

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

LED LCD TV

Model No.	Brand
65K600GW, 65H7G	Hisense

FCC ID : W9HLCDF0046

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-F14112
Date of Test : Jul 09 – 10, 2014
Date of Report : Jul 21, 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
65K600GW, 65H7G	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 Jul 09 – 10, 2014 is technically compliance with the FCC official limits also.

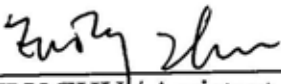
This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

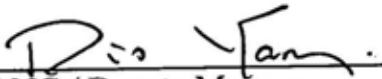

This report contains data that are not covered by the NVLAP accreditation.

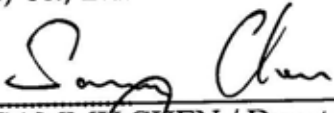
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

The test results for EUT's TV functions are contained in No.F14111, a Verification report.

Date of Test : Jul 09 – 10, 2014 Date of Report : Jul 21, 2014

Producer : 
EMILY ZHU / Assistant

Review : 
DIO YANG / Deputy 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 checked="" type="checkbox"/> Production <input type="checkbox"/> Pre-product <input type="checkbox"/> Pro-type
Model No.	:	65K600GW, 65H7G
Note	:	The above models are all the same except for model name. 65H7G 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 : INNOLUX M/N : V650HP1-LS6 Rev.E8
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 #3
- (2) One HDMI3 Port : Connected with DVD PLAYER #1
- (3) One HDMI4 Port : Connected with DVD PLAYER #2
- (4) One LAN Port : Connected with PC
- (5) One IR Blaster Port : Connected with Terminal
- (6) One DIGITAL Audio Out Port : Connected with DVD PLAYER #3
- (7) One PC/ AUDIO IN Port : Connected with PC
- (8) One VGA In Port : Connected with PC

Side Port:

- (9) One component of AV/YPbPr Port : Connected with DVD PLAYER #3
- (10) One HDMI1 Port : Connected with PC
- (11) One Headphone Port : Connected with Earphone
- (12) One ANT Port : Connected with ATSC SG / TV SG
- (13) Three USB Ports : Connected with U-Disk

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

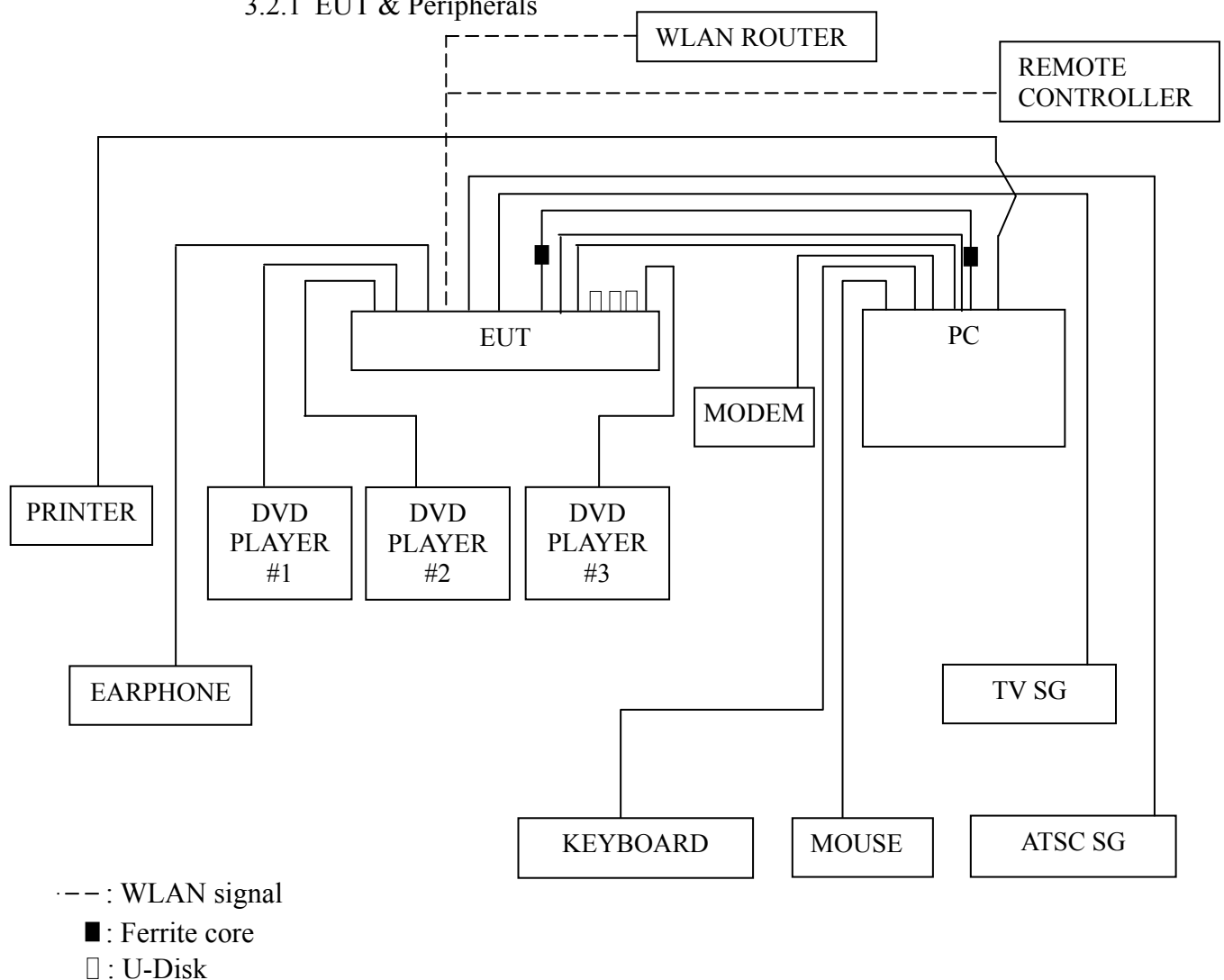
3.1 Test Equipment

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

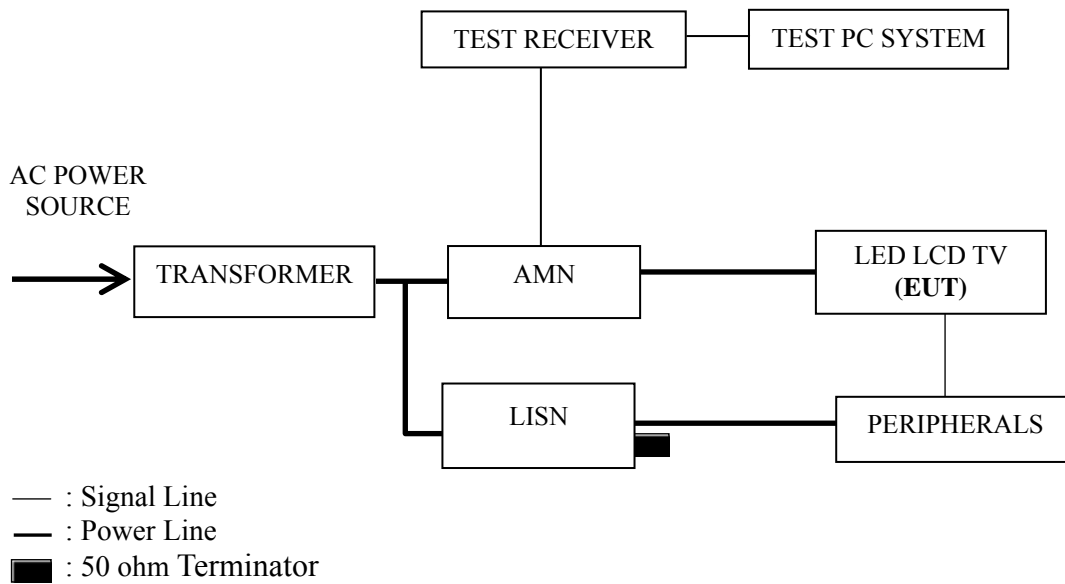
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	100841	Mar 20, 2014	Mar 19, 2015
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Feb 25, 2014	Feb 24, 2015
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2014	Mar 19, 2015
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Mar 18, 2014	Sep 17, 2014
5.	50 Ω Terminator	Anritsu	BNC	001	Mar 20, 2014	Mar 19, 2015
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 (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 WLAN function is operating to communicate with WLAN router / the BT function is operating to communicate with the remote controller.

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
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 1920*1080@60Hz test mode. The worst emission is detected at 4.947 MHz (Average Value) with corrected signal level of 44.91 dB (μV) (limit is 46.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22

Model No. : 65H7G Humidity : 48%RH

Test Mode : D-Sub 1920*1080@60Hz Date of Test : Jul 10, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.376	45.50	0.01	45.51	58.37	12.86	QP
	0.673	49.31	0.08	49.39	56.00	6.61	
	1.130	48.79	0.06	48.85	56.00	7.15	
	1.866	47.11	0.07	47.18	56.00	8.82	
	4.947	51.70	0.21	51.91	56.00	4.09	
	5.233	52.90	0.22	53.12	60.00	6.88	
	0.376	41.00	0.01	41.01	48.37	7.36	AV
	0.673	35.01	0.08	35.09	46.00	10.91	
	1.130	41.29	0.06	41.35	46.00	4.65	
	1.866	37.81	0.07	37.88	46.00	8.12	
	4.947	44.50	0.21	44.71	46.00	1.29	
	5.233	45.20	0.22	45.42	50.00	4.58	
Neutral	0.401	46.99	0.22	47.21	57.82	10.61	QP
	0.663	50.40	0.13	50.53	56.00	5.47	
	1.128	49.80	0.18	49.98	56.00	6.02	
	1.869	47.90	0.17	48.07	56.00	7.93	
	4.938	51.70	0.23	51.93	56.00	4.07	
	5.228	53.19	0.25	53.44	60.00	6.56	
	0.401	30.39	0.22	30.61	47.82	17.21	AV
	0.663	36.70	0.13	36.83	46.00	9.17	
	1.128	42.40	0.18	42.58	46.00	3.42	
	1.869	39.30	0.17	39.47	46.00	6.53	
	4.938	43.90	0.23	44.13	46.00	1.87	
	5.228	44.89	0.25	45.14	50.00	4.86	

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22

Model No. : 65H7G Humidity : 48%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Jul 10, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.399	44.10	0.00	44.10	57.88	13.78	QP
	0.630	48.00	0.06	48.06	56.00	7.94	
	1.126	47.99	0.06	48.05	56.00	7.95	
	2.366	47.00	0.09	47.09	56.00	8.91	
	4.947	51.70	0.21	51.91	56.00	4.09	
	5.246	55.00	0.22	55.22	60.00	4.78	
	0.399	29.10	0.00	29.10	47.88	18.78	AV
	0.630	40.10	0.06	40.16	46.00	5.84	
	1.126	41.39	0.06	41.45	46.00	4.55	
	2.366	38.70	0.09	38.79	46.00	7.21	
	4.947	44.70	0.21	44.91	46.00	1.09	
	5.246	45.10	0.22	45.32	50.00	4.68	
Neutral	0.399	46.19	0.22	46.41	57.87	11.46	QP
	0.663	50.20	0.13	50.33	56.00	5.67	
	1.122	48.90	0.18	49.08	56.00	6.92	
	1.882	48.51	0.16	48.67	56.00	7.33	
	4.939	51.20	0.23	51.43	56.00	4.57	
	5.236	53.09	0.25	53.34	60.00	6.66	
	0.399	31.19	0.22	31.41	47.87	16.46	AV
	0.663	36.10	0.13	36.23	46.00	9.77	
	1.122	40.56	0.18	40.74	46.00	5.26	
	1.882	40.41	0.16	40.57	46.00	5.43	
	4.939	44.40	0.23	44.63	46.00	1.37	
	5.236	45.19	0.25	45.44	50.00	4.56	

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22

Model No. : 65H7G Humidity : 48%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : Jul 10, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.399	43.80	0.00	43.80	57.87	14.07	QP
	0.668	49.20	0.08	49.28	56.00	6.72	
	1.128	48.69	0.06	48.75	56.00	7.25	
	1.897	45.91	0.07	45.98	56.00	10.02	
	4.936	50.70	0.21	50.91	56.00	5.09	
	5.240	52.40	0.22	52.62	60.00	7.38	
	0.399	29.10	0.00	29.10	47.87	18.77	AV
	0.668	35.10	0.08	35.18	46.00	10.82	
	1.128	40.89	0.06	40.95	46.00	5.05	
	1.897	35.31	0.07	35.38	46.00	10.62	
	4.936	43.50	0.21	43.71	46.00	2.29	
	5.240	45.00	0.22	45.22	50.00	4.78	
Neutral	0.405	47.29	0.22	47.51	57.75	10.24	QP
	0.675	50.71	0.12	50.83	56.00	5.17	
	1.119	48.90	0.18	49.08	56.00	6.92	
	2.387	48.00	0.16	48.16	56.00	7.84	
	4.950	52.10	0.23	52.33	56.00	3.67	
	5.233	54.29	0.25	54.54	60.00	5.46	
	0.405	31.29	0.22	31.51	47.75	16.24	AV
	0.675	36.81	0.12	36.93	46.00	9.07	
	1.119	41.10	0.18	41.28	46.00	4.72	
	2.387	39.40	0.16	39.56	46.00	6.44	
	4.950	44.60	0.23	44.83	46.00	1.17	
	5.233	45.59	0.25	45.84	50.00	4.16	

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22

Model No. : 65H7G Humidity : 48%RH

Test Mode : HDMI 640*480@60Hz Date of Test : Jul 10, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.399	43.10	0.00	43.10	57.87	14.77	QP
	0.667	49.30	0.08	49.38	56.00	6.62	
	1.130	49.19	0.06	49.25	56.00	6.75	
	1.877	46.91	0.07	46.98	56.00	9.02	
	4.932	51.50	0.21	51.71	56.00	4.29	
	5.234	54.30	0.22	54.52	60.00	5.48	
	0.399	29.10	0.00	29.10	47.87	18.77	AV
	0.667	35.30	0.08	35.38	46.00	10.62	
	1.130	41.69	0.06	41.75	46.00	4.25	
	1.877	39.11	0.07	39.18	46.00	6.82	
	4.932	43.60	0.21	43.81	46.00	2.19	
	5.234	45.10	0.22	45.32	50.00	4.68	
Neutral	0.398	47.09	0.22	47.31	57.90	10.59	QP
	0.657	50.00	0.13	50.13	56.00	5.87	
	1.113	49.00	0.18	49.18	56.00	6.82	
	1.880	48.61	0.16	48.77	56.00	7.23	
	4.932	51.20	0.23	51.43	56.00	4.57	
	5.233	54.49	0.25	54.74	60.00	5.26	
	0.398	31.19	0.22	31.41	47.90	16.49	AV
	0.657	35.50	0.13	35.63	46.00	10.37	
	1.113	41.20	0.18	41.38	46.00	4.62	
	1.880	40.41	0.16	40.57	46.00	5.43	
	4.932	43.80	0.23	44.03	46.00	1.97	
	5.233	45.09	0.25	45.34	50.00	4.66	

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22

Model No. : 65H7G Humidity : 48%RH

Test Mode : USB Play Date of Test : Jul 10, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.403	44.10	0.00	44.10	57.79	13.69	QP
	0.663	49.00	0.08	49.08	56.00	6.92	
	1.126	48.49	0.06	48.55	56.00	7.45	
	1.881	47.71	0.07	47.78	56.00	8.22	
	4.935	50.60	0.21	50.81	56.00	5.19	
	5.234	54.50	0.22	54.72	60.00	5.28	
	0.403	29.60	0.00	29.60	47.79	18.19	AV
	0.663	35.10	0.08	35.18	46.00	10.82	
	1.126	41.79	0.06	41.85	46.00	4.15	
	1.881	39.31	0.07	39.38	46.00	6.62	
	4.935	43.30	0.21	43.51	46.00	2.49	
	5.234	44.70	0.22	44.92	50.00	5.08	
Neutral	0.399	46.69	0.22	46.91	57.87	10.96	QP
	0.666	50.50	0.13	50.63	56.00	5.37	
	1.127	49.80	0.18	49.98	56.00	6.02	
	1.865	48.10	0.17	48.27	56.00	7.73	
	4.951	52.10	0.23	52.33	56.00	3.67	
	5.235	54.29	0.25	54.54	60.00	5.46	
	0.399	31.49	0.22	31.71	47.87	16.16	AV
	0.666	36.60	0.13	36.73	46.00	9.27	
	1.127	41.50	0.18	41.68	46.00	4.32	
	1.865	39.70	0.17	39.87	46.00	6.13	
	4.951	44.20	0.23	44.43	46.00	1.57	
	5.235	44.89	0.25	45.14	50.00	4.86	

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22

Model No. : 65H7G Humidity : 48%RH

Test Mode : LAN Play Date of Test : Jul 10, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.378	45.80	0.01	45.81	58.32	12.51	QP
	0.666	49.20	0.08	49.28	56.00	6.72	
	1.131	48.89	0.06	48.95	56.00	7.05	
	1.880	47.71	0.07	47.78	56.00	8.22	
	4.943	51.70	0.21	51.91	56.00	4.09	
	5.164	53.30	0.21	53.51	60.00	6.49	
	0.378	39.40	0.01	39.41	48.32	8.91	AV
	0.666	35.30	0.08	35.38	46.00	10.62	
	1.131	40.99	0.06	41.05	46.00	4.95	
	1.880	39.61	0.07	39.68	46.00	6.32	
	4.943	44.40	0.21	44.61	46.00	1.39	
	5.164	44.30	0.21	44.51	50.00	5.49	
Neutral	0.403	47.89	0.22	48.11	57.80	9.69	QP
	0.645	48.50	0.14	48.64	56.00	7.36	
	1.132	49.70	0.18	49.88	56.00	6.12	
	1.876	48.30	0.17	48.47	56.00	7.53	
	4.947	52.00	0.23	52.23	56.00	3.77	
	5.233	54.39	0.25	54.64	60.00	5.36	
	0.403	31.99	0.22	32.21	47.80	15.59	AV
	0.645	32.90	0.14	33.04	46.00	12.96	
	1.132	41.30	0.18	41.48	46.00	4.52	
	1.876	40.30	0.17	40.47	46.00	5.53	
	4.947	43.80	0.23	44.03	46.00	1.97	
	5.233	45.49	0.25	45.74	50.00	4.26	

TEST ENGINEER: ERIC TANG

4 RADIATED EMISSION TEST

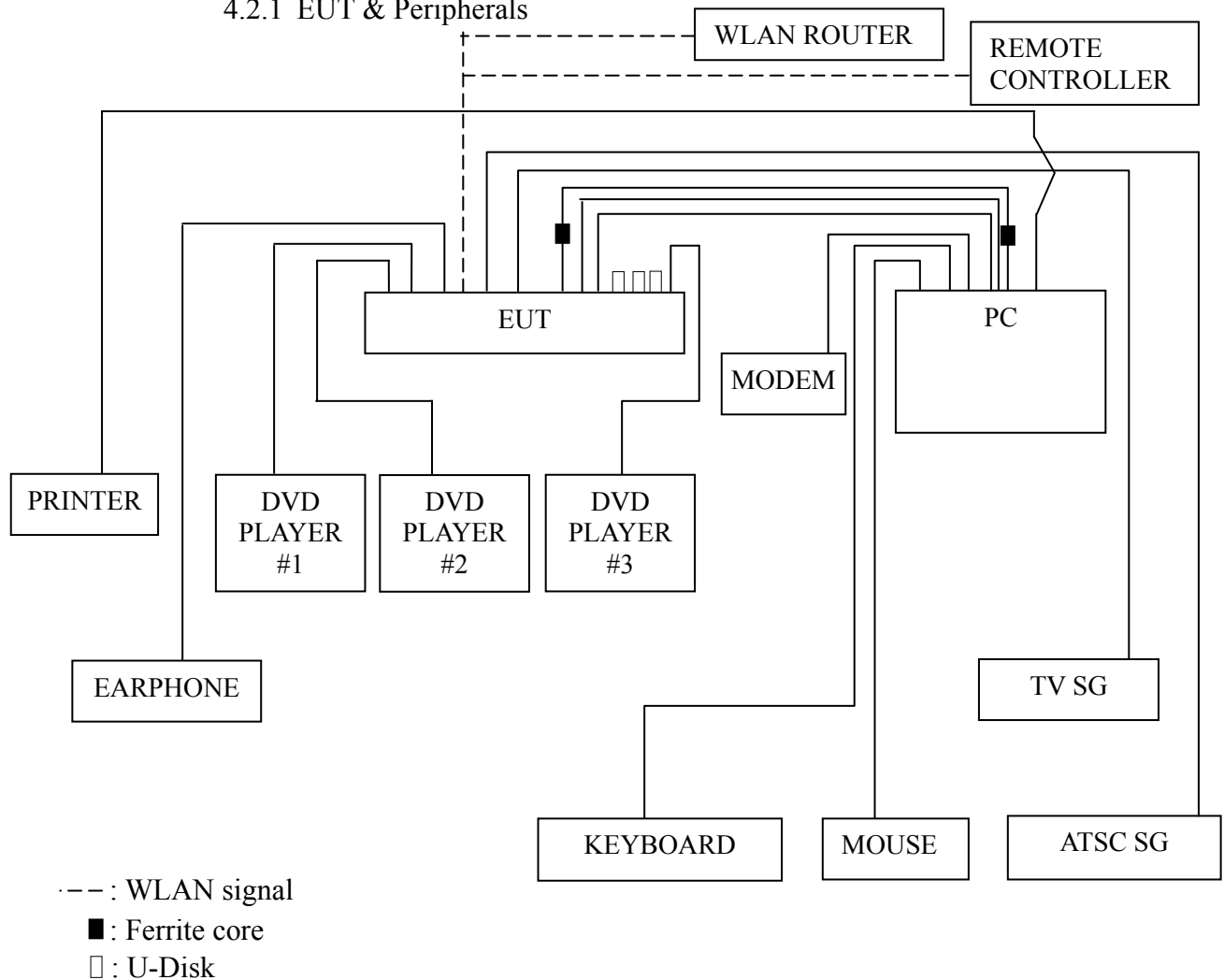
4.1 Test Equipment

The following test equipments are used during the radiated emission test in a semi-anechoic chamber:

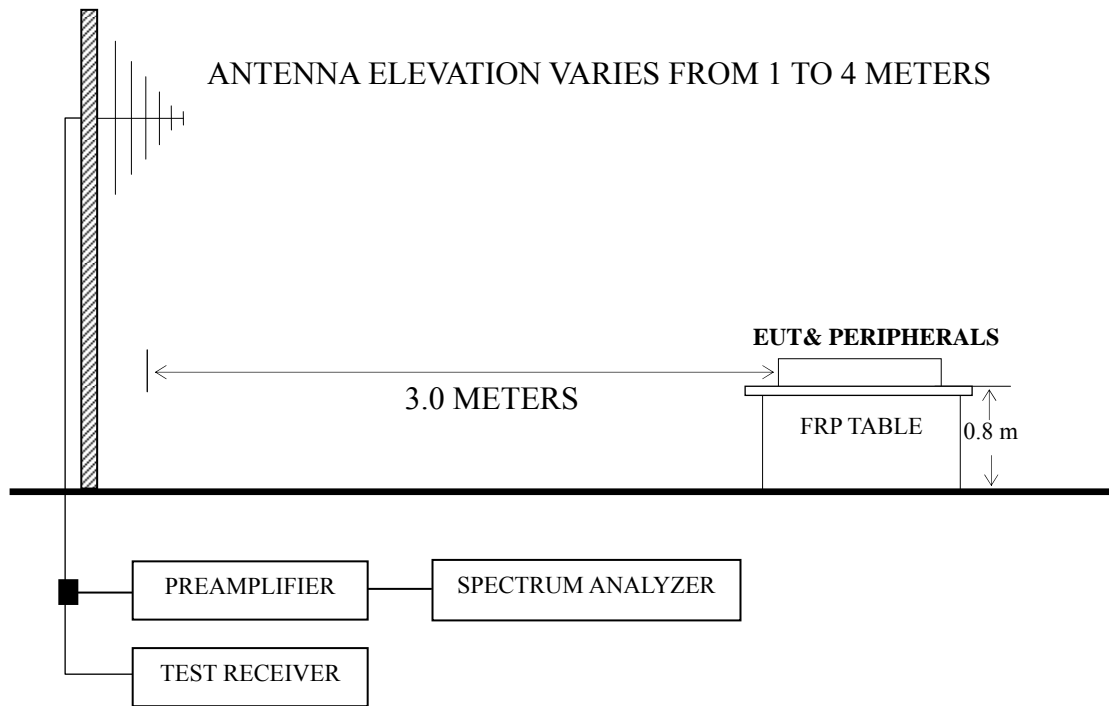
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Sep 03, 2013	Sep 02, 2014
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 18, 2014	Sep 17, 2014
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2014	Mar 19, 2015
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 03, 2014	May 02, 2015
5.	Horn Antenna	EMCO	3115	9607-4878	May 11, 2014	May 10, 2015
6.	Spectrum	Agilent	E7405A	MY45106600	Nov 11, 2013	Nov 10, 2014
7.	50 Coaxial Switch	Anritsu	MP59B	6200426390	Mar 18, 2014	Sep 17, 2014
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



■ : 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 24 GHz (10th harmonic of the 2.4GHz RF function) was checked for the worst emission 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	P23 – P24
D-Sub 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 742.950 MHz with corrected signal level of 42.51 dB ($\mu\text{V/m}$) (limit is 46.00 dB ($\mu\text{V/m}$)), when the antenna was 2.00 m height and the turntable was at 265°. The worst emission at vertical polarization was detected at 742.950 MHz with corrected signal level of 42.86 dB ($\mu\text{V/m}$) (limit is 46.00 dB ($\mu\text{V/m}$)), when the antenna was 1.80 m height and the turntable was at 110°.

EUT : LED LCD TV Temperature : 22

Model No. : 65H7G Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Jul 09, 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	74.620	28.01	6.46	1.00	--	35.47	40.00	4.53	QP
	109.540	22.13	11.84	1.40	--	35.37	43.50	8.13	
	316.150	25.46	13.68	2.57	--	41.71	46.00	4.29	
	558.650	20.21	19.10	3.12	--	42.43	46.00	3.57	
	742.950	20.07	18.87	3.57	--	42.51	46.00	3.49	
	927.250	18.36	19.30	4.63	--	42.29	46.00	3.71	
	1063.000	47.51	23.94	4.96	38.06	38.35	74.00	35.65	PK
	1148.000	46.97	24.29	5.05	37.87	38.44	74.00	35.56	
	1354.000	46.35	25.19	5.51	37.33	39.72	74.00	34.28	
	1466.000	45.86	25.51	5.62	37.00	39.99	74.00	34.01	
	1662.000	53.75	27.43	5.89	36.56	50.51	74.00	23.49	
	1859.000	46.00	29.79	6.17	36.27	45.69	74.00	28.31	
	1063.000	34.63	23.94	4.96	38.06	25.47	54.00	28.53	AV
	1148.000	33.56	24.29	5.05	37.87	25.03	54.00	28.97	
	1354.000	33.20	25.19	5.51	37.33	26.57	54.00	27.43	
	1466.000	31.80	25.51	5.62	37.00	25.93	54.00	28.07	
	1662.000	40.02	27.43	5.89	36.56	36.78	54.00	17.22	
	1859.000	32.37	29.79	6.17	36.27	32.06	54.00	21.94	

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : 65H7G Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Jul 09, 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	70.740	27.26	5.89	0.94	--	34.09	40.00	5.91	QP
	141.550	23.38	10.30	1.60	--	35.28	43.50	8.22	
	316.150	21.36	13.68	2.57	--	37.61	46.00	8.39	
	558.650	20.13	19.10	3.12	--	42.35	46.00	3.65	
	742.950	20.42	18.87	3.57	--	42.86	46.00	3.14	
	927.250	18.36	19.30	4.63	--	42.29	46.00	3.71	
	1045.000	46.82	23.87	4.94	38.10	37.53	74.00	36.47	PK
	1148.000	46.29	24.29	5.05	37.87	37.76	74.00	36.24	
	1241.000	45.33	24.74	5.25	37.64	37.68	74.00	36.32	
	1368.000	45.50	25.23	5.51	37.29	38.95	74.00	35.05	
	1455.000	45.51	25.49	5.62	37.03	39.59	74.00	34.41	
	1544.000	45.21	26.06	5.65	36.81	40.11	74.00	33.89	
	1045.000	33.43	23.87	4.94	38.10	24.14	54.00	29.86	AV
	1148.000	32.13	24.29	5.05	37.87	23.60	54.00	30.40	
	1241.000	32.48	24.74	5.25	37.64	24.83	54.00	29.17	
	1368.000	31.84	25.23	5.51	37.29	25.29	54.00	28.71	
	1455.000	32.66	25.49	5.62	37.03	26.74	54.00	27.26	
	1544.000	31.67	26.06	5.65	36.81	26.57	54.00	27.43	

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : 65H7G Humidity : 60%RH

Test Mode : D-Sub 1920*1080@60Hz Date of Test : Jul 09, 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	25.47	5.56	0.92	31.95	40.00	8.05
	194.900	26.45	8.20	1.92	36.57	43.50	6.93
	251.160	25.51	12.18	2.22	39.91	46.00	6.09
	267.650	26.13	12.75	2.32	41.20	46.00	4.80
	316.150	24.04	13.68	2.57	40.29	46.00	5.71
	901.060	15.86	19.30	4.55	39.71	46.00	6.29
Vertical	51.340	22.97	7.20	0.86	31.03	40.00	8.97
	70.740	27.65	5.89	0.94	34.48	40.00	5.52
	251.160	26.08	12.18	2.22	40.48	46.00	5.52
	316.150	21.61	13.68	2.57	37.86	46.00	8.14
	804.060	13.39	19.93	3.70	37.02	46.00	8.98
	901.060	16.40	19.30	4.55	40.25	46.00	5.75

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : 65H7G Humidity : 60%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : Jul 09, 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	88.200	23.64	7.92	1.18	32.74	43.50	10.76
	316.150	25.64	13.68	2.57	41.89	46.00	4.11
	447.100	19.39	17.07	2.82	39.28	46.00	6.72
	594.540	20.09	18.50	3.20	41.79	46.00	4.21
	707.060	18.11	19.97	3.55	41.63	46.00	4.37
	804.060	17.97	19.93	3.70	41.60	46.00	4.40
Vertical	88.200	24.16	7.92	1.18	33.26	43.50	10.24
	146.400	21.16	10.25	1.62	33.03	43.50	10.47
	316.150	20.39	13.68	2.57	36.64	46.00	9.36
	594.540	15.88	18.50	3.20	37.58	46.00	8.42
	827.340	15.01	20.57	3.89	39.47	46.00	6.53
	985.450	15.16	21.03	4.83	41.02	54.00	12.98

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : 65H7G Humidity : 60%RH

Test Mode : HDMI 640*480@60Hz Date of Test : Jul 09, 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	88.200	21.76	7.92	1.18	30.86	43.50	12.64
	219.150	26.66	8.13	2.04	36.83	46.00	9.17
	316.150	24.30	13.68	2.57	40.55	46.00	5.45
	435.460	18.10	17.47	2.78	38.35	46.00	7.65
	701.240	16.44	20.30	3.54	40.28	46.00	5.72
	804.060	16.99	19.93	3.70	40.62	46.00	5.38
Vertical	88.200	25.13	7.92	1.18	34.23	43.50	9.27
	151.250	21.21	9.98	1.65	32.84	43.50	10.66
	330.700	19.49	14.40	2.60	36.49	46.00	9.51
	542.160	14.23	19.48	3.08	36.79	46.00	9.21
	704.150	13.72	20.13	3.55	37.40	46.00	8.60
	804.060	15.59	19.93	3.70	39.22	46.00	6.78

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : 65H7G Humidity : 60%RH

Test Mode : USB Play Date of Test : Jul 09, 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	88.200	22.76	7.92	1.18	31.86	43.50	11.64
	151.250	22.86	9.98	1.65	34.49	43.50	9.01
	328.760	21.30	14.32	2.59	38.21	46.00	7.79
	374.350	20.89	14.95	2.66	38.50	46.00	7.50
	704.150	15.28	20.13	3.55	38.96	46.00	7.04
	804.060	15.83	19.93	3.70	39.46	46.00	6.54
Vertical	31.940	15.41	16.50	0.68	32.59	40.00	7.41
	88.200	25.22	7.92	1.18	34.32	43.50	9.18
	316.150	20.98	13.68	2.57	37.23	46.00	8.77
	699.300	12.40	20.30	3.54	36.24	46.00	9.76
	804.060	15.31	19.93	3.70	38.94	46.00	7.06
	985.450	13.93	21.03	4.83	39.79	54.00	14.21

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : 65H7G Humidity : 60%RH

Test Mode : LAN Play Date of Test : Jul 09, 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	66.860	25.77	5.12	0.91	31.80	40.00	8.20
	97.900	21.23	10.01	1.32	32.56	43.50	10.94
	207.510	23.58	7.67	1.98	33.23	43.50	10.27
	354.950	16.54	14.90	2.63	34.07	46.00	11.93
	525.670	12.77	18.35	3.03	34.15	46.00	11.85
	674.080	12.74	19.40	3.48	35.62	46.00	10.38
Vertical	48.430	21.47	7.98	0.84	30.29	40.00	9.71
	107.600	20.39	11.60	1.39	33.38	43.50	10.12
	188.110	23.61	8.05	1.89	33.55	43.50	9.95
	395.690	16.20	15.80	2.68	34.68	46.00	11.32
	580.960	13.34	18.78	3.16	35.28	46.00	10.72
	783.690	13.28	18.30	3.60	35.18	46.00	10.82

TEST ENGINEER: NEAL WANG

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Ferrite core	ZCAT2132-1130\ROH	Jiangsu Ruifeng Electronic Co., Ltd	See Internal Photo Appendix Figure 27
Gasket	DAA13X30\ROH 1.0m	JOINSET, Shenzhen Tongantai Electronic Technology Co., Ltd.	See Internal Photo Appendix Figure 28, 29, 30
Gasket	DAA25X20X75\ROH		
Gasket	DAA1001\ROH 0.6m		
Gasket	DAA10x8x130\ROH		See Internal Photo Appendix Figure 27, 28
Alumiumn Tape	DCF40\ROH 300mm		

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)

6 DEVIATION TO TEST SPECIFICATIONS

None.