

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

LED LCD TV

Model No.	Brand
55K600GW	Hisense
55H7G	

FCC ID : W9HLCDF0036

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

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Report No. : ACI-F14020
Date of Test : Jan 11 – 17, 2014
Date of Report : Jan 22, 2014

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TEST REPORT FOR FCC CERTIFICATE

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

Model No.	Brand	Power Supply
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 Jan 11 – 17, 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.F14019, a Verification report.

Date of Test : Jan 11 – 17, 2014 Date of Report : Jan 22, 2014

Producer : 
 KATHY WANG / Supervisor

Review : 
 DIO YANG / Assistant Manager

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

Signatory : 
 Authorized Signature EMC SAMMY CHEN / Deputy Manager

1 SUMMARY OF STANDARDS AND RESULTS

1.1 Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Description of Test Item	Standard	Limits	Results
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	:	<input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-product <input type="checkbox"/> Pro-type
Model No.	:	55K600GW, 55H7G
Note	:	The above models are all the same except for model name. 55H7G 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 : HE550HF-B51\S0.B2
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 LAN Port : Connected with PC
- (2) One IR Blaster Port : Connected with IR CABLE
- (3) One DIGITAL AUDIO OUT Port : Connected with DVD PLAYER #1
- (4) One PC/DVI AUDIO IN Port : Connected with PC
- (5) One VGA IN Port : Connected with PC
- (6) One HDMI2 Port : Connected with DVD PLAYER#1
- (7) One HDMI3 Port : Connected with DVD PLAYER#2
- (8) One HDMI4 Port : Connected with DVD PLAYER#3

Side Port:

- (1) One HDMI1 Port : Connected with PC
- (2) One AUDIO OUT Port : Connected with Earphone
- (3) One ANT/CABLE IN Port : Connected with Antenna or ATSC SG / TV SG
- (4) Three USB Ports : Connected with U-Disk
- (5) One COMPONENT IN/AV IN Port : Connected with DVD PLAYER#1
- (6) One COMPONENT IN/YPbPr Port : Connected with DVD PLAYER#1

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 DVD PLAYER#3

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

2.2.11 Earphone

Manufacturer : audio-technica
 Model Number : ATH-CKL200

2.2.12 U-DISK *3

Manufacturer : LG
 Model Number : 1GB

2.3 Description of Test Facility

Site Description (No.3 3m Chamber) : Sept. 17, 1998 file on
 Mar 16, 2012 Renewed
 Federal Communications Commission
 FCC Engineering Laboratory
 7435 Oakland Mills Road
 Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3F 34Bldg 680 Guiping Rd,
 Caohejing Hi-Tech Park,
 Shanghai 200233, China

NVLAP Lab Code : 200371-0

2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty: U = 3.02 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

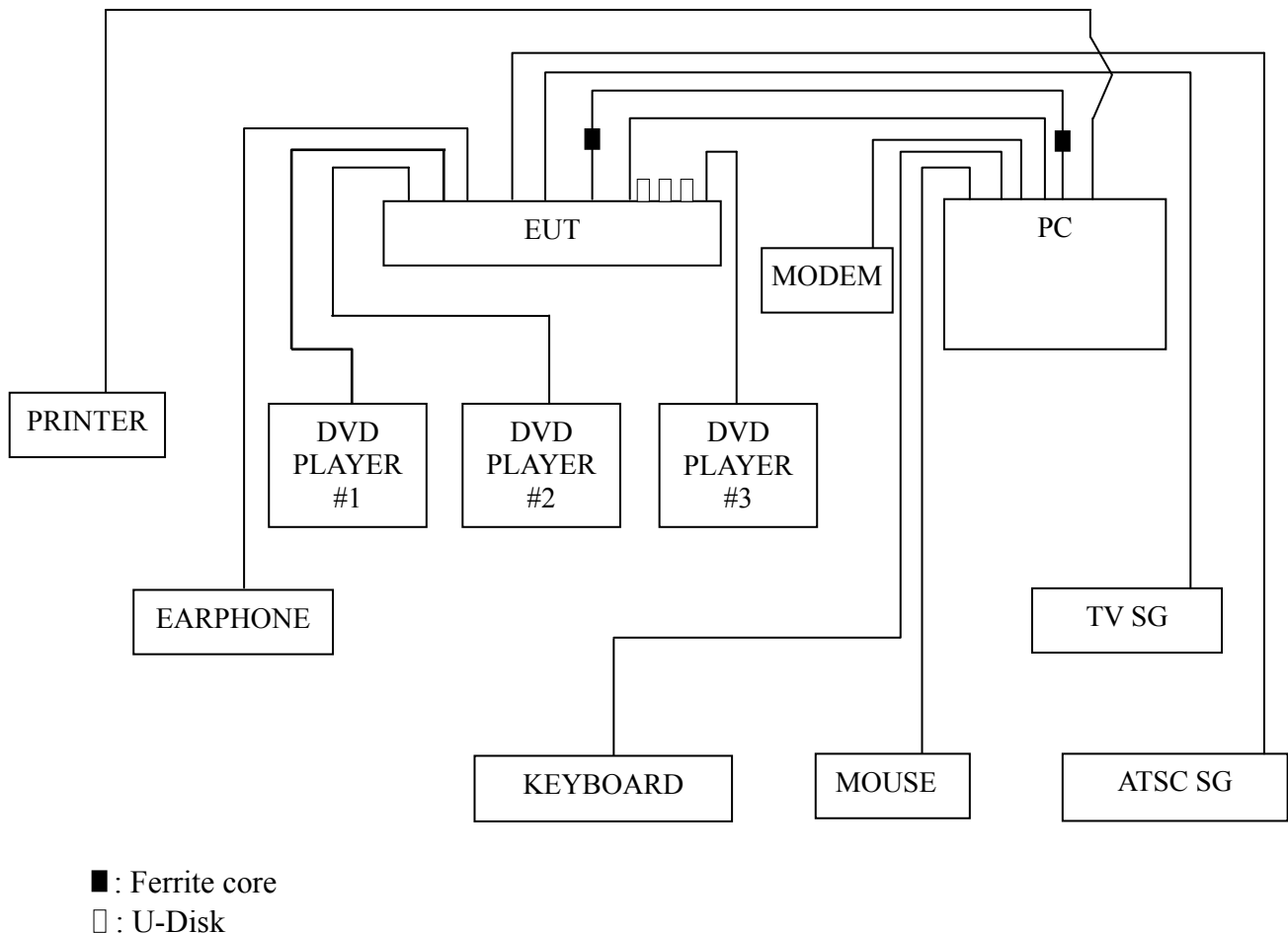
3.1 Test Equipment

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

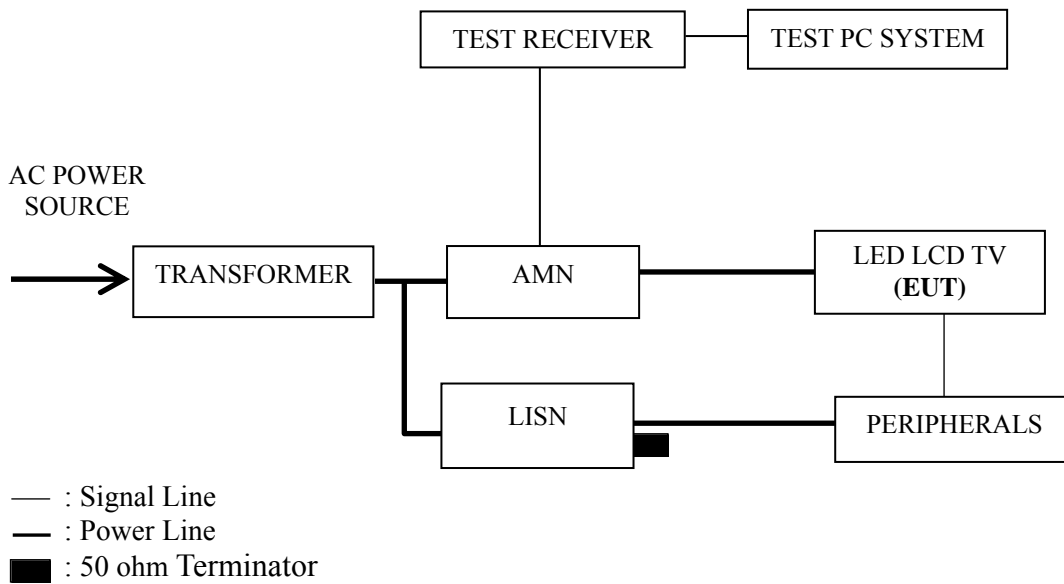
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	100841	Mar 20, 2013	Mar 19, 2014
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Feb 25, 2013	Feb 24, 2014
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2013	Mar 19, 2014
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Sep 18, 2013	Mar 17, 2014
5.	50 Ω 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



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 (μ 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 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
D-Sub 1280*1024@60Hz
D-Sub 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
D-Sub 1280*1024@60Hz	P15
D-Sub 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 D-Sub 1920*1080@60Hz test mode. The worst emission is detected at 7.029 MHz (Average Value) with corrected signal level of 40.23 dB (μ V) (limit is 50.00 dB (μ V)), when the Neutral of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C
 Model No. : 55H7G Humidity : 48%RH
 Test Mode : D-Sub 1920*1080@60Hz Date of Test : Jan 11, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark	
Line	0.154	46.80	0.15	46.95	65.78	18.83	QP	
	0.372	37.10	0.01	37.11	58.45	21.34		
	0.648	39.40	0.07	39.47	56.00	16.53		
	1.434	37.10	0.06	37.16	56.00	18.84		
	4.625	34.80	0.20	35.00	56.00	21.00		
	7.027	42.90	0.26	43.16	60.00	16.84		
	0.154	34.20	0.15	34.35	55.78	21.43	AV	
	0.372	24.60	0.01	24.61	48.45	23.84		
	0.648	29.00	0.07	29.07	46.00	16.93		
	1.434	28.10	0.06	28.16	46.00	17.84		
	4.625	28.00	0.20	28.20	46.00	17.80		
	7.027	39.30	0.26	39.56	50.00	10.44		
	Neutral	0.155	49.80	0.15	49.95	65.74	15.79	QP
		0.351	34.71	0.21	34.92	58.93	24.01	
0.559		38.21	0.17	38.38	56.00	17.62		
1.438		36.30	0.17	36.47	56.00	19.53		
7.029		44.10	0.33	44.43	60.00	15.57		
20.570		36.20	0.81	37.01	60.00	22.99		
0.155		35.10	0.15	35.25	55.74	20.49	AV	
0.351		22.41	0.21	22.62	48.93	26.31		
0.559		28.41	0.17	28.58	46.00	17.42		
1.438		27.10	0.17	27.27	46.00	18.73		
7.029		39.90	0.33	40.23	50.00	9.77		
20.570		30.90	0.81	31.71	50.00	18.29		

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22°C
 Model No. : 55H7G Humidity : 48%RH
 Test Mode : HDMI 1920*1080@60Hz Date of Test : Jan 11, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.156	46.50	0.15	46.65	65.67	19.02	QP
	0.363	36.60	0.02	36.62	58.65	22.03	
	0.661	39.10	0.08	39.18	56.00	16.82	
	1.173	37.39	0.06	37.45	56.00	18.55	
	2.223	36.40	0.08	36.48	56.00	19.52	
	6.480	38.40	0.24	38.64	60.00	21.36	
	0.156	34.20	0.15	34.35	55.67	21.32	AV
	0.363	25.50	0.02	25.52	48.65	23.13	
	0.661	29.30	0.08	29.38	46.00	16.62	
	1.173	29.19	0.06	29.25	46.00	16.75	
	2.223	27.70	0.08	27.78	46.00	18.22	
	6.480	32.90	0.24	33.14	50.00	16.86	
Neutral	0.155	49.80	0.15	49.95	65.71	15.76	QP
	0.350	34.41	0.21	34.62	58.95	24.33	
	0.558	38.81	0.17	38.98	56.00	17.02	
	1.429	36.90	0.17	37.07	56.00	18.93	
	2.242	36.70	0.17	36.87	56.00	19.13	
	7.110	43.61	0.33	43.94	60.00	16.06	
	0.155	35.00	0.15	35.15	55.71	20.56	AV
	0.350	22.31	0.21	22.52	48.95	26.43	
	0.558	29.11	0.17	29.28	46.00	16.72	
	1.429	27.40	0.17	27.57	46.00	18.43	
	2.242	28.20	0.17	28.37	46.00	17.63	
	7.110	37.61	0.33	37.94	50.00	12.06	

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22°C
 Model No. : 55H7G Humidity : 48%RH
 Test Mode : D-Sub 1280*1024@60Hz Date of Test : Jan 11, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.156	46.90	0.15	47.05	65.68	18.63	QP
	0.479	34.80	-0.04	34.76	56.37	21.61	
	0.660	39.10	0.08	39.18	56.00	16.82	
	1.963	37.20	0.08	37.28	56.00	18.72	
	3.014	33.70	0.12	33.82	56.00	22.18	
	7.037	41.20	0.26	41.46	60.00	18.54	
	0.156	34.40	0.15	34.55	55.68	21.13	AV
	0.479	24.70	-0.04	24.66	46.37	21.71	
	0.660	30.40	0.08	30.48	46.00	15.52	
	1.963	27.60	0.08	27.68	46.00	18.32	
	3.014	25.50	0.12	25.62	46.00	20.38	
	7.037	36.00	0.26	36.26	50.00	13.74	
Neutral	0.152	48.20	0.15	48.35	65.91	17.56	QP
	0.472	34.40	0.21	34.61	56.48	21.87	
	0.648	39.20	0.14	39.34	56.00	16.66	
	1.458	37.80	0.17	37.97	56.00	18.03	
	4.296	31.29	0.22	31.51	56.00	24.49	
	7.028	44.10	0.33	44.43	60.00	15.57	
	0.152	32.10	0.15	32.25	55.91	23.66	AV
	0.472	22.90	0.21	23.11	46.48	23.37	
	0.648	27.40	0.14	27.54	46.00	18.46	
	1.458	28.80	0.17	28.97	46.00	17.03	
	4.296	25.09	0.22	25.31	46.00	20.69	
	7.028	39.20	0.33	39.53	50.00	10.47	

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22°C
 Model No. : 55H7G Humidity : 48%RH
 Test Mode : D-Sub 640*480@60Hz Date of Test : Jan 11, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark	
Line	0.153	46.90	0.15	47.05	65.83	18.78	QP	
	0.365	36.20	0.02	36.22	58.61	22.39		
	0.559	38.70	0.00	38.70	56.00	17.30		
	1.468	38.10	0.06	38.16	56.00	17.84		
	2.517	34.60	0.09	34.69	56.00	21.31		
	7.030	43.80	0.26	44.06	60.00	15.94		
	0.153	34.20	0.15	34.35	55.83	21.48	AV	
	0.365	25.00	0.02	25.02	48.61	23.59		
	0.559	28.50	0.00	28.50	46.00	17.50		
	1.468	28.70	0.06	28.76	46.00	17.24		
	2.517	23.40	0.09	23.49	46.00	22.51		
	7.030	38.80	0.26	39.06	50.00	10.94		
	Neutral	0.157	49.10	0.16	49.26	65.62	16.36	QP
		0.349	34.21	0.21	34.42	58.98	24.56	
0.663		38.70	0.13	38.83	56.00	17.17		
1.178		38.29	0.18	38.47	56.00	17.53		
2.003		36.90	0.17	37.07	56.00	18.93		
7.055		45.20	0.33	45.53	60.00	14.47		
0.157		35.20	0.16	35.36	55.62	20.26	AV	
0.349		21.51	0.21	21.72	48.98	27.26		
0.663		29.90	0.13	30.03	46.00	15.97		
1.178		29.79	0.18	29.97	46.00	16.03		
2.003		28.10	0.17	28.27	46.00	17.73		
7.055		39.20	0.33	39.53	50.00	10.47		

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22°C
 Model No. : 55H7G Humidity : 48%RH
 Test Mode : USB Play Date of Test : Jan 11, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.154	47.10	0.15	47.25	65.79	18.54	QP
	0.369	36.50	0.01	36.51	58.53	22.02	
	0.662	38.90	0.08	38.98	56.00	17.02	
	1.193	37.49	0.06	37.55	56.00	18.45	
	2.231	37.60	0.08	37.68	56.00	18.32	
	7.027	43.20	0.26	43.46	60.00	16.54	
	0.154	34.00	0.15	34.15	55.79	21.64	AV
	0.369	25.40	0.01	25.41	48.53	23.12	
	0.662	30.40	0.08	30.48	46.00	15.52	
	1.193	28.79	0.06	28.85	46.00	17.15	
	2.231	28.50	0.08	28.58	46.00	17.42	
	7.027	38.20	0.26	38.46	50.00	11.54	
Neutral	0.160	47.70	0.16	47.86	65.49	17.63	QP
	0.358	34.61	0.21	34.82	58.78	23.96	
	0.655	39.31	0.13	39.44	56.00	16.56	
	1.184	38.19	0.18	38.37	56.00	17.63	
	1.974	37.20	0.17	37.37	56.00	18.63	
	7.007	41.40	0.33	41.73	60.00	18.27	
	0.160	34.20	0.16	34.36	55.49	21.13	AV
	0.358	21.91	0.21	22.12	48.78	26.66	
	0.655	29.51	0.13	29.64	46.00	16.36	
	1.184	30.09	0.18	30.27	46.00	15.73	
	1.974	27.70	0.17	27.87	46.00	18.13	
	7.007	36.20	0.33	36.53	50.00	13.47	

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H7G Humidity : 48%RH

Test Mode : LAN Play Date of Test : Jan 11, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	43.50	0.16	43.66	65.99	22.33	QP
	0.370	36.50	0.01	36.51	58.51	22.00	
	0.655	39.41	0.07	39.48	56.00	16.52	
	1.184	38.39	0.06	38.45	56.00	17.55	
	2.274	36.20	0.09	36.29	56.00	19.71	
	7.033	41.60	0.26	41.86	60.00	18.14	
	0.150	29.70	0.16	29.86	55.99	26.13	AV
	0.370	25.40	0.01	25.41	48.51	23.10	
	0.655	29.61	0.07	29.68	46.00	16.32	
	1.184	29.99	0.06	30.05	46.00	15.95	
	2.274	26.20	0.09	26.29	46.00	19.71	
	7.033	36.60	0.26	36.86	50.00	13.14	
Neutral	0.156	50.10	0.15	50.25	65.70	15.45	QP
	0.362	34.71	0.21	34.92	58.68	23.76	
	0.667	39.10	0.13	39.23	56.00	16.77	
	1.472	38.10	0.17	38.27	56.00	17.73	
	3.050	34.09	0.19	34.28	56.00	21.72	
	6.487	38.60	0.30	38.90	60.00	21.10	
	0.156	35.30	0.15	35.45	55.70	20.25	AV
	0.362	21.91	0.21	22.12	48.68	26.56	
	0.667	29.90	0.13	30.03	46.00	15.97	
	1.472	28.80	0.17	28.97	46.00	17.03	
	3.050	25.49	0.19	25.68	46.00	20.32	
	6.487	33.10	0.30	33.40	50.00	16.60	

TEST ENGINEER: ERIC TANG

4 RADIATED EMISSION TEST

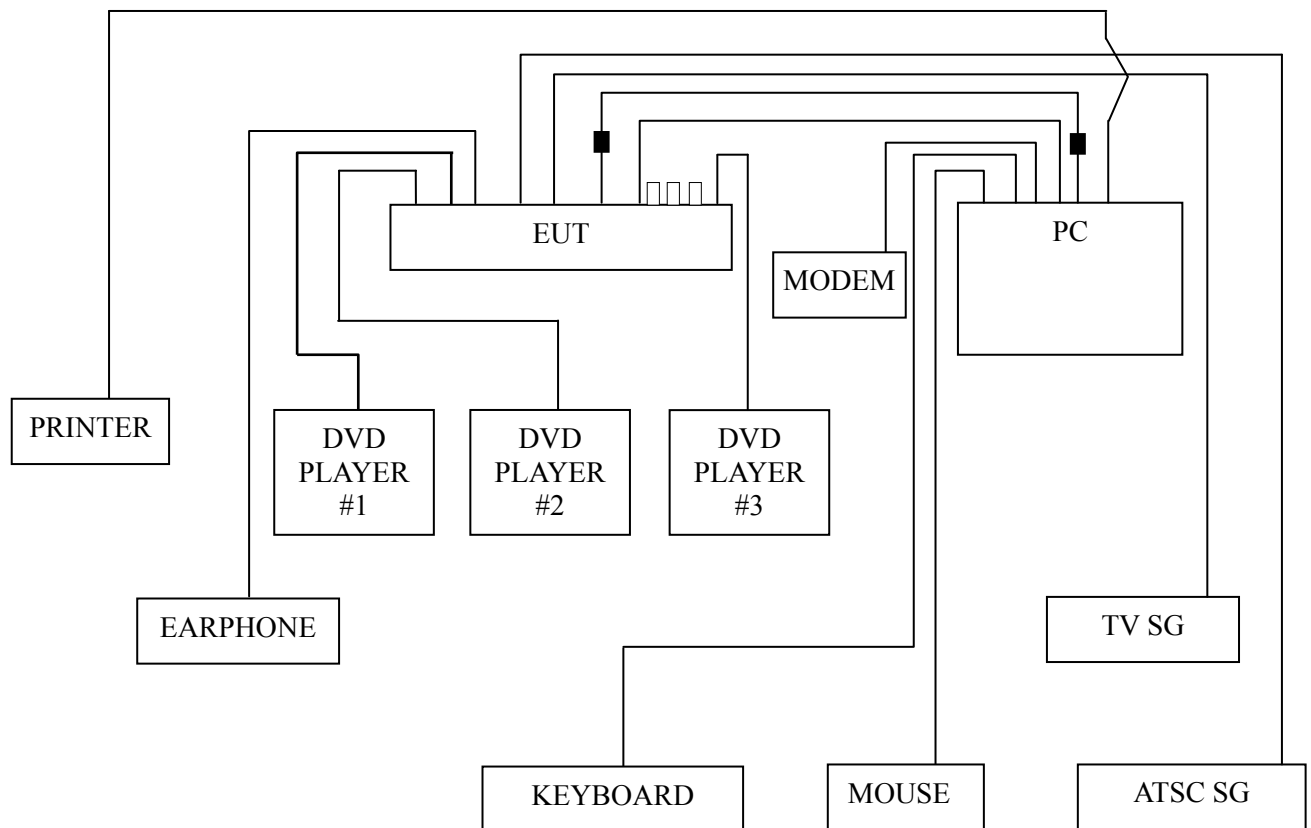
4.1 Test Equipment

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

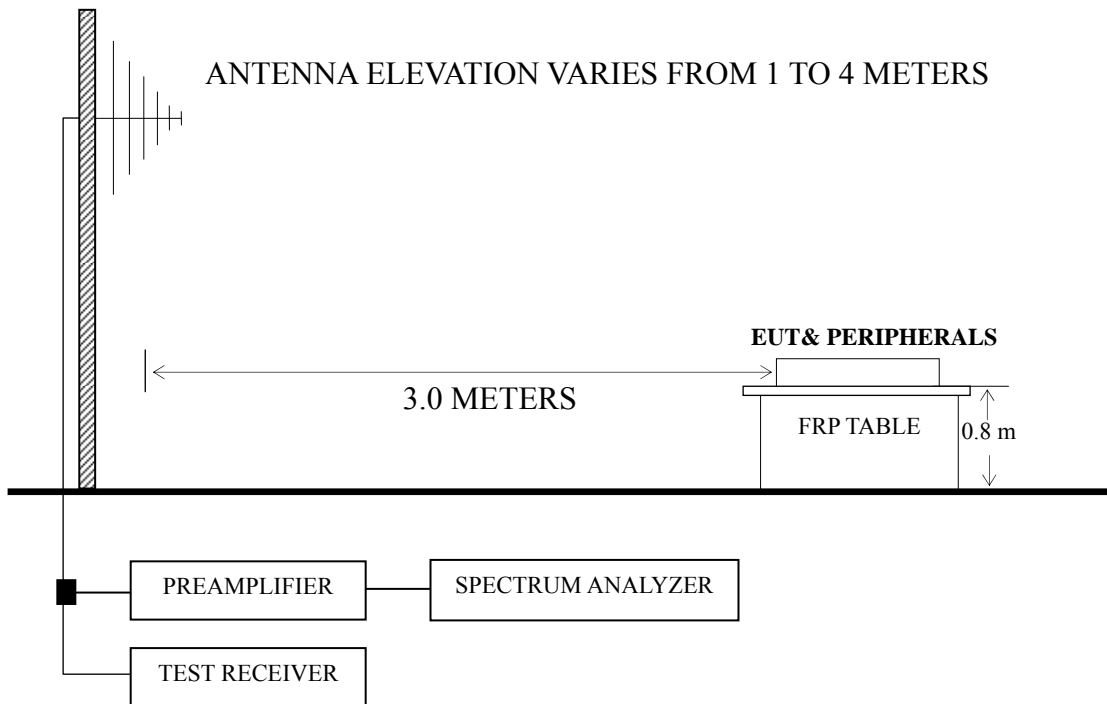
4.2.1 EUT & Peripherals



■ : 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	
		($\mu\text{V/m}$)	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
D-Sub 1920*1080@60Hz	P23
HDMI 1920*1080@60Hz	P24 – 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 894.270 MHz with corrected signal level of 44.85 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.90 m height and the turntable was at 125°. The worst emission at vertical polarization was detected at 895.240 MHz with corrected signal level of 44.93 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.80 m height and the turntable was at 72°.

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H7G Humidity : 60%RH

Test Mode : D-Sub 1920*1080@60Hz Date of Test : Jan 17, 2014

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	82.380	24.57	7.10	1.11	32.78	40.00	7.22
	135.730	21.52	10.91	1.57	34.00	43.50	9.50
	198.780	28.21	8.20	1.94	38.35	43.50	5.15
	543.130	16.94	19.45	3.08	39.47	46.00	6.53
	701.240	16.25	20.30	3.54	40.09	46.00	5.91
	798.240	16.67	19.43	3.61	39.71	46.00	6.29
Vertical	41.640	21.32	11.88	0.79	33.99	40.00	6.01
	51.340	25.64	7.20	0.86	33.70	40.00	6.30
	96.930	27.96	9.76	1.31	39.03	43.50	4.47
	145.430	26.89	10.28	1.62	38.79	43.50	4.71
	198.780	29.52	8.20	1.94	39.66	43.50	3.84
	701.240	18.38	20.30	3.54	42.22	46.00	3.78

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22°C
 Model No. : 55H7G Humidity : 60%RH
 Test Mode : HDMI 1920*1080@60Hz Date of Test : Jan 17, 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	371.440	24.10	14.85	2.66	--	41.61	46.00	4.39	QP
	463.590	21.97	17.45	2.88	--	42.30	46.00	3.70	
	555.740	20.05	19.20	3.10	--	42.35	46.00	3.65	
	599.390	20.88	18.30	3.22	--	42.40	46.00	3.60	
	740.040	20.79	18.90	3.57	--	43.26	46.00	2.74	
	894.270	20.79	19.63	4.43	--	44.85	46.00	1.15	
	1063.000	47.51	23.94	4.96	38.06	38.35	74.00	35.65	PK
	1172.000	47.30	24.40	5.08	37.81	38.97	74.00	35.03	
	1260.000	46.13	24.82	5.30	37.59	38.66	74.00	35.34	
	1430.000	45.91	25.42	5.60	37.09	39.84	74.00	34.16	
	1647.000	47.95	27.25	5.81	36.59	44.42	74.00	29.58	
	1849.000	45.71	29.68	6.16	36.28	45.27	74.00	28.73	
	1063.000	34.53	23.94	4.96	38.06	25.37	54.00	28.63	AV
	1172.000	34.40	24.40	5.08	37.81	26.07	54.00	27.93	
	1260.000	33.63	24.82	5.30	37.59	26.16	54.00	27.84	
	1430.000	32.11	25.42	5.60	37.09	26.04	54.00	27.96	
1647.000	34.57	27.25	5.81	36.59	31.04	54.00	22.96		
1849.000	32.68	29.68	6.16	36.28	32.24	54.00	21.76		

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H7G Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Jan 17, 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	133.790	24.65	11.22	1.56	--	37.43	43.50	6.07	QP
	555.740	21.10	19.20	3.10	--	43.40	46.00	2.60	
	599.390	21.44	18.30	3.22	--	42.96	46.00	3.04	
	740.040	19.98	18.90	3.57	--	42.45	46.00	3.55	
	795.330	19.42	19.07	3.61	--	42.10	46.00	3.90	
	895.240	21.03	19.47	4.43	--	44.93	46.00	1.07	
	1023.000	46.37	23.79	4.91	38.15	36.92	74.00	37.08	PK
	1059.000	45.99	23.92	4.96	38.07	36.80	74.00	37.20	
	1154.000	45.80	24.32	5.07	37.85	37.34	74.00	36.66	
	1222.000	46.00	24.63	5.20	37.68	38.15	74.00	35.85	
	1615.000	45.85	26.87	5.74	36.65	41.81	74.00	32.19	
	1826.000	45.22	29.40	6.16	36.31	44.47	74.00	29.53	
	1023.000	33.29	23.79	4.91	38.15	23.84	54.00	30.16	AV
	1059.000	32.11	23.92	4.96	38.07	22.92	54.00	31.08	
	1154.000	32.64	24.32	5.07	37.85	24.18	54.00	29.82	
	1222.000	32.84	24.63	5.20	37.68	24.99	54.00	29.01	
	1615.000	32.64	26.87	5.74	36.65	28.60	54.00	25.40	
	1826.000	32.44	29.40	6.16	36.31	31.69	54.00	22.31	

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22°C
 Model No. : 55H7G Humidity : 60%RH
 Test Mode : HDMI 1280*1024@60Hz Date of Test : Jan 17, 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	80.440	25.37	6.84	1.08	33.29	40.00	6.71
	196.840	24.09	8.20	1.94	34.23	43.50	9.27
	324.880	22.02	14.09	2.58	38.69	46.00	7.31
	538.280	20.24	19.23	3.06	42.53	46.00	3.47
	698.330	18.68	20.30	3.54	42.52	46.00	3.48
	895.240	18.01	19.47	4.43	41.91	46.00	4.09
Vertical	31.940	17.93	16.50	0.68	35.11	40.00	4.89
	128.940	25.23	11.82	1.53	38.58	43.50	4.92
	145.430	26.65	10.28	1.62	38.55	43.50	4.95
	538.280	20.38	19.23	3.06	42.67	46.00	3.33
	698.330	18.77	20.30	3.54	42.61	46.00	3.39
	795.330	18.08	19.07	3.61	40.76	46.00	5.24

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H7G Humidity : 60%RH

Test Mode : HDMI 640*480@60Hz Date of Test : Jan 17, 2014

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	80.440	24.54	6.84	1.08	32.46	40.00	7.54
	130.880	20.61	11.72	1.55	33.88	43.50	9.62
	196.840	24.14	8.20	1.94	34.28	43.50	9.22
	698.330	15.68	20.30	3.54	39.52	46.00	6.48
	795.330	17.61	19.07	3.61	40.29	46.00	5.71
	890.390	15.31	19.80	4.43	39.54	46.00	6.46
Vertical	38.730	19.42	13.30	0.76	33.48	40.00	6.52
	96.930	23.30	9.76	1.31	34.37	43.50	9.13
	145.430	25.88	10.28	1.62	37.78	43.50	5.72
	453.890	20.27	17.03	2.84	40.14	46.00	5.86
	698.330	15.82	20.30	3.54	39.66	46.00	6.34
	795.330	16.97	19.07	3.61	39.65	46.00	6.35

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H7G Humidity : 60%RH

Test Mode : USB Play Date of Test : Jan 17, 2014

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	78.500	24.22	6.71	1.05	31.98	40.00	8.02
	134.760	21.29	11.00	1.57	33.86	43.50	9.64
	195.870	24.15	8.20	1.92	34.27	43.50	9.23
	287.050	19.65	12.55	2.46	34.66	46.00	11.34
	685.720	14.60	19.65	3.51	37.76	46.00	8.24
	870.020	14.26	20.30	4.20	38.76	46.00	7.24
Vertical	33.880	16.86	16.12	0.70	33.68	40.00	6.32
	40.670	20.55	12.15	0.78	33.48	40.00	6.52
	98.870	25.29	10.17	1.32	36.78	43.50	6.72
	133.790	25.48	11.22	1.56	38.26	43.50	5.24
	492.690	15.47	17.68	2.96	36.11	46.00	9.89
	676.020	18.38	19.20	3.48	41.06	46.00	4.94

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H7G Humidity : 60%RH

Test Mode : LAN Play Date of Test : Jan 17, 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	92.080	21.74	8.66	1.24	31.64	43.50	11.86
	128.940	21.10	11.82	1.53	34.45	43.50	9.05
	178.410	21.80	8.23	1.83	31.86	43.50	11.64
	307.420	20.09	13.10	2.56	35.75	46.00	10.25
	466.500	13.76	17.50	2.88	34.14	46.00	11.86
	655.650	15.23	18.70	3.41	37.34	46.00	8.66
Vertical	38.730	20.85	13.30	0.76	34.91	40.00	5.09
	100.810	17.93	10.58	1.35	29.86	43.50	13.64
	152.220	22.93	9.85	1.65	34.43	43.50	9.07
	210.420	25.01	7.60	2.00	34.61	43.50	8.89
	525.670	12.19	18.35	3.03	33.57	46.00	12.43
	695.420	15.29	20.30	3.54	39.13	46.00	6.87

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.	
Ferrite Core	BNF-12/ZCAT1519-0830	Jiangsu Ruifeng Electronic Co., Ltd.	See Internal Photos Figure 19
		FEELUX	
		Jiangsu Chenlang Group Electronic 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.