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

LED LCD TV

Model No.	Brand
40K368AW	Hisense

FCC ID : W9HLCDD0033

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-F13165
Date of Test : Sep 06 – 18, 2013
Date of Report : Oct 08, 2013

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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
40K368AW	Hisense	120V/60Hz

Test Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2012 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 Sep 06 – 18, 2013 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.F13166, a Verification report.

Date of Test : Sep 06 – 18, 2013 Date of Report : Oct 08, 2013

Producer : EMILY ZHU / Assistant

Review : DIO YANG / Assistant Manager

AUDIX® 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 2012 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2012 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.	:	40K368AW
Bread 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 : HE400GF-B31(1000)\S20L\PW1
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 USB2 Port
: Connected with U-Disk

(2) One USB3 Port
: Connected with U-Disk

(3) One LAN Port
: Connected with PC

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

(5) One VGA in Port
: Connected with PC

(6) One PC AUDIO Port
: Connected with PC

(7) One IR BLASTER Port
: Connected with Terminator

Side Port:

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

(2) One HDMI1 Port
: Connected with PC

(3) One HDMI2 Port
: Connected with DVD PLAYER #1

(4) One HDMI3 Port
: Connected with DVD PLAYER # 2

(5) One HDMI4 Port
: Connected with DVD PLAYER # 3

(6) One USB1 Port
: Connected with U-Disk

(7) One Headphone / AUDIO OUT Port
: Connected with Earphone

(8) One DIGITAL AUDIO OUT Port
: Connected with DVD PLAYER #1

(9) One component of AV Port
: Connected with DVD PLAYER #1

2.2 Peripherals

2.2.1 PC

Manufacturer	:	HP
Model Number	:	dx7200MT
Serial Number	:	CNG622017W
Power Cord	:	Unshielded, Detachable, 1.8m
Certificate	:	FCC DoC; CE/EMC; VCCI; C-Tick; UL BSMI (R33001) 3C (A000111) MIC (E-A011-04-2659(B))

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 : LG
Model Number : DF9921N
Serial Number : 3850R-M846W

2.2.10 DVD PLAYER #3

Manufacturer : DGT RONIK
Model Number : DV-A340
Serial Number : 10004184-C

2.2.11 Earphone

Manufacturer : SONY
Model Number : MDR-E808
Serial Number : 1808030805305506

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 = 3.42 dB
Radiated Emission Expanded Uncertainty (30-200MHz):
U = 4.14 dB (Horizontal)
U = 4.28 dB (Vertical)
Radiated Emission Expanded Uncertainty (200M-1GHz):
U = 4.18 dB (Horizontal)
U = 4.26 dB (Vertical)
Radiated Emission Expanded Uncertainty (Above 1GHz):
U = 4.50 dB (Horizontal)
U = 4.16 dB (Vertical)

3 CONDUCTED EMISSION TEST

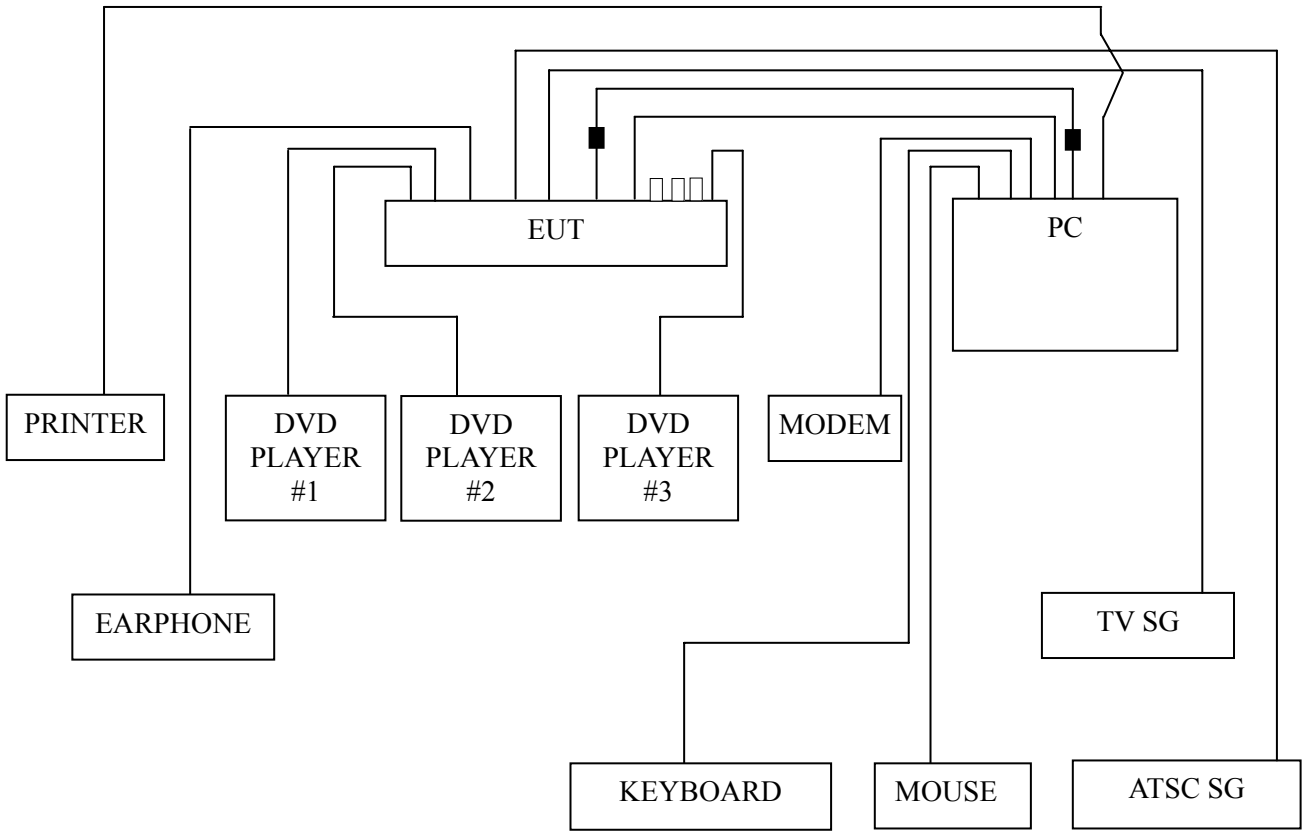
3.1 Test Equipment

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

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	100841	Mar 20, 2013	Mar 20, 2014
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Feb 25, 2013	Feb 25, 2014
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2013	Mar 20, 2014
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Sep 18, 2013	Mar 18, 2014
5.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2013	Mar 20, 2014
6.	Software	Audix	E3	SET00200 9804M592	--	--

3.2 Block Diagram of Test Setup

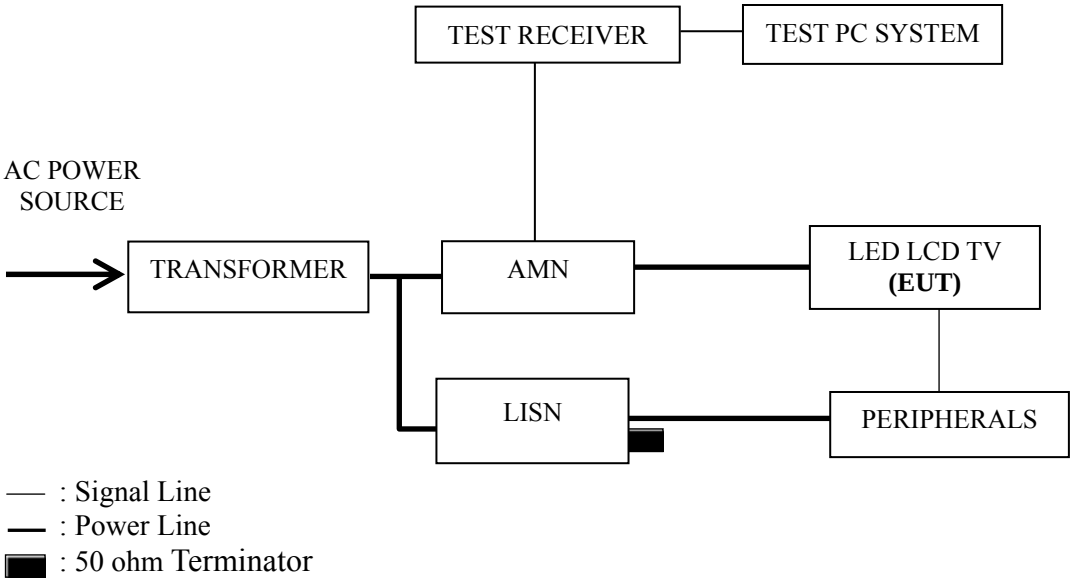
3.2.1 EUT & Peripherals



■: Ferrite core

: U-Disk

3.2.2 Conducted Disturbance Test Setup



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

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

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

3.4 Test Configuration

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

3.5 Operating Condition of EUT

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

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

3.5.3 Set the contrast & brightness of EUT to maximum.

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

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

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

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

3.5.8 The test modes are as follows:

Test Mode
D-Sub 1920*1080@60Hz
HDMI 1920*1080@60Hz
HDMI 1280*1024@60Hz
HDMI 640*480@60Hz
USB Play
LAN Play

3.6 Test Procedures

The EUT and peripherals were connected to the power mains through an Artificial Mains Network (AMN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line (Line & Neutral) were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to ANSI C63.4:2003 during conducted emission test.

The bandwidth of R&S Test Receiver ESCI was set at 9 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7.

3.7 Test Results

< PASS >

The frequency and amplitude of the highest conducted emission relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

Test Mode	Data Page
D-Sub 1920*1080@60Hz	P13
HDMI 1920*1080@60Hz	P14
HDMI 1280*1024@60Hz	P15
HDMI 640*480@60Hz	P16
USB Play	P17
LAN Play	P18

NOTE 1 – Factor = Cable Loss + AMN Factor.
NOTE 2 – Emission Level = Meter Reading + Factor.
NOTE 3 – "QP" means "Quasi-Peak" values, "AV" means "Average" values.
NOTE 4 – The worst case is for USB Play test mode. The worst emission is detected at 0.516 MHz (Quasi-Peak Value) with corrected signal level of 47.76 dB (μV) (limit is 56.00 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	40K368AW	Humidity	:	48%RH
Test Mode	:	D-Sub 1920*1080@60Hz	Date of Test	:	Sep 18, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.407	45.89	0.12	46.01	57.72	11.71	QP
	0.526	46.90	0.13	47.03	56.00	8.97	
	1.215	43.60	0.19	43.79	56.00	12.21	
	2.516	42.60	0.23	42.83	56.00	13.17	
	4.239	43.50	0.29	43.79	56.00	12.21	
	7.261	48.30	0.36	48.66	60.00	11.34	
	0.407	35.79	0.12	35.91	47.72	11.81	AV
	0.526	31.60	0.13	31.73	46.00	14.27	
	1.215	29.40	0.19	29.59	46.00	16.41	
	2.516	28.90	0.23	29.13	46.00	16.87	
	4.239	31.80	0.29	32.09	46.00	13.91	
	7.261	40.30	0.36	40.66	50.00	9.34	
Neutral	0.404	45.89	0.34	46.23	57.76	11.53	QP
	0.517	**47.20**	**0.36**	**47.56**	**56.00**	**8.44**	
	1.214	43.80	0.31	44.11	56.00	11.89	
	2.574	42.60	0.30	42.90	56.00	13.10	
	4.221	43.69	0.33	44.02	56.00	11.98	
	7.633	46.50	0.46	46.96	60.00	13.04	
	0.404	35.59	0.34	35.93	47.76	11.83	AV
	0.517	31.30	0.36	31.66	46.00	14.34	
	1.214	29.70	0.31	30.01	46.00	15.99	
	2.574	29.40	0.30	29.70	46.00	16.30	
	4.221	31.99	0.33	32.32	46.00	13.68	
	7.633	38.90	0.46	39.36	50.00	10.64	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	40K368AW	Humidity	:	48%RH
Test Mode	:	HDMI 1920*1080@60Hz	Date of Test	:	Sep 18, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.407	46.29	0.12	46.41	57.72	11.31	QP
	0.511	47.20	0.12	47.32	56.00	8.68	
	1.212	43.80	0.19	43.99	56.00	12.01	
	2.508	42.70	0.23	42.93	56.00	13.07	
	4.199	43.80	0.29	44.09	56.00	11.91	
	7.120	49.00	0.36	49.36	60.00	10.64	
	0.407	35.19	0.12	35.31	47.72	12.41	AV
	0.511	30.50	0.12	30.62	46.00	15.38	
	1.212	29.60	0.19	29.79	46.00	16.21	
	2.508	28.90	0.23	29.13	46.00	16.87	
	4.199	31.90	0.29	32.19	46.00	13.81	
	7.120	40.20	0.36	40.56	50.00	9.44	
Neutral	0.406	45.89	0.34	46.23	57.73	11.50	QP
	0.516	**47.20**	**0.36**	**47.56**	**56.00**	**8.44**	
	1.208	43.70	0.31	44.01	56.00	11.99	
	2.575	43.20	0.30	43.50	56.00	12.50	
	4.411	43.31	0.32	43.63	56.00	12.37	
	7.336	48.50	0.44	48.94	60.00	11.06	
	0.406	35.29	0.34	35.63	47.73	12.10	AV
	0.516	31.60	0.36	31.96	46.00	14.04	
	1.208	28.70	0.31	29.01	46.00	16.99	
	2.575	29.40	0.30	29.70	46.00	16.30	
	4.411	32.81	0.32	33.13	46.00	12.87	
	7.336	39.80	0.44	40.24	50.00	9.76	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	40K368AW	Humidity	:	48%RH
Test Mode	:	HDMI 1280*1024@60Hz	Date of Test	:	Sep 18, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.406	46.29	0.12	46.41	57.74	11.33	QP
	0.517	47.30	0.12	47.42	56.00	8.58	
	1.209	43.80	0.19	43.99	56.00	12.01	
	2.365	42.29	0.23	42.52	56.00	13.48	
	4.333	43.50	0.29	43.79	56.00	12.21	
	7.447	48.81	0.35	49.16	60.00	10.84	
	0.406	35.19	0.12	35.31	47.74	12.43	AV
	0.517	32.20	0.12	32.32	46.00	13.68	
	1.209	29.60	0.19	29.79	46.00	16.21	
	2.365	28.69	0.23	28.92	46.00	17.08	
	4.333	32.40	0.29	32.69	46.00	13.31	
	7.447	40.61	0.35	40.96	50.00	9.04	
Neutral	0.401	45.99	0.34	46.33	57.83	11.50	QP
	0.515	**47.30**	**0.36**	**47.66**	**56.00**	**8.34**	
	1.202	43.90	0.31	44.21	56.00	11.79	
	2.353	42.31	0.29	42.60	56.00	13.40	
	4.325	41.90	0.32	42.22	56.00	13.78	
	7.697	45.00	0.46	45.46	60.00	14.54	
	0.401	35.69	0.34	36.03	47.83	11.80	AV
	0.515	31.90	0.36	32.26	46.00	13.74	
	1.202	29.60	0.31	29.91	46.00	16.09	
	2.353	28.51	0.29	28.80	46.00	17.20	
	4.325	32.50	0.32	32.82	46.00	13.18	
	7.697	38.70	0.46	39.16	50.00	10.84	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature	:	22℃
Model No.	:	40K368AW	Humidity	:	48%RH
Test Mode	:	HDMI 640*480@60Hz	Date of Test	:	Sep 18, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.405	46.19	0.12	46.31	57.75	11.44	QP
	0.517	47.30	0.12	47.42	56.00	8.58	
	1.207	44.00	0.19	44.19	56.00	11.81	
	2.355	42.30	0.22	42.52	56.00	13.48	
	4.392	44.30	0.29	44.59	56.00	11.41	
	7.458	46.81	0.35	47.16	60.00	12.84	
	0.405	34.89	0.12	35.01	47.75	12.74	AV
	0.517	32.40	0.12	32.52	46.00	13.48	
	1.207	29.90	0.19	30.09	46.00	15.91	
	2.355	28.50	0.22	28.72	46.00	17.28	
	4.392	32.40	0.29	32.69	46.00	13.31	
	7.458	40.31	0.35	40.66	50.00	9.34	
Neutral	0.404	46.19	0.34	46.53	57.77	11.24	QP
	0.517	**47.30**	**0.36**	**47.66**	**56.00**	**8.34**	
	1.212	44.00	0.31	44.31	56.00	11.69	
	2.359	42.50	0.30	42.80	56.00	13.20	
	4.452	41.41	0.32	41.73	56.00	14.27	
	7.641	46.40	0.46	46.86	60.00	13.14	
	0.404	35.79	0.34	36.13	47.77	11.64	AV
	0.517	32.20	0.36	32.56	46.00	13.44	
	1.212	30.10	0.31	30.41	46.00	15.59	
	2.359	28.80	0.30	29.10	46.00	16.90	
	4.452	32.71	0.32	33.03	46.00	12.97	
	7.641	39.00	0.46	39.46	50.00	10.54	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature	:	22℃
Model No.	:	40K368AW	Humidity	:	48%RH
Test Mode	:	USB Play	Date of Test	:	Sep 18, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.404	46.19	0.12	46.31	57.77	11.46	QP
	0.522	47.30	0.13	47.43	56.00	8.57	
	1.205	43.90	0.19	44.09	56.00	11.91	
	2.353	42.40	0.22	42.62	56.00	13.38	
	4.387	43.90	0.29	44.19	56.00	11.81	
	7.495	49.41	0.35	49.76	60.00	10.24	
	0.404	35.89	0.12	36.01	47.77	11.76	AV
	0.522	32.40	0.13	32.53	46.00	13.47	
	1.205	29.90	0.19	30.09	46.00	15.91	
	2.353	28.70	0.22	28.92	46.00	17.08	
	4.387	32.70	0.29	32.99	46.00	13.01	
	7.495	40.91	0.35	41.26	50.00	8.74	
Neutral	0.396	45.81	0.32	46.13	57.94	11.81	QP
	0.516	**47.40**	**0.36**	**47.76**	**56.00**	**8.24**	
	1.214	44.40	0.31	44.71	56.00	11.29	
	2.356	42.61	0.29	42.90	56.00	13.10	
	4.389	43.70	0.32	44.02	56.00	11.98	
	7.527	45.60	0.46	46.06	60.00	13.94	
	0.396	33.21	0.32	33.53	47.94	14.41	AV
	0.516	32.40	0.36	32.76	46.00	13.24	
	1.214	29.30	0.31	29.61	46.00	16.39	
	2.356	28.81	0.29	29.10	46.00	16.90	
	4.389	32.60	0.32	32.92	46.00	13.08	
	7.527	39.40	0.46	39.86	50.00	10.14	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature	:	22℃
Model No.	:	40K368AW	Humidity	:	48%RH
Test Mode	:	LAN Play	Date of Test	:	Sep 18, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.403	46.19	0.12	46.31	57.78	11.47	QP
	0.525	47.20	0.13	47.33	56.00	8.67	
	1.199	43.90	0.19	44.09	56.00	11.91	
	2.348	42.80	0.22	43.02	56.00	12.98	
	4.248	42.40	0.29	42.69	56.00	13.31	
	7.555	48.70	0.36	49.06	60.00	10.94	
	0.403	35.79	0.12	35.91	47.78	11.87	AV
	0.525	32.60	0.13	32.73	46.00	13.27	
	1.199	29.90	0.19	30.09	46.00	15.91	
	2.348	28.60	0.22	28.82	46.00	17.18	
	4.248	31.90	0.29	32.19	46.00	13.81	
	7.555	40.60	0.36	40.96	50.00	9.04	
Neutral	0.406	45.89	0.34	46.23	57.74	11.51	QP
	0.511	**47.30**	**0.36**	**47.66**	**56.00**	**8.34**	
	1.202	44.10	0.31	44.41	56.00	11.59	
	2.561	43.00	0.30	43.30	56.00	12.70	
	4.915	40.90	0.33	41.23	56.00	14.77	
	7.558	46.90	0.46	47.36	60.00	12.64	
	0.406	34.19	0.34	34.53	47.74	13.21	AV
	0.511	31.30	0.36	31.66	46.00	14.34	
	1.202	29.90	0.31	30.21	46.00	15.79	
	2.561	29.40	0.30	29.70	46.00	16.30	
	4.915	32.80	0.33	33.13	46.00	12.87	
	7.558	39.30	0.46	39.76	50.00	10.24	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

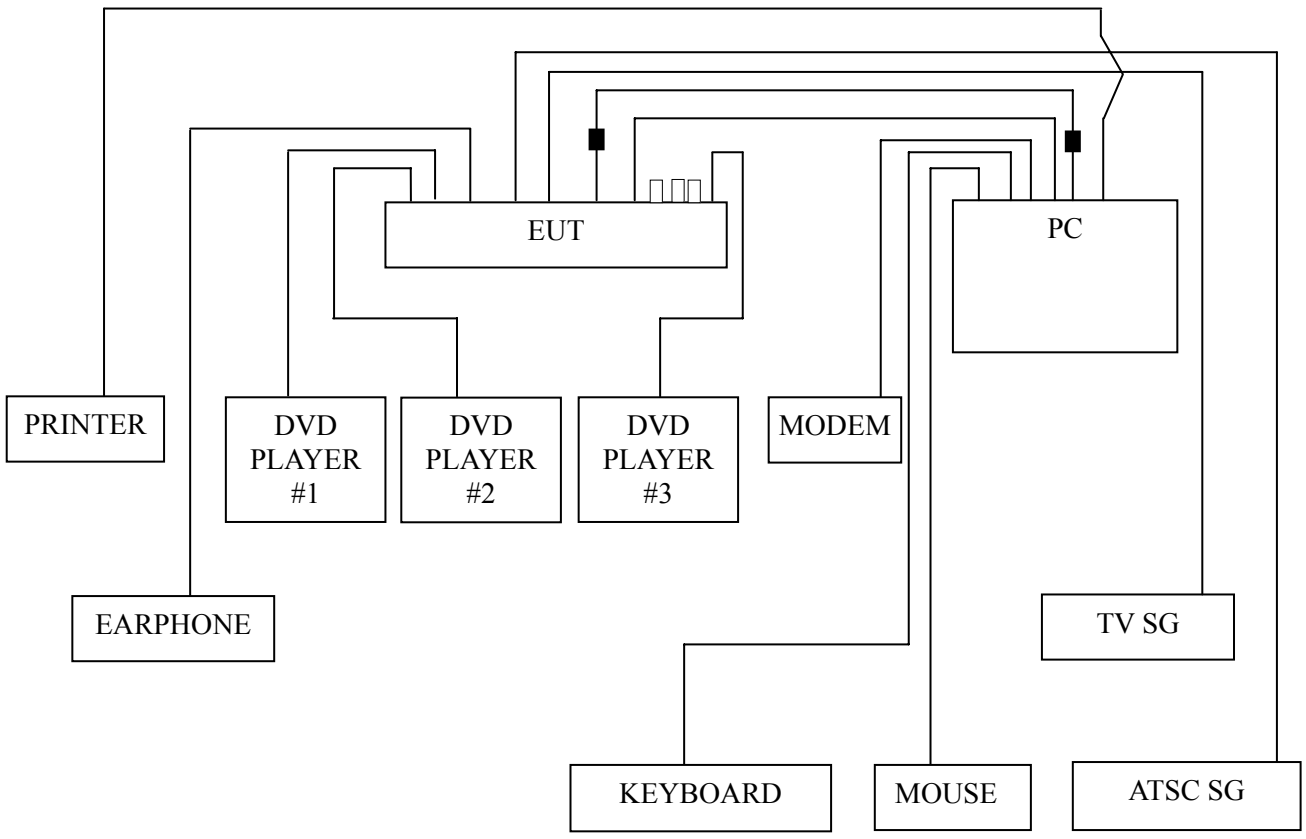
4.1 Test Equipment

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 03, 2014
2.	Preamplifier	Agilent	8447D	2944A10548	Sep 18, 2013	Mar 18, 2014
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2013	Mar 20, 2014
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 03, 2013	May 03, 2014
5.	Horn Antenna	EMCO	3115	9607-4878	May 11, 2013	May 11, 2014
6.	Spectrum	Agilent	E7405A	MY45106600	Dec 17, 2012	Dec 17, 2013
7.	50Ω Coaxial Switch	Anritsu	MP59B	6200426390	Sep 18, 2013	Mar 18, 2014
8.	Software	Audix	E3	SET00200 9912M295-2	--	--

4.2 Block Diagram of Test Setup

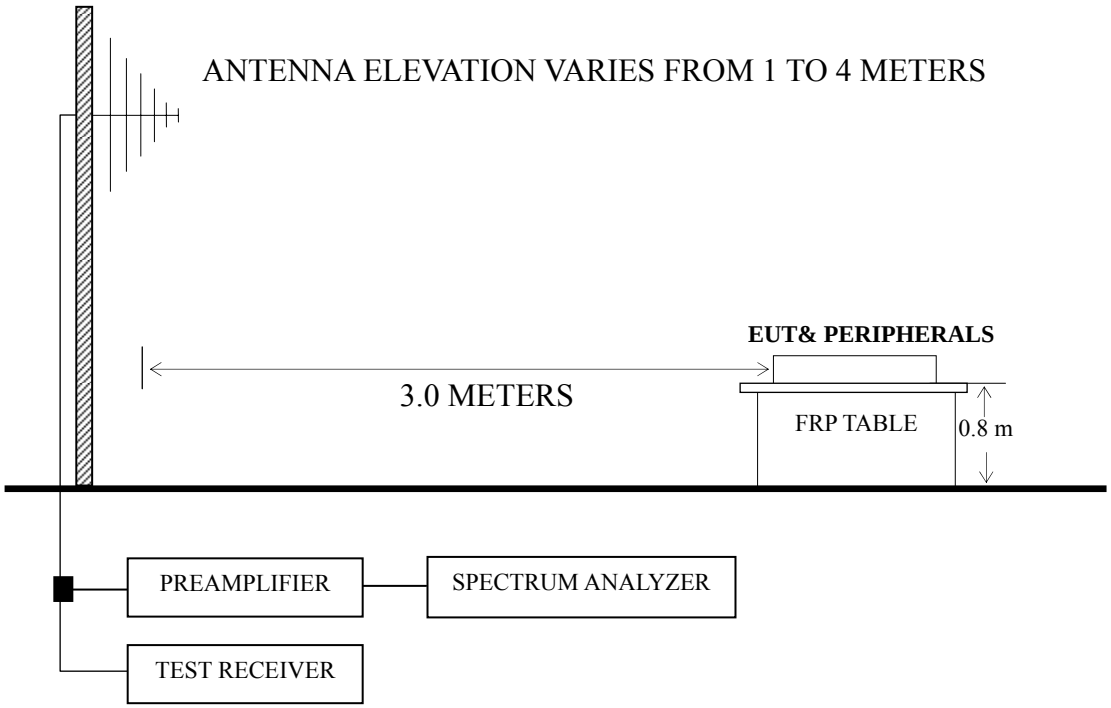
4.2.1 EUT & Peripherals



■ : Ferrite core

□ : U-Disk

4.2.2 Radiated emission test setup



■ : 50 ohm Coaxial Switch

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

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

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

4.4 Test Configuration

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

Please refer to Sec.3.4.

4.5 Operating Condition of EUT

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

4.6 Test Procedures

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

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

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

The frequency range from 1 GHz to 2 GHz was checked for the worst test mode in 30 – 1000 MHz test.

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 499.480 MHz with corrected signal level of 43.87 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.70 m height and the turntable was at 212°. The worst emission at vertical polarization was detected at 69.770 MHz with corrected signal level of 37.07 dB (μV/m) (limit is 40.00 dB (μV/m)), when the antenna was 1.50 m height and the turntable was at 147°.

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	40K368AW	Humidity	:	60%RH
Test Mode	:	HDMI 1920*1080@60Hz	Date of Test	:	Sep 06, 2013

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	68.800	28.21	5.56	0.92	--	34.69	40.00	5.31	QP
	149.310	29.10	10.12	1.64	--	40.86	43.50	2.64	
	175.500	25.03	8.29	1.81	--	35.13	43.50	8.37	
	233.700	23.63	9.93	2.13	--	35.69	46.00	10.31	
	372.410	20.72	14.90	2.66	--	38.28	46.00	7.72	
	499.480	**22.79**	**18.10**	**2.98**	--	**43.87**	**46.00**	**2.13**	
	1093.000	47.81	24.06	4.99	38.00	38.86	74.00	35.14	PK
	1221.000	47.54	24.63	5.20	37.69	39.68	74.00	34.32	
	1418.000	45.60	25.39	5.60	37.14	39.45	74.00	34.55	
	1556.000	48.20	26.20	5.65	36.77	43.28	74.00	30.72	
	1703.000	48.18	27.91	5.97	36.50	45.56	74.00	28.44	
	1836.000	46.68	29.51	6.16	36.30	46.05	74.00	27.95	
	1093.000	33.96	24.06	4.99	38.00	25.01	54.00	28.99	AV
	1221.000	33.60	24.63	5.20	37.69	25.74	54.00	28.26	
	1418.000	32.46	25.39	5.60	37.14	26.31	54.00	27.69	
	1556.000	35.55	26.20	5.65	36.77	30.63	54.00	23.37	
	1703.000	35.05	27.91	5.97	36.50	32.43	54.00	21.57	
	1836.000	33.23	29.51	6.16	36.30	32.60	54.00	21.40	

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	40K368AW	Humidity :	60%RH
Test Mode	:	HDMI 1920*1080@60Hz	Date of Test :	Sep 06, 2013

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	**69.770**	**30.41**	**5.74**	**0.92**	**--**	**37.07**	**40.00**	**2.93**	QP
	109.540	23.35	11.84	1.40	--	36.59	43.50	6.91	
	177.440	24.65	8.26	1.83	--	34.74	43.50	8.76	
	418.000	20.56	16.98	2.74	--	40.28	46.00	5.72	
	501.420	17.48	18.17	2.98	--	38.63	46.00	7.37	
	871.960	13.33	20.30	4.20	--	37.83	46.00	8.17	
	1089.000	45.66	24.03	4.99	38.00	36.68	74.00	37.32	PK
	1195.000	45.59	24.51	5.10	37.75	37.45	74.00	36.55	
	1423.000	45.16	25.40	5.60	37.12	39.04	74.00	34.96	
	1631.000	46.69	27.03	5.81	36.62	42.91	74.00	31.09	
	1807.000	45.89	29.23	6.16	36.33	44.95	74.00	29.05	
	1944.000	45.56	30.54	6.19	36.16	46.13	74.00	27.87	
	1089.000	32.95	24.03	4.99	38.00	23.97	54.00	30.03	AV
	1195.000	31.50	24.51	5.10	37.75	23.36	54.00	30.64	
	1423.000	32.75	25.40	5.60	37.12	26.63	54.00	27.37	
	1631.000	33.95	27.03	5.81	36.62	30.17	54.00	23.83	
	1807.000	32.74	29.23	6.16	36.33	31.80	54.00	22.20	
	1944.000	32.76	30.54	6.19	36.16	33.33	54.00	20.67	

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	40K368AW	Humidity :	60%RH
Test Mode	:	D-Sub 1920*1080@60Hz	Date of Test :	Sep 06, 2013

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	70.740	23.51	5.89	0.94	30.34	40.00	9.66
	129.910	24.19	11.90	1.53	37.62	43.50	5.88
	395.690	20.67	15.80	2.68	39.15	46.00	6.85
	506.270	13.53	18.30	3.00	34.83	46.00	11.17
	669.230	16.41	19.45	3.44	39.30	46.00	6.70
	742.950	**19.73**	**18.87**	**3.57**	**42.17**	**46.00**	**3.83**
Vertical	30.970	14.89	17.65	0.67	33.21	40.00	6.79
	90.140	25.13	8.20	1.22	34.55	43.50	8.95
	446.130	19.26	17.07	2.82	39.15	46.00	6.85
	593.570	16.49	18.50	3.20	38.19	46.00	7.81
	742.950	**19.76**	**18.87**	**3.57**	**42.20**	**46.00**	**3.80**
	793.390	17.10	19.07	3.61	39.78	46.00	6.22

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	40K368AW	Humidity :	60%RH
Test Mode	:	HDMI 1280*1024@60Hz	Date of Test :	Sep 06, 2013

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	78.500	24.00	6.71	1.05	31.76	40.00	8.24
	134.760	22.34	11.00	1.57	34.91	43.50	8.59
	159.980	22.15	9.60	1.70	33.45	43.50	10.05
	311.300	21.09	13.37	2.56	37.02	46.00	8.98
	553.800	**16.15**	**19.30**	**3.10**	**38.55**	**46.00**	**7.45**
	785.630	16.27	18.50	3.60	38.37	46.00	7.63
Vertical	33.880	14.10	16.12	0.70	30.92	40.00	9.08
	88.200	24.15	7.92	1.18	33.25	43.50	10.25
	144.460	20.52	10.30	1.61	32.43	43.50	11.07
	230.790	27.04	9.75	2.11	38.90	46.00	7.10
	430.610	**18.58**	**17.60**	**2.78**	**38.96**	**46.00**	**7.04**
	623.640	15.41	18.65	3.28	37.34	46.00	8.66

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	40K368AW	Humidity :	60%RH
Test Mode	:	HDMI 640*480@60Hz	Date of Test :	Sep 06, 2013

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	**70.740**	**27.52**	**5.89**	**0.94**	**34.35**	**40.00**	**5.65**
	99.840	23.98	10.32	1.34	35.64	43.50	7.86
	168.710	23.98	8.40	1.76	34.14	43.50	9.36
	419.940	16.90	17.20	2.74	36.84	46.00	9.16
	614.910	14.27	18.65	3.25	36.17	46.00	9.83
	852.560	13.00	20.90	4.08	37.98	46.00	8.02
Vertical	31.940	15.03	16.50	0.68	32.21	40.00	7.79
	75.590	22.95	6.54	1.01	30.50	40.00	9.50
	108.570	**23.05**	**11.72**	**1.40**	**36.17**	**43.50**	**7.33**
	169.680	24.47	8.40	1.78	34.65	43.50	8.85
	272.500	23.05	12.60	2.35	38.00	46.00	8.00
	516.940	16.66	18.32	3.01	37.99	46.00	8.01

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	40K368AW	Humidity :	60%RH
Test Mode	:	USB Play	Date of Test :	Sep 06, 2013

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	79.470	21.76	6.76	1.06	29.58	40.00	10.42
	94.990	23.42	9.30	1.29	34.01	43.50	9.49
	196.840	25.96	8.20	1.94	36.10	43.50	7.40
	340.400	20.71	14.80	2.61	38.12	46.00	7.88
	542.160	14.81	19.48	3.08	37.37	46.00	8.63
	741.010	**17.96**	**18.87**	**3.57**	**40.40**	**46.00**	**5.60**
Vertical	33.880	14.10	16.12	0.70	30.92	40.00	9.08
	66.860	26.03	5.12	0.91	32.06	40.00	7.94
	120.210	22.55	11.41	1.48	35.44	43.50	8.06
	237.580	24.98	10.67	2.15	37.80	46.00	8.20
	542.160	15.24	19.48	3.08	37.80	46.00	8.20
	721.610	**16.17**	**19.30**	**3.56**	**39.03**	**46.00**	**6.97**

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	40K368AW	Humidity :	60%RH
Test Mode	:	LAN Play	Date of Test :	Sep 06, 2013

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	78.500	25.11	6.71	1.05	32.87	40.00	7.13
	149.310	**25.10**	**10.12**	**1.64**	**36.86**	**43.50**	**6.64**
	223.030	26.21	8.43	2.06	36.70	46.00	9.30
	369.500	18.95	14.80	2.65	36.40	46.00	9.60
	556.710	16.48	19.20	3.10	38.78	46.00	7.22
	908.820	9.63	19.30	4.55	33.48	46.00	12.52
Vertical	**65.890**	**28.15**	**4.88**	**0.91**	**33.94**	**40.00**	**6.06**
	110.510	23.13	11.87	1.41	36.41	43.50	7.09
	171.620	25.18	8.37	1.78	35.33	43.50	8.17
	361.740	20.41	14.97	2.64	38.02	46.00	7.98
	549.920	16.90	19.40	3.10	39.40	46.00	6.60
	704.150	12.93	20.13	3.55	36.61	46.00	9.39

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	Jiangsu Ruifeng Electronic Co., Ltd.	See Internal Photo Figure 22

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.