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

LED LCD TV

Model No.	Brand
50K20DGW, 50K21DGW, 50K22DGW, 50K23DGW, 50K24DGW, 50K25DGW	Hisense
50H5G, 50H5CG, 50H5EG, 50H5SG, 50H5IG	

FCC ID : W9HLCDF0032

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

Prepared By : Audix Technology (Shanghai) Co., Ltd.
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Report No. : ACI-F14009
Date of Test : Dec 30, 2013 – Jan 02, 2014
Date of Report : Jan 10, 2014

TABLE OF CONTENTS

Page

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 2013 AND ANSI C63.4-2003

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B (Class B) limits both radiated and conducted emissions.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report shows that the EUT (M/N: Refer to Sec2.1) which was tested in 3m anechoic chamber Dec 30, 2013 – Jan 02, 2014 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.F14010, a Verification report.

Date of Test : Dec 30, 2013 – Jan 02, 2014 Date of Report : Jan 10, 2014

Producer : KATHY WANG / Supervisor

Review : DIO YANG / Assistant Manager

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

Signatory : SAMMY CHEN / Deputy Manager

Authorized Signature EMC

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
EMISSION			
Conducted Disturbance at the Mains Terminal	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2013 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2013 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	:	☐ Production ☑ Pre-product ☐ Pro-type
Model No.	:	50K20DGW, 50K21DGW, 50K22DGW, 50K23DGW, 50K24DW, 50K25DW, 50H5G, 50H5CG, 50H5EG, 50H5SG, 50H5IG
Note	:	The above models are all the same except for model name. 50H5G model is 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	:	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 : HD500DF-B57\S0
Max Resolution	:	1920*1080@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 HDMI2 Port
: Connected with DVD PLAYER#2

(2) One HDMI3/ARC Port
: Connected with DVD PLAYER#1

(3) One DIGITAL AUDIO OUT Port
: Connected with DVD PLAYER #2

(4) One component of Audio/YPbPr Audio Port
: Connected with DVD PLAYER#1

(5) One component of Video/YPbPr Port
: Connected with DVD PLAYER#1

(6) One LAN Port
: Connected with PC

Side Port:

(1) Two USB Ports
: Connected with U-Disk

(2) One HDMI1/DVI Port
: Connected with PC

(3) One VGA Port
: Connected with PC

(4) One AUDIO IN Port
: Connected with PC

(5) One AUDIO OUT/Earphone Port
: Connected with Earphone

(6) One ANT/CABLE IN Port
: Connected with Antenna or ATSC SG / TV SG

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	:	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 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	:	PHILIPS
Model Number	:	DVP3986K/93
Serial Number	:	KX1A0902120082
Certificate	:	FCC DoC, CE/EMC, CCC

2.2.10 Earphone

Manufacturer	:	audio-technica
Model Number	:	ATH-CKL200

2.2.11 U-DISK *2

Manufacturer : LG
Model Number : 1GB

2.3 Description of Test Facility

Site Description (No.3 3m Chamber)	:	Sept. 17, 1998 file on Mar 16, 2012 Renewed Federal Communications Commission FCC Engineering Laboratory 7435 Oakland Mills Road Columbia, MD 21046, USA
Name of Firm	:	Audix Technology (Shanghai) Co., Ltd.
Site Location	:	3F 34Bldg 680 Guiping Rd, Caohejing Hi-Tech Park, Shanghai 200233, China
NVLAP Lab Code	:	200371-0

2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty: U = 3.02 dB
Radiated Emission Expanded Uncertainty (30-200MHz):
U = 4.17 dB (Horizontal)
U = 4.02 dB (Vertical)
Radiated Emission Expanded Uncertainty (200M-1GHz):
U = 3.38 dB (Horizontal)
U = 3.28 dB (Vertical)
Radiated Emission Expanded Uncertainty (Above 1GHz):
U = 4.68 dB (Horizontal)
U = 4.87 dB (Vertical)

3 CONDUCTED EMISSION TEST

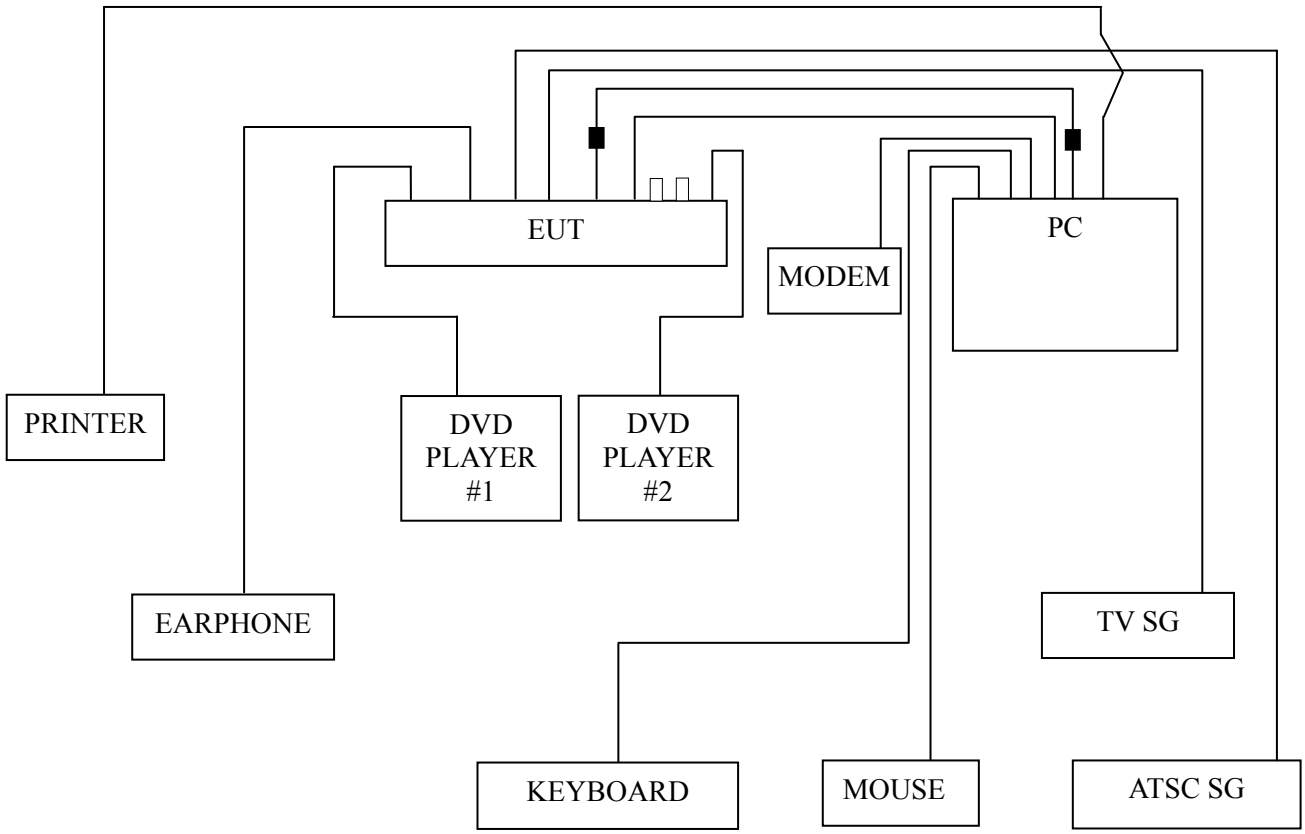
3.1 Test Equipment

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 19, 2014
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Feb 25, 2013	Feb 24, 2014
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2013	Mar 19, 2014
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Sep 18, 2013	Mar 17, 2014
5.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2013	Mar 19, 2014
6.	Software	Audix	E3	6.2009-1-15	--	--

3.2 Block Diagram of Test Setup

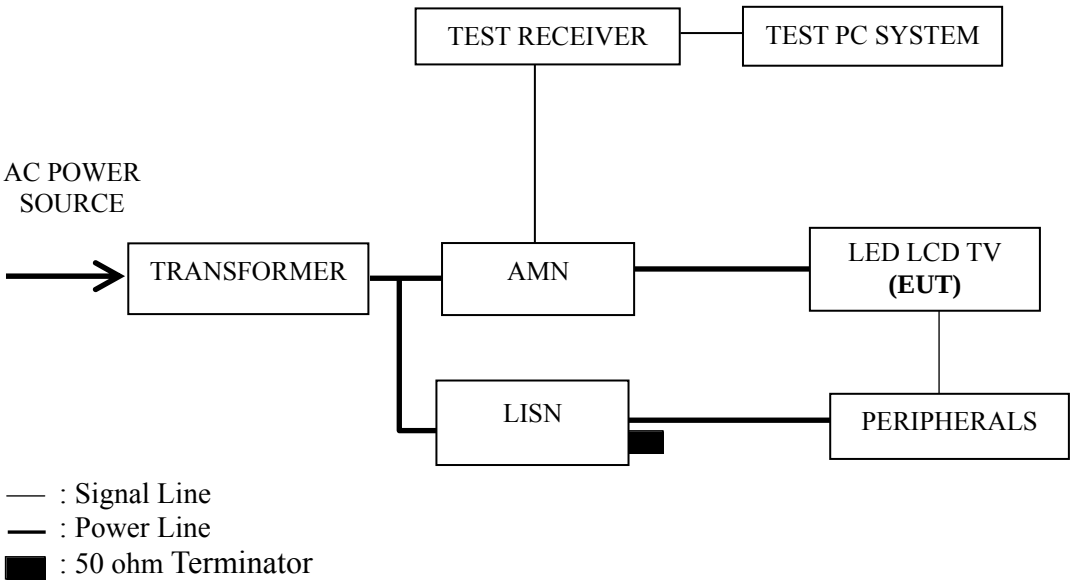
3.2.1 EUT & Peripherals



■: 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 (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 D-Sub & HDMI Input).

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

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

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

3.5.8 The test modes are as follows:

Test Mode
D-Sub 1920*1080@60Hz
HDMI 1920*1080@60Hz
HDMI 1280*1024@60Hz
HDMI 640*480@60Hz
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
D-Sub 1920*1080@60Hz	P13
HDMI 1920*1080@60Hz	P14
HDMI 1280*1024@60Hz	P15
HDMI 640*480@60Hz	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*080@60Hz test mode. The worst emission is detected at 6.949 MHz (Average Value) with corrected signal level of 40.56 dB (μV) (limit is 50.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	50H5G	Humidity	:	48%RH
Test Mode	:	D-Sub 1920*1080@60Hz	Date of Test	:	Dec 30, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.258	35.40	0.08	35.48	61.49	26.01	QP
	0.410	35.10	-0.01	35.09	57.65	22.56	
	0.560	35.20	0.00	35.20	56.00	20.80	
	1.079	31.50	0.05	31.55	56.00	24.45	
	7.165	41.30	0.26	41.56	60.00	18.44	
	22.470	32.31	-0.28	32.03	60.00	27.97	
	0.258	16.50	0.08	16.58	51.49	34.91	AV
	0.410	19.40	-0.01	19.39	47.65	28.26	
	0.560	21.10	0.00	21.10	46.00	24.90	
	1.079	22.50	0.05	22.55	46.00	23.45	
	7.165	37.80	0.26	38.06	50.00	11.94	
	22.470	25.41	-0.28	25.13	50.00	24.87	
Neutral	0.265	37.89	0.22	38.11	61.27	23.16	QP
	0.558	36.31	0.17	36.48	56.00	19.52	
	0.781	32.20	0.13	32.33	56.00	23.67	
	1.240	30.60	0.17	30.77	56.00	25.23	
	7.114	42.31	0.33	42.64	60.00	17.36	
	25.220	33.60	0.91	34.51	60.00	25.49	
	0.265	19.29	0.22	19.51	51.27	31.76	AV
	0.558	21.81	0.17	21.98	46.00	24.02	
	0.781	19.80	0.13	19.93	46.00	26.07	
	1.240	18.30	0.17	18.47	46.00	27.53	
	7.114	**37.91**	**0.33**	**38.24**	**50.00**	**11.76**	
	25.220	26.00	0.91	26.91	50.00	23.09	

TEST ENGINEER: ERIC TANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	50H5G	Humidity	:	48%RH
Test Mode	:	HDMI 1920*1080@60Hz	Date of Test	:	Dec 30, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.256	36.21	0.09	36.30	61.56	25.26	QP
	0.558	35.36	0.00	35.36	56.00	20.64	
	0.779	33.05	0.09	33.14	56.00	22.86	
	1.071	32.53	0.05	32.58	56.00	23.42	
	7.175	41.79	0.26	42.05	60.00	17.95	
	22.063	32.90	-0.23	32.67	60.00	27.33	
	0.256	16.61	0.09	16.70	51.56	34.86	AV
	0.558	21.90	0.00	21.90	46.00	24.10	
	0.779	20.80	0.09	20.89	46.00	25.11	
	1.071	22.49	0.05	22.54	46.00	23.46	
	7.175	37.18	0.26	37.44	50.00	12.56	
	22.063	25.22	-0.23	24.99	50.00	25.01	
Neutral	0.264	37.63	0.22	37.85	61.29	23.44	QP
	0.413	35.93	0.22	36.15	57.59	21.44	
	0.779	33.39	0.13	33.52	56.00	22.48	
	1.249	30.90	0.17	31.07	56.00	24.93	
	7.175	40.59	0.34	40.93	60.00	19.07	
	22.896	30.29	0.86	31.15	60.00	28.85	
	0.264	18.83	0.22	19.05	51.29	32.24	AV
	0.413	22.71	0.22	22.93	47.59	24.66	
	0.779	21.61	0.13	21.74	46.00	24.26	
	1.249	20.22	0.17	20.39	46.00	25.61	
	7.175	**37.93**	**0.34**	**38.27**	**50.00**	**11.73**	
	22.896	23.51	0.86	24.37	50.00	25.63	

TEST ENGINEER: ERIC TANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	50H5G	Humidity :	48%RH
Test Mode	:	HDMI 1280*1024@60Hz	Date of Test :	Dec 30, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.253	35.39	0.09	35.48	61.65	26.17	QP
	0.559	35.30	0.00	35.30	56.00	20.70	
	0.780	31.90	0.09	31.99	56.00	24.01	
	1.242	30.40	0.05	30.45	56.00	25.55	
	6.886	39.70	0.26	39.96	60.00	20.04	
	21.950	31.40	-0.22	31.18	60.00	28.82	
	0.253	16.49	0.09	16.58	51.65	35.07	AV
	0.559	21.10	0.00	21.10	46.00	24.90	
	0.780	19.20	0.09	19.29	46.00	26.71	
	1.242	19.10	0.05	19.15	46.00	26.85	
	6.886	**35.30**	**0.26**	**35.56**	**50.00**	**14.44**	
	21.950	24.70	-0.22	24.48	50.00	25.52	
Neutral	0.263	37.59	0.22	37.81	61.35	23.54	QP
	0.419	36.29	0.22	36.51	57.47	20.96	
	0.558	36.31	0.17	36.48	56.00	19.52	
	1.080	32.01	0.17	32.18	56.00	23.82	
	6.886	39.79	0.33	40.12	60.00	19.88	
	22.170	30.90	0.85	31.75	60.00	28.25	
	0.263	18.49	0.22	18.71	51.35	32.64	AV
	0.419	22.79	0.22	23.01	47.47	24.46	
	0.558	21.71	0.17	21.88	46.00	24.12	
	1.080	23.51	0.17	23.68	46.00	22.32	
	6.886	34.99	0.33	35.32	50.00	14.68	
	22.170	24.10	0.85	24.95	50.00	25.05	

TEST ENGINEER: ERIC TANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	50H5G	Humidity	:	48%RH
Test Mode	:	HDMI 640*480@60Hz	Date of Test	:	Dec 30, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.256	35.59	0.09	35.68	61.57	25.89	QP
	0.559	35.20	0.00	35.20	56.00	20.80	
	0.786	32.50	0.09	32.59	56.00	23.41	
	1.272	28.10	0.05	28.15	56.00	27.85	
	6.949	43.10	0.26	43.36	60.00	16.64	
	22.050	32.59	-0.23	32.36	60.00	27.64	
	0.256	16.49	0.09	16.58	51.57	34.99	AV
	0.559	21.00	0.00	21.00	46.00	25.00	
	0.786	21.40	0.09	21.49	46.00	24.51	
	1.272	21.00	0.05	21.05	46.00	24.95	
	6.949	**40.30**	**0.26**	**40.56**	**50.00**	**9.44**	
	22.050	26.19	-0.23	25.96	50.00	24.04	
Neutral	0.263	37.79	0.22	38.01	61.35	23.34	QP
	0.414	36.42	0.22	36.64	57.57	20.93	
	0.781	32.20	0.13	32.33	56.00	23.67	
	1.240	30.80	0.17	30.97	56.00	25.03	
	7.114	42.11	0.33	42.44	60.00	17.56	
	23.020	31.20	0.86	32.06	60.00	27.94	
	0.263	18.57	0.22	18.79	51.35	32.56	AV
	0.414	22.99	0.22	23.21	47.57	24.36	
	0.781	20.20	0.13	20.33	46.00	25.67	
	1.240	17.90	0.17	18.07	46.00	27.93	
	7.114	37.71	0.33	38.04	50.00	11.96	
	23.020	24.60	0.86	25.46	50.00	24.54	

TEST ENGINEER: ERIC TANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	50H5G	Humidity	:	48%RH
Test Mode	:	USB Play	Date of Test	:	Dec 30, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.268	35.30	0.08	35.38	61.19	25.81	QP
	0.560	35.40	0.00	35.40	56.00	20.60	
	0.781	32.30	0.09	32.39	56.00	23.61	
	1.143	29.09	0.06	29.15	56.00	26.85	
	7.188	40.30	0.26	40.56	60.00	19.44	
	21.850	32.60	-0.22	32.38	60.00	27.62	
	0.268	18.00	0.08	18.08	51.19	33.11	AV
	0.560	21.50	0.00	21.50	46.00	24.50	
	0.781	20.60	0.09	20.69	46.00	25.31	
	1.143	17.99	0.06	18.05	46.00	27.95	
	7.188	36.80	0.26	37.06	50.00	12.94	
	21.850	25.60	-0.22	25.38	50.00	24.62	
Neutral	0.262	37.49	0.22	37.71	61.38	23.67	QP
	0.413	36.29	0.22	36.51	57.60	21.09	
	0.560	36.51	0.17	36.68	56.00	19.32	
	1.080	31.91	0.17	32.08	56.00	23.92	
	7.364	41.80	0.35	42.15	60.00	17.85	
	21.780	31.60	0.84	32.44	60.00	27.56	
	0.262	18.29	0.22	18.51	51.38	32.87	AV
	0.413	22.19	0.22	22.41	47.60	25.19	
	0.560	22.31	0.17	22.48	46.00	23.52	
	1.080	23.41	0.17	23.58	46.00	22.42	
	7.364	**39.90**	**0.35**	**40.25**	**50.00**	**9.75**	
	21.780	25.20	0.84	26.04	50.00	23.96	

TEST ENGINEER: ERIC TANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	50H5G	Humidity	:	48%RH
Test Mode	:	LAN Play	Date of Test	:	Dec 30, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.259	35.00	0.08	35.08	61.45	26.37	QP
	0.561	34.40	0.00	34.40	56.00	21.60	
	0.782	31.80	0.09	31.89	56.00	24.11	
	1.098	30.10	0.05	30.15	56.00	25.85	
	7.193	39.80	0.26	40.06	60.00	19.94	
	24.140	39.70	-0.41	39.29	60.00	20.71	
	0.259	16.10	0.08	16.18	51.45	35.27	AV
	0.561	20.70	0.00	20.70	46.00	25.30	
	0.782	20.60	0.09	20.69	46.00	25.31	
	1.098	17.90	0.05	17.95	46.00	28.05	
	7.193	35.90	0.26	36.16	50.00	13.84	
	24.140	30.90	-0.41	30.49	50.00	19.51	
Neutral	0.265	36.99	0.22	37.21	61.29	24.08	QP
	0.418	35.69	0.22	35.91	57.49	21.58	
	0.561	35.66	0.17	35.83	56.00	20.17	
	1.082	30.61	0.17	30.78	56.00	25.22	
	7.195	41.00	0.34	41.34	60.00	18.66	
	24.120	39.20	0.88	40.08	60.00	19.92	
	0.265	18.09	0.22	18.31	51.29	32.98	AV
	0.418	22.79	0.22	23.01	47.49	24.48	
	0.561	21.31	0.17	21.48	46.00	24.52	
	1.082	22.21	0.17	22.38	46.00	23.62	
	7.195	**36.60**	**0.34**	**36.94**	**50.00**	**13.06**	
	24.120	29.10	0.88	29.98	50.00	20.02	

TEST ENGINEER: ERIC TANG

4 RADIATED EMISSION TEST

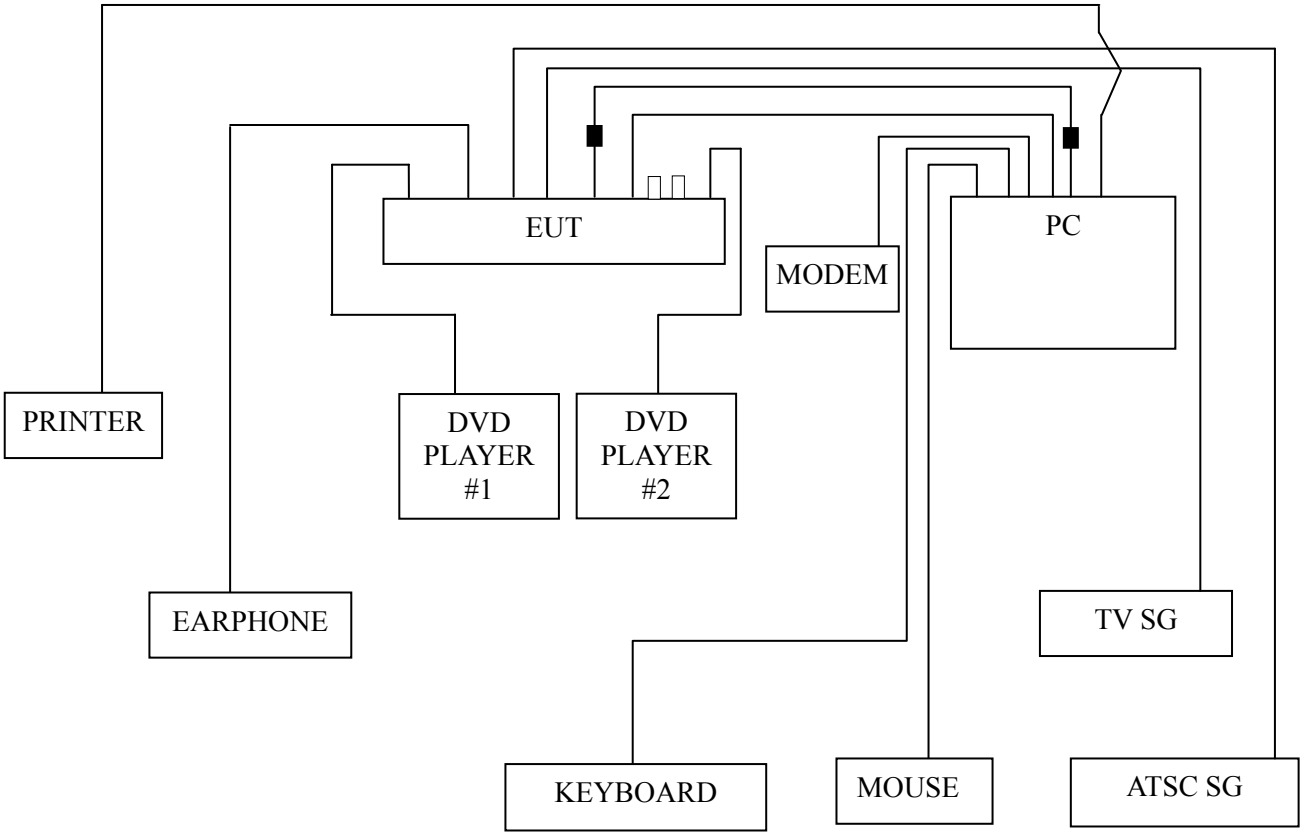
4.1 Test Equipment

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 03, 2013	Sep 02, 2014
2.	Preamplifier	Agilent	8447D	2944A10548	Sep 18, 2013	Mar 17, 2014
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2013	Mar 19, 2014
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 03, 2013	May 02, 2014
5.	Horn Antenna	EMCO	3115	9607-4878	May 11, 2013	May 10, 2014
6.	Spectrum	Agilent	E7405A	MY45106600	Nov 11, 2013	Nov 10, 2014
7.	50Ω Coaxial Switch	Anritsu	MP59B	6200426390	Sep 18, 2013	Mar 17, 2014
8.	Software	Audix	E3	6.2007-9-10	--	--

4.2 Block Diagram of Test Setup

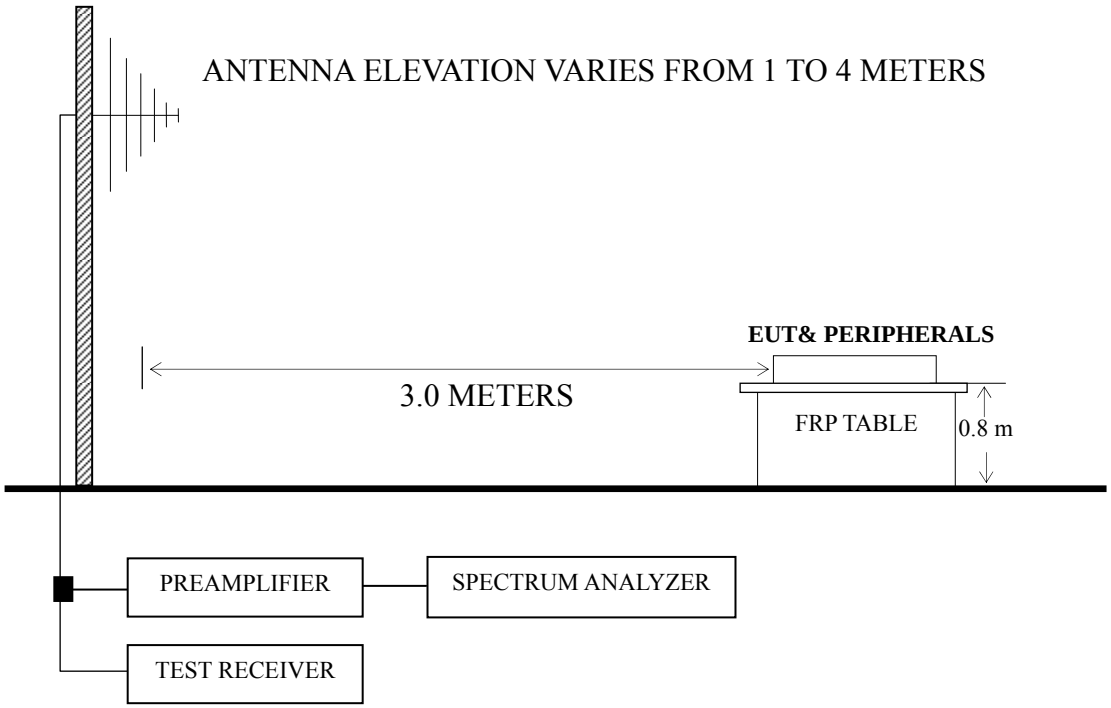
4.2.1 EUT & Peripherals



■: Ferrite core

□: U-Disk

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	
		(μV/m)	dB (μV/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 (μV/m) = 20 log Emission Level (μV/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
D-Sub 1920*1080@60Hz	P23 – P24
HDMI 1920*1080@60Hz	P25
HDMI 1280*1024@60Hz	P26
HDMI 640*480@60Hz	P27
USB Play	P28
LAN Play	P29

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 1920*1080@60Hz test mode. The worst emission at horizontal polarization was detected at 701.240 MHz with corrected signal level of 43.60 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 2.00 m height and the turntable was at 123°. The worst emission at vertical polarization was detected at 444.190 MHz with corrected signal level of 44.80 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.80 m height and the turntable was at 45°.

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	50H5G	Humidity :	60%RH
Test Mode	:	D-Sub 1920*1080@60Hz	Date of Test :	Jan 02, 2014

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	77.530	24.76	6.65	1.05	32.46	40.00	7.54
	235.640	23.94	10.25	2.13	36.32	46.00	9.68
	313.240	23.95	13.52	2.57	40.04	46.00	5.96
	567.380	19.37	19.30	3.14	41.81	46.00	4.19
	633.340	**20.24**	**18.42**	**3.32**	**41.98**	**46.00**	**4.02**
	701.240	17.84	20.30	3.54	41.68	46.00	4.32
Vertical	**33.880**	**19.91**	**16.12**	**0.70**	**36.73**	**40.00**	**3.27**
	77.530	28.59	6.65	1.05	36.29	40.00	3.71
	94.990	26.20	9.30	1.29	36.79	43.50	6.71
	567.380	19.01	19.30	3.14	41.45	46.00	4.55
	633.340	19.90	18.42	3.32	41.64	46.00	4.36
	703.180	16.82	20.13	3.55	40.50	46.00	5.50

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	50H5G	Humidity :	60%RH
Test Mode	:	HDMI 1920*1080@60Hz	Date of Test :	Jan 02, 2014

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	133.790	23.41	11.22	1.56	--	36.19	43.50	7.31	QP
	313.240	24.70	13.52	2.57	--	40.79	46.00	5.21	
	417.030	23.76	16.98	2.74	--	43.48	46.00	2.52	
	453.890	23.09	17.03	2.84	--	42.96	46.00	3.04	
	701.240	**19.76**	**20.30**	**3.54**	**--**	**43.60**	**46.00**	**2.40**	
	741.980	21.13	18.87	3.57	--	43.57	46.00	2.43	
	1026.000	47.54	23.80	4.92	38.14	38.12	74.00	35.88	PK
	1179.000	46.63	24.43	5.08	37.79	38.35	74.00	35.65	
	1282.000	46.16	24.92	5.35	37.53	38.90	74.00	35.10	
	1477.000	45.73	25.55	5.63	36.96	39.95	74.00	34.05	
	1632.000	48.24	27.03	5.81	36.62	44.46	74.00	29.54	
	1836.000	46.68	29.51	6.16	36.30	46.05	74.00	27.95	
	1026.000	34.91	23.80	4.92	38.14	25.49	54.00	28.51	AV
	1179.000	33.63	24.43	5.08	37.79	25.35	54.00	28.65	
	1282.000	33.57	24.92	5.35	37.53	26.31	54.00	27.69	
	1477.000	32.13	25.55	5.63	36.96	26.35	54.00	27.65	
	1632.000	35.48	27.03	5.81	36.62	31.70	54.00	22.30	
	1836.000	33.72	29.51	6.16	36.30	33.09	54.00	20.91	

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	50H5G	Humidity	:	60%RH
Test Mode	:	HDMI 1920*1080@60Hz	Date of Test	:	Jan 02, 2014

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	30.970	18.36	17.65	0.67	--	36.68	40.00	3.32	QP
	51.340	26.07	7.20	0.86	--	34.13	40.00	5.87	
	145.430	23.49	10.28	1.62	--	35.39	43.50	8.11	
	444.190	**24.83**	**17.15**	**2.82**	**--**	**44.80**	**46.00**	**1.20**	
	620.730	21.71	18.90	3.28	**--**	43.89	46.00	2.11	
	703.180	19.58	20.13	3.55	**--**	43.26	46.00	2.74	
	1019.000	46.93	23.78	4.91	38.16	37.46	74.00	36.54	PK
	1185.000	45.95	24.46	5.08	37.78	37.71	74.00	36.29	
	1347.000	44.79	25.16	5.47	37.35	38.07	74.00	35.93	
	1491.000	45.38	25.58	5.63	36.92	39.67	74.00	34.33	
	1683.000	52.12	27.67	5.97	36.53	49.23	74.00	24.77	
	1889.000	44.44	30.05	6.18	36.23	44.44	74.00	29.56	
	1019.000	33.68	23.78	4.91	38.16	24.21	54.00	29.79	AV
	1185.000	32.90	24.46	5.08	37.78	24.66	54.00	29.34	
	1347.000	31.28	25.16	5.47	37.35	24.56	54.00	29.44	
	1491.000	32.63	25.58	5.63	36.92	26.92	54.00	27.08	
	1683.000	38.24	27.67	5.97	36.53	35.35	54.00	18.65	
	1889.000	31.77	30.05	6.18	36.23	31.77	54.00	22.23	

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	50H5G	Humidity :	60%RH
Test Mode	:	HDMI 1280*1024@60Hz	Date of Test :	Jan 02, 2014

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	138.640	22.61	10.51	1.59	34.71	43.50	8.79
	310.330	**26.60**	**13.30**	**2.56**	**42.46**	**46.00**	**3.54**
	570.290	19.82	19.40	3.14	42.36	46.00	3.64
	620.730	19.79	18.90	3.28	41.97	46.00	4.03
	706.090	18.79	19.97	3.55	42.31	46.00	3.69
	822.490	17.93	20.70	3.80	42.43	46.00	3.57
Vertical	31.940	19.66	16.50	0.68	36.84	40.00	3.16
	80.440	24.82	6.84	1.08	32.74	40.00	7.26
	572.230	18.61	19.25	3.14	41.00	46.00	5.00
	620.730	20.02	18.90	3.28	42.20	46.00	3.80
	706.090	**19.43**	**19.97**	**3.55**	**42.95**	**46.00**	**3.05**
	822.490	16.73	20.70	3.80	41.23	46.00	4.77

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	50H5G	Humidity :	60%RH
Test Mode	:	HDMI 640*480@60Hz	Date of Test :	Jan 02, 2014

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	77.530	24.48	6.65	1.05	32.18	40.00	7.82
	313.240	24.63	13.52	2.57	40.72	46.00	5.28
	444.190	**22.98**	**17.15**	**2.82**	**42.95**	**46.00**	**3.05**
	567.380	19.92	19.30	3.14	42.36	46.00	3.64
	623.640	20.66	18.65	3.28	42.59	46.00	3.41
	741.980	18.39	18.87	3.57	40.83	46.00	5.17
Vertical	33.880	18.46	16.12	0.70	35.28	40.00	4.72
	463.590	22.23	17.45	2.88	42.56	46.00	3.44
	567.380	19.78	19.30	3.14	42.22	46.00	3.78
	623.640	**20.99**	**18.65**	**3.28**	**42.92**	**46.00**	**3.08**
	698.330	18.71	20.30	3.54	42.55	46.00	3.45
	926.280	18.95	19.30	4.63	42.88	46.00	3.12

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	50H5G	Humidity :	60%RH
Test Mode	:	USB Play	Date of Test :	Jan 02, 2014

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	68.800	25.04	5.56	0.92	31.52	40.00	8.48
	133.790	20.20	11.22	1.56	32.98	43.50	10.52
	238.550	23.44	10.83	2.15	36.42	46.00	9.58
	293.840	23.97	12.67	2.49	39.13	46.00	6.87
	629.460	**19.18**	**18.40**	**3.32**	**40.90**	**46.00**	**5.10**
	709.000	16.81	19.80	3.55	40.16	46.00	5.84
Vertical	37.760	20.41	14.13	0.75	35.29	40.00	4.71
	76.560	26.78	6.59	1.03	34.40	40.00	5.60
	94.020	23.25	9.12	1.27	33.64	43.50	9.86
	314.210	20.37	13.52	2.57	36.46	46.00	9.54
	570.290	17.18	19.40	3.14	39.72	46.00	6.28
	627.520	**19.81**	**18.52**	**3.32**	**41.65**	**46.00**	**4.35**

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	50H5G	Humidity :	60%RH
Test Mode	:	LAN Play	Date of Test :	Jan 02, 2014

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	64.920	25.73	4.70	0.90	31.33	40.00	8.67
	133.790	21.20	11.22	1.56	33.98	43.50	9.52
	244.370	22.21	11.15	2.18	35.54	46.00	10.46
	342.340	16.39	14.80	2.61	33.80	46.00	12.20
	480.080	14.22	18.00	2.92	35.14	46.00	10.86
	625.580	**17.36**	**18.65**	**3.28**	**39.29**	**46.00**	**6.71**
Vertical	43.580	19.03	10.60	0.80	30.43	40.00	9.57
	54.250	**25.64**	**6.18**	**0.87**	**32.69**	**40.00**	**7.31**
	94.020	24.25	9.12	1.27	34.64	43.50	8.86
	122.150	21.06	11.44	1.49	33.99	43.50	9.51
	382.110	19.15	15.23	2.66	37.04	46.00	8.96
	554.770	14.33	19.20	3.10	36.63	46.00	9.37

TEST ENGINEER: NEAL WANG

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Gasket	35x0.7x41mmVGA	Qingdao Joinset S&T Co., Ltd.	See Internal Photos Figure 18
		Shenzhen Tongantai 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: Neal_Wang

(NEAL WANG)

6 DEVIATION TO TEST SPECIFICATIONS

None.