63</b>	<b>3.88</b>	<b>39.91</b>	<b>46.00</b>	<b>6.09</b>

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : 40H5B Humidity : 60%RH

Test Mode : USB Play Date of Test : Jul 24, 2015

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	34.850	3.05	15.80	0.68	19.53	40.00	20.47
	89.170	16.90	10.35	1.20	28.45	43.50	15.05
	195.870	16.41	10.03	1.94	28.38	43.50	15.12
	333.610	13.04	14.93	2.64	30.61	46.00	15.39
	602.300	12.71	19.10	2.26	34.07	46.00	11.93
	<b>782.720</b>	<b>13.88</b>	<b>20.50</b>	<b>3.66</b>	<b>38.04</b>	<b>46.00</b>	<b>7.96</b>
Vertical	74.620	8.57	8.43	1.01	18.01	40.00	21.99
	<b>114.390</b>	<b>19.57</b>	<b>12.69</b>	<b>1.42</b>	<b>33.68</b>	<b>43.50</b>	<b>9.82</b>
	162.890	11.74	11.21	1.73	24.68	43.50	18.82
	262.800	16.98	13.16	2.29	32.43	46.00	13.57
	524.700	15.18	18.18	2.78	36.14	46.00	9.86
	844.800	13.15	20.73	4.07	37.95	46.00	8.05

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : 40H5B Humidity : 60%RH

Test Mode : LAN Play Date of Test : Jul 24, 2015

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	62.010	14.87	6.33	0.89	22.09	40.00	17.91
	91.110	13.22	10.80	1.23	25.25	43.50	18.25
	128.940	9.44	12.87	1.52	23.83	43.50	19.67
	215.270	13.03	10.20	2.03	25.26	43.50	18.24
	<b>467.470</b>	<b>19.10</b>	<b>17.26</b>	<b>2.87</b>	<b>39.23</b>	<b>46.00</b>	<b>6.77</b>
	709.970	14.14	19.80	3.56	37.50	46.00	8.50
Vertical	34.850	15.05	15.80	0.68	31.53	40.00	8.47
	85.290	16.33	9.85	1.15	27.33	40.00	12.67
	230.790	17.91	11.24	2.09	31.24	46.00	14.76
	301.600	17.27	13.88	2.59	33.74	46.00	12.26
	<b>546.040</b>	<b>18.11</b>	<b>18.68</b>	<b>2.63</b>	<b>39.42</b>	<b>46.00</b>	<b>6.58</b>
	788.540	13.10	20.50	3.66	37.26	46.00	8.74

TEST ENGINEER: MARK LI

## **5 DEVIATION TO TEST SPECIFICATIONS**

None.

## 6 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Conductive Tape	45*14.5\ROH	Qingdao Joinset S&T Co., Ltd.	See Internal Photo 19, 20

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:

Wency Yang  
(WENCY YANG)