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

LED LCD TV

Model No.	Brand
65K680GW, 65H8	Hisense
65H8G, 65H8CG	

FCC ID : W9HLCDF0043

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-F14083
Date of Test : May 04 – 09, 2014
Date of Report : May 19, 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
65K680GW, 65H8	Hisense	120V/60Hz
65H8G, 65H8CG		

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 May 04 – 09, 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.F14082, a Verification report.

Date of Test : May 04 – 09, 2014 Date of Report : May 19, 2014

Producer : EMILY ZHU / Assistant

Review : DIO YANG / Deputy 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.	:	65K680GW, 65H8, 65H8G, 65H8CG
Note	:	The above models are all the same except for model name. 65K680GW 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 : CHIMEI INNOLUX M/N : V650DK1-LS1 Rev.C1
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/ARC Port
: Connected with DVD PLAYER #2

(4) One LAN Port
: Connected with PC

(5) One component of AV/YPbPr Port
: Connected with DVD PLAYER #3

Side Port:

(1) One DIGITAL Audio Out Port
: Connected with DVD PLAYER #3

(2) One PC/ AUDIO IN Port
: Connected with PC

(3) One VGA In Port
: Connected with PC

(4) One HDMI1 (UHD) Port
: Connected with PC

(5) One Headphone Port
: Connected with Earphone

(6) One ANT Port
: Connected with ATSC SG / TV SG

(7) Three USB Ports
: Connected with U-Disk

(8) One Debug Port
: Not open to customer

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	:	Skullcandy
Model Number	:	FMJ

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

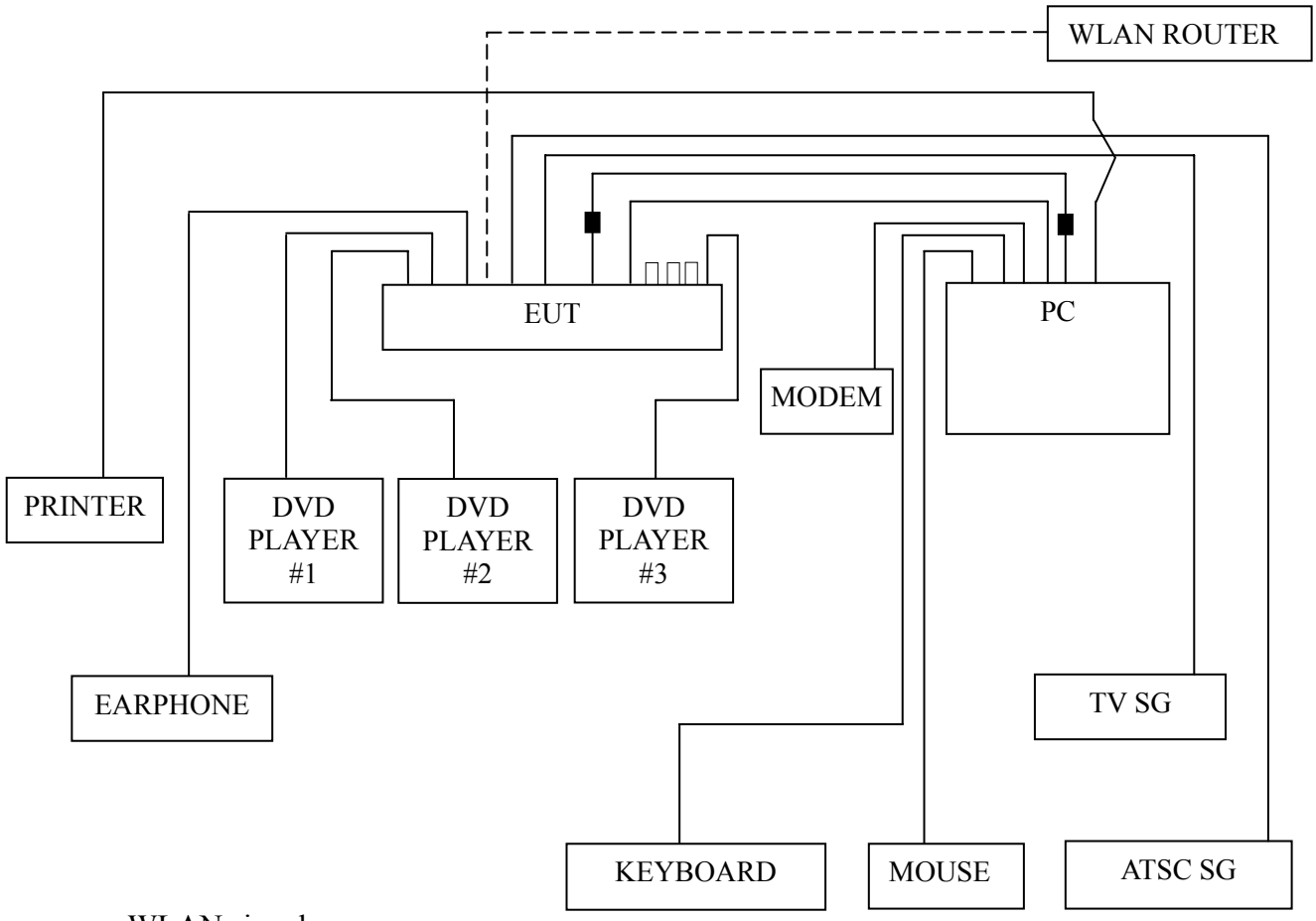
3.1 Test Equipment

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, 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.	50Ω 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

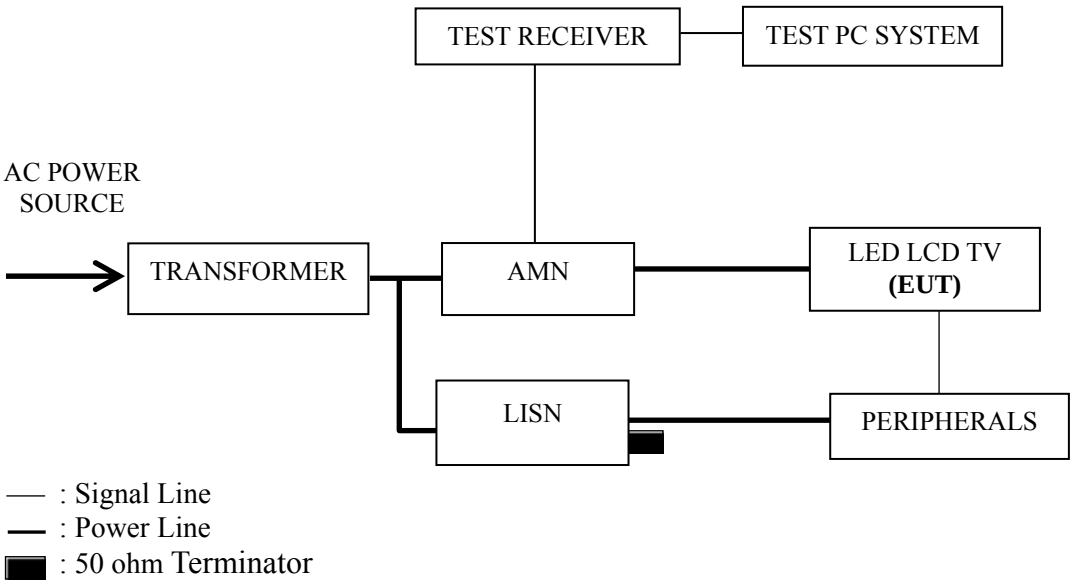


·– – : WLAN signal

■ : 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 WLAN function is operating to communicate with WLAN router.

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
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 5.721 MHz (Average Value) with corrected signal level of 39.57 dB (μV) (limit is 50.00 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	65K680GW	Humidity	:	48%RH
Test Mode	:	D-Sub 1920*1080@60Hz	Date of Test	:	May 09, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	52.50	0.16	52.66	66.00	13.34	QP
	0.247	38.51	0.08	38.59	61.85	23.26	
	0.943	28.20	0.06	28.26	56.00	27.74	
	5.721	42.10	0.22	42.32	60.00	17.68	
	15.310	38.61	-0.02	38.59	60.00	21.41	
	21.920	36.50	-0.22	36.28	60.00	23.72	
	0.150	39.50	0.16	39.66	56.00	16.34	AV
	0.247	26.21	0.08	26.29	51.85	25.56	
	0.943	16.10	0.06	16.16	46.00	29.84	
	5.721	39.10	0.22	39.32	50.00	10.68	
	15.310	33.61	-0.02	33.59	50.00	16.41	
	21.920	29.00	-0.22	28.78	50.00	21.22	
Neutral	0.164	50.80	0.16	50.96	65.27	14.31	QP
	0.421	37.89	0.22	38.11	57.42	19.31	
	0.965	29.80	0.17	29.97	56.00	26.03	
	5.721	42.31	0.26	42.57	60.00	17.43	
	15.320	40.40	0.55	40.95	60.00	19.05	
	21.130	37.20	0.83	38.03	60.00	21.97	
	0.164	34.50	0.16	34.66	55.27	20.61	AV
	0.421	32.09	0.22	32.31	47.42	15.11	
	0.965	20.90	0.17	21.07	46.00	24.93	
	5.721	**39.31**	**0.26**	**39.57**	**50.00**	**10.43**	
	15.320	35.60	0.55	36.15	50.00	13.85	
	21.130	30.19	0.83	31.02	50.00	18.98	

TEST ENGINEER: ERIC TANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	65K680GW	Humidity	:	48%RH
Test Mode	:	HDMI 1920*1080@60Hz	Date of Test	:	May 09, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	52.70	0.15	52.85	65.88	13.03	QP
	0.239	39.30	0.09	39.39	62.13	22.74	
	3.368	28.00	0.14	28.14	56.00	27.86	
	5.722	42.30	0.22	42.52	60.00	17.48	
	15.400	38.11	-0.02	38.09	60.00	21.91	
	21.820	36.80	-0.22	36.58	60.00	23.42	
	0.152	38.00	0.15	38.15	55.88	17.73	AV
	0.239	24.40	0.09	24.49	52.13	27.64	
	3.368	19.90	0.14	20.04	46.00	25.96	
	5.722	**39.30**	**0.22**	**39.52**	**50.00**	**10.48**	
	15.400	32.71	-0.02	32.69	50.00	17.31	
	21.820	38.40	-0.22	38.18	50.00	11.82	
Neutral	0.159	51.50	0.16	51.66	65.52	13.86	QP
	0.242	38.11	0.20	38.31	62.03	23.72	
	0.407	37.39	0.22	37.61	57.71	20.10	
	5.721	42.11	0.26	42.37	60.00	17.63	
	15.340	38.70	0.55	39.25	60.00	20.75	
	20.900	36.80	0.82	37.62	60.00	22.38	
	0.159	36.50	0.16	36.66	55.52	18.86	AV
	0.242	25.31	0.20	25.51	52.03	26.52	
	0.407	30.49	0.22	30.71	47.71	17.00	
	5.721	39.21	0.26	39.47	50.00	10.53	
	15.340	33.40	0.55	33.95	50.00	16.05	
	20.900	30.00	0.82	30.82	50.00	19.18	

TEST ENGINEER: ERIC TANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	65K680GW	Humidity	:	48%RH
Test Mode	:	D-Sub 1280*1024@60Hz	Date of Test	:	May 09, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	53.50	0.16	53.66	65.96	12.30	QP
	0.239	40.20	0.09	40.29	62.13	21.84	
	0.975	27.80	0.05	27.85	56.00	28.15	
	5.722	42.10	0.22	42.32	60.00	17.68	
	15.300	37.31	-0.02	37.29	60.00	22.71	
	20.930	36.50	-0.14	36.36	60.00	23.64	
	0.151	39.00	0.16	39.16	55.96	16.80	AV
	0.239	25.50	0.09	25.59	52.13	26.54	
	0.975	18.50	0.05	18.55	46.00	27.45	
	5.722	**38.10**	**0.22**	**38.32**	**50.00**	**11.68**	
	15.300	32.51	-0.02	32.49	50.00	17.51	
	20.930	29.60	-0.14	29.46	50.00	20.54	
Neutral	0.150	51.10	0.15	51.25	66.00	14.75	QP
	0.414	37.49	0.22	37.71	57.57	19.86	
	0.945	30.20	0.17	30.37	56.00	25.63	
	5.723	41.81	0.26	42.07	60.00	17.93	
	15.320	38.40	0.55	38.95	60.00	21.05	
	21.360	36.90	0.83	37.73	60.00	22.27	
	0.150	38.30	0.15	38.45	56.00	17.55	AV
	0.414	31.19	0.22	31.41	47.57	16.16	
	0.945	21.00	0.17	21.17	46.00	24.83	
	5.723	37.51	0.26	37.77	50.00	12.23	
	15.320	33.70	0.55	34.25	50.00	15.75	
	21.360	29.90	0.83	30.73	50.00	19.27	

TEST ENGINEER: ERIC TANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	65K680GW	Humidity	:	48%RH
Test Mode	:	D-Sub 640*480@60Hz	Date of Test	:	May 09, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	53.30	0.16	53.46	66.00	12.54	QP
	0.256	39.39	0.09	39.48	61.57	22.09	
	0.909	30.69	0.07	30.76	56.00	25.24	
	5.721	42.00	0.22	42.22	60.00	17.78	
	15.320	38.11	-0.02	38.09	60.00	21.91	
	21.660	35.99	-0.20	35.79	60.00	24.21	
	0.150	40.30	0.16	40.46	56.00	15.54	AV
	0.256	27.59	0.09	27.68	51.57	23.89	
	0.909	19.79	0.07	19.86	46.00	26.14	
	5.721	38.00	0.22	38.22	50.00	11.78	
	15.320	33.41	-0.02	33.39	50.00	16.61	
	21.660	28.39	-0.20	28.19	50.00	21.81	
Neutral	0.150	51.50	0.15	51.65	66.00	14.35	QP
	0.417	37.69	0.22	37.91	57.50	19.59	
	0.944	30.30	0.17	30.47	56.00	25.53	
	5.721	42.11	0.26	42.37	60.00	17.63	
	15.310	36.80	0.55	37.35	60.00	22.65	
	21.210	36.70	0.83	37.53	60.00	22.47	
	0.150	38.70	0.15	38.85	56.00	17.15	AV
	0.417	32.09	0.22	32.31	47.50	15.19	
	0.944	20.60	0.17	20.77	46.00	25.23	
	5.721	**38.11**	**0.26**	**38.37**	**50.00**	**11.63**	
	15.310	31.70	0.55	32.25	50.00	17.75	
	21.210	29.59	0.83	30.42	50.00	19.58	

TEST ENGINEER: ERIC TANG

EUT	:	LED LCD TV	Temperature	:	22℃
Model No.	:	65K680GW	Humidity	:	48%RH
Test Mode	:	USB Play	Date of Test	:	May 09, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	53.40	0.15	53.55	65.90	12.35	QP
	0.244	40.21	0.08	40.29	61.96	21.67	
	0.899	30.10	0.07	30.17	56.00	25.83	
	5.592	41.40	0.22	41.62	60.00	18.38	
	15.330	38.41	-0.02	38.39	60.00	21.61	
	21.190	36.90	-0.16	36.74	60.00	23.26	
	0.152	38.50	0.15	38.65	55.90	17.25	AV
	0.244	27.41	0.08	27.49	51.96	24.47	
	0.899	20.40	0.07	20.47	46.00	25.53	
	5.592	37.00	0.22	37.22	50.00	12.78	
	15.330	33.91	-0.02	33.89	50.00	16.11	
	21.190	30.80	-0.16	30.64	50.00	19.36	
Neutral	0.150	51.50	0.15	51.65	66.00	14.35	QP
	0.413	37.49	0.22	37.71	57.59	19.88	
	0.988	31.00	0.18	31.18	56.00	24.82	
	5.721	42.21	0.26	42.47	60.00	17.53	
	15.330	38.60	0.55	39.15	60.00	20.85	
	21.340	36.60	0.83	37.43	60.00	22.57	
	0.150	38.90	0.15	39.05	56.00	16.95	AV
	0.413	31.39	0.22	31.61	47.59	15.98	
	0.988	22.40	0.18	22.58	46.00	23.42	
	5.721	**38.21**	**0.26**	**38.47**	**50.00**	**11.53**	
	15.330	34.30	0.55	34.85	50.00	15.15	
	21.340	29.40	0.83	30.23	50.00	19.77	

TEST ENGINEER: ERIC TANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	65K680GW	Humidity	:	48%RH
Test Mode	:	LAN Play	Date of Test	:	May 09, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	53.50	0.15	53.65	65.91	12.26	QP
	0.237	40.30	0.09	40.39	62.19	21.80	
	2.791	29.11	0.10	29.21	56.00	26.79	
	5.721	42.10	0.22	42.32	60.00	17.68	
	15.330	38.51	-0.02	38.49	60.00	21.51	
	20.880	36.20	-0.13	36.07	60.00	23.93	
	0.152	38.90	0.15	39.05	55.91	16.86	AV
	0.237	24.90	0.09	24.99	52.19	27.20	
	2.791	19.91	0.10	20.01	46.00	25.99	
	5.721	38.20	0.22	38.42	50.00	11.58	
	15.330	34.31	-0.02	34.29	50.00	15.71	
	20.880	29.40	-0.13	29.27	50.00	20.73	
Neutral	0.150	51.50	0.15	51.65	66.00	14.35	QP
	0.417	37.79	0.22	38.01	57.52	19.51	
	0.998	30.20	0.18	30.38	56.00	25.62	
	5.722	42.21	0.26	42.47	60.00	17.53	
	15.320	37.70	0.55	38.25	60.00	21.75	
	21.620	36.60	0.84	37.44	60.00	22.56	
	0.150	38.70	0.15	38.85	56.00	17.15	AV
	0.417	32.09	0.22	32.31	47.52	15.21	
	0.998	20.30	0.18	20.48	46.00	25.52	
	5.722	**38.21**	**0.26**	**38.47**	**50.00**	**11.53**	
	15.320	33.10	0.55	33.65	50.00	16.35	
	21.620	29.40	0.84	30.24	50.00	19.76	

TEST ENGINEER: ERIC TANG

4 RADIATED EMISSION TEST

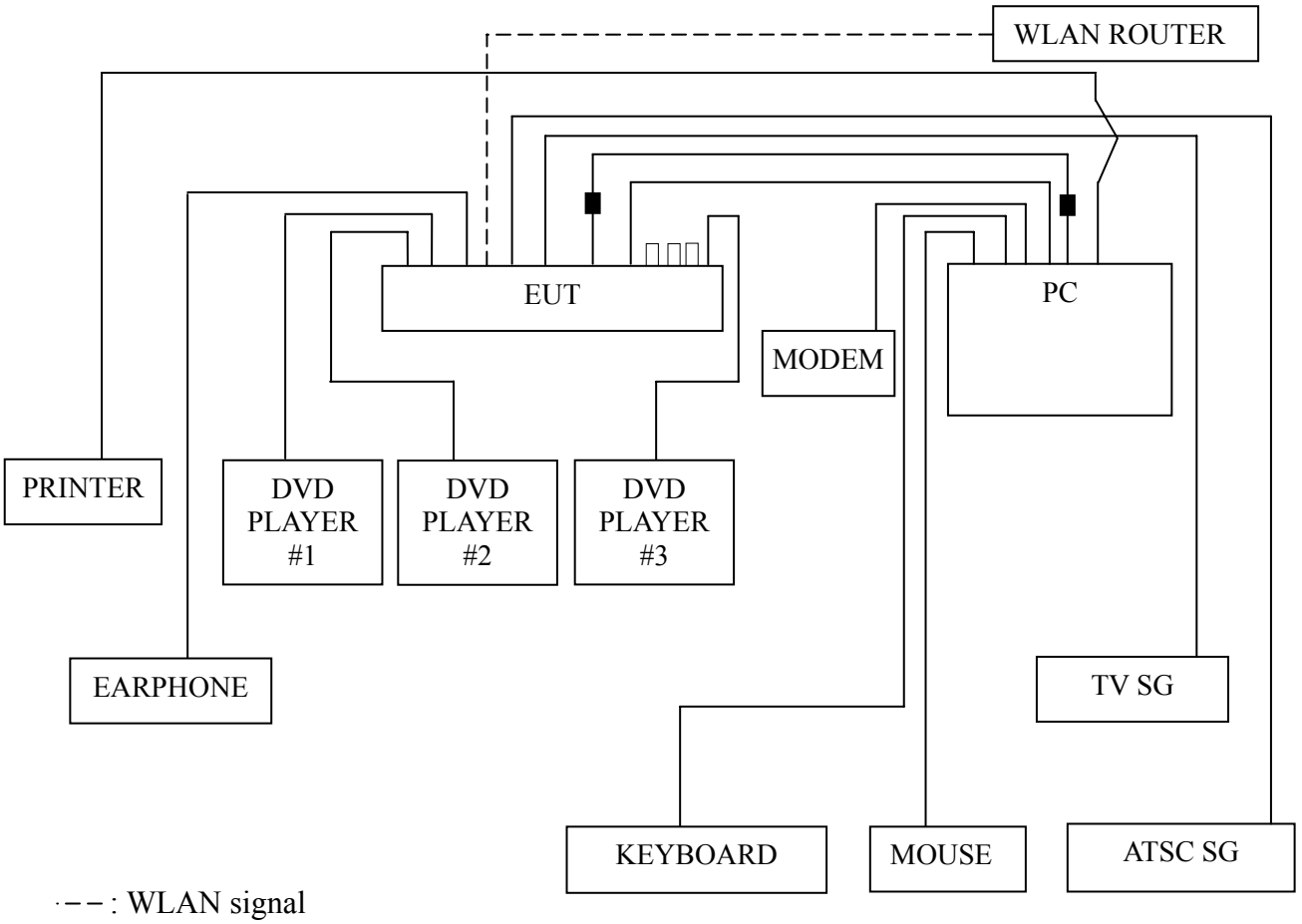
4.1 Test Equipment

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.	50Ω 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

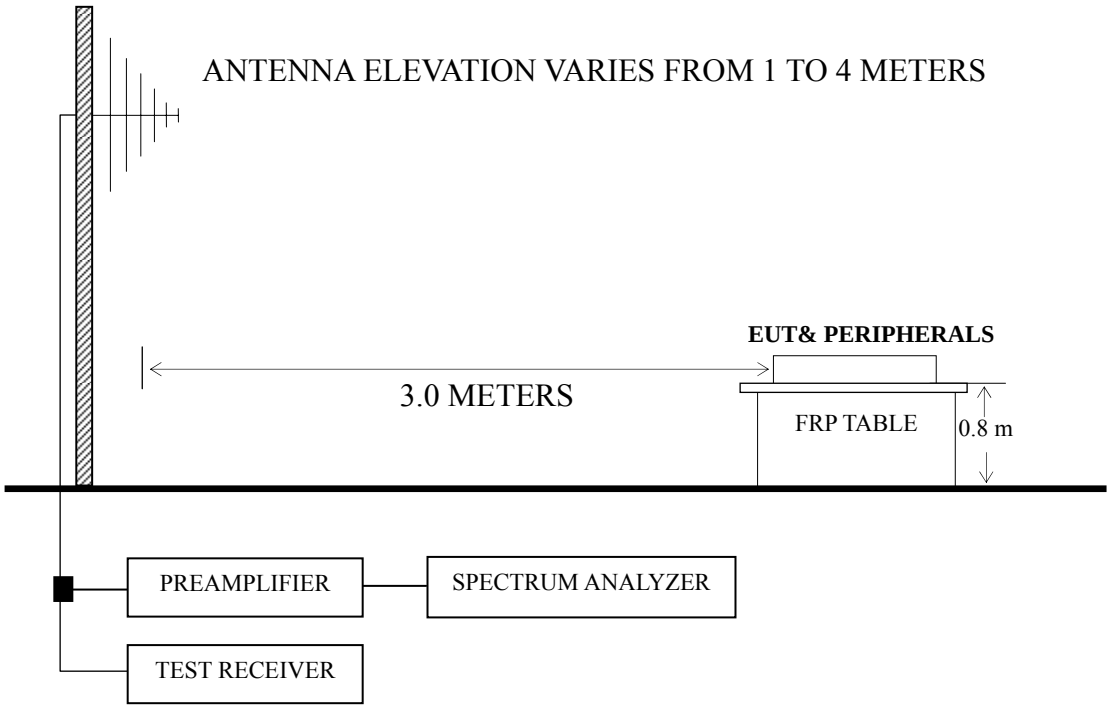


·– – : WLAN signal

■ : 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 24 GHz (10^{th} 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 787.570 MHz with corrected signal level of 42.56 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.90 m height and the turntable was at 270°. The worst emission at vertical polarization was detected at 652.740 MHz with corrected signal level of 42.47 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.50 m height and the turntable was at 110°.

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	65K680GW	Humidity	:	60%RH
Test Mode	:	HDMI 1920*1080@60Hz	Date of Test	:	May 04, 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	52.310	25.21	6.83	0.86	--	32.90	40.00	7.10	QP
	85.290	24.96	7.46	1.15	--	33.57	40.00	6.43	
	165.800	26.84	8.40	1.75	--	36.99	43.50	6.51	
	338.460	24.93	14.75	2.61	--	42.29	46.00	3.71	
	602.300	20.67	18.32	3.22	--	42.21	46.00	3.79	
	787.570	**20.46**	**18.50**	**3.60**	--	**42.56**	**46.00**	**3.44**	
	1022.000	48.02	23.79	4.91	38.15	38.57	74.00	35.43	PK
	1152.000	46.99	24.31	5.07	37.86	38.51	74.00	35.49	
	1289.000	45.93	24.95	5.35	37.51	38.72	74.00	35.28	
	1450.000	45.95	25.48	5.61	37.04	40.00	74.00	34.00	
	1646.000	47.59	27.20	5.81	36.59	44.01	74.00	29.99	
	1799.000	48.54	29.11	6.15	36.35	47.45	74.00	26.55	
	1022.000	35.43	23.79	4.91	38.15	25.98	54.00	28.02	AV
	1152.000	33.20	24.31	5.07	37.86	24.72	54.00	29.28	
	1289.000	32.71	24.95	5.35	37.51	25.50	54.00	28.50	
	1450.000	32.13	25.48	5.61	37.04	26.18	54.00	27.82	
	1646.000	34.62	27.20	5.81	36.59	31.04	54.00	22.96	
	1799.000	35.84	29.11	6.15	36.35	34.75	54.00	19.25	

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	65K680GW	Humidity :	60%RH
Test Mode	:	HDMI 1920*1080@60Hz	Date of Test :	May 04, 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	34.850	17.98	15.85	0.71	--	34.54	40.00	5.46	QP
	72.680	25.30	6.20	0.97	--	32.47	40.00	7.53	
	144.460	22.98	10.30	1.61	--	34.89	43.50	8.61	
	201.690	28.19	8.07	1.95	--	38.21	43.50	5.29	
	398.600	23.44	16.07	2.68	--	42.19	46.00	3.81	
	652.740	**20.54**	**18.55**	**3.38**	--	**42.47**	**46.00**	**3.53**	
	1067.000	46.84	23.95	4.96	38.05	37.70	74.00	36.30	PK
	1160.000	46.45	24.34	5.07	37.83	38.03	74.00	35.97	
	1261.000	45.62	24.82	5.30	37.59	38.15	74.00	35.85	
	1441.000	45.46	25.45	5.61	37.07	39.45	74.00	34.55	
	1699.000	49.88	27.85	5.97	36.50	47.20	74.00	26.80	
	1917.000	44.50	30.30	6.18	36.19	44.79	74.00	29.21	
	1067.000	33.28	23.95	4.96	38.05	24.14	54.00	29.86	AV
	1160.000	33.19	24.34	5.07	37.83	24.77	54.00	29.23	
	1261.000	32.10	24.82	5.30	37.59	24.63	54.00	29.37	
	1441.000	32.11	25.45	5.61	37.07	26.10	54.00	27.90	
	1699.000	36.74	27.85	5.97	36.50	34.06	54.00	19.94	
	1917.000	31.00	30.30	6.18	36.19	31.29	54.00	22.71	

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	65K680GW	Humidity :	60%RH
Test Mode	:	D-Sub 1920*1080@60Hz	Date of Test :	May 04, 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	55.220	26.58	6.08	0.87	33.53	40.00	6.47
	91.110	27.37	8.47	1.24	37.08	43.50	6.42
	189.080	25.42	8.00	1.89	35.31	43.50	8.19
	363.680	19.15	14.93	2.64	36.72	46.00	9.28
	544.100	17.27	19.45	3.08	39.80	46.00	6.20
	703.180	**16.51**	**20.13**	**3.55**	**40.19**	**46.00**	**5.81**
Vertical	36.790	16.81	14.92	0.74	32.47	40.00	7.53
	101.780	23.11	10.76	1.35	35.22	43.50	8.28
	202.660	26.40	8.00	1.97	36.37	43.50	7.13
	354.950	20.62	14.90	2.63	38.15	46.00	7.85
	631.400	18.33	18.40	3.32	40.05	46.00	5.95
	700.270	**16.23**	**20.30**	**3.54**	**40.07**	**46.00**	**5.93**

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	65K680GW	Humidity	:	60%RH
Test Mode	:	HDMI 1280*1024@60Hz	Date of Test	:	May 04, 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	37.760	18.30	14.13	0.75	33.18	40.00	6.82
	67.830	27.28	5.31	0.91	33.50	40.00	6.50
	121.180	20.91	11.42	1.48	33.81	43.50	9.69
	194.900	25.21	8.20	1.92	35.33	43.50	8.17
	361.740	**24.20**	**14.97**	**2.64**	**41.81**	**46.00**	**4.19**
	588.720	19.90	18.70	3.18	41.78	46.00	4.22
Vertical	84.320	24.82	7.32	1.13	33.27	40.00	6.73
	140.580	24.44	10.30	1.60	36.34	43.50	7.16
	315.180	21.10	13.60	2.57	37.27	46.00	8.73
	499.480	17.28	18.10	2.98	38.36	46.00	7.64
	634.310	19.22	18.45	3.32	40.99	46.00	5.01
	852.560	**16.12**	**20.90**	**4.08**	**41.10**	**46.00**	**4.90**

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	65K680GW	Humidity :	60%RH
Test Mode	:	HDMI 640*480@60Hz	Date of Test :	May 04, 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	37.760	18.14	14.13	0.75	33.02	40.00	6.98
	83.350	24.44	7.19	1.13	32.76	40.00	7.24
	131.850	23.71	11.54	1.55	36.80	43.50	6.70
	217.210	25.54	7.83	2.04	35.41	46.00	10.59
	546.040	**17.63**	**19.43**	**3.08**	**40.14**	**46.00**	**5.86**
	727.430	17.29	19.23	3.57	40.09	46.00	5.91
Vertical	58.130	26.39	5.58	0.88	32.85	40.00	7.15
	134.760	23.81	11.00	1.57	36.38	43.50	7.12
	238.550	24.81	10.83	2.15	37.79	46.00	8.21
	404.420	19.05	16.23	2.69	37.97	46.00	8.03
	528.580	16.02	18.38	3.05	37.45	46.00	8.55
	677.960	**17.51**	**19.20**	**3.48**	**40.19**	**46.00**	**5.81**

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	65K680GW	Humidity :	60%RH	
Test Mode	:	USB Play	Date of Test :	May 04, 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	84.320	22.92	7.32	1.13	31.37	40.00	8.63
	132.820	21.16	11.45	1.56	34.17	43.50	9.33
	288.990	21.53	12.73	2.46	36.72	46.00	9.28
	499.480	14.95	18.10	2.98	36.03	46.00	9.97
	727.430	**14.98**	**19.23**	**3.57**	**37.78**	**46.00**	**8.22**
	990.300	11.68	21.10	4.83	37.61	54.00	16.39
Vertical	**33.880**	**16.35**	**16.12**	**0.70**	**33.17**	**40.00**	**6.83**
	69.770	26.04	5.74	0.92	32.70	40.00	7.30
	124.090	23.00	11.48	1.50	35.98	43.50	7.52
	196.840	25.00	8.20	1.94	35.14	43.50	8.36
	483.960	16.69	17.80	2.94	37.43	46.00	8.57
	703.180	15.08	20.13	3.55	38.76	46.00	7.24

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	65K680GW	Humidity :	60%RH
Test Mode	:	LAN Play	Date of Test :	May 04, 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	35.820	15.82	15.63	0.73	32.18	40.00	7.82
	80.440	**24.74**	**6.84**	**1.08**	**32.66**	**40.00**	**7.34**
	127.970	22.55	11.74	1.52	35.81	43.50	7.69
	231.760	25.32	9.80	2.11	37.23	46.00	8.77
	414.120	18.28	16.60	2.73	37.61	46.00	8.39
	665.350	15.14	19.30	3.44	37.88	46.00	8.12
Vertical	35.820	15.74	15.63	0.73	32.10	40.00	7.90
	88.200	23.07	7.92	1.18	32.17	43.50	11.33
	152.220	22.86	9.85	1.65	34.36	43.50	9.14
	288.990	21.00	12.73	2.46	36.19	46.00	9.81
	425.760	16.73	17.47	2.76	36.96	46.00	9.04
	569.320	**15.87**	**19.40**	**3.14**	**38.41**	**46.00**	**7.59**

TEST ENGINEER: NEAL WANG

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Gasket	DAA25X20X75\ROH	JOINSET, Shenzhen Tongantai Electronic Technology Co., Ltd.	See Internal Photo Appendix Figure 23, 24
Gasket	DAA13X30\ROH 1.0m		See Internal Photo Appendix Figure 25

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.