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

LED LCD TV

Model No.	Brand
48K20DW, 48K21DW, 48K22DW, 48K23DW, 48K24DW, 48K25DW, 48K26DW, 48H5, 48H5C, 48H5E, 48H5S, 48H5I	Hisense

FCC ID : W9HLCDE0015

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-F14002A1
Date of Test : Jul 23 – Aug 06, 2014
Date of Report : Aug 11, 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 Jul 23 – Aug 06, 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.F14003A1, a Verification report.

Date of Test : Jul 23 – Aug 06, 2014 Date of Report : Aug 11, 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. : 48K20DW, 48K21DW, 48K22DW, 48K23DW, 48K24DW, 48K25DW, 48K26DW, 48H5, 48H5C, 48H5E, 48H5S, 48H5I

Note #1 : The modified histories of report are as follows:

ACI-F14002	48K20DW, 48K21DW, 48K22DW, 48K23DW, 48K24DW, 48K25DW, 48H5, 48H5C, 48H5E, 48H5S, 48H5I	Original Report	0	Jan 08, 2014
ACI-F14002A1	48K20DW, 48K21DW, 48K22DW, 48K23DW, 48K24DW, 48K25DW, 48K26DW, 48H5, 48H5C, 48H5E, 48H5S, 48H5I	1. To modify the panel and power board. 2. To add a new model name. (48K26DW)	Rev. A1	Aug 11, 2014

Note#2 : The above models are all the same except for model name.
48K26DW 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 : HD480DF-B31(020)\S3.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 HDMI2 Port
: Connected with DVD PLAYER#2

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

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

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

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

(6) One LAN Port
: Connected with PC

Side Port:

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

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

(3) One VGA Port
: Connected with PC

(4) One PC/DVI AUDIO IN Port
: Connected with PC

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

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

2.2 Peripherals

2.2.1 PC #1

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 PC #2

Manufacturer	:	HP
Model Number	:	dx7400MT
Serial Number	:	CNG8130K89
Power Cord	:	Unshielded, Detachable, 1.8m
Certificate	:	FCC DoC; CE/EMC; VCCI; C-Tick; BSMI, 3C, MIC

2.2.3 Printer

Manufacturer	:	HP
Model Number	:	C3990A
Serial Number	:	JPZX020487
Data Cable	:	Shielded, detachable, 1.5m
Certificate	:	GS, CE/EMC, C-Tick, FCC DoC

2.2.4 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

2.2.5 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

2.2.6 Modem

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

2.2.7 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

2.2.8 ATSC Signal Generator

Manufacturer	:	SENCORE
Model Number	:	ATSC997
Serial Number	:	6790071

2.2.9 DVD PLAYER#1

Manufacturer	:	PHILIPS
Model Number	:	DVP3986K/93
Serial Number	:	KX1A0902120108
Certificate	:	FCC DoC, CE/EMC, CCC

2.2.10 DVD PLAYER#2

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

2.2.11 Earphone

Manufacturer	:	Skullcandy
Model Number	:	FMJ

2.2.12 U-DISK*2

Manufacturer	:	LG
Model Number	:	1GB

2.3 Description of Test Facility

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

2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty: U = 2.77 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

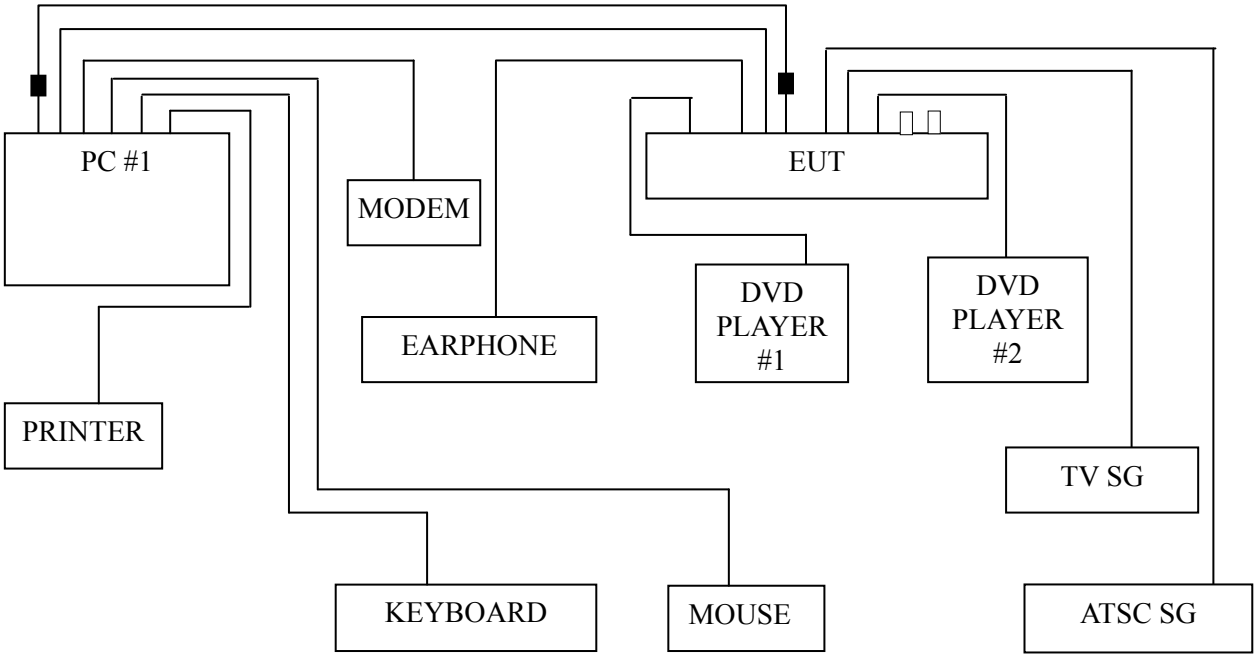
3.1 Test Equipment

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	ENV4200	100125	Jun 27, 2014	Jun 26, 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	6.111206	--	--

3.2 Block Diagram of Test Setup

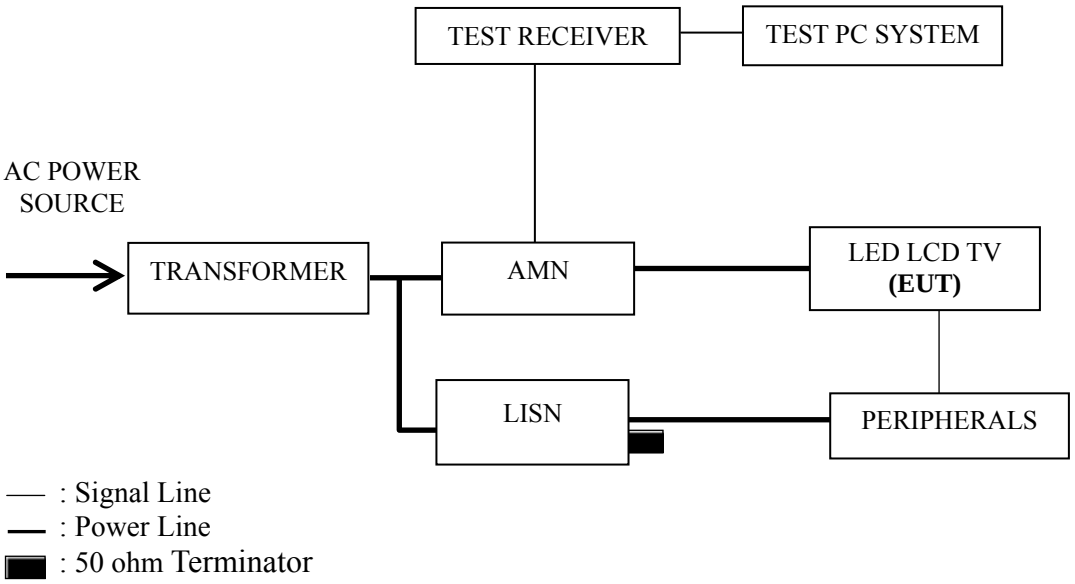
3.2.1 EUT & Peripherals



■ : Ferrite core

▯ : U-Disk

3.2.2 Conducted Disturbance Test Setup



3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)]

Frequency Range (MHz)	Limits dB (μV)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56	56~46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE 1 – The lower limit shall apply at the transition frequencies.
NOTE 2 – The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz

3.4 Test Configuration

The EUT (listed in Sec.2.1) and the peripherals (listed in Sec 2.2) were installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner that tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

3.5.1 Setup the EUT and peripherals as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipments and the EUT.

3.5.3 Set the contrast & brightness of EUT to maximum.

3.5.4 PC system ran the self-test program "EMC Test" by windows XP and sent "H" characters to EUT through graphic card, the EUT's screen displayed and filled with "H" pattern by its resolution (Via D-Sub & HDMI Input).

3.5.5 PC system sent the 1kHz audio signal to EUT through audio port, the EUT speak out 1kHz audio signal.

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

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

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

3.5.9 The test modes are as follows:

Test Mode
HDMI 1920*1080@60Hz & 1kHz Playing
D-Sub 1024*768@60Hz & 1kHz Playing
D-Sub 800*600@60Hz & 1kHz Playing
D-Sub 640*480@60Hz & 1kHz Playing
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
HDMI 1920*1080@60Hz & 1kHz Playing	P14
D-Sub 1024*768@60Hz & 1kHz Playing	P15
D-Sub 800*600@60Hz & 1kHz Playing	P16
D-Sub 640*480@60Hz & 1kHz Playing	P17
USB Play	P18
LAN Play	P19

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 LAN Play test mode. The worst emission is detected at 0.151 MHz (Average Value) with corrected signal level of 53.68 dB (μV) (limit is 55.97 dB (μV)), when the Line of the EUT is connected to AMN.

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	48K26DW	Humidity :	48%RH	
Test Mode	:	HDMI 1920*1080@60Hz & 1kHz Playing	Date of Test :	Jul 23, 2014	

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	**0.150**	**49.50**	**10.58**	**60.08**	**65.99**	**5.91**	QP
	0.559	32.60	10.44	43.04	56.00	12.96	
	1.303	28.20	10.40	38.60	56.00	17.40	
	2.364	28.30	10.44	38.74	56.00	17.26	
	6.208	40.11	10.41	50.52	60.00	9.48	
	15.380	30.31	10.54	40.85	60.00	19.15	
	0.150	39.20	10.58	49.78	55.99	6.21	AV
	0.559	22.10	10.44	32.54	46.00	13.46	
	1.303	19.00	10.40	29.40	46.00	16.60	
	2.364	18.60	10.44	29.04	46.00	16.96	
	6.208	28.01	10.41	38.42	50.00	11.58	
	15.380	27.21	10.54	37.75	50.00	12.25	
Neutral	0.151	49.30	10.58	59.88	65.93	6.05	QP
	0.301	27.80	10.49	38.29	60.22	21.93	
	0.553	32.90	10.43	43.33	56.00	12.67	
	1.235	28.20	10.41	38.61	56.00	17.39	
	2.461	27.29	10.48	37.77	56.00	18.23	
	6.230	40.30	10.49	50.79	60.00	9.21	
	0.151	39.10	10.58	49.68	55.93	6.25	AV
	0.301	14.60	10.49	25.09	50.22	25.13	
	0.553	23.10	10.43	33.53	46.00	12.47	
	1.235	18.50	10.41	28.91	46.00	17.09	
	2.461	18.89	10.48	29.37	46.00	16.63	
	6.230	28.50	10.49	38.99	50.00	11.01	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	48K26DW	Humidity :	48%RH	
Test Mode	:	D-Sub 1024*768@60Hz & 1kHz Playing	Date of Test :	Jul 23, 2014	

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	50.10	10.58	60.68	65.96	5.28	QP
	0.547	33.30	10.44	43.74	56.00	12.26	
	1.314	30.10	10.40	40.50	56.00	15.50	
	2.457	29.09	10.45	39.54	56.00	16.46	
	6.267	39.01	10.41	49.42	60.00	10.58	
	18.100	29.10	10.58	39.68	60.00	20.32	
	0.151	**41.30**	**10.58**	**51.88**	**55.96**	**4.08**	AV
	0.547	23.60	10.44	34.04	46.00	11.96	
	1.314	21.70	10.40	32.10	46.00	13.90	
	2.457	21.49	10.45	31.94	46.00	14.06	
	6.267	27.11	10.41	37.52	50.00	12.48	
	18.100	23.30	10.58	33.88	50.00	16.12	
Neutral	0.150	49.50	10.58	60.08	65.99	5.91	QP
	0.548	33.20	10.43	43.63	56.00	12.37	
	1.296	30.50	10.41	40.91	56.00	15.09	
	2.324	28.81	10.46	39.27	56.00	16.73	
	6.271	40.09	10.50	50.59	60.00	9.41	
	18.070	29.20	10.69	39.89	60.00	20.11	
	0.150	39.80	10.58	50.38	55.99	5.61	AV
	0.548	23.80	10.43	34.23	46.00	11.77	
	1.296	22.20	10.41	32.61	46.00	13.39	
	2.324	20.51	10.46	30.97	46.00	15.03	
	6.271	29.29	10.50	39.79	50.00	10.21	
	18.070	23.40	10.69	34.09	50.00	15.91	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	48K26DW	Humidity :	48%RH	
Test Mode	:	D-Sub 800*600@60Hz & 1kHz Playing	Date of Test :	Jul 23, 2014	

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	50.20	10.58	60.78	65.96	5.18	QP
	0.545	33.80	10.44	44.24	56.00	11.76	
	1.309	30.50	10.40	40.90	56.00	15.10	
	2.176	30.20	10.44	40.64	56.00	15.36	
	6.522	38.80	10.43	49.23	60.00	10.77	
	18.080	29.60	10.58	40.18	60.00	19.82	
	0.151	42.00	10.58	52.58	55.96	3.38	AV
	0.545	23.50	10.44	33.94	46.00	12.06	
	1.309	22.10	10.40	32.50	46.00	13.50	
	2.176	22.50	10.44	32.94	46.00	13.06	
	6.522	27.40	10.43	37.83	50.00	12.17	
	18.080	23.90	10.58	34.48	50.00	15.52	
Neutral	0.151	50.20	10.58	60.78	65.96	5.18	QP
	0.621	32.20	10.42	42.62	56.00	13.38	
	1.311	30.90	10.41	41.31	56.00	14.69	
	2.199	29.61	10.46	40.07	56.00	15.93	
	6.257	38.30	10.49	48.79	60.00	11.21	
	18.090	29.20	10.69	39.89	60.00	20.11	
	0.151	**42.10**	**10.58**	**52.68**	**55.96**	**3.28**	AV
	0.621	21.50	10.42	31.92	46.00	14.08	
	1.311	22.60	10.41	33.01	46.00	12.99	
	2.199	22.01	10.46	32.47	46.00	13.53	
	6.257	27.70	10.49	38.19	50.00	11.81	
	18.090	23.50	10.69	34.19	50.00	15.81	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	48K26DW	Humidity	:	48%RH
Test Mode	:	D-Sub 640*480@60Hz & 1kHz Playing	Date of Test	:	Jul 23, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	51.20	10.58	61.78	65.98	4.20	QP
	0.539	33.70	10.44	44.14	56.00	11.86	
	1.319	31.10	10.40	41.50	56.00	14.50	
	3.040	26.30	10.45	36.75	56.00	19.25	
	6.326	39.60	10.42	50.02	60.00	9.98	
	17.880	28.80	10.58	39.38	60.00	20.62	
	0.150	**43.00**	**10.58**	**53.58**	**55.98**	**2.40**	AV
	0.539	24.50	10.44	34.94	46.00	11.06	
	1.319	22.90	10.40	33.30	46.00	12.70	
	3.040	19.60	10.45	30.05	46.00	15.95	
	6.326	29.80	10.42	40.22	50.00	9.78	
	17.880	23.40	10.58	33.98	50.00	16.02	
Neutral	0.150	50.30	10.58	60.88	65.99	5.11	QP
	0.542	34.00	10.43	44.43	56.00	11.57	
	1.314	31.00	10.41	41.41	56.00	14.59	
	2.186	29.91	10.46	40.37	56.00	15.63	
	6.317	39.39	10.50	49.89	60.00	10.11	
	17.790	28.70	10.69	39.39	60.00	20.61	
	0.150	42.20	10.58	52.78	55.99	3.21	AV
	0.542	24.50	10.43	34.93	46.00	11.07	
	1.314	22.80	10.41	33.21	46.00	12.79	
	2.186	22.11	10.46	32.57	46.00	13.43	
	6.317	28.59	10.50	39.09	50.00	10.91	
	17.790	23.20	10.69	33.89	50.00	16.11	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	48K26DW	Humidity	:	48%RH
Test Mode	:	USB Play	Date of Test	:	Jul 23, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	51.30	10.58	61.88	66.00	4.12	QP
	0.542	34.10	10.44	44.54	56.00	11.46	
	1.324	31.80	10.40	42.20	56.00	13.80	
	2.178	29.30	10.44	39.74	56.00	16.26	
	6.306	38.80	10.42	49.22	60.00	10.78	
	18.140	29.40	10.58	39.98	60.00	20.02	
	0.150	**43.00**	**10.58**	**53.58**	**56.00**	**2.42**	AV
	0.542	24.40	10.44	34.84	46.00	11.16	
	1.324	23.60	10.40	34.00	46.00	12.00	
	2.178	21.40	10.44	31.84	46.00	14.16	
	6.306	28.20	10.42	38.62	50.00	11.38	
	18.140	23.90	10.58	34.48	50.00	15.52	
Neutral	0.151	50.50	10.58	61.08	65.97	4.89	QP
	0.543	34.00	10.43	44.43	56.00	11.57	
	1.320	31.60	10.41	42.01	56.00	13.99	
	3.056	28.60	10.48	39.08	56.00	16.92	
	6.303	38.79	10.50	49.29	60.00	10.71	
	18.140	29.90	10.69	40.59	60.00	19.41	
	0.151	42.60	10.58	53.18	55.97	2.79	AV
	0.543	24.40	10.43	34.83	46.00	11.17	
	1.320	23.10	10.41	33.51	46.00	12.49	
	3.056	21.70	10.48	32.18	46.00	13.82	
	6.303	28.09	10.50	38.59	50.00	11.41	
	18.140	24.30	10.69	34.99	50.00	15.01	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	48K26DW	Humidity	:	48%RH
Test Mode	:	LAN Play	Date of Test	:	Jul 23, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	51.20	10.58	61.78	65.97	4.19	QP
	0.531	32.70	10.44	43.14	56.00	12.86	
	1.320	31.50	10.40	41.90	56.00	14.10	
	2.501	29.59	10.45	40.04	56.00	15.96	
	6.297	38.60	10.42	49.02	60.00	10.98	
	17.849	29.10	10.58	39.68	60.00	20.32	
	0.151	**43.10**	**10.58**	**53.68**	**55.97**	**2.29**	AV
	0.531	23.10	10.44	33.54	46.00	12.46	
	1.320	23.60	10.40	34.00	46.00	12.00	
	2.501	21.69	10.45	32.14	46.00	13.86	
	6.297	28.20	10.42	38.62	50.00	11.38	
	17.849	23.60	10.58	34.18	50.00	15.82	
Neutral	0.150	50.40	10.58	60.98	65.99	5.01	QP
	0.536	33.50	10.43	43.93	56.00	12.07	
	1.322	31.80	10.41	42.21	56.00	13.79	
	2.794	28.10	10.48	38.58	56.00	17.42	
	6.292	38.19	10.50	48.69	60.00	11.31	
	17.900	29.40	10.69	40.09	60.00	19.91	
	0.150	42.50	10.58	53.08	55.99	2.91	AV
	0.536	24.00	10.43	34.43	46.00	11.57	
	1.322	23.70	10.41	34.11	46.00	11.89	
	2.794	19.90	10.48	30.38	46.00	15.62	
	6.292	28.09	10.50	38.59	50.00	11.41	
	17.900	23.90	10.69	34.59	50.00	15.41	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

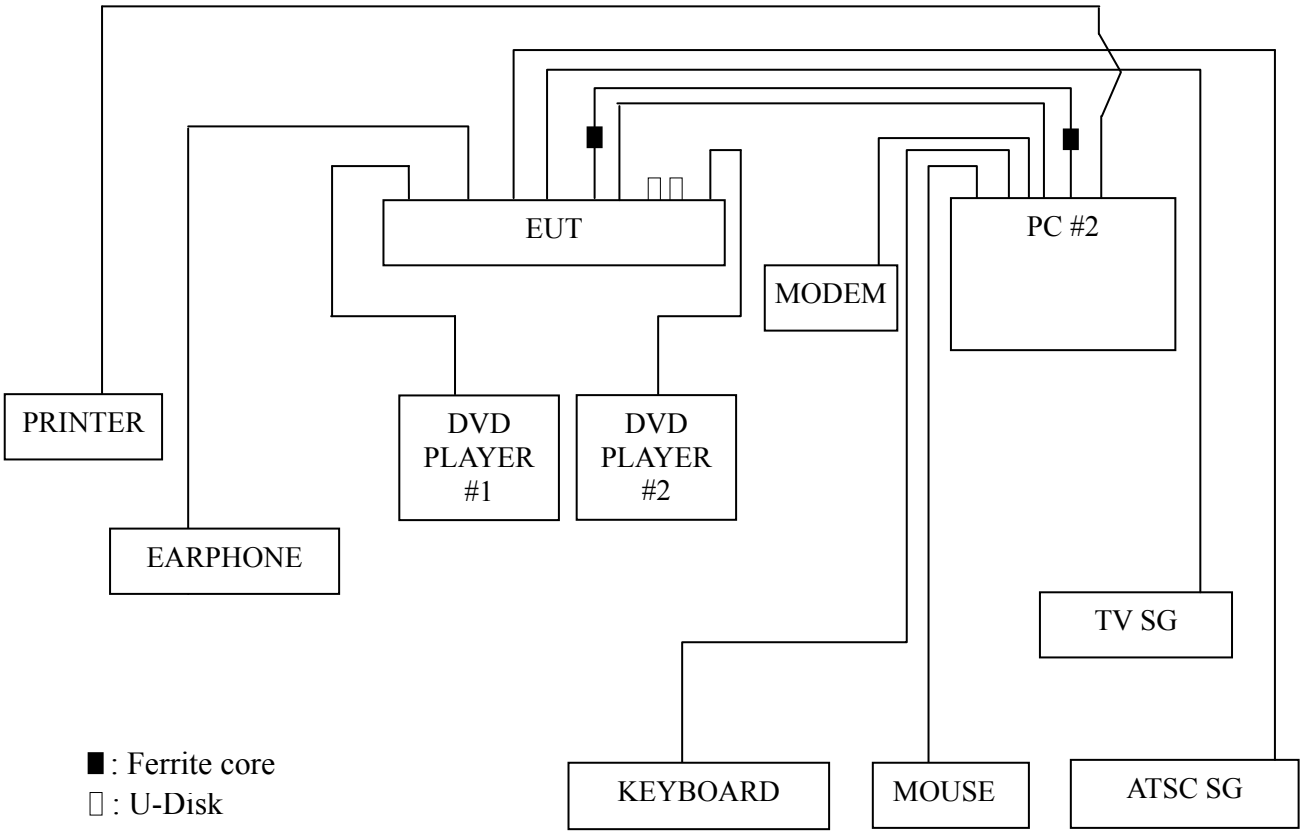
4.1 Test Equipment

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

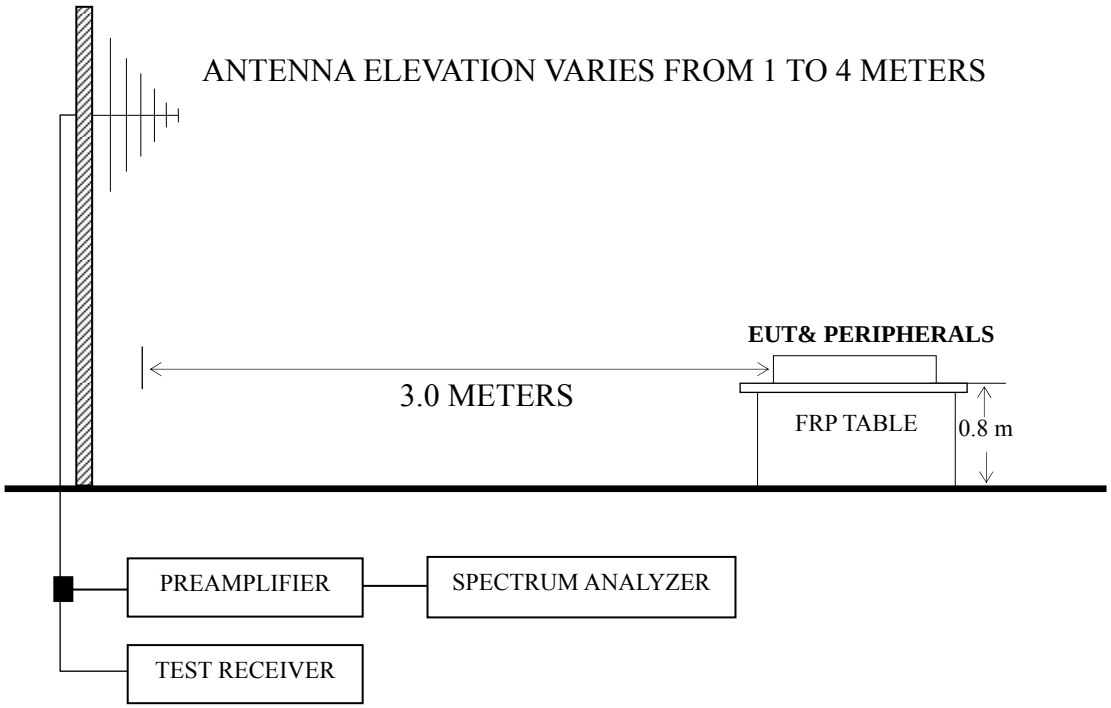
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Sep 03, 2013	Sep 02, 2014
2.	Preamplifier	Agilent	8447D	2944A10548	Sep 18, 2014	Mar 17, 2015
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2014	Mar 19, 2015
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 03, 2014	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



4.2.2 Radiated emission test setup



■ : 50 ohm Coaxial Switch

4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)]

Frequency (MHz)	Distance (m)	Field strength limits	
		(μV/m)	dB (μV/m)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level dB (μV/m) = 20 log Emission Level (μV/m)
NOTE 2 - The tighter limit applies at the band edges.
NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
NOTE 4 - The limits shown are based on Quasi-peak value detector.
NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT.

4.4 Test Configuration

The configuration of the EUT and peripherals are same as those used in conducted emission test.

Please refer to Sec.3.4.

4.5 Operating Condition of EUT

Same as conducted emission test which is listed in Sec.3.5, except for the test setup replaced by Sec.4.2.

4.6 Test Procedures

The EUT and peripherals were placed on a FRP turntable that is 0.8 meter above ground. The FRP turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. Broadband antenna (Calibrated Bilog Antenna) was used as receiving antenna. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.4:2003 requirements during radiated emission test.

The I.F. bandwidth of Test Receiver R&S ESCI was set at 120 kHz.

The frequency range from 30 MHz to 1000MHz was checked for all test modes.

The frequency range from 1 GHz to 2 GHz was checked for the maximum resolution test mode.

The test modes were done on radiated disturbance test and all the test results are listed in Sec.4.7.

4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

Test Mode	Data Page
HDMI 1920*1080@60Hz & 1 kHz Playing	P24 – P25
HDMI 1024*768@60Hz & 1 kHz Playing	P26
HDMI 640*480@60Hz & 1 kHz Playing	P27
D-Sub 1024*768@60Hz & 1 kHz Playing	P28
USB Play	P29
LAN Play	P30

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 D-Sub 1024*768@60Hz & 1 kHz Playing test mode. The worst emission at horizontal polarization was detected at 699.300 MHz with corrected signal level of 41.70 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.30 m height and the turntable was at 213°. The worst emission at vertical polarization was detected at 92.360 MHz with corrected signal level of 41.67dB (μV/m) (limit is 43.50 dB (μV/m)), when the antenna was 1.00 m height and the turntable was at 123°.

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	48K26DW	Humidity :	60%RH
Test Mode	:	HDMI 1920*1080@60Hz & 1 kHz Playing	Date of Test :	Aug 06, 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	70.759	24.71	6.30	0.93	--	31.94	40.00	8.06	QP
	138.658	**26.05**	**10.76**	**1.47**	**--**	**38.28**	**43.50**	**5.22**	
	219.166	24.78	8.20	1.94	--	34.92	46.00	11.08	
	364.663	18.08	15.20	2.62	--	35.90	46.00	10.10	
	447.111	16.38	16.57	2.78	--	35.73	46.00	10.27	
	707.066	16.42	19.83	3.50	--	39.75	46.00	6.25	
	1122.000	48.32	24.18	5.03	37.93	39.60	74.00	34.40	PK
	1235.000	48.09	24.70	5.20	37.65	40.34	74.00	33.66	
	1327.000	46.89	25.09	5.43	37.40	40.01	74.00	33.99	
	1487.000	47.10	25.57	5.63	36.94	41.36	74.00	32.64	
	1574.000	46.28	26.40	5.66	36.74	41.60	74.00	32.40	
	1723.000	48.60	28.17	6.01	36.46	46.32	74.00	27.68	
	1122.000	35.12	24.18	5.03	37.93	26.40	54.00	27.60	AV
	1235.000	35.34	24.70	5.20	37.65	27.59	54.00	26.41	
	1327.000	35.67	25.09	5.43	37.40	28.79	54.00	25.21	
	1487.000	35.79	25.57	5.63	36.94	30.05	54.00	23.95	
	1574.000	36.22	26.40	5.66	36.74	31.54	54.00	22.46	
	1723.000	35.43	28.17	6.01	36.46	33.15	54.00	20.85	

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	48K26DW	Humidity :	60%RH
Test Mode	:	HDMI 1920*1080@60Hz & 1 kHz Playing	Date of Test :	Aug 06, 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	31.960	14.21	17.10	0.65	--	31.96	40.00	8.04	QP
	39.720	19.12	12.16	0.75	--	32.03	40.00	7.97	
	70.759	**27.15**	**6.30**	**0.93**	--	**34.38**	**40.00**	**5.62**	
	141.568	23.66	10.60	1.48	--	35.74	43.50	7.76	
	222.076	25.46	8.25	1.96	--	35.67	46.00	10.33	
	594.548	18.04	18.35	3.21	--	39.60	46.00	6.40	
	1089.000	45.66	24.03	4.99	38.00	36.68	74.00	37.32	PK
	1204.000	45.53	24.55	5.15	37.73	37.50	74.00	36.50	
	1287.000	45.99	24.93	5.35	37.52	38.75	74.00	35.25	
	1419.000	45.87	25.39	5.60	37.14	39.72	74.00	34.28	
	1552.000	45.11	26.16	5.65	36.78	40.14	74.00	33.86	
	1776.000	47.47	28.87	6.11	36.38	46.07	74.00	27.93	
	1089.000	36.11	24.03	4.99	38.00	27.13	54.00	26.87	AV
	1204.000	36.49	24.55	5.15	37.73	28.46	54.00	25.54	
	1287.000	36.90	24.93	5.35	37.52	29.66	54.00	24.34	
	1419.000	37.20	25.39	5.60	37.14	31.05	54.00	22.95	
	1552.000	37.49	26.16	5.65	36.78	32.52	54.00	21.48	
	1776.000	37.40	28.87	6.11	36.38	36.00	54.00	18.00	

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	48K26DW	Humidity :	60%RH
Test Mode	:	HDMI 1024*768@60Hz & 1 kHz Playing	Date of Test :	Aug 06, 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	63.969	23.86	5.26	0.90	30.02	40.00	9.98
	93.069	21.83	8.97	1.17	31.97	43.50	11.53
	138.658	**25.71**	**10.76**	**1.47**	**37.94**	**43.50**	**5.56**
	230.806	21.88	9.55	2.03	33.46	46.00	12.54
	353.023	19.18	15.10	2.60	36.88	46.00	9.12
	602.308	12.50	18.25	3.24	33.99	46.00	12.01
Vertical	34.870	13.23	15.65	0.69	29.57	40.00	10.43
	41.660	17.52	11.82	0.77	30.11	40.00	9.89
	71.729	25.40	6.50	0.94	32.84	40.00	7.16
	138.658	20.86	10.76	1.47	33.09	43.50	10.41
	223.046	24.59	8.27	1.96	34.82	46.00	11.18
	540.020	**19.70**	**19.50**	**3.02**	**42.22**	**46.00**	**3.78**

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	48K26DW	Humidity :	60%RH
Test Mode	:	HDMI 640*480@60Hz & 1 kHz Playing	Date of Test :	Aug 06, 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	65.890	23.92	5.45	0.91	30.28	40.00	9.72
	92.080	19.91	8.71	1.15	29.77	43.50	13.73
	152.220	**25.08**	**10.05**	**1.53**	**36.66**	**43.50**	**6.84**
	217.210	21.26	8.27	1.94	31.47	46.00	14.53
	365.620	17.99	15.20	2.62	35.81	46.00	10.19
	707.060	14.86	19.83	3.50	38.19	46.00	7.81
Vertical	30.970	11.75	18.10	0.64	30.49	40.00	9.51
	64.920	24.96	5.30	0.90	31.16	40.00	8.84
	138.640	**24.52**	**10.79**	**1.47**	**36.78**	**43.50**	**6.72**
	230.790	25.54	9.55	2.03	37.12	46.00	8.88
	452.920	7.93	16.43	2.80	27.16	46.00	18.84
	811.820	13.98	20.30	3.70	37.98	46.00	8.02

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	48K26DW	Humidity :	60%RH
Test Mode	:	D-Sub 1024*768@60Hz & 1 kHz Playing	Date of Test :	Aug 06, 2014

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	77.530	24.67	7.05	1.01	32.73	40.00	7.27
	131.850	23.53	11.66	1.43	36.62	43.50	6.88
	233.700	29.77	9.73	2.05	41.55	46.00	4.45
	325.850	24.18	13.95	2.55	40.68	46.00	5.32
	464.560	17.85	16.90	2.83	37.58	46.00	8.42
	699.300	**18.11**	**20.10**	**3.49**	**41.70**	**46.00**	**4.30**
Vertical	31.940	16.04	17.10	0.65	33.79	40.00	6.21
	69.770	26.46	6.15	0.92	33.53	40.00	6.47
	92.360	**31.70**	**8.80**	**1.17**	**41.67**	**43.50**	**1.83**
	144.460	24.02	10.35	1.49	35.86	43.50	7.64
	222.060	26.89	8.25	1.96	37.10	46.00	8.90
	371.440	20.58	15.04	2.64	38.26	46.00	7.74

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	48K26DW	Humidity :	60%RH
Test Mode	:	USB Play	Date of Test :	Aug 06, 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	66.879	22.46	5.65	0.91	29.02	40.00	10.98
	105.678	17.97	11.93	1.27	31.17	43.50	12.33
	157.087	22.12	9.39	1.56	33.07	43.50	10.43
	229.836	22.26	9.50	2.01	33.77	46.00	12.23
	352.053	**19.68**	**15.05**	**2.60**	**37.33**	**46.00**	**8.67**
	711.916	11.90	19.60	3.50	35.00	46.00	11.00
Vertical	35.840	13.96	15.35	0.71	30.02	40.00	9.98
	64.939	**25.76**	**5.30**	**0.90**	**31.96**	**40.00**	**8.04**
	125.078	19.03	12.40	1.40	32.83	43.50	10.67
	232.746	25.17	9.65	2.03	36.85	46.00	9.15
	434.502	15.47	17.20	2.75	35.42	46.00	10.58
	647.897	12.35	19.30	3.37	35.02	46.00	10.98

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	48K26DW	Humidity :	60%RH
Test Mode	:	LAN Play	Date of Test :	Aug 06, 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	72.680	23.81	6.65	0.95	31.41	40.00	8.59
	136.700	23.19	10.89	1.46	35.54	43.50	7.96
	220.120	21.74	8.22	1.94	31.90	46.00	14.10
	365.620	17.99	15.20	2.62	35.81	46.00	10.19
	699.300	**15.61**	**20.10**	**3.49**	**39.20**	**46.00**	**6.80**
	875.840	9.37	20.23	4.30	33.90	46.00	12.10
Vertical	40.670	21.68	11.87	0.76	34.31	40.00	5.69
	72.680	**26.78**	**6.65**	**0.95**	**34.38**	**40.00**	**5.62**
	137.670	24.32	10.82	1.46	36.60	43.50	6.90
	230.790	25.54	9.55	2.03	37.12	46.00	8.88
	699.300	16.03	20.10	3.49	39.62	46.00	6.38
	811.820	13.98	20.30	3.70	37.98	46.00	8.02

TEST ENGINEER: NEAL WANG

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Gasket	35X0.7X41mm\VGA\ROH	Qingdao Joinset S&T Co., Ltd., Shenzhen Tongantai Electronic Technology Co., Ltd	See Internal Photo Appendix Figure 19
Tape	DCF40\ROH		See Internal Photo Appendix Figure 20

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.