

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

LED LCD TV

Model No.	Brand
50H5C	Hisense
50H5D	
50H5D1	
50H5D2	
50H5D3	
50H5050	

FCC ID : W9HLCDF0099

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

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Report No. : ACI-F16293  
Date of Test : Dec 02- 09, 2016  
Date of Report : Dec 14, 2016

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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.  
Factory #3 : HISENSE ELECTRONICA MEXICO, S.A. DE C.V.  
EUT Description : LED LCD TV

Model No.	Brand	Power Supply
Refer to Sec.2.1	Hisense	120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2015  
AND ANSI C63.4-2014*

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 02- 09, 2016 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.

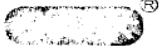
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

***The test results for EUT's TV functions are contained in No.F16292, a Verification report.***

Date of Test : Dec 02- 09, 2016 Date of Report : Dec 14, 2016

Producer : HuiMin Yan  
HUI MIN YAN / Assistant

Review : Byron Wu  
BYRON WU / Deputy Assistant Manager

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

Signatory :   
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 2015 AND ANSI C63.4-2014	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2015 AND ANSI C63.4-2014	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	:	50H5C, 50H5D, 50H5D1 , 50H5D2, 50H5D3, 50H5050
Note	:	The above models are all the same except for model number.50H5C model is tested and recorded in the report.
Brand	:	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
Factory #3	:	HISENSE ELECTRONICA MEXICO, S.A.DE C.V. Blvd. Sharp #3510 Parque Industrial Rosarito, C.P. 22710 Playas de Rosarito, B.C.
LCD Panel	:	Manufacturer : Hisense M/N : HD500DF-B54(020)
Tuner	:	Manufacturer : MAXLINEAR M/N : MxL661
Max Resolution	:	1920*1080@60Hz
HDMI Cable*3 (Lab provide)	:	Shielded, Detachable, 1.50m
Power Cord	:	Unshielded, Detachable, 1.80m, 2C
LAN Cable	:	Unshielded, Detachable, 1.50m
USB Cable*2 (Lab provide)	:	Shielded, Detachable, 1.00m

**Remark:**

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

## Side Port:

- (1) One Audio out Port : Connected with Earphone
- (2) One USB 2 Port : Connected with Hard-Disk #2
- (3) One DEBUG Port : This port does not open to user
- (4) One USB 1 Port : Connected with Hard-Disk #1
- (5) One HDMI 2 Port : Connected with PC
- (6) One HDMI 1 Port : Connected with PC
- (7) One ANT/CABLE IN Port : Connected with Antenna or ATSC SG / TV SG

## Back Port:

- (8) One LAN Port : Connected with PC
- (9) One HDMI3 Port : Connected with DVD PLAYER
- (10) One Digital Audio Out Port : Connected with DVD PLAYER
- (11) One COMPONENT IN/AV IN Port : Connected with DVD PLAYER

## 2.2 Peripherals

### 2.2.1 PC

Manufacturer	:	HP
Model Number	:	Pro3340
Serial Number	:	6CR2512VFD
Power Cord	:	Unshielded, Detachable, 1.8m
Certificate	:	FCC DoC; CE/EMC; VCCI; C-Tick;

**2.2.2 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

**2.2.3 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

**2.2.4 Modem**

Manufacturer : TP-LINK  
Model Number : TM-EC5658V  
Serial Number : 07123301053  
Data Cable : Shielded, Detachable, 1.8m  
Certificate : CCC

**2.2.5 Earphone\*2**

Manufacturer : EDIFIER  
Model Number : H210

**2.2.6 TV Signal Generator**

Manufacturer : FLUKE  
Model Number : 54200M01  
Serial Number : 814008

**2.2.7 ATSC Signal Generator**

Manufacturer : SENCORE  
Model Number : ATSC997  
Serial Number : 6790071

**2.2.8 DVD PLAYER**

Manufacturer : PHILIPS  
Model Number : DVP3986K/93  
Serial Number : KX1A0902120108  
Certificate : CCC

**2.2.9 Hard Disk#1**

Manufacturer : Tetasys  
Model Number : F12  
Serial Number : A010022-486006  
Data Cable : Shielded, Undetachable, 1.8m.  
Certificate : CE, FCC DoC

### 2.2.10 Hard Disk #2

Manufacturer : Tetasy  
Model Number : F12  
Serial Number : A010022-4860010X  
Data Cable : Shielded, Undetachable, 1.8m.  
Certificate : CE, FCC DoC

## 2.3 Description of Test Facility

Site Description : Sept. 17, 1998 file on  
(No.3 3m Chamber) 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

NVLAP Lab Code : 200371-0

## 2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty : U = 3.4dB

Radiated Emission Expanded Uncertainty (30-200MHz):  
U = 4.6dB (Horizontal)  
U = 4.3dB (Vertical)

Radiated Emission Expanded Uncertainty (200M-1GHz):  
U = 4.5dB (Horizontal)  
U = 5.4dB (Vertical)

Radiated Emission Expanded Uncertainty (1GHz-6GHz):  
U = 5.1dB



### 3 CONDUCTED EMISSION TEST

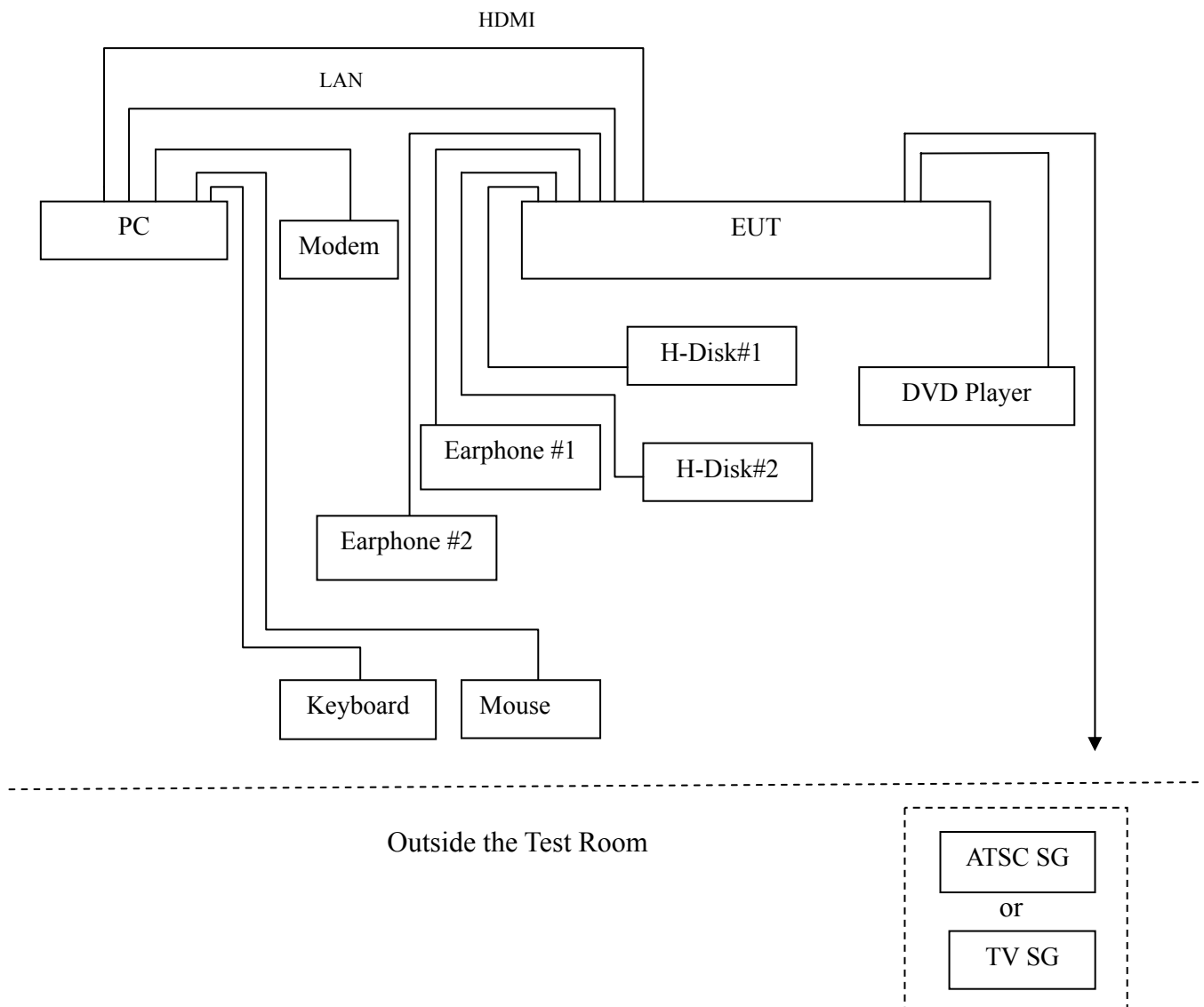
#### 3.1 Test Equipment

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

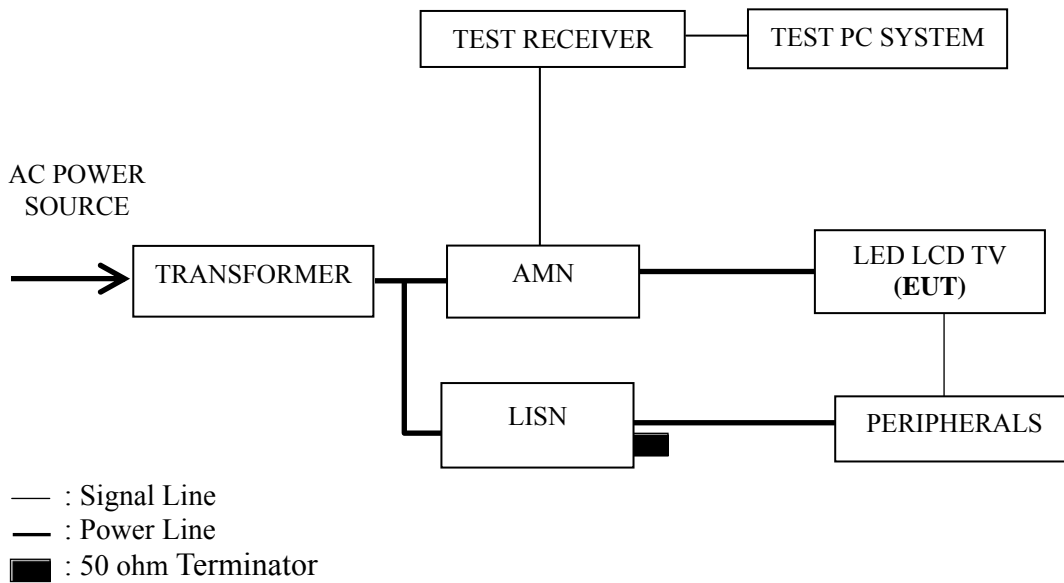
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Apr 27, 2016	Apr 26, 2017
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 25, 2016	Jun 24, 2017
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2016	Mar 19, 2017
4.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2016	Mar 19, 2017
5.	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 ( $\mu$ 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 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 Hard 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
HDMI1080P
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 C63.4:2014 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
HDMI1080P	P16
USB Play	P17
LAN Play	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 HDMI 640\*480@60Hz & 1kHz playing test mode. The worst emission is detected at 0.516MHz (Average Value) with corrected signal level of 35.70 dB (μV) (limit is 46.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : 50H5C Humidity : 48%RH

Test Mode : HDMI 1920\*1080@60Hz Date of Test : Dec 02, 2016  
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.172	22.30	10.56	32.86	64.86	32.00	QP
	0.228	35.20	10.51	45.71	62.52	16.81	
	0.510	31.40	10.40	41.80	56.00	14.20	
	1.552	28.31	10.40	38.71	56.00	17.29	
	2.474	27.00	10.42	37.42	56.00	18.58	
	6.805	26.10	10.47	36.57	60.00	23.43	
	0.172	8.40	10.56	18.96	54.86	35.90	AV
	0.228	26.00	10.51	36.51	52.52	16.01	
	0.510	19.30	10.40	29.70	46.00	16.30	
	1.552	18.71	10.40	29.11	46.00	16.89	
	2.474	19.50	10.42	29.92	46.00	16.08	
	6.805	21.60	10.47	32.07	50.00	17.93	
Neutral	0.150	25.10	10.58	35.68	66.00	30.32	QP
	0.233	30.50	10.50	41.00	62.35	21.35	
	0.521	29.50	10.39	39.89	56.00	16.11	
	1.418	27.00	10.42	37.42	56.00	18.58	
	3.603	23.20	10.47	33.67	56.00	22.33	
	17.199	21.71	10.67	32.38	60.00	27.62	
	0.150	4.70	10.58	15.28	56.00	40.72	AV
	0.233	19.30	10.50	29.80	52.35	22.55	
	<b>0.521</b>	<b>21.60</b>	<b>10.39</b>	<b>31.99</b>	<b>46.00</b>	<b>14.01</b>	
	1.418	17.00	10.42	27.42	46.00	18.58	
	3.603	15.70	10.47	26.17	46.00	19.83	
	17.199	17.41	10.67	28.08	50.00	21.92	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 50H5C Humidity : 48%RH

Test Mode : HDMI 1280\*1024@60Hz Date of Test : Dec 02, 2016  
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.233	34.80	10.51	45.31	62.35	17.04	QP
	0.489	28.70	10.40	39.10	56.19	17.09	
	0.679	30.00	10.40	40.40	56.00	15.60	
	1.552	28.41	10.40	38.81	56.00	17.19	
	3.840	23.80	10.44	34.24	56.00	21.76	
	6.627	29.30	10.47	39.77	60.00	20.23	
	0.233	23.20	10.51	33.71	52.35	18.64	AV
	0.489	14.30	10.40	24.70	46.19	21.49	
	0.679	22.00	10.40	32.40	46.00	13.60	
	1.552	18.81	10.40	29.21	46.00	16.79	
	3.840	15.60	10.44	26.04	46.00	19.96	
	6.627	21.70	10.47	32.17	50.00	17.83	
Neutral	0.172	22.50	10.55	33.05	64.86	31.81	QP
	0.226	31.40	10.50	41.90	62.61	20.71	
	0.516	30.80	10.39	41.19	56.00	14.81	
	1.262	26.40	10.41	36.81	56.00	19.19	
	2.474	27.51	10.44	37.95	56.00	18.05	
	6.878	30.40	10.53	40.93	60.00	19.07	
	0.172	9.00	10.55	19.55	54.86	35.31	AV
	0.226	21.30	10.50	31.80	52.61	20.81	
	<b>0.516</b>	<b>23.60</b>	<b>10.39</b>	<b>33.99</b>	<b>46.00</b>	<b>12.01</b>	
	1.262	15.10	10.41	25.51	46.00	20.49	
	2.474	18.51	10.44	28.95	46.00	17.05	
	6.878	24.60	10.53	35.13	50.00	14.87	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 50H5C Humidity : 48%RH

Test Mode : HDMI 640\*480@60Hz & 1kHz Playing Date of Test : Dec 02, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.174	22.80	10.56	33.36	64.77	31.41	QP
	0.228	35.20	10.51	45.71	62.52	16.81	
	0.516	32.20	10.40	42.60	56.00	13.40	
	1.552	28.41	10.40	38.81	56.00	17.19	
	4.454	24.20	10.44	34.64	56.00	21.36	
	6.805	27.00	10.47	37.47	60.00	22.53	
	0.174	10.70	10.56	21.26	54.77	33.51	AV
	0.228	25.70	10.51	36.21	52.52	16.31	
	<b>0.516</b>	<b>25.30</b>	<b>10.40</b>	<b>35.70</b>	<b>46.00</b>	<b>10.30</b>	
	1.552	19.01	10.40	29.41	46.00	16.59	
	4.454	8.06	10.44	18.50	46.00	27.50	
	6.805	22.00	10.47	32.47	50.00	17.53	
Neutral	0.156	23.80	10.57	34.37	65.65	31.28	QP
	0.226	31.40	10.50	41.90	62.61	20.71	
	0.598	30.81	10.38	41.19	56.00	14.81	
	1.552	28.00	10.42	38.42	56.00	17.58	
	2.500	25.01	10.44	35.45	56.00	20.55	
	6.878	30.10	10.53	40.63	60.00	19.37	
	0.156	3.20	10.57	13.77	55.65	41.88	AV
	0.226	21.40	10.50	31.90	52.61	20.71	
	0.598	18.01	10.38	28.39	46.00	17.61	
	1.552	18.40	10.42	28.82	46.00	17.18	
	2.500	16.21	10.44	26.65	46.00	19.35	
	6.878	22.20	10.53	32.73	50.00	17.27	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 50H5C Humidity : 48%RH

Test Mode : HDMI1080P Date of Test : Dec 02, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.226	35.50	10.51	46.01	62.61	16.60	QP
	0.489	28.70	10.40	39.10	56.19	17.09	
	0.679	30.20	10.40	40.60	56.00	15.40	
	1.236	25.49	10.41	35.90	56.00	20.10	
	2.474	26.80	10.42	37.22	56.00	18.78	
	6.627	31.40	10.47	41.87	60.00	18.13	
	0.226	25.30	10.51	35.81	52.61	16.80	AV
	0.489	14.20	10.40	24.60	46.19	21.59	
	<b>0.679</b>	<b>22.10</b>	<b>10.40</b>	<b>32.50</b>	<b>46.00</b>	<b>13.50</b>	
	1.236	15.69	10.41	26.10	46.00	19.90	
	2.474	18.70	10.42	29.12	46.00	16.88	
	6.627	24.20	10.47	34.67	50.00	15.33	
Neutral	0.150	25.20	10.58	35.78	66.00	30.22	QP
	0.228	31.00	10.50	41.50	62.52	21.02	
	0.510	30.00	10.39	40.39	56.00	15.61	
	1.552	28.10	10.42	38.52	56.00	17.48	
	4.574	24.29	10.50	34.79	56.00	21.21	
	7.100	23.00	10.53	33.53	60.00	26.47	
	0.150	4.40	10.58	14.98	56.00	41.02	AV
	0.228	21.70	10.50	32.20	52.52	20.32	
	0.510	19.00	10.39	29.39	46.00	16.61	
	1.552	18.30	10.42	28.72	46.00	17.28	
	4.574	17.39	10.50	27.89	46.00	18.11	
	7.100	19.00	10.53	29.53	50.00	20.47	

TEST ENGINEER: BYRON WU



EUT : LED LCD TV Temperature : 22°C

Model No. : 50H5C Humidity : 48%RH

Test Mode : USB Play Date of Test : Dec 02, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.174	22.80	10.56	33.36	64.77	31.41	QP
	0.228	35.20	10.51	45.71	62.52	16.81	
	0.521	31.30	10.40	41.70	56.00	14.30	
	1.433	28.01	10.40	38.41	56.00	17.59	
	4.454	24.30	10.44	34.74	56.00	21.26	
	6.878	30.20	10.47	40.67	60.00	19.33	
	0.174	11.00	10.56	21.56	54.77	33.21	AV
	0.228	26.00	10.51	36.51	52.52	16.01	
	<b>0.521</b>	<b>23.80</b>	<b>10.40</b>	<b>34.20</b>	<b>46.00</b>	<b>11.80</b>	
	1.433	19.31	10.40	29.71	46.00	16.29	
	4.454	18.50	10.44	28.94	46.00	17.06	
	6.878	23.20	10.47	33.67	50.00	16.33	
Neutral	0.150	25.20	10.58	35.78	66.00	30.22	QP
	0.230	30.80	10.50	41.30	62.44	21.14	
	0.672	29.30	10.39	39.69	56.00	16.31	
	1.352	27.80	10.41	38.21	56.00	17.79	
	2.650	24.29	10.46	34.75	56.00	21.25	
	6.878	32.30	10.53	42.83	60.00	17.17	
	0.150	4.00	10.58	14.58	56.00	41.42	AV
	0.230	20.90	10.50	31.40	52.44	21.04	
	0.672	18.30	10.39	28.69	46.00	17.31	
	1.352	18.80	10.41	29.21	46.00	16.79	
	2.650	13.79	10.46	24.25	46.00	21.75	
	6.878	24.00	10.53	34.53	50.00	15.47	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 50H5C Humidity : 48%RH

Test Mode : LAN Play Date of Test : Dec 02, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.233	34.70	10.51	45.21	62.35	17.14	QP
	0.484	28.00	10.40	38.40	56.27	17.87	
	0.672	29.20	10.40	39.60	56.00	16.40	
	1.552	28.41	10.40	38.81	56.00	17.19	
	4.672	23.80	10.45	34.25	56.00	21.75	
	6.878	32.40	10.47	42.87	60.00	17.13	
	0.233	22.80	10.51	33.31	52.35	19.04	AV
	0.484	16.00	10.40	26.40	46.27	19.87	
	0.672	20.00	10.40	30.40	46.00	15.60	
	1.552	19.01	10.40	29.41	46.00	16.59	
	4.672	16.50	10.45	26.95	46.00	19.05	
	6.878	24.30	10.47	34.77	50.00	15.23	
Neutral	0.172	22.70	10.55	33.25	64.86	31.61	QP
	0.230	30.70	10.50	41.20	62.44	21.24	
	<b>0.598</b>	<b>30.81</b>	<b>10.38</b>	<b>41.19</b>	<b>56.00</b>	<b>14.81</b>	
	1.552	28.00	10.42	38.42	56.00	17.58	
	2.309	25.20	10.44	35.64	56.00	20.36	
	6.878	30.50	10.53	41.03	60.00	18.97	
	0.172	9.70	10.55	20.25	54.86	34.61	AV
	0.230	20.90	10.50	31.40	52.44	21.04	
	0.598	18.01	10.38	28.39	46.00	17.61	
	1.552	18.60	10.42	29.02	46.00	16.98	
	2.309	17.60	10.44	28.04	46.00	17.96	
	6.878	22.70	10.53	33.23	50.00	16.77	

TEST ENGINEER: BYRON WU

## 4 RADIATED EMISSION TEST

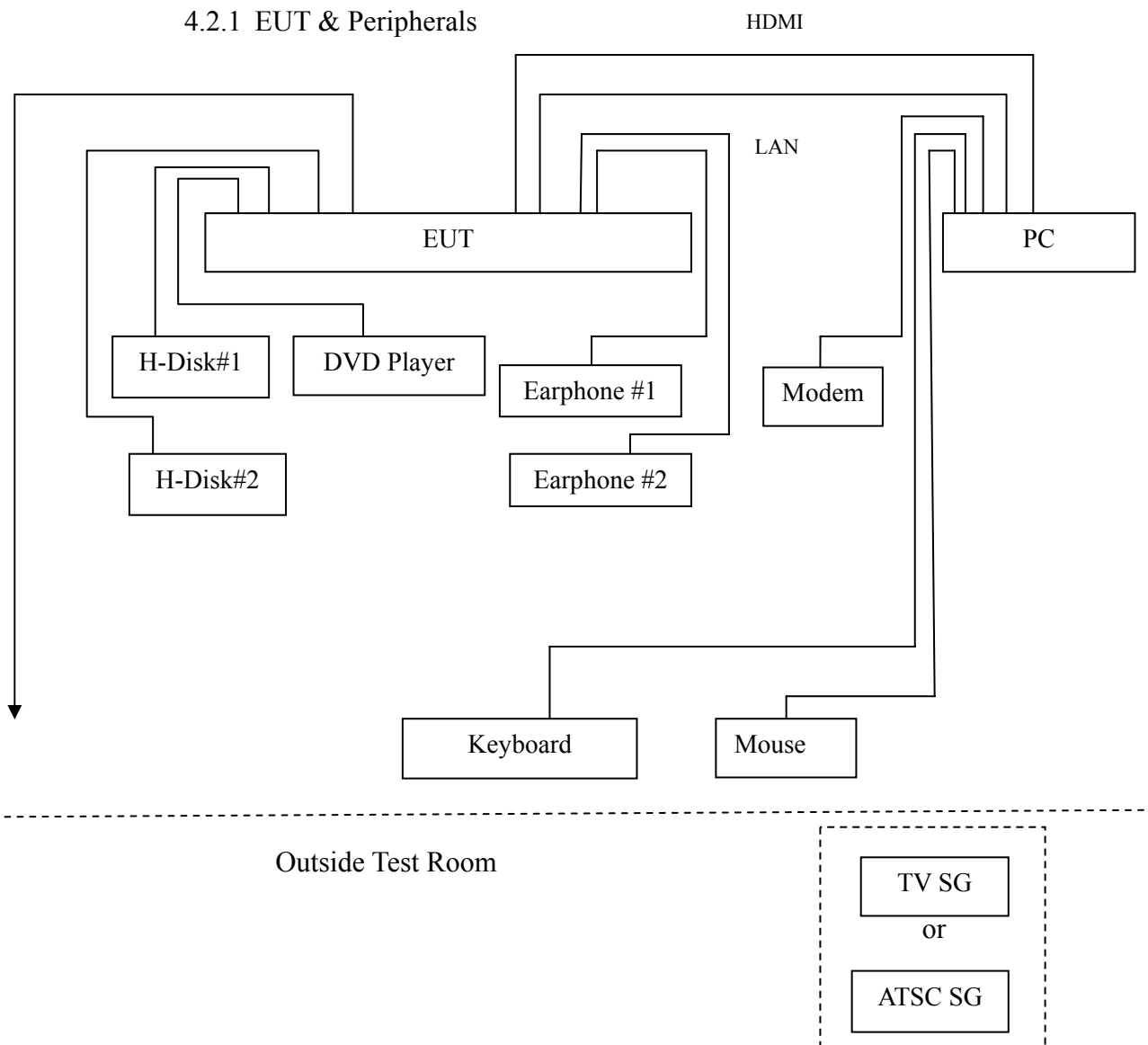
### 4.1 Test Equipment

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, 2016	May 06, 2017
2.	Preamplifier	Agilent	8447D	2944A06664	Apr 27, 2016	Apr 26, 2017
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2016	Mar 19, 2017
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 15, 2016	May 14, 2017
5.	Horn Antenna	EMCO	3115	9607-4878	Jun 03, 2016	Jun 02, 2017
6.	Spectrum	Agilent	E7405A	MY45106600	Apr 26, 2016	Apr 25, 2017
7.	Software	Audix	e3	6.2007-9-10	--	--

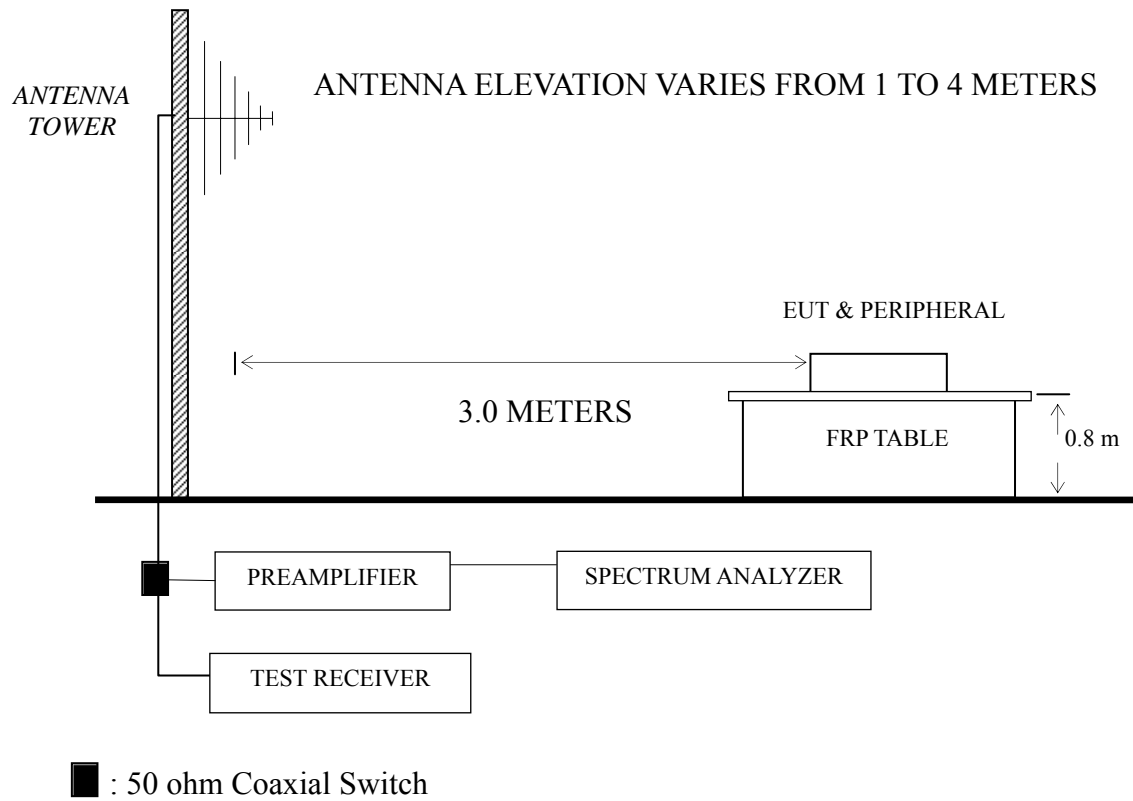
### 4.2 Block Diagram of Test Setup

#### 4.2.1 EUT & Peripherals



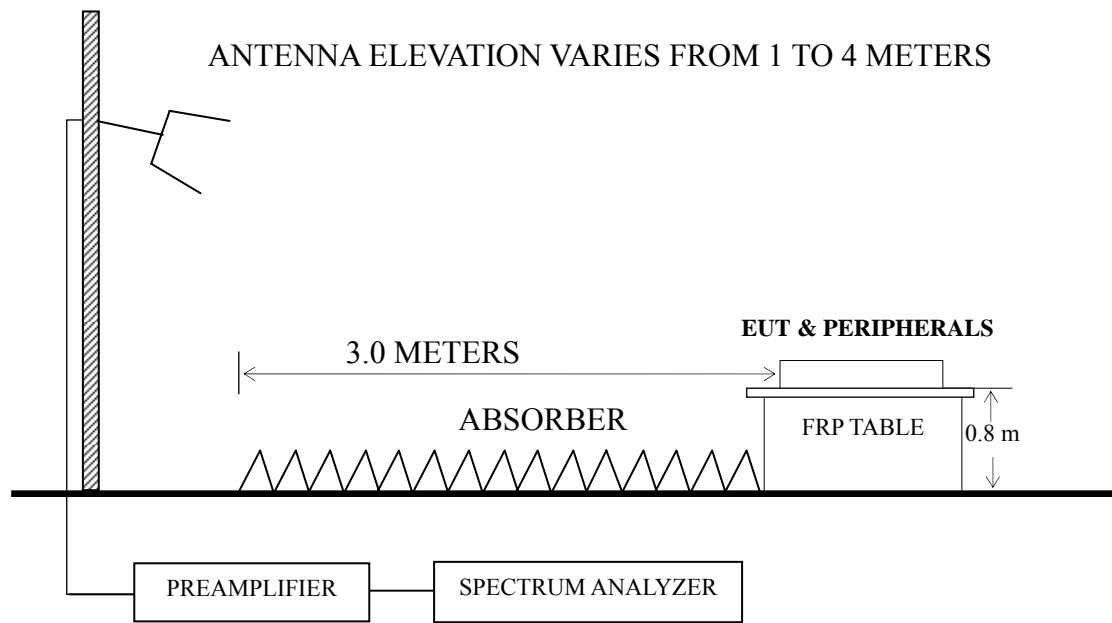
4.2.2 Test Setup

4.2.2.1 Below 1GHz



4.2.2.2 Above 1GHz

BORE-SIGHT ANTENNA TOWER



### 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 C63.4:2014 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	P23 - P24
HDMI 1280*1024@60Hz & 1kHz playing	P25
HDMI 640*480@60Hz & 1kHz playing	P26
HDMI1080P	P27
USB Play	P28
LAN Play	P29

NOTE 1 – Emission Level = Antenna Factor + Cable Loss + Meter Reading.  
( $< 1\text{GHz}$ );

Emission Level = Antenna Factor + Cable Loss – Preamp Factor  
+ Meter Reading. ( $> 1\text{GHz}$ )

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

NOTE 3 –  $0^\circ$  was the table front facing the antenna. Degree is calculated  
from  $0^\circ$  clockwise facing the antenna.

NOTE 4 – The worst case is for HDMI 1920\*1080@60Hz & 1kHz playing test  
mode. The worst emission at horizontal polarization was detected  
at 435.590 MHz with corrected signal level of 42.39 dB ( $\mu\text{V/m}$ )  
(limit is 46.00 dB ( $\mu\text{V/m}$ )), when the antenna was 1.9 m height  
and the turntable was at  $130^\circ$ . The worst emission at vertical  
polarization was detected at 137.903 MHz with corrected signal  
level of 40.12dB ( $\mu\text{V/m}$ ) (limit is 43.50 dB ( $\mu\text{V/m}$ )), when the  
antenna was 1.1m height and the turntable was at  $60^\circ$ .

EUT : LED LCD TV Temperature : 22°C

Model No. : 50H5C Humidity : 60%RH

Test Mode : HDMI 1920\*1080@60Hz Date of Test : Dec 09, 2016  
& 1kHz Playing

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	65.114	25.34	6.93	0.81	0.00	33.08	40.00	6.92	QP
	96.099	24.05	11.78	0.98	0.00	36.81	43.50	6.69	
	138.874	25.53	13.11	1.23	0.00	39.87	43.50	3.63	
	374.623	22.05	15.69	1.97	0.00	39.71	46.00	6.29	
	<b>435.590</b>	<b>23.74</b>	<b>16.52</b>	<b>2.13</b>	<b>0.00</b>	<b>42.39</b>	<b>46.00</b>	<b>3.61</b>	
	790.619	17.98	20.30	2.89	0.00	41.17	46.00	4.83	
	1162.424	56.23	24.28	3.75	36.20	48.06	74.00	25.94	PK
	1375.659	55.19	25.15	3.74	35.86	48.22	74.00	25.78	
	1681.372	53.54	26.36	4.07	35.45	48.52	74.00	25.48	
	1162.424	39.77	24.28	3.75	36.20	31.60	54.00	22.40	AV
	1375.659	37.39	25.15	3.74	35.86	30.42	54.00	23.58	
	1681.372	35.52	26.36	4.07	35.45	30.50	54.00	23.50	

TEST ENGINEER: LEON YUN

EUT : LED LCD TV Temperature : 22°C

Model No. : 50H5C Humidity : 60%RH

Test Mode : HDMI 1920\*1080@60Hz & 1kHz Playing Date of Test : Dec 09, 2016

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	32.979	18.83	16.67	0.67	0.00	36.17	40.00	3.83	QP
	56.991	27.75	7.25	0.86	0.00	35.86	40.00	4.14	
	<b>137.903</b>	<b>25.54</b>	<b>13.02</b>	<b>1.56</b>	<b>0.00</b>	<b>40.12</b>	<b>43.50</b>	<b>3.38</b>	
	399.030	18.14	16.27	2.71	0.00	37.12	46.00	8.88	
	798.980	14.61	20.40	3.68	0.00	38.69	46.00	7.31	
	890.728	13.24	21.10	4.46	0.00	38.80	46.00	7.20	
	1076.228	56.30	23.88	4.32	36.35	48.15	74.00	25.85	PK
	1365.835	54.05	25.12	3.72	35.87	47.02	74.00	26.98	
	1601.968	53.55	26.04	4.01	35.55	48.05	74.00	25.95	
	1076.228	40.52	23.88	4.32	36.35	32.37	54.00	21.63	AV
	1365.835	38.44	25.12	3.72	35.87	31.41	54.00	22.59	
	1601.968	37.00	26.04	4.01	35.55	31.50	54.00	22.50	

TEST ENGINEER: LEON YUN



EUT : LED LCD TV Temperature : 22°C

Model No. : 50H5C Humidity : 60%RH

Test Mode : HDMI 1280\*1024@60Hz Date of Test : Dec 09, 2016  
& 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	70.090	23.85	7.40	0.84	32.09	40.00	7.91
	94.098	24.07	11.47	0.97	36.51	43.50	6.99
	139.851	22.50	13.20	1.23	36.93	43.50	6.57
	300.367	22.01	13.64	1.76	37.41	46.00	8.59
	429.523	21.58	16.40	2.12	40.10	46.00	5.90
	796.183	17.02	20.37	2.89	40.28	46.00	5.72
Vertical	<b>32.979</b>	<b>18.50</b>	<b>16.67</b>	<b>0.59</b>	<b>35.76</b>	<b>40.00</b>	<b>4.24</b>
	57.999	26.11	7.10	0.76	33.97	40.00	6.03
	95.093	23.20	11.66	0.98	35.84	43.50	7.66
	138.620	24.10	13.07	1.23	38.40	43.50	5.10
	394.855	17.15	16.20	2.03	35.38	46.00	10.62
	796.183	14.19	20.37	2.89	37.45	46.00	8.55

TEST ENGINEER: LEON YUN

EUT : LED LCD TV Temperature : 22°C

Model No. : 50H5C Humidity : 60%RH

Test Mode : HDMI 640\*480@60Hz & 1kHz Playing Date of Test : Dec 09, 2016

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	67.913	24.72	7.21	0.82	32.75	40.00	7.25
	93.113	23.37	11.33	0.96	35.66	43.50	7.84
	139.851	22.24	13.20	1.23	36.67	43.50	6.83
	294.114	22.34	13.60	1.74	37.68	46.00	8.32
	435.590	22.07	16.52	2.13	40.72	46.00	5.28
	790.619	17.11	20.30	2.89	40.30	46.00	5.70
Vertical	<b>32.979</b>	<b>18.83</b>	<b>16.67</b>	<b>0.59</b>	<b>36.09</b>	<b>40.00</b>	<b>3.91</b>
	56.991	26.16	7.25	0.75	34.16	40.00	5.84
	92.139	25.24	11.13	0.96	37.33	43.50	6.17
	137.840	23.30	13.02	1.22	37.54	43.50	5.96
	394.855	18.35	16.20	2.03	36.58	46.00	9.42
	887.610	13.61	21.10	3.07	37.78	46.00	8.22

TEST ENGINEER: LEON YUN

EUT : LED LCD TV Temperature : 22°C

Model No. : 50H5C Humidity : 60%RH

Test Mode : HDMI1080P Date of Test : Dec 09, 2016

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	69.357	23.00	7.34	0.83	31.17	40.00	8.83
	96.099	23.54	11.78	0.98	36.30	43.50	7.20
	137.903	22.87	13.02	1.22	37.11	43.50	6.39
	152.130	23.44	11.80	1.29	36.53	43.50	6.97
	429.523	22.77	16.40	2.12	41.29	46.00	4.71
	793.396	17.84	20.33	2.89	41.06	46.00	4.94
Vertical	<b>33.211</b>	<b>18.12</b>	<b>16.62</b>	<b>0.59</b>	<b>35.33</b>	<b>40.00</b>	<b>4.67</b>
	57.999	26.58	7.10	0.76	34.44	40.00	5.56
	136.720	24.10	12.93	1.22	38.25	43.50	5.25
	159.784	25.07	11.32	1.32	37.71	43.50	5.79
	399.030	17.32	16.27	2.03	35.62	46.00	10.38
	890.728	16.30	21.10	3.07	40.47	46.00	5.53

TEST ENGINEER: LEON YUN

EUT : LED LCD TV Temperature : 22°C

Model No. : 50H5C Humidity : 60%RH

Test Mode : USB Play Date of Test : Dec 09, 2016

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	<b>67.202</b>	<b>25.68</b>	<b>7.12</b>	<b>0.82</b>	<b>33.62</b>	<b>40.00</b>	<b>6.38</b>
	85.898	21.99	10.20	0.93	33.12	40.00	6.88
	164.330	24.00	11.13	1.34	36.47	43.50	7.03
	316.589	21.87	14.02	1.82	37.71	46.00	8.29
	440.196	19.80	16.63	2.13	38.56	46.00	7.44
	629.477	16.26	19.10	2.58	37.94	46.00	8.06
Vertical	35.251	16.23	15.56	0.60	32.39	40.00	7.61
	62.431	24.31	6.76	0.79	31.86	40.00	8.14
	87.725	21.67	10.45	0.93	33.05	40.00	6.95
	176.269	22.84	10.51	1.39	34.74	43.50	8.76
	414.722	18.54	16.24	2.07	36.85	46.00	9.15
	827.493	13.79	20.37	2.96	37.12	46.00	8.88

TEST ENGINEER: LEON YUN

EUT : LED LCD TV Temperature : 22°C

Model No. : 50H5C Humidity : 60%RH

Test Mode : LAN Play Date of Test : Dec 09, 2016

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	73.876	23.47	8.13	0.86	32.46	40.00	7.54
	89.590	22.84	10.75	0.95	34.54	43.50	8.96
	145.861	22.36	12.48	1.26	36.10	43.50	7.40
	247.682	21.31	12.52	1.63	35.46	46.00	10.54
	522.718	17.58	17.56	2.32	37.46	46.00	8.54
	752.743	14.90	19.55	2.81	37.26	46.00	8.74
Vertical	<b>34.276</b>	<b>17.30</b>	<b>16.12</b>	<b>0.60</b>	<b>34.02</b>	<b>40.00</b>	<b>5.98</b>
	51.662	23.13	8.21	0.72	32.06	40.00	7.94
	77.321	21.59	8.56	0.87	31.02	40.00	8.98
	144.335	22.87	12.68	1.25	36.80	43.50	6.70
	197.200	24.64	9.97	1.47	36.08	43.50	7.42
	539.478	17.05	17.60	2.36	37.01	46.00	8.99

TEST ENGINEER: LEON YUN

## 5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Conductive foam	SMR-TSL-4-3.5-5R	QINGDAO JOINSET CO.,LTD	See Appendix Figure 21

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:



(BYRON WU)

## **6 DEVIATION TO TEST SPECIFICATIONS**

None.