

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

LED LCD TV

Model No.	Brand
LTDN55XT880WUS	Hisense
55T880UW	

FCC ID : W9HLCDF0029

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

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Report No. : ACI-F13163
Date of Test : Sep 18 – Oct 17, 2013
Date of Report : Oct 22, 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
LTDN55XT880WUS	Hisense	120V/60Hz
55T880UW		

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 18 – Oct 17, 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.


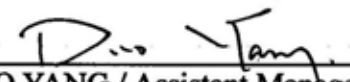
The test results for EUT's TV functions are contained in No.F13162, a Verification report.

Date of Test : Sep 18 – Oct 17, 2013 Date of Report : Oct 22, 2013

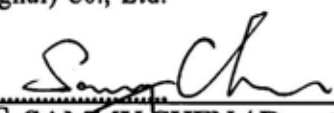
Producer :


EMILY ZHU / Assistant

Review :

 For and on behalf of

DIAO YANG / Assistant Manager
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	:	<input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-product <input type="checkbox"/> Pro-type
Model No.	:	LTDN55XT880WUS, 55T880UW
Note	:	The above models are all the same except for the different model name. The LTDN55XT880WUS was tested and reported in the report.
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 : CSOT M/N : MT5461D01-1
Max Resolution	:	1920*1080@60Hz 3840*2160@30Hz (Only for UHD port)
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 #1
- (2) One HDMI3 Port : Connected with DVD PLAYER #2
- (3) One HDMI4 Port : Connected with DVD PLAYER #3
- (4) One LAN Port : Connected with PC
- (5) One component of AV/YPbPr Port : Connected with DVD PLAYER #1

Side Port:

- (1) One ANT Port : Connected with ATSC SG / TV SG
- (2) One VGA Port : Connected with PC
- (3) One Audio In Port : Connected with PC
- (4) One HDMI1(UHD) Port : Connected with PC
- (5) Three USB Ports : Connected with U-Disk
- (6) One Headphone Out Port : Connected with Earphone
- (7) One DIGITAL Port : Connected with DVD PLAYER #1
- (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; 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 : Sept. 17, 1998 file on
(No.3 3m Chamber) Mar 16, 2012 Renewed
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046, USA

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

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

NVLAP Lab Code : 200371-0

2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty: U = 3.42 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

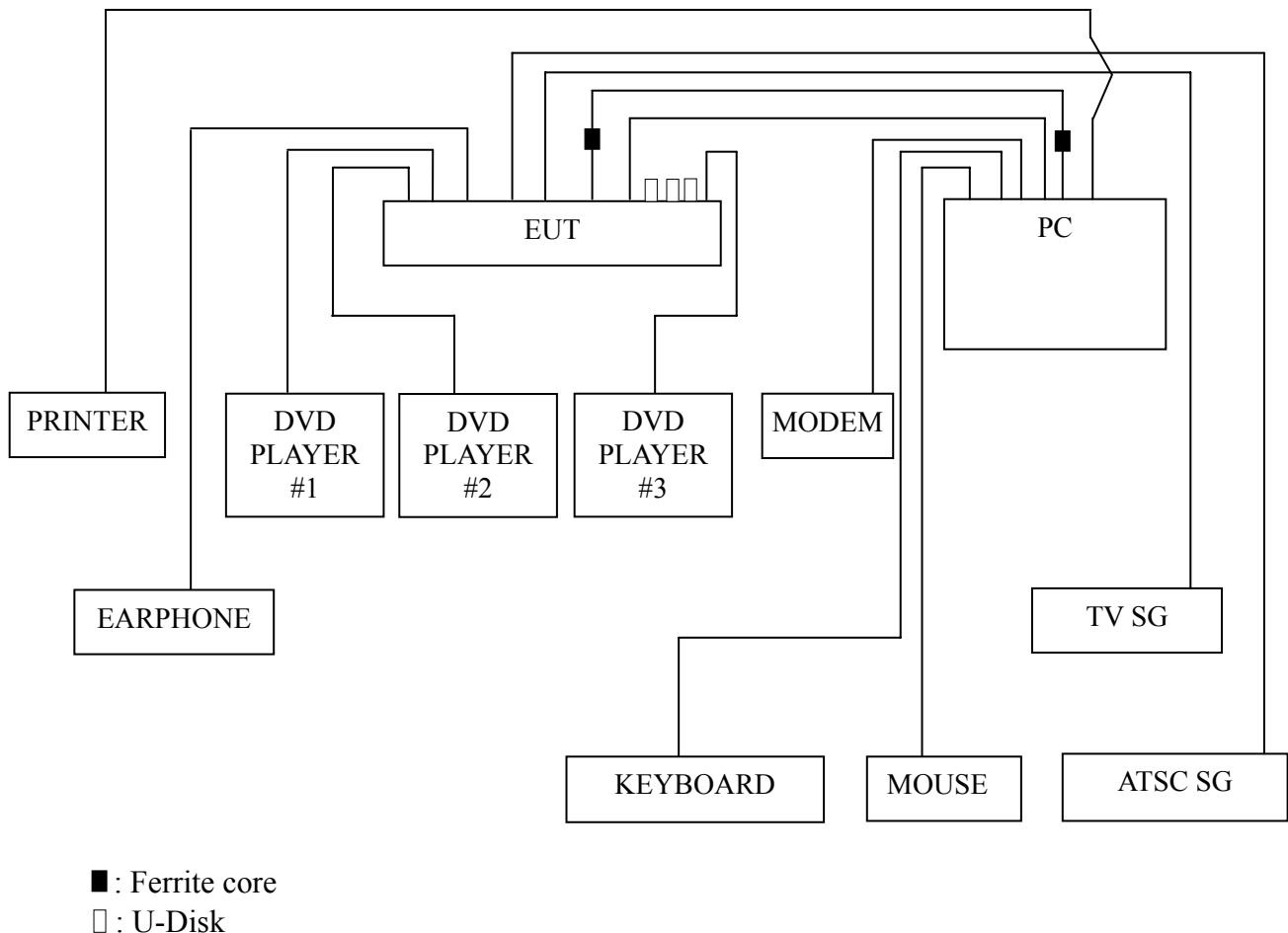
3.1 Test Equipment

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

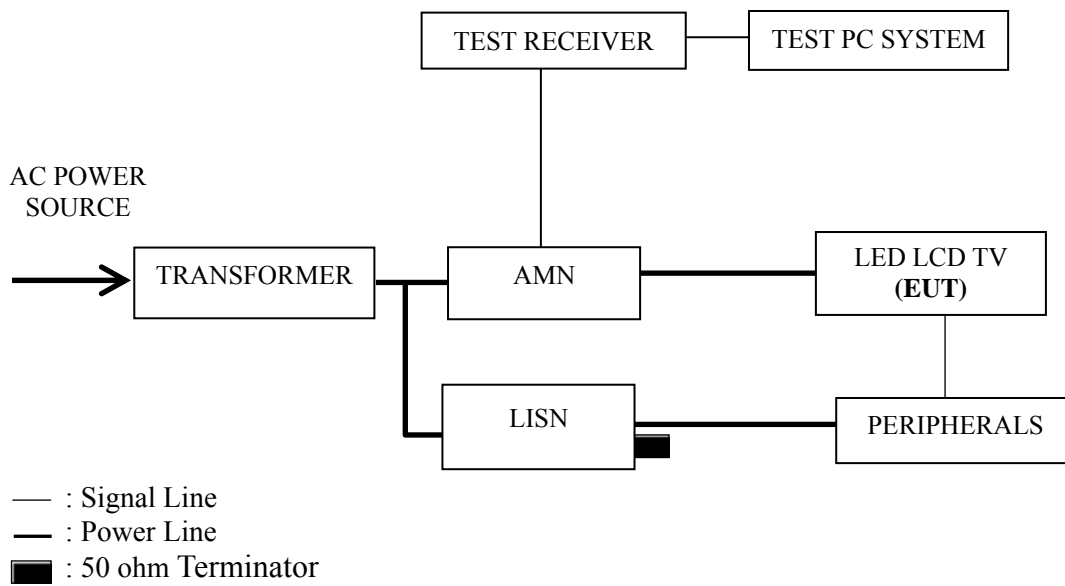
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	100841	Mar 20, 2013	Mar 20, 2014
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Feb 25, 2013	Feb 25, 2014
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2013	Mar 20, 2014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



3.2.2 Conducted Disturbance Test Setup



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

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

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

3.4 Test Configuration

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

3.5 Operating Condition of EUT

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

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

3.5.3 Set the contrast & brightness of EUT to maximum.

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

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

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

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

3.5.8 The test modes are as follows:

Test Mode
HDMI 3840*2160@30Hz (UHD)
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
HDMI 3840*2160@30Hz (UHD)	P13
D-Sub 1920*1080@60Hz	P14
HDMI 1920*1080@60Hz	P15
D-Sub 1280*1024@60Hz	P16
D-Sub 640*480@60Hz	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 D-Sub 1920*1080@60Hz test mode. The worst emission is detected at 0.811 MHz (Average Value) with corrected signal level of 41.03 dB (μV) (limit is 46.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 48%RH

Test Mode : HDMI 3840*2160@30Hz Date of Test : Oct 17, 2013
(UHD)

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	52.10	0.15	52.25	66.00	13.75	QP
	0.411	44.79	0.22	45.01	57.62	12.61	
	0.952	45.70	0.17	45.87	56.00	10.13	
	1.784	47.10	0.17	47.27	56.00	8.73	
	2.586	47.11	0.16	47.27	56.00	8.73	
	5.324	50.00	0.25	50.25	60.00	9.75	
	0.150	37.60	0.15	37.75	56.00	18.25	AV
	0.411	33.59	0.22	33.81	47.62	13.81	
	0.952	33.30	0.17	33.47	46.00	12.53	
	1.784	37.20	0.17	37.37	46.00	8.63	
	2.586	35.61	0.16	35.77	46.00	10.23	
	5.324	41.40	0.25	41.65	50.00	8.35	
Neutral	0.150	53.40	0.15	53.55	66.00	12.45	QP
	0.416	42.99	0.22	43.21	57.53	14.32	
	0.834	43.71	0.14	43.85	56.00	12.15	
	1.736	44.00	0.17	44.17	56.00	11.83	
	3.320	43.10	0.19	43.29	56.00	12.71	
	5.413	47.80	0.25	48.05	60.00	11.95	
	0.150	37.40	0.15	37.55	56.00	18.45	AV
	0.416	30.99	0.22	31.21	47.53	16.32	
	0.834	34.91	0.14	35.05	46.00	10.95	
	1.736	32.00	0.17	32.17	46.00	13.83	
	3.320	32.30	0.19	32.49	46.00	13.51	
	5.413	39.60	0.25	39.85	50.00	10.15	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS 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	0.350	46.41	0.11	46.52	58.95	12.43	QP
	0.811	47.30	0.23	47.53	56.00	8.47	
	1.044	46.90	0.19	47.09	56.00	8.91	
	1.747	46.40	0.20	46.60	56.00	9.40	
	3.712	45.00	0.28	45.28	56.00	10.72	
	5.841	48.80	0.34	49.14	60.00	10.86	
	0.350	41.71	0.11	41.82	48.95	7.13	AV
	0.811	40.80	0.23	41.03	46.00	4.97	
	1.044	38.50	0.19	38.69	46.00	7.31	
	1.747	39.00	0.20	39.20	46.00	6.80	
	3.712	34.20	0.28	34.48	46.00	11.52	
	5.841	40.80	0.34	41.14	50.00	8.86	
Neutral	0.353	44.80	0.31	45.11	58.89	13.78	QP
	0.815	45.00	0.29	45.29	56.00	10.71	
	1.754	43.90	0.30	44.20	56.00	11.80	
	3.103	44.49	0.32	44.81	56.00	11.19	
	4.953	43.60	0.33	43.93	56.00	12.07	
	5.952	49.19	0.40	49.59	60.00	10.41	
	0.353	39.30	0.31	39.61	48.89	9.28	AV
	0.815	36.80	0.29	37.09	46.00	8.91	
	1.754	33.90	0.30	34.20	46.00	11.80	
	3.103	31.39	0.32	31.71	46.00	14.29	
	4.953	35.90	0.33	36.23	46.00	9.77	
	5.952	39.19	0.40	39.59	50.00	10.41	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS 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	0.351	46.20	0.12	46.32	58.93	12.61	QP
	0.823	47.50	0.23	47.73	56.00	8.27	
	1.736	46.60	0.20	46.80	56.00	9.20	
	3.077	46.20	0.25	46.45	56.00	9.55	
	4.686	44.09	0.31	44.40	56.00	11.60	
	5.661	48.90	0.34	49.24	60.00	10.76	
	0.351	41.60	0.12	41.72	48.93	7.21	AV
	0.823	39.40	0.23	39.63	46.00	6.37	
	1.736	37.10	0.20	37.30	46.00	8.70	
	3.077	34.20	0.25	34.45	46.00	11.55	
	4.686	33.89	0.31	34.20	46.00	11.80	
	5.661	41.90	0.34	42.24	50.00	7.76	
Neutral	0.352	44.20	0.31	44.51	58.92	14.41	QP
	0.812	45.70	0.29	45.99	56.00	10.01	
	1.047	45.10	0.32	45.42	56.00	10.58	
	1.743	44.50	0.30	44.80	56.00	11.20	
	3.127	42.69	0.32	43.01	56.00	12.99	
	5.657	47.79	0.38	48.17	60.00	11.83	
	0.352	39.70	0.31	40.01	48.92	8.91	AV
	0.812	37.40	0.29	37.69	46.00	8.31	
	1.047	36.30	0.32	36.62	46.00	9.38	
	1.743	34.40	0.30	34.70	46.00	11.30	
	3.127	31.69	0.32	32.01	46.00	13.99	
	5.657	40.69	0.38	41.07	50.00	8.93	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 48%RH

Test Mode : D-Sub 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	0.351	45.70	0.12	45.82	58.93	13.11	QP
	0.810	47.90	0.23	48.13	56.00	7.87	
	1.051	45.90	0.19	46.09	56.00	9.91	
	1.735	47.70	0.20	47.90	56.00	8.10	
	2.915	46.10	0.25	46.35	56.00	9.65	
	5.770	49.50	0.34	49.84	60.00	10.16	
	0.351	41.80	0.12	41.92	48.93	7.01	AV
	0.810	39.20	0.23	39.43	46.00	6.57	
	1.051	37.00	0.19	37.19	46.00	8.81	
	1.735	38.20	0.20	38.40	46.00	7.60	
	2.915	36.90	0.25	37.15	46.00	8.85	
	5.770	40.90	0.34	41.24	50.00	8.76	
Neutral	0.348	45.11	0.30	45.41	59.01	13.60	QP
	0.813	45.90	0.29	46.19	56.00	9.81	
	1.035	43.60	0.32	43.92	56.00	12.08	
	1.731	44.51	0.29	44.80	56.00	11.20	
	2.925	44.30	0.31	44.61	56.00	11.39	
	5.655	46.99	0.38	47.37	60.00	12.63	
	0.348	39.31	0.30	39.61	49.01	9.40	AV
	0.813	37.40	0.29	37.69	46.00	8.31	
	1.035	32.90	0.32	33.22	46.00	12.78	
	1.731	34.21	0.29	34.50	46.00	11.50	
	2.925	34.20	0.31	34.51	46.00	11.49	
	5.655	40.19	0.38	40.57	50.00	9.43	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 48%RH

Test Mode : D-Sub 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	0.347	46.61	0.11	46.72	59.03	12.31	QP
	0.813	47.90	0.23	48.13	56.00	7.87	
	1.047	46.20	0.19	46.39	56.00	9.61	
	1.727	46.71	0.19	46.90	56.00	9.10	
	2.421	46.90	0.23	47.13	56.00	8.87	
	5.143	50.90	0.32	51.22	60.00	8.78	
	0.347	40.71	0.11	40.82	49.03	8.21	AV
	0.813	39.50	0.23	39.73	46.00	6.27	
	1.047	37.50	0.19	37.69	46.00	8.31	
	1.727	34.91	0.19	35.10	46.00	10.90	
	2.421	35.40	0.23	35.63	46.00	10.37	
	5.143	40.40	0.32	40.72	50.00	9.28	
Neutral	0.347	45.20	0.30	45.50	59.03	13.53	QP
	0.816	46.40	0.29	46.69	56.00	9.31	
	1.032	43.60	0.32	43.92	56.00	12.08	
	1.729	44.71	0.29	45.00	56.00	11.00	
	2.909	43.60	0.31	43.91	56.00	12.09	
	5.663	48.09	0.38	48.47	60.00	11.53	
	0.347	39.20	0.30	39.50	49.03	9.53	AV
	0.816	37.70	0.29	37.99	46.00	8.01	
	1.032	31.60	0.32	31.92	46.00	14.08	
	1.729	33.71	0.29	34.00	46.00	12.00	
	2.909	34.70	0.31	35.01	46.00	10.99	
	5.663	40.59	0.38	40.97	50.00	9.03	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS 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	0.352	45.80	0.12	45.92	58.91	12.99	QP
	0.814	48.40	0.23	48.63	56.00	7.37	
	1.060	47.70	0.19	47.89	56.00	8.11	
	1.769	47.00	0.20	47.20	56.00	8.80	
	3.039	46.90	0.25	47.15	56.00	8.85	
	5.677	51.00	0.34	51.34	60.00	8.66	
	0.352	41.60	0.12	41.72	48.91	7.19	AV
	0.814	39.70	0.23	39.93	46.00	6.07	
	1.060	39.00	0.19	39.19	46.00	6.81	
	1.769	37.50	0.20	37.70	46.00	8.30	
	3.039	35.90	0.25	36.15	46.00	9.85	
	5.677	40.50	0.34	40.84	50.00	9.16	
Neutral	0.348	44.70	0.30	45.00	59.02	14.02	QP
	0.823	46.90	0.29	47.19	56.00	8.81	
	1.054	44.20	0.32	44.52	56.00	11.48	
	1.765	43.90	0.30	44.20	56.00	11.80	
	3.596	44.40	0.32	44.72	56.00	11.28	
	5.560	46.90	0.37	47.27	60.00	12.73	
	0.348	39.50	0.30	39.80	49.02	9.22	AV
	0.823	38.80	0.29	39.09	46.00	6.91	
	1.054	35.90	0.32	36.22	46.00	9.78	
	1.765	34.80	0.30	35.10	46.00	10.90	
	3.596	32.70	0.32	33.02	46.00	12.98	
	5.560	39.80	0.37	40.17	50.00	9.83	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS 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	0.352	46.00	0.12	46.12	58.91	12.79	QP
	0.811	48.80	0.23	49.03	56.00	6.97	
	1.051	46.30	0.19	46.49	56.00	9.51	
	1.763	46.00	0.20	46.20	56.00	9.80	
	2.414	46.99	0.23	47.22	56.00	8.78	
	5.663	49.90	0.34	50.24	60.00	9.76	
	0.352	41.40	0.12	41.52	48.91	7.39	AV
	0.811	39.90	0.23	40.13	46.00	5.87	
	1.051	37.60	0.19	37.79	46.00	8.21	
	1.763	36.90	0.20	37.10	46.00	8.90	
	2.414	34.59	0.23	34.82	46.00	11.18	
	5.663	41.90	0.34	42.24	50.00	7.76	
Neutral	0.352	44.30	0.31	44.61	58.92	14.31	QP
	0.822	46.80	0.29	47.09	56.00	8.91	
	1.054	44.40	0.32	44.72	56.00	11.28	
	2.201	43.50	0.30	43.80	56.00	12.20	
	3.166	41.20	0.31	41.51	56.00	14.49	
	5.653	48.09	0.38	48.47	60.00	11.53	
	0.352	39.90	0.31	40.21	48.92	8.71	AV
	0.822	38.90	0.29	39.19	46.00	6.81	
	1.054	36.00	0.32	36.32	46.00	9.68	
	2.201	34.70	0.30	35.00	46.00	11.00	
	3.166	31.20	0.31	31.51	46.00	14.49	
	5.653	39.89	0.38	40.27	50.00	9.73	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

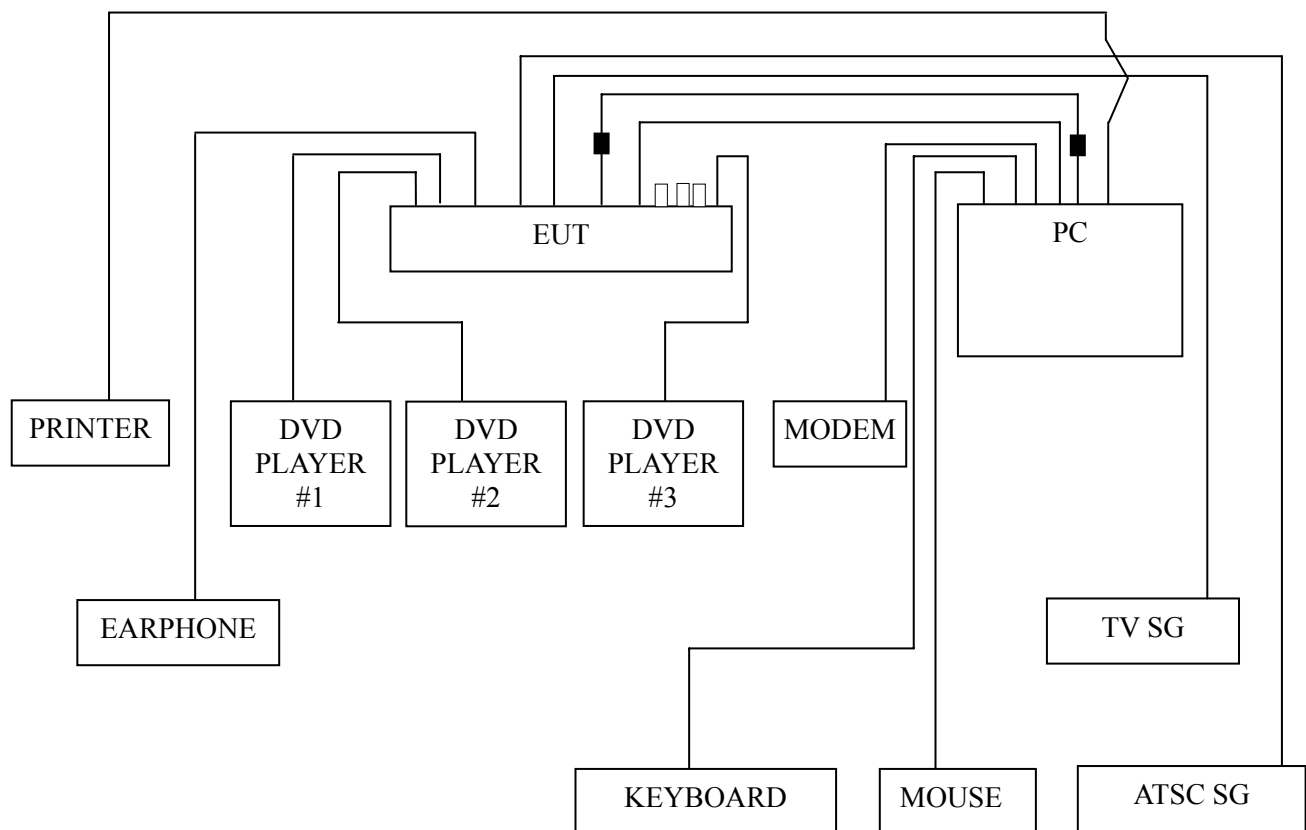
4.1 Test Equipment

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	Mar 18, 2013	Sep 18, 2013
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.	50 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

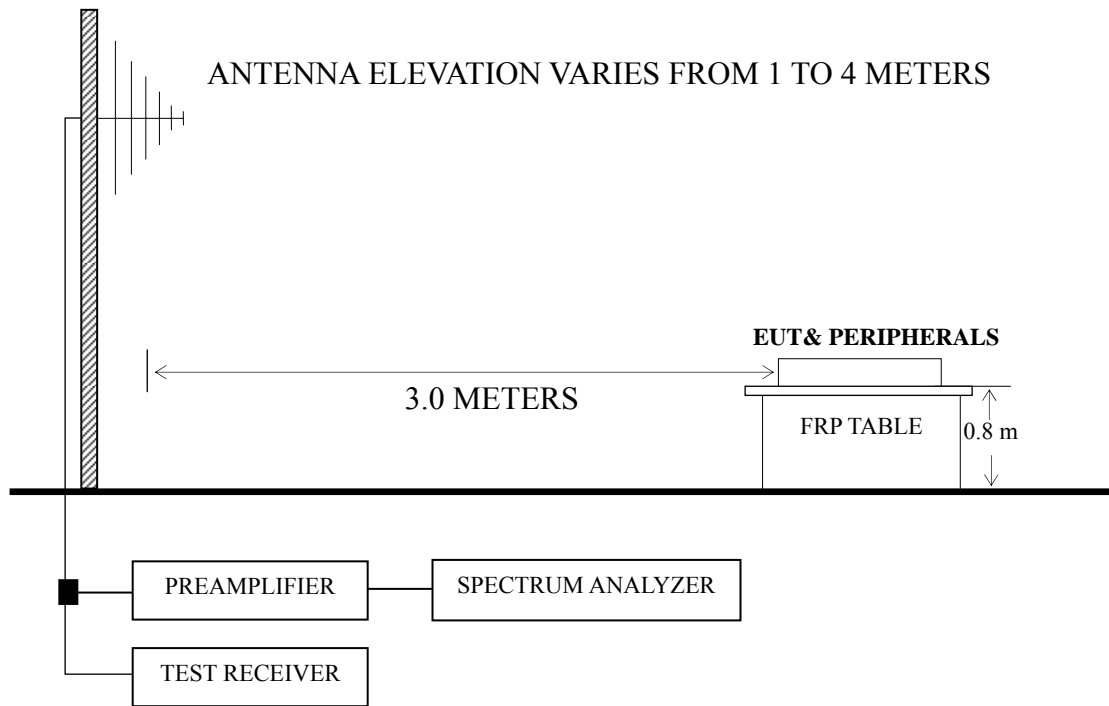
4.2.1 EUT & Peripherals



■ : 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	
		($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level dB ($\mu\text{V/m}$) = 20 log Emission Level ($\mu\text{V/m}$)

NOTE 2 - The tighter limit applies at the band edges.

NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

NOTE 4 - The limits shown are based on Quasi-peak value detector.

NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT.

4.4 Test Configuration

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

Please refer to Sec.3.4.

4.5 Operating Condition of EUT

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

4.6 Test Procedures

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

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

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

The frequency range from 1 GHz to 2 GHz was checked for the 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 3840*2160@30Hz (UHD)	P24 – P25
D-Sub 1920*1080@60Hz	P26
HDMI 1920*1080@60Hz	P27 – P28
HDMI 1280*1024@60Hz	P29
HDMI 640*480@60Hz	P30
USB Play	P31
LAN Play	P32

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 702.210 MHz with corrected signal level of 43.92 dB ($\mu\text{V/m}$) (limit is 46.00 dB ($\mu\text{V/m}$)), when the antenna was 1.90 m height and the turntable was at 85°. The worst emission at vertical polarization was detected at 702.210 MHz with corrected signal level of 43.84 dB ($\mu\text{V/m}$) (limit is 46.00 dB ($\mu\text{V/m}$)), when the antenna was 1.80 m height and the turntable was at 203°.

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 60%RH

Test Mode : HDMI 3840*2160@30Hz (UHD) Date of Test : Oct 14, 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	83.350	22.43	7.55	1.12	--	31.10	40.00	8.90	QP
	137.670	19.24	10.82	1.56	--	31.62	40.00	8.38	
	374.350	20.15	14.91	2.67	--	37.73	47.00	9.27	
	398.600	21.30	15.53	2.70	--	39.53	47.00	7.47	
	705.120	15.30	19.83	3.53	--	38.66	47.00	8.34	
	798.240	16.81	19.13	3.63	--	39.57	47.00	7.43	
	1158.000	46.64	24.34	5.07	37.84	38.21	74.00	35.79	PK
	1230.000	48.35	24.69	5.20	37.66	40.58	74.00	33.42	
	1412.000	46.02	25.36	5.60	37.15	39.83	74.00	34.17	
	1574.000	46.28	26.40	5.66	36.74	41.60	74.00	32.40	
	1748.000	47.87	28.50	6.06	36.43	46.00	74.00	28.00	
	1869.000	45.60	29.84	6.17	36.25	45.36	74.00	28.64	
	1158.000	33.54	24.34	5.07	37.84	25.11	54.00	28.89	AV
	1230.000	33.53	24.69	5.20	37.66	25.76	54.00	28.24	
	1412.000	32.22	25.36	5.60	37.15	26.03	54.00	27.97	
	1574.000	33.03	26.40	5.66	36.74	28.35	54.00	25.65	
	1748.000	34.42	28.50	6.06	36.43	32.55	54.00	21.45	
	1869.000	31.22	29.84	6.17	36.25	30.98	54.00	23.02	

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 60%RH

Test Mode : HDMI 3840*2160@30Hz (UHD) Date of Test : Oct 14, 2013

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	87.230	28.35	8.01	1.17	--	37.53	40.00	2.47	QP
	253.100	18.47	12.00	2.20	--	32.67	47.00	14.33	
	374.350	23.54	14.91	2.67	--	41.12	47.00	5.88	
	398.600	24.61	15.53	2.70	--	42.84	47.00	4.16	
	702.900	19.60	19.97	3.52	--	43.09	47.00	3.91	
	795.600	17.30	19.13	3.63	--	40.06	47.00	6.94	
	1043.000	46.83	23.87	4.94	38.11	37.53	74.00	36.47	PK
	1132.000	46.20	24.22	5.03	37.90	37.55	74.00	36.45	
	1189.000	46.11	24.48	5.10	37.77	37.92	74.00	36.08	
	1388.000	45.54	25.29	5.55	37.22	39.16	74.00	34.84	
	1528.000	45.54	25.92	5.64	36.84	40.26	74.00	33.74	
	1830.000	44.97	29.46	6.16	36.31	44.28	74.00	29.72	
	1043.000	33.64	23.87	4.94	38.11	24.34	54.00	29.66	AV
	1132.000	32.10	24.22	5.03	37.90	23.45	54.00	30.55	
	1189.000	33.30	24.48	5.10	37.77	25.11	54.00	28.89	
	1388.000	32.11	25.29	5.55	37.22	25.73	54.00	28.27	
	1528.000	32.10	25.92	5.64	36.84	26.82	54.00	27.18	
	1830.000	31.77	29.46	6.16	36.31	31.08	54.00	22.92	

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 60%RH

Test Mode : D-Sub 1920*1080@60Hz Date of Test : Sep 22, 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	92.080	18.00	8.66	1.24	27.90	43.50	15.60
	140.580	19.56	10.30	1.60	31.46	43.50	12.04
	298.690	18.57	12.52	2.52	33.61	46.00	12.39
	394.720	17.77	15.80	2.68	36.25	46.00	9.75
	704.150	18.27	20.13	3.55	41.95	46.00	4.05
	796.300	13.33	19.43	3.61	36.37	46.00	9.63
Vertical	36.790	16.85	14.92	0.74	32.51	40.00	7.49
	45.520	22.73	9.32	0.82	32.87	40.00	7.13
	93.050	19.96	8.94	1.26	30.16	43.50	13.34
	115.360	17.50	11.58	1.45	30.53	43.50	12.97
	396.660	22.20	15.93	2.68	40.81	46.00	5.19
	702.210	19.42	20.13	3.54	43.09	46.00	2.91

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Sep 22, 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	45.520	17.47	9.32	0.82	--	27.61	40.00	12.39	QP
	75.590	24.31	6.54	1.01	--	31.86	40.00	8.14	
	106.630	19.51	11.50	1.39	--	32.40	43.50	11.10	
	399.570	24.44	16.20	2.69	--	43.33	46.00	2.67	
	702.210	20.25	20.13	3.54	--	43.92	46.00	2.08	
	799.210	18.70	19.80	3.61	--	42.11	46.00	3.89	
	1069.000	47.84	23.96	4.96	38.05	38.71	74.00	35.29	PK
	1141.000	47.03	24.26	5.05	37.89	38.45	74.00	35.55	
	1285.000	46.12	24.93	5.35	37.52	38.88	74.00	35.12	
	1443.000	45.78	25.46	5.61	37.05	39.80	74.00	34.20	
	1586.000	46.76	26.55	5.66	36.71	42.26	74.00	31.74	
	1800.000	48.00	29.11	6.15	36.35	46.91	74.00	27.09	
	1069.000	34.55	23.96	4.96	38.05	25.42	54.00	28.58	AV
	1141.000	34.63	24.26	5.05	37.89	26.05	54.00	27.95	
	1285.000	33.62	24.93	5.35	37.52	26.38	54.00	27.62	
	1443.000	32.18	25.46	5.61	37.05	26.20	54.00	27.80	
	1586.000	33.93	26.55	5.66	36.71	29.43	54.00	24.57	
	1800.000	34.70	29.11	6.15	36.35	33.61	54.00	20.39	

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Sep 22, 2013

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	30.970	15.11	17.65	0.67	--	33.43	40.00	6.57	QP
	45.520	24.04	9.32	0.82	--	34.18	40.00	5.82	
	103.720	22.79	11.08	1.37	--	35.24	43.50	8.26	
	396.660	24.94	15.93	2.68	--	43.55	46.00	2.45	
	596.480	16.53	18.40	3.20	--	38.13	46.00	7.87	
	702.210	20.17	20.13	3.54	--	43.84	46.00	2.16	
	1033.000	46.48	23.82	4.92	38.13	37.09	74.00	36.91	PK
	1106.000	46.55	24.11	5.01	37.96	37.71	74.00	36.29	
	1280.000	45.89	24.90	5.35	37.53	38.61	74.00	35.39	
	1514.000	45.91	25.73	5.64	36.87	40.41	74.00	33.59	
	1859.000	45.35	29.79	6.17	36.27	45.04	74.00	28.96	
	1960.000	44.73	30.68	6.19	36.14	45.46	74.00	28.54	
	1033.000	33.19	23.82	4.92	38.13	23.80	54.00	30.20	AV
	1106.000	33.30	24.11	5.01	37.96	24.46	54.00	29.54	
	1280.000	32.89	24.90	5.35	37.53	25.61	54.00	28.39	
	1514.000	32.64	25.73	5.64	36.87	27.14	54.00	26.86	
	1859.000	32.52	29.79	6.17	36.27	32.21	54.00	21.79	
	1960.000	31.26	30.68	6.19	36.14	31.99	54.00	22.01	

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 60%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : Sep 22, 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	31.940	11.46	16.50	0.68	28.64	40.00	11.36
	73.650	21.56	6.33	0.98	28.87	40.00	11.13
	102.750	19.49	10.93	1.36	31.78	43.50	11.72
	298.690	16.60	12.52	2.52	31.64	46.00	14.36
	553.800	9.30	19.30	3.10	31.70	46.00	14.30
	875.840	9.35	20.03	4.32	33.70	46.00	12.30
Vertical	38.730	17.45	13.30	0.76	31.51	40.00	8.49
	56.190	20.23	6.00	0.87	27.10	40.00	12.90
	109.540	17.83	11.84	1.40	31.07	43.50	12.43
	230.790	19.28	9.75	2.11	31.14	46.00	14.86
	646.920	15.59	18.43	3.38	37.40	46.00	8.60
	846.740	6.35	20.70	3.98	31.03	46.00	14.97

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 60%RH

Test Mode : HDMI 640*480@60Hz Date of Test : Sep 22, 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	110.510	15.80	11.87	1.41	29.08	43.50	14.42
	141.550	17.90	10.30	1.60	29.80	43.50	13.70
	294.810	15.28	12.60	2.52	30.40	46.00	15.60
	401.510	13.58	16.22	2.69	32.49	46.00	13.51
	533.430	7.55	18.67	3.05	29.27	46.00	16.73
	672.140	11.04	19.60	3.44	34.08	46.00	11.92
Vertical	35.820	14.48	15.63	0.73	30.84	40.00	9.16
	60.070	21.07	4.70	0.89	26.66	40.00	13.34
	125.060	17.80	11.50	1.50	30.80	43.50	12.70
	292.870	13.73	12.67	2.49	28.89	46.00	17.11
	558.650	9.06	19.10	3.12	31.28	46.00	14.72
	818.610	10.13	20.53	3.80	34.46	46.00	11.54

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 60%RH

Test Mode : USB Play Date of Test : Sep 22, 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	83.350	16.76	7.19	1.13	25.08	40.00	14.92
	120.210	15.08	11.41	1.48	27.97	43.50	15.53
	295.780	16.06	12.58	2.52	31.16	46.00	14.84
	385.020	13.68	15.30	2.67	31.65	46.00	14.35
	506.270	8.86	18.30	3.00	30.16	46.00	15.84
	728.400	11.53	19.23	3.57	34.33	46.00	11.67
Vertical	39.700	17.57	12.54	0.77	30.88	40.00	9.12
	121.180	15.27	11.42	1.48	28.17	43.50	15.33
	314.210	14.46	13.52	2.57	30.55	46.00	15.45
	439.340	7.49	17.40	2.80	27.69	46.00	18.31
	568.350	9.92	19.30	3.14	32.36	46.00	13.64
	820.550	9.77	20.70	3.80	34.27	46.00	11.73

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 60%RH

Test Mode : LAN Play Date of Test : Sep 22, 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	77.530	19.43	6.65	1.05	27.13	40.00	12.87
	135.730	14.81	10.91	1.57	27.29	43.50	16.21
	184.230	14.22	8.28	1.86	24.36	43.50	19.14
	273.470	13.53	12.60	2.35	28.48	46.00	17.52
	640.130	8.75	18.50	3.35	30.60	46.00	15.40
	979.630	11.67	21.00	4.78	37.45	54.00	16.55
Vertical	31.940	15.09	16.50	0.68	32.27	40.00	7.73
	79.470	21.71	6.76	1.06	29.53	40.00	10.47
	106.630	20.45	11.50	1.39	33.34	43.50	10.16
	343.310	16.07	14.80	2.61	33.48	46.00	12.52
	618.790	12.22	18.90	3.28	34.40	46.00	11.60
	779.810	13.70	18.10	3.60	35.40	46.00	10.60

TEST ENGINEER: NEAL WANG

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Ferrite core	ZCAT2132-1130\ROH	Jiangsu Ruifeng Electronic Co., Ltd.	See Internal Photo Figure 24
		FEELUX	
		Jiangsu Chenlang Group Electronic Co., Ltd.	
Gasket	DAA1001\ROH	Qingdao Joinset S&T Co., Ltd. Shenzhen Tongantai Electronic Technology Co., Ltd.	See Internal Photo Figure 25, 26
Gasket	DAA25×20×150\ROH		See Internal Photo Figure 27
Gasket	20×20×22T\ROH		See Internal Photo Figure 28
Gasket	10×8×35\ROH		See Internal Photo Figure 29, 30, 31
Gasket	DAA1002\ROH		

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.