

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

LED LCD TV

Model No.	Brand
LTDN55XT880WUS, 55T880UW, 55T880, 55H8EG	Hisense

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-F13163A1
Date of Test : Feb 18 – Mar 05, 2014
Date of Report : Apr 18, 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
LTDN55XT880WUS, 55T880UW, 55T880, 55H8EG	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 Feb 18 – Mar 05, 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.F13162A1, a Verification report.

Date of Test : Feb 18 – Mar 05, 2014 Date of Report : Apr 18, 2014

Producer : 
 EMILY ZHU / Assistant

Review : 
 DIAO YANG / Deputy Manager

 For and on behalf of
 Audix Technology (Shanghai) Co., Ltd.

Signatory : 
 Authorized Signature EMC SAMMY CHEN / Deputy Manager

1 SUMMARY OF STANDARDS AND RESULTS

1.1 Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Description of Test Item	Standard	Limits	Results
EMISSION			
Conducted Disturbance at the Mains Terminal	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2013 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2013 AND ANSI C63.4-2003	15.109(a) Class B	Pass

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description : LED LCD TV

Type of EUT : Production Pre-product Pro-type

Model No. : LTDN55XT880WUS, 55T880UW, 55T880, 55H8EG

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

Report No.	Model No.	Rev. Summary	Edition No.	Data of Rev.
ACI-F13163	LTDN55XT880WUS, 55T880UW	Original Report	0	Oct 22, 2013
ACI-F13163A1	LTDN55XT880WUS, 55T880UW, 55T880, 55H8EG	1. To add two new models (55T880 and 55H8EG). 2. To add a new panel.	Rev. A1	Apr 18, 2014

Note #2 : The above models are all the same except for the different model name.
The LTDN55XT880WUS was tested and reported 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 : CSOT
M/N : MT5461D01-3

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/ARC 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 AUDIO OUT 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; 3C; MIC

2.2.2 Printer

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

2.2.3 Keyboard

Manufacturer : Microsoft
Model Number : RT2300
Serial Number : 7668200662248
Data Cable : Shielded, undetachable, 1.8m
Certificate : CE/EMC, FCC DoC, VCCI, MIC, C-Tick, BSMI

2.2.4 Mouse

Manufacturer : Microsoft
Model Number : RT2300
Serial Number : 6965712071551
Data Cable : Shielded, undetachable, 1.8m.
Certificate : CE/EMC, FCC DoC, VCCI, MIC, C-Tick, BSMI

2.2.5 Modem

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

2.2.6 TV Signal Generator

Manufacturer : FLUKE
Model Number : 54200m01
Serial Number : 814008
Data Cable : Shielded, detachable, 2.0m
Power Cord : Unshielded, detachable, 2.0m
Certificate : CE/EMC, FCC DoC, CCC

2.2.7 ATSC Signal Generator

Manufacturer : SENCORE
Model Number : ATSC997
Serial Number : 6790071

2.2.8 DVD PLAYER #1

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

2.2.9 DVD PLAYER #2

Manufacturer : 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 : Skullcandy
Model Number : FMJ

2.2.12 U-DISK*3

Manufacturer : LG
Model Number : 1GB

2.3 Description of Test Facility

Site Description (No.3 3m Chamber) : Sept. 17, 1998 file on
Mar 16, 2012 Renewed
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046, USA

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

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

NVLAP Lab Code : 200371-0

2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty: U = 3.02 dB

Radiated Emission Expanded Uncertainty (30-200MHz):
U = 4.17 dB (Horizontal)
U = 4.02 dB (Vertical)

Radiated Emission Expanded Uncertainty (200M-1GHz):
U = 3.38 dB (Horizontal)
U = 3.28 dB (Vertical)

Radiated Emission Expanded Uncertainty (Above 1GHz):
U = 4.68 dB (Horizontal)
U = 4.87 dB (Vertical)

3 CONDUCTED EMISSION TEST

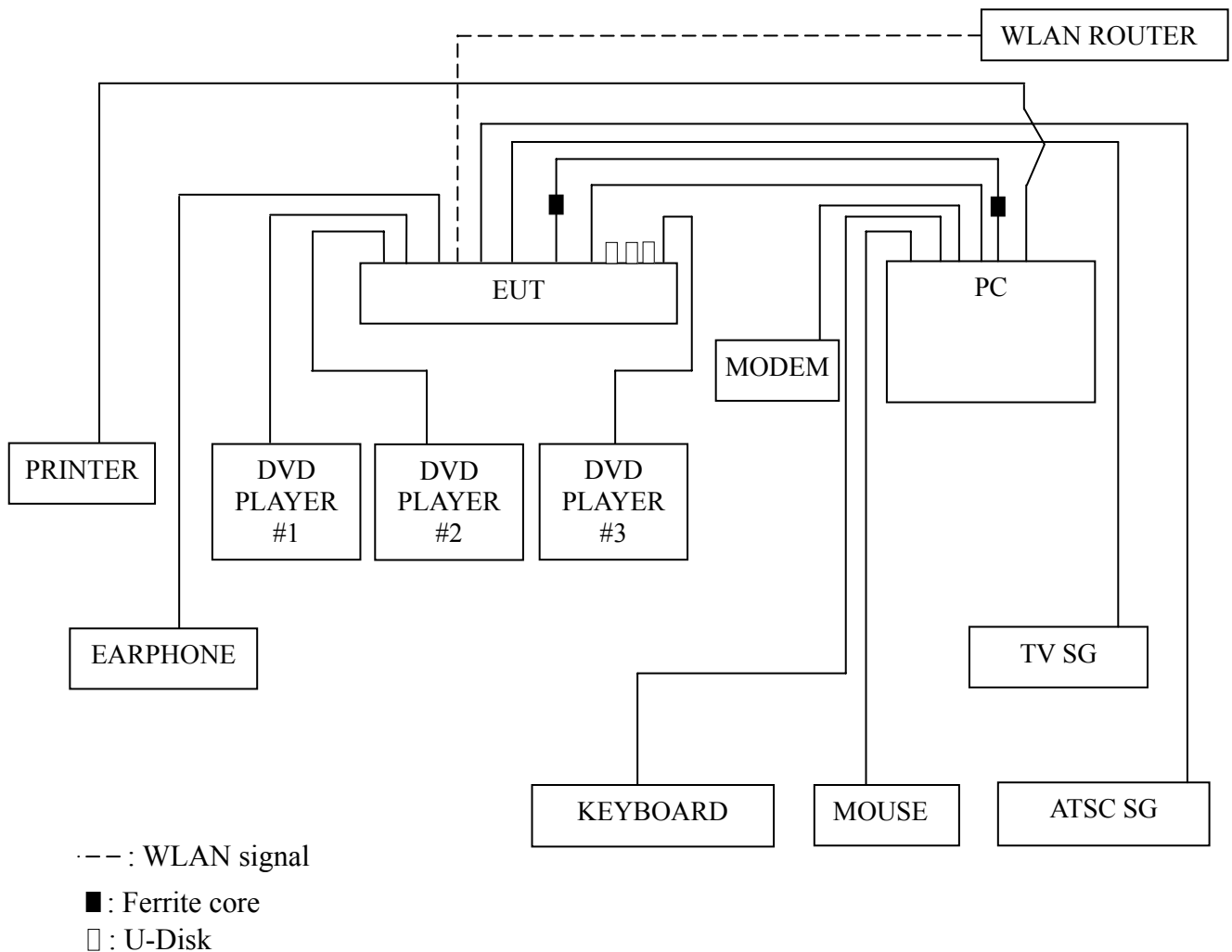
3.1 Test Equipment

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

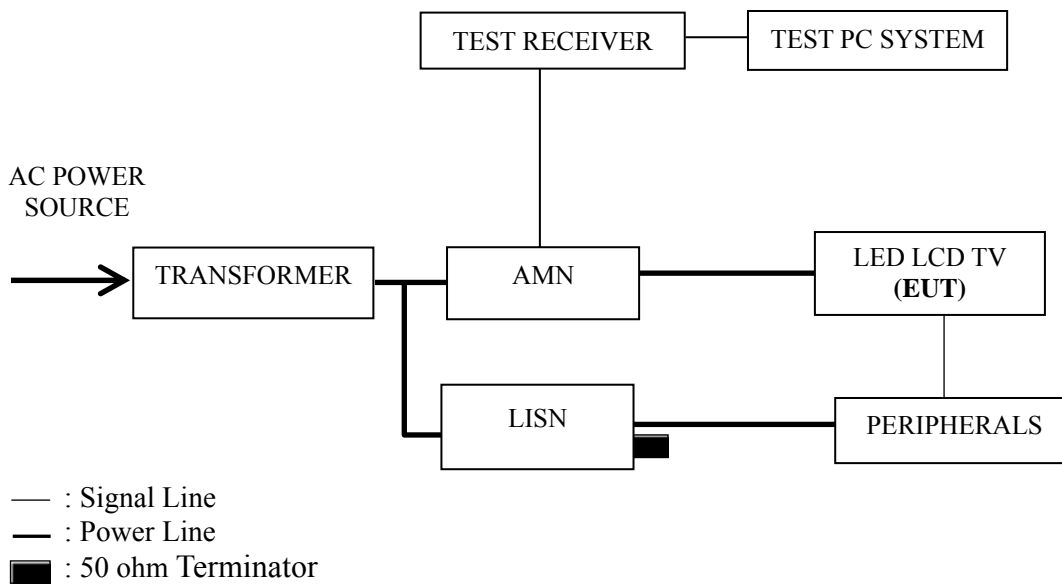
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	100841	Mar 20, 2014	Mar 19, 2015
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Feb 25, 2014	Feb 24, 2015
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2014	Mar 19, 2015
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Mar 17, 2014	Sep 16, 2014
5.	50 Ω Terminator	Anritsu	BNC	001	Mar 20, 2014	Mar 19, 2015
6.	Software	Audix	E3	6.2009-1-15	--	--

3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



3.2.2 Conducted Disturbance Test Setup



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

Frequency Range (MHz)	Limits dB (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 WLAN function is operating to communicate with WLAN router.

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

3.5.9 The test modes are as follows:

Test Mode
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 0.358 MHz (Average Value) with corrected signal level of 44.22 dB (μV) (limit is 48.77 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 : Feb 18, 2014
(UHD)

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.356	48.49	0.02	48.51	58.83	10.32	QP
	0.598	46.69	0.03	46.72	56.00	9.28	
	0.839	46.74	0.07	46.81	56.00	9.19	
	1.065	45.97	0.05	46.02	56.00	9.98	
	2.012	43.59	0.08	43.67	56.00	12.33	
	5.476	48.86	0.22	49.08	60.00	10.92	
	0.356	43.80	0.02	43.82	48.83	5.01	AV
	0.598	40.90	0.03	40.93	46.00	5.07	
	0.839	39.51	0.07	39.58	46.00	6.42	
	1.065	38.80	0.05	38.85	46.00	7.15	
	2.012	33.90	0.08	33.98	46.00	12.02	
	5.476	42.70	0.22	42.92	50.00	7.08	
Neutral	0.356	45.40	0.21	45.61	58.83	13.22	QP
	0.822	46.56	0.14	46.70	56.00	9.30	
	1.065	48.82	0.17	48.99	56.00	7.01	
	1.800	47.64	0.17	47.81	56.00	8.19	
	3.298	45.50	0.19	45.69	56.00	10.31	
	5.277	48.76	0.25	49.01	60.00	10.99	
	0.356	38.01	0.21	38.22	48.83	10.61	AV
	0.822	37.70	0.14	37.84	46.00	8.16	
	1.065	39.51	0.17	39.68	46.00	6.32	
	1.800	38.70	0.17	38.87	46.00	7.13	
	3.298	37.60	0.19	37.79	46.00	8.21	
	5.277	42.99	0.25	43.24	50.00	6.76	

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 48%RH

Test Mode : D-Sub 1920*1080@60Hz Date of Test : Feb 18, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark	
Line	0.358	47.80	0.02	47.82	58.77	10.95	QP	
	0.600	45.79	0.04	45.83	56.00	10.17		
	1.063	46.20	0.05	46.25	56.00	9.75		
	1.792	45.10	0.07	45.17	56.00	10.83		
	2.504	44.20	0.09	44.29	56.00	11.71		
	5.615	52.90	0.22	53.12	60.00	6.88		
		0.358	44.20	0.02	44.22	48.77	4.55	AV
		0.600	40.09	0.04	40.13	46.00	5.87	
		1.063	37.90	0.05	37.95	46.00	8.05	
		1.792	36.50	0.07	36.57	46.00	9.43	
		2.504	35.90	0.09	35.99	46.00	10.01	
		5.615	42.80	0.22	43.02	50.00	6.98	
Neutral	0.596	45.00	0.16	45.16	56.00	10.84	QP	
	1.079	47.81	0.17	47.98	56.00	8.02		
	1.778	46.60	0.17	46.77	56.00	9.23		
	2.649	47.20	0.17	47.37	56.00	8.63		
	3.354	46.20	0.19	46.39	56.00	9.61		
	5.747	51.71	0.26	51.97	60.00	8.03		
		0.596	38.50	0.16	38.66	46.00	7.34	AV
		1.079	39.01	0.17	39.18	46.00	6.82	
		1.778	37.30	0.17	37.47	46.00	8.53	
		2.649	37.20	0.17	37.37	46.00	8.63	
		3.354	37.40	0.19	37.59	46.00	8.41	
		5.747	43.61	0.26	43.87	50.00	6.13	

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 48%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Feb 18, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.356	48.10	0.02	48.12	58.81	10.69	QP
	0.592	45.70	0.03	45.73	56.00	10.27	
	1.070	46.60	0.05	46.65	56.00	9.35	
	1.790	46.20	0.07	46.27	56.00	9.73	
	2.506	46.10	0.09	46.19	56.00	9.81	
	5.658	51.50	0.22	51.72	60.00	8.28	
	0.356	42.70	0.02	42.72	48.81	6.09	AV
	0.592	39.80	0.03	39.83	46.00	6.17	
	1.070	38.40	0.05	38.45	46.00	7.55	
	1.790	36.30	0.07	36.37	46.00	9.63	
	2.506	36.40	0.09	36.49	46.00	9.51	
	5.658	42.90	0.22	43.12	50.00	6.88	
Neutral	0.595	44.70	0.16	44.86	56.00	11.14	QP
	0.765	47.80	0.13	47.93	56.00	8.07	
	1.068	47.71	0.17	47.88	56.00	8.12	
	1.782	47.00	0.17	47.17	56.00	8.83	
	2.627	46.30	0.17	46.47	56.00	9.53	
	5.722	50.31	0.26	50.57	60.00	9.43	
	0.595	38.30	0.16	38.46	46.00	7.54	AV
	0.765	34.80	0.13	34.93	46.00	11.07	
	1.068	38.81	0.17	38.98	46.00	7.02	
	1.782	37.50	0.17	37.67	46.00	8.33	
	2.627	37.30	0.17	37.47	46.00	8.53	
	5.722	43.11	0.26	43.37	50.00	6.63	

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 48%RH

Test Mode : D-Sub 1280*1024@60Hz Date of Test : Feb 18, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.360	47.30	0.02	47.32	58.74	11.42	QP
	0.830	45.60	0.08	45.68	56.00	10.32	
	1.071	46.90	0.05	46.95	56.00	9.05	
	1.781	45.60	0.07	45.67	56.00	10.33	
	3.328	43.40	0.14	43.54	56.00	12.46	
	5.653	51.90	0.22	52.12	60.00	7.88	
	0.360	42.40	0.02	42.42	48.74	6.32	AV
	0.830	38.30	0.08	38.38	46.00	7.62	
	1.071	38.20	0.05	38.25	46.00	7.75	
	1.781	36.00	0.07	36.07	46.00	9.93	
	3.328	34.90	0.14	35.04	46.00	10.96	
	5.653	43.00	0.22	43.22	50.00	6.78	
Neutral	0.426	46.29	0.22	46.51	57.33	10.82	QP
	0.822	45.80	0.14	45.94	56.00	10.06	
	1.065	47.71	0.17	47.88	56.00	8.12	
	1.762	46.80	0.17	46.97	56.00	9.03	
	2.710	47.40	0.17	47.57	56.00	8.43	
	5.476	49.90	0.25	50.15	60.00	9.85	
	0.426	35.49	0.22	35.71	47.33	11.62	AV
	0.822	36.90	0.14	37.04	46.00	8.96	
	1.065	39.21	0.17	39.38	46.00	6.62	
	1.762	38.00	0.17	38.17	46.00	7.83	
	2.710	38.00	0.17	38.17	46.00	7.83	
	5.476	43.40	0.25	43.65	50.00	6.35	

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 48%RH

Test Mode : D-Sub 640*480@60Hz Date of Test : Feb 18, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.352	47.20	0.02	47.22	58.91	11.69	QP
	0.598	46.30	0.03	46.33	56.00	9.67	
	1.081	46.60	0.05	46.65	56.00	9.35	
	1.781	45.70	0.07	45.77	56.00	10.23	
	3.328	43.60	0.14	43.74	56.00	12.26	
	5.667	49.10	0.22	49.32	60.00	10.68	
	0.352	41.10	0.02	41.12	48.91	7.79	AV
	0.598	40.70	0.03	40.73	46.00	5.27	
	1.081	38.40	0.05	38.45	46.00	7.55	
	1.781	36.30	0.07	36.37	46.00	9.63	
	3.328	34.90	0.14	35.04	46.00	10.96	
	5.667	42.50	0.22	42.72	50.00	7.28	
Neutral	0.360	44.71	0.21	44.92	58.74	13.82	QP
	0.822	46.00	0.14	46.14	56.00	9.86	
	1.071	48.21	0.17	48.38	56.00	7.62	
	1.762	47.00	0.17	47.17	56.00	8.83	
	2.622	46.80	0.17	46.97	56.00	9.03	
	5.713	50.71	0.26	50.97	60.00	9.03	
	0.360	37.81	0.21	38.02	48.74	10.72	AV
	0.822	36.70	0.14	36.84	46.00	9.16	
	1.071	39.01	0.17	39.18	46.00	6.82	
	1.762	37.60	0.17	37.77	46.00	8.23	
	2.622	37.50	0.17	37.67	46.00	8.33	
	5.713	43.41	0.26	43.67	50.00	6.33	

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 48%RH

Test Mode : USB Play Date of Test : Feb 18, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.354	48.10	0.02	48.12	58.87	10.75	QP
	0.830	45.70	0.08	45.78	56.00	10.22	
	1.296	44.61	0.05	44.66	56.00	11.34	
	2.039	44.40	0.08	44.48	56.00	11.52	
	2.707	45.58	0.10	45.68	56.00	10.32	
	5.476	48.90	0.22	49.12	60.00	10.88	
	0.354	42.90	0.02	42.92	48.87	5.95	AV
	0.830	38.40	0.08	38.48	46.00	7.52	
	1.296	36.21	0.05	36.26	46.00	9.74	
	2.039	35.20	0.08	35.28	46.00	10.72	
	2.707	36.20	0.10	36.30	46.00	9.70	
	5.476	42.30	0.22	42.52	50.00	7.48	
Neutral	0.426	46.39	0.22	46.61	57.33	10.72	QP
	0.767	48.20	0.13	48.33	56.00	7.67	
	1.071	48.41	0.17	48.58	56.00	7.42	
	1.762	46.70	0.17	46.87	56.00	9.13	
	2.718	47.70	0.17	47.87	56.00	8.13	
	5.491	50.80	0.25	51.05	60.00	8.95	
	0.426	35.39	0.22	35.61	47.33	11.72	AV
	0.767	35.30	0.13	35.43	46.00	10.57	
	1.071	38.81	0.17	38.98	46.00	7.02	
	1.762	37.80	0.17	37.97	46.00	8.03	
	2.718	38.40	0.17	38.57	46.00	7.43	
	5.491	44.10	0.25	44.35	50.00	5.65	

TEST ENGINEER: ERIC TANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 48%RH

Test Mode : LAN Play Date of Test : Feb 18, 2014

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.356	48.10	0.02	48.12	58.83	10.71	QP
	0.598	46.30	0.03	46.33	56.00	9.67	
	0.823	46.50	0.08	46.58	56.00	9.42	
	1.296	44.71	0.05	44.76	56.00	11.24	
	2.707	45.40	0.10	45.50	56.00	10.50	
	5.713	51.50	0.22	51.72	60.00	8.28	
	0.356	43.70	0.02	43.72	48.83	5.11	AV
	0.598	40.70	0.03	40.73	46.00	5.27	
	0.823	38.00	0.08	38.08	46.00	7.92	
	1.296	36.31	0.05	36.36	46.00	9.64	
	2.707	36.40	0.10	36.50	46.00	9.50	
	5.713	42.20	0.22	42.42	50.00	7.58	
Neutral	0.356	46.01	0.21	46.22	58.83	12.61	QP
	0.822	45.90	0.14	46.04	56.00	9.96	
	1.065	47.91	0.17	48.08	56.00	7.92	
	1.767	47.40	0.17	47.57	56.00	8.43	
	3.328	46.10	0.19	46.29	56.00	9.71	
	5.476	50.20	0.25	50.45	60.00	9.55	
	0.356	39.61	0.21	39.82	48.83	9.01	AV
	0.822	36.90	0.14	37.04	46.00	8.96	
	1.065	39.41	0.17	39.58	46.00	6.42	
	1.767	38.80	0.17	38.97	46.00	7.03	
	3.328	37.20	0.19	37.39	46.00	8.61	
	5.476	43.70	0.25	43.95	50.00	6.05	

TEST ENGINEER: ERIC TANG

4 RADIATED EMISSION TEST

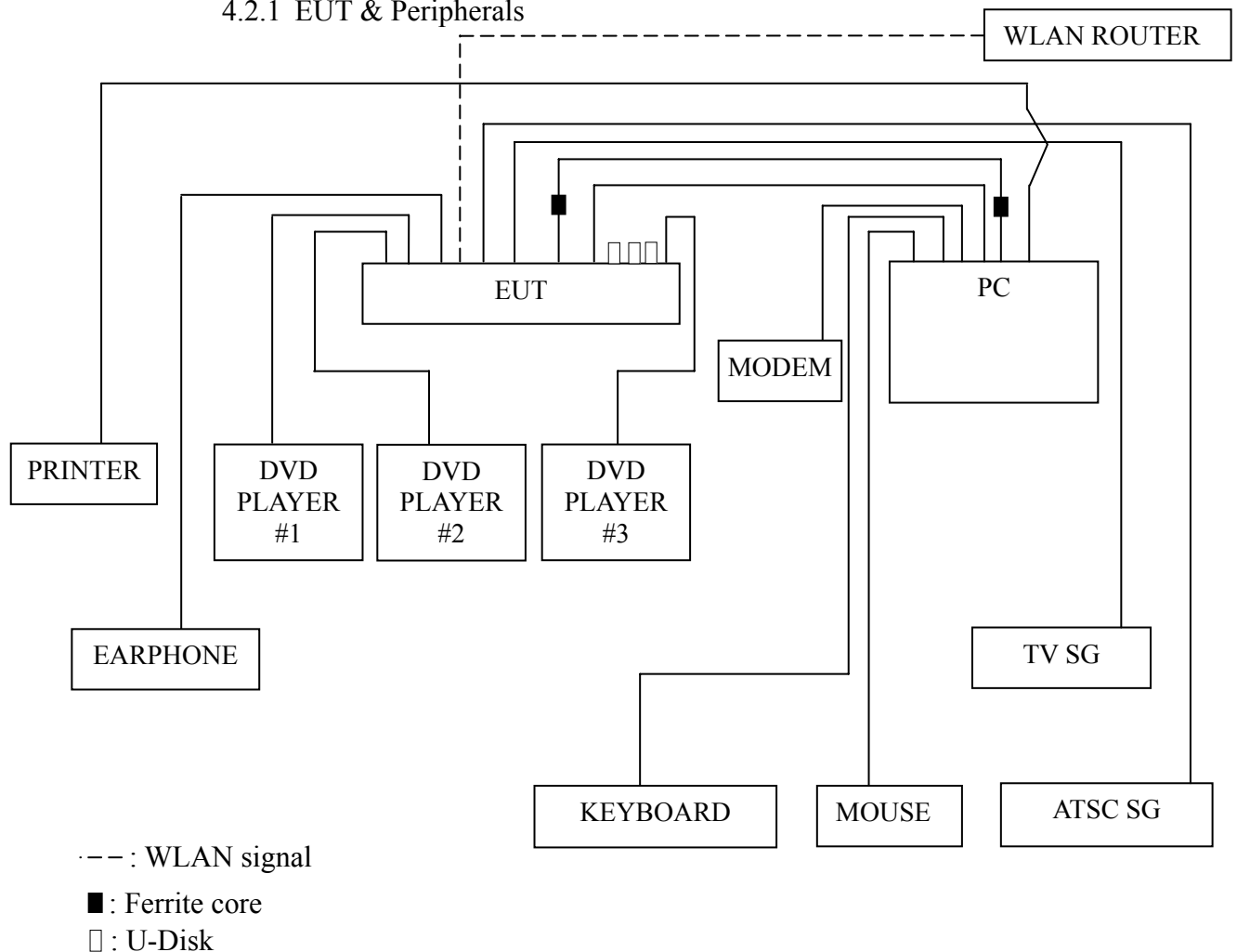
4.1 Test Equipment

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

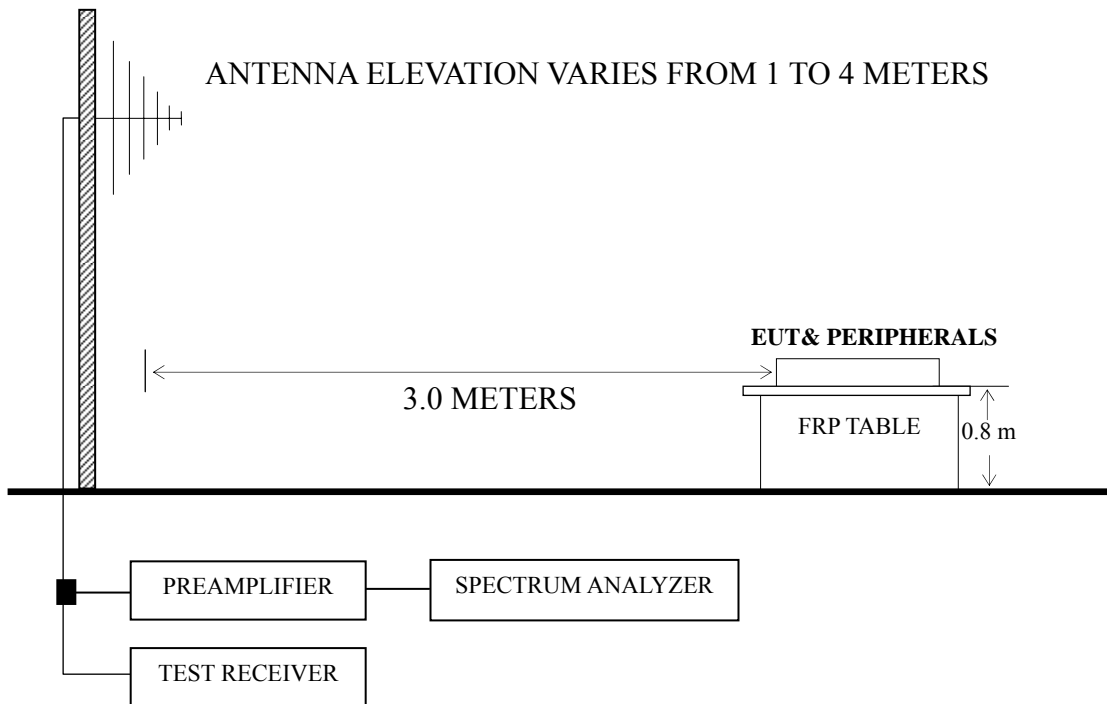
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Sep 03, 2013	Sep 02, 2014
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 17, 2014	Sep 16, 2014
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2014	Mar 19, 2015
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 03, 2013	May 02, 2014
5.	Horn Antenna	EMCO	3115	9607-4878	May 11, 2013	May 10, 2014
6.	Spectrum	Agilent	E7405A	MY45106600	Nov 11, 2013	Nov 10, 2014
7.	50 Coaxial Switch	Anritsu	MP59B	6200426390	Mar 17, 2014	Sep 16, 2014
8.	Software	Audix	E3	6.2007-9-10	--	--

4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



4.2.2 Radiated emission test setup



■ : 50 ohm Coaxial Switch

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

Frequency (MHz)	Distance (m)	Field strength limits	
		($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

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

4.4 Test Configuration

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

Please refer to Sec.3.4.

4.5 Operating Condition of EUT

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

4.6 Test Procedures

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

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

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

The frequency range from 1 GHz to 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 697.360 MHz with corrected signal level of 43.89 dB ($\mu\text{V}/\text{m}$) (limit is 46.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.90 m height and the turntable was at 210°. The worst emission at vertical polarization was detected at 699.300 MHz with corrected signal level of 43.80 dB ($\mu\text{V}/\text{m}$) (limit is 46.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.80 m height and the turntable was at 150°.

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 60%RH

Test Mode : HDMI 3840*2160@30Hz (UHD) Date of Test : Mar 05, 2014

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	74.620	24.58	6.46	1.00	--	32.04	40.00	7.96	QP
	200.720	26.16	8.13	1.95	--	36.24	43.50	7.26	
	298.690	26.45	12.52	2.52	--	41.49	46.00	4.51	
	391.810	18.11	15.53	2.68	--	36.32	46.00	9.68	
	569.320	21.26	19.40	3.14	--	43.80	46.00	2.20	
	802.120	19.75	19.80	3.70	--	43.25	46.00	2.75	
	1029.000	48.34	23.81	4.92	38.14	38.93	74.00	35.07	PK
	1127.000	47.55	24.19	5.03	37.91	38.86	74.00	35.14	
	1231.000	47.47	24.69	5.20	37.66	39.70	74.00	34.30	
	1510.000	46.14	25.73	5.64	36.89	40.62	74.00	33.38	
	1672.000	48.47	27.55	5.89	36.55	45.36	74.00	28.64	
	1873.000	45.60	29.89	6.17	36.25	45.41	74.00	28.59	AV
	1029.000	35.47	23.81	4.92	38.14	26.06	54.00	27.94	
	1127.000	34.56	24.19	5.03	37.91	25.87	54.00	28.13	
	1231.000	34.80	24.69	5.20	37.66	27.03	54.00	26.97	
	1510.000	33.24	25.73	5.64	36.89	27.72	54.00	26.28	
1672.000	35.79	27.55	5.89	36.55	32.68	54.00	21.32		
1873.000	32.42	29.89	6.17	36.25	32.23	54.00	21.77		

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 : Mar 05, 2014

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)	Remark
Vertical	38.730	17.00	13.30	0.76	--	31.06	40.00	8.94	QP
	76.560	24.63	6.59	1.03	--	32.25	40.00	7.75	
	301.600	24.26	12.70	2.55	--	39.51	46.00	6.49	
	354.950	24.01	14.90	2.63	--	41.54	46.00	4.46	
	585.810	21.32	18.72	3.18	--	43.22	46.00	2.78	
	687.660	19.63	19.98	3.51	--	43.12	46.00	2.88	
	1035.000	46.84	23.83	4.92	38.12	37.47	74.00	36.53	PK
	1175.000	46.44	24.42	5.08	37.81	38.13	74.00	35.87	
	1262.000	45.17	24.84	5.30	37.59	37.72	74.00	36.28	
	1468.000	45.33	25.52	5.62	36.99	39.48	74.00	34.52	
	1649.000	46.45	27.25	5.81	36.58	42.93	74.00	31.07	
	1843.000	44.73	29.62	6.16	36.29	44.22	74.00	29.78	AV
	1035.000	33.45	23.83	4.92	38.12	24.08	54.00	29.92	
	1175.000	33.21	24.42	5.08	37.81	24.90	54.00	29.10	
	1262.000	32.00	24.84	5.30	37.59	24.55	54.00	29.45	
	1468.000	32.63	25.52	5.62	36.99	26.78	54.00	27.22	
1649.000	33.92	27.25	5.81	36.58	30.40	54.00	23.60		
1843.000	31.22	29.62	6.16	36.29	30.71	54.00	23.29		

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 : Mar 05, 2014

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	154.160	20.53	9.66	1.67	31.86	43.50	11.64
	289.960	22.86	12.90	2.46	38.22	46.00	7.78
	398.600	20.59	16.07	2.68	39.34	46.00	6.66
	600.360	18.35	18.30	3.22	39.87	46.00	6.13
	699.300	16.06	20.30	3.54	39.90	46.00	6.10
	982.540	14.85	21.03	4.83	40.71	54.00	13.29
Vertical	73.650	26.62	6.33	0.98	33.93	40.00	6.07
	296.750	24.42	12.55	2.52	39.49	46.00	6.51
	600.360	19.15	18.30	3.22	40.67	46.00	5.33
	699.300	16.39	20.30	3.54	40.23	46.00	5.77
	794.360	18.31	19.07	3.61	40.99	46.00	5.01
	995.150	18.91	21.45	4.83	45.19	54.00	8.81

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 : Mar 05, 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	76.560	23.62	6.59	1.03	--	31.24	40.00	8.76	QP
	289.960	22.46	12.90	2.46	--	37.82	46.00	8.18	
	555.740	21.34	19.20	3.10	--	43.64	46.00	2.36	
	697.360	20.05	20.30	3.54	--	43.89	46.00	2.11	
	788.540	18.18	18.50	3.60	--	40.28	46.00	5.72	
	998.060	18.61	21.45	4.89	--	44.95	54.00	9.05	
	1031.000	48.32	23.82	4.92	38.14	38.92	74.00	35.08	PK
	1155.000	46.75	24.32	5.07	37.85	38.29	74.00	35.71	
	1249.000	46.09	24.77	5.25	37.62	38.49	74.00	35.51	
	1340.000	46.37	25.13	5.47	37.37	39.60	74.00	34.40	
	1469.000	46.06	25.52	5.62	36.99	40.21	74.00	33.79	
	1603.000	47.27	26.71	5.66	36.67	42.97	74.00	31.03	
	1031.000	35.78	23.82	4.92	38.14	26.38	54.00	27.62	AV
	1155.000	33.62	24.32	5.07	37.85	25.16	54.00	28.84	
	1249.000	33.21	24.77	5.25	37.62	25.61	54.00	28.39	
	1340.000	33.10	25.13	5.47	37.37	26.33	54.00	27.67	
1469.000	33.80	25.52	5.62	36.99	27.95	54.00	26.05		
1603.000	34.52	26.71	5.66	36.67	30.22	54.00	23.78		

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 : Mar 05, 2014

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	70.745	27.65	5.89	0.94	--	34.48	40.00	5.52	QP
	298.690	24.22	12.52	2.52	--	39.26	46.00	6.74	
	555.740	21.06	19.20	3.10	--	43.36	46.00	2.64	
	600.360	21.91	18.30	3.22	--	43.43	46.00	2.57	
	699.300	20.00	20.30	3.54	--	43.84	46.00	2.16	
	975.750	19.18	20.90	4.78	--	44.86	54.00	9.14	
	1009.000	46.29	23.73	4.89	38.18	36.73	74.00	37.27	PK
	1173.000	46.54	24.40	5.08	37.81	38.21	74.00	35.79	
	1286.000	46.02	24.93	5.35	37.52	38.78	74.00	35.22	
	1387.000	45.27	25.29	5.55	37.23	38.88	74.00	35.12	
	1447.000	45.91	25.47	5.61	37.05	39.94	74.00	34.06	
	1677.000	50.84	27.61	5.89	36.54	47.80	74.00	26.20	
	1009.000	33.83	23.73	4.89	38.18	24.27	54.00	29.73	AV
	1173.000	33.29	24.40	5.08	37.81	24.96	54.00	29.04	
	1286.000	33.52	24.93	5.35	37.52	26.28	54.00	27.72	
	1387.000	32.09	25.29	5.55	37.23	25.70	54.00	28.30	
	1447.000	32.13	25.47	5.61	37.05	26.16	54.00	27.84	
	1677.000	37.67	27.61	5.89	36.54	34.63	54.00	19.37	

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 : Mar 05, 2014

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	73.650	24.20	6.33	0.98	31.51	40.00	8.49
	288.020	22.81	12.73	2.46	38.00	46.00	8.00
	600.360	17.09	18.30	3.22	38.61	46.00	7.39
	699.300	17.86	20.30	3.54	41.70	46.00	4.30
	807.940	18.64	20.07	3.70	42.41	46.00	3.59
	895.240	17.73	19.47	4.43	41.63	46.00	4.37
Vertical	70.740	28.49	5.89	0.94	35.32	40.00	4.68
	293.840	25.23	12.67	2.49	40.39	46.00	5.61
	597.450	21.45	18.40	3.20	43.05	46.00	2.95
	697.360	20.16	20.30	3.54	44.00	46.00	2.00
	895.240	17.34	19.47	4.43	41.24	46.00	4.76
	980.600	19.88	21.00	4.78	45.66	54.00	8.34

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 : Mar 05, 2014

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	83.350	22.88	7.19	1.13	31.20	40.00	8.80
	287.050	23.30	12.55	2.46	38.31	46.00	7.69
	597.450	17.76	18.40	3.20	39.36	46.00	6.64
	699.300	16.90	20.30	3.54	40.74	46.00	5.26
	815.700	16.46	20.37	3.80	40.63	46.00	5.37
	985.450	13.76	21.03	4.83	39.62	54.00	14.38
Vertical	70.740	27.44	5.89	0.94	34.27	40.00	5.73
	151.250	22.36	9.98	1.65	33.99	43.50	9.51
	293.840	24.07	12.67	2.49	39.23	46.00	6.77
	699.300	16.46	20.30	3.54	40.30	46.00	5.70
	815.700	16.21	20.37	3.80	40.38	46.00	5.62
	992.240	20.25	21.10	4.83	46.18	54.00	7.82

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 60%RH

Test Mode : USB Play Date of Test : Mar 05, 2014

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	83.350	23.34	7.19	1.13	31.66	40.00	8.34
	289.960	23.06	12.90	2.46	38.42	46.00	7.58
	400.540	20.87	16.20	2.69	39.76	46.00	6.24
	602.300	17.16	18.32	3.22	38.70	46.00	7.30
	699.300	16.03	20.30	3.54	39.87	46.00	6.13
	980.600	12.84	21.00	4.78	38.62	54.00	15.38
Vertical	30.970	13.21	17.65	0.67	31.53	40.00	8.47
	70.753	24.36	5.89	0.94	31.19	40.00	8.81
	296.750	22.74	12.55	2.52	37.81	46.00	8.19
	602.300	15.74	18.32	3.22	37.28	46.00	8.72
	697.360	14.61	20.30	3.54	38.45	46.00	7.55
	995.150	18.68	21.45	4.83	44.96	54.00	9.04

TEST ENGINEER: NEAL WANG

EUT : LED LCD TV Temperature : 22

Model No. : LTDN55XT880WUS Humidity : 60%RH

Test Mode : LAN Play Date of Test : Mar 05, 2014

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	73.650	23.41	6.33	0.98	30.72	40.00	9.28
	95.960	25.21	9.57	1.29	36.07	43.50	7.43
	325.850	21.02	14.15	2.58	37.75	46.00	8.25
	400.540	20.03	16.20	2.69	38.92	46.00	7.08
	597.450	16.92	18.40	3.20	38.52	46.00	7.48
	699.300	14.73	20.30	3.54	38.57	46.00	7.43
Vertical	70.746	25.98	5.89	0.94	32.81	40.00	7.19
	293.840	23.10	12.67	2.49	38.26	46.00	7.74
	325.850	21.98	14.15	2.58	38.71	46.00	7.29
	600.360	18.17	18.30	3.22	39.69	46.00	6.31
	699.300	14.56	20.30	3.54	38.40	46.00	7.60
	985.450	21.06	21.03	4.83	46.92	54.00	7.08

TEST ENGINEER: NEAL WANG

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Ferrite core	ZCAT2132-1130\ROH	Jiangsu Ruifeng Electronic Co., Ltd.	See Internal Photo Appendix Figure 24
Gasket	DAA1001\ROH	Shenzhen Tongantai Electronic Technology Co., Ltd.	See Appendix Figure 25, 26
Gasket	DAA25×20×150\ROH		See Appendix Figure 27
Gasket	20×20×22T\ROH		See Appendix Figure 28
Gasket	10×8×35\ROH	Qingdao Joinset S&T Co., Ltd.	See Appendix Figure 29
Gasket	35×0.7×41mm\VGA\ROH		See Appendix Figure 30

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.