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

LED LCD TV

Model No.	Brand
LTDN55XT710XWUS3D	Hisense
55T710DW	

FCC ID : W9HLCDF0010

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-F12184
Date of Test : Nov 08 – 14, 2012
Date of Report : Nov 21, 2012

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TEST REPORT FOR FCC CERTIFICATE

Applicant : Hisense Electric Co., Ltd.

Manufacturer : Hisense Electric Co., Ltd.

EUT Description : LED LCD TV

Model No.	Brand	Power Supply
LTDN55XT710XWUS3D	Hisense	120V/60Hz
55T710DW		

Test Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2011 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; S/N: Refer to Sec2.1) which was tested in 3m anechoic chamber Nov 08 – 14, 2012 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.F12185, a Verification report.

Date of Test : Nov 08 – 14, 2012 Date of Report : Nov 21, 2012

Producer : Yenny Yu
YENNY YU / Assistant

Review : Dio Yang
DIO YANG/ Assistant Manager

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

Signatory : Sammy Chen
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 2011 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2011 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.	:	LTDN55XT710XWUS3D | 55T710DW
Bread Name	:	Hisense
Note	:	The above models are all the same except for the different model name. The LTDN55XT710XWUS3D was tested and reported in the report.
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
LCD Panel	:	Manufacturer : Samsung M/N : LTA550HQ20
Max Resolution	:	1024*768@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

The EUT is a LED LCD TV which input/output ports as follows:

Side Port:

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

(2) One HDMI1 Port
: Connected with PC

(3) One DIGITAL AUDIO OUT Port
: Connected with PC

(4) One Headphone Port
: Connected with Earphone

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

(6) One component of YPbPr Port
: Connected with DVD PLAYER #1
(7) One component of YPbPr Audio Port
: Connected with DVD PLAYER #1
(8) One component of AV Port
: Connected with DVD PLAYER #1

Bottom Port:
(9) One LAN Port
: Connected with PC
(10) One USB2 Port
: Connected with U-Disk
(11) One USB1 Port
: Connected with U-Disk
(12) One VGA Port
: Connected with PC
(13) One PC/DVI Audio In Port
: Connected with PC
(14) One HDMI4 Port
: Connected with DVD PLAYER #3
(15) One HDMI3 Port
: Connected with DVD PLAYER #2

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 Earphone

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

2.2.7 TV Signal Generator

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

2.2.8 ATSC Signal Generator

Manufacturer	:	SENCORE
Model Number	:	ATSC997
Serial Number	:	6790071

2.2.9 DVD PLAYER #1

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

2.2.10 DVD PLAYER #2

Manufacturer	:	LG
Model Number	:	DF9921N
Serial Number	:	3850R-M846W
Certificate	:	FCC DoC, CE/EMC, CCC

2.2.11 DVD PLAYER #3

Manufacturer	:	DGT RONIK
Model Number	:	DV-A340
Serial Number	:	10004184-C
Certificate	:	FCC DoC, CE/EMC, CCC

2.2.12 U-DISK 1# 2#

Manufacturer : LG
Model Number : 1GB

2.3 Description of Test Facility

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

2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty: U = 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)

3 CONDUCTED EMISSION TEST

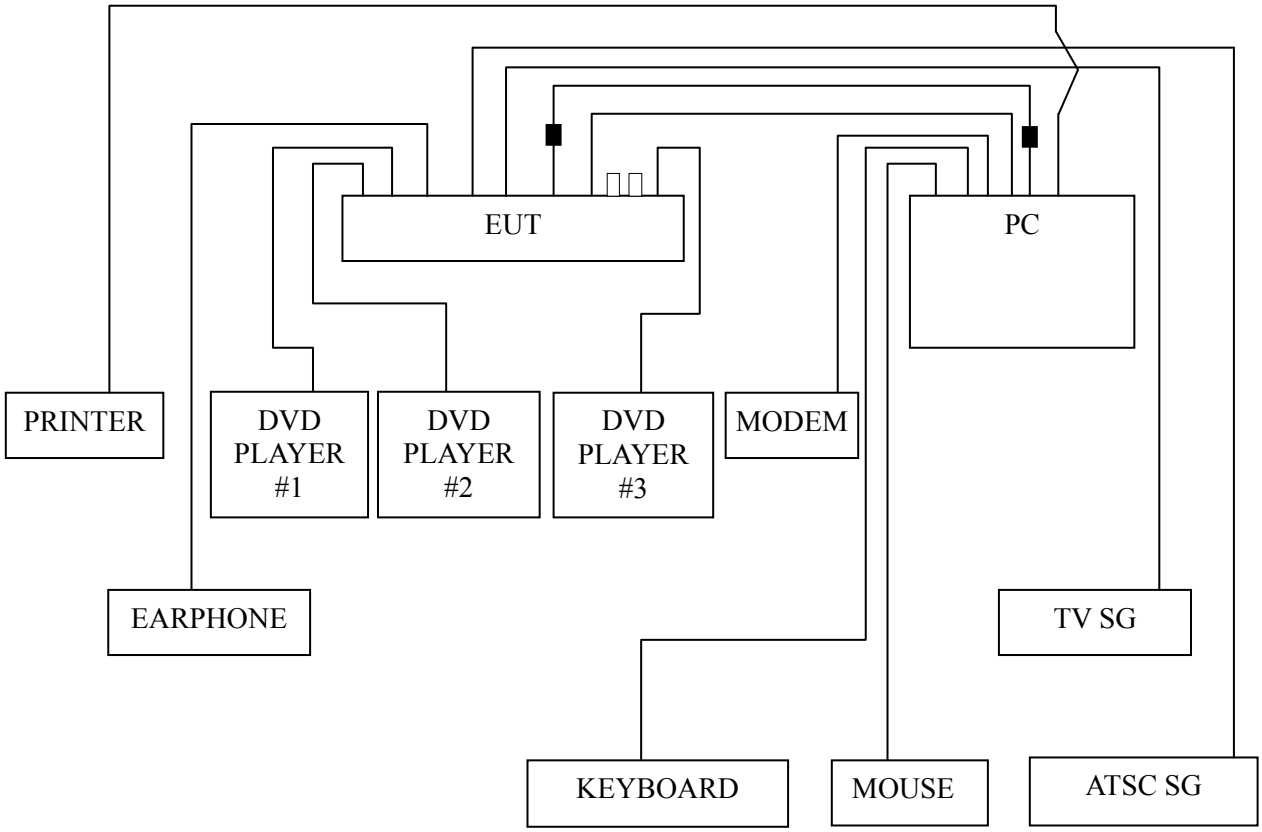
3.1 Test Equipment

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 22, 2012	Mar 22, 2013
2.	Artificial Mains Network (AMN #1)	R&S	ESH2-Z5	843890/011	Feb 13, 2012	Feb 13, 2013
3.	Artificial Mains Network (AMN #2)	R&S	ENV4200	100125	Mar 22, 2012	Mar 22, 2013
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Sep 18, 2012	Mar 18, 2013
5.	50Ω Terminator	Anritsu	BNC	001	Mar 22, 2012	Mar 22, 2013
6.	Software	Audix	E3	SET00200 9804M592	--	--

3.2 Block Diagram of Test Setup

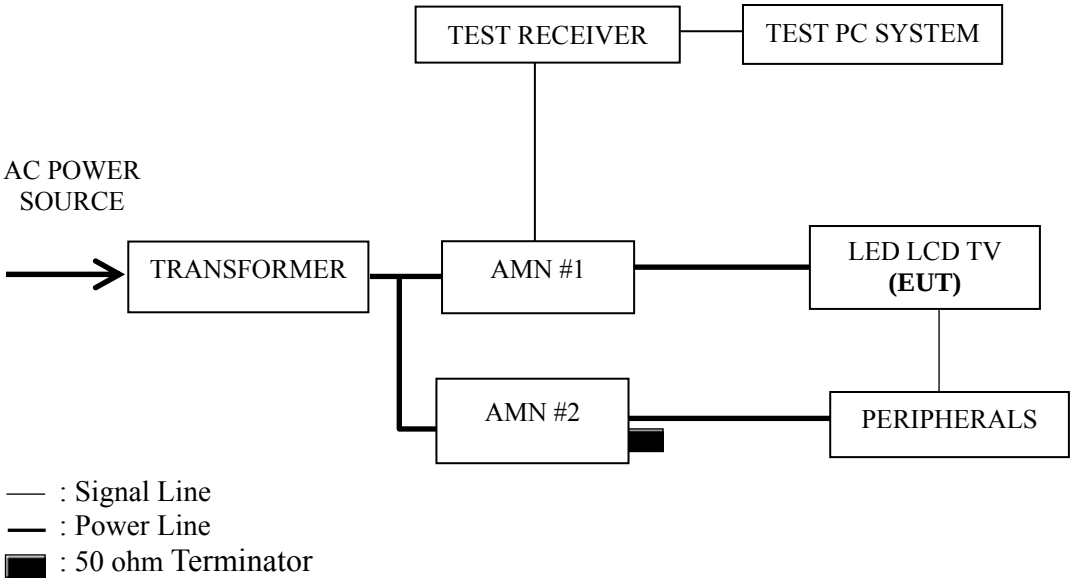
3.2.1 EUT & Peripherals



■: 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 mode, set the EUT play digital media through LAN port.

3.5.7 Repeat above procedure 3.5.6 for difference test mode.

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

3.5.9 The test modes are as follows:

Test Mode
D-Sub 1024*768@60Hz
HDMI 1024*768@60Hz
HDMI 800*600@60Hz
HDMI 640*480@60Hz
USB Play
LAN

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 1024*768@60Hz	P13
HDMI 1024*768@60Hz	P14
HDMI 800*600@60Hz	P15
HDMI 640*480@60Hz	P16
USB Play	P17
LAN	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 0.150 MHz (Quasi-Peak Value) with corrected signal level of 61.70 dB (μV) (limit is 66.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LTDN55XT710XWUS3D	Humidity	:	48%RH
Test Mode	:	D-Sub 1024*768@60Hz	Date of Test	:	Nov 08, 2012

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	58.05	0.23	58.28	66.00	7.72	QP
	0.283	31.64	0.26	31.90	60.72	28.82	
	0.426	36.79	0.34	37.13	57.33	20.20	
	1.000	29.63	0.32	29.95	56.00	26.05	
	3.881	28.15	0.48	28.63	56.00	27.37	
	23.636	41.32	1.14	42.46	60.00	17.54	
	0.150	48.50	0.23	48.73	56.00	7.27	AV
	0.283	21.50	0.26	21.76	50.72	28.96	
	0.426	26.40	0.34	26.74	47.33	20.59	
	1.000	19.80	0.32	20.12	46.00	25.88	
	3.881	18.10	0.48	18.58	46.00	27.42	
	23.636	31.60	1.14	32.74	50.00	17.26	
Neutral	0.150	60.16	0.13	60.29	66.00	5.71	QP
	0.277	31.67	0.12	31.79	60.90	29.11	
	0.431	37.26	0.17	37.43	57.24	19.81	
	0.984	33.02	0.22	33.24	56.00	22.76	
	1.839	31.58	0.17	31.75	56.00	24.25	
	19.326	41.36	0.82	42.18	60.00	17.82	
	0.150	**50.50**	**0.13**	**50.63**	**56.00**	**5.37**	AV
	0.277	21.10	0.12	21.22	50.90	29.68	
	0.431	27.50	0.17	27.67	47.24	19.57	
	0.984	23.10	0.22	23.32	46.00	22.68	
	1.839	21.20	0.17	21.37	46.00	24.63	
	19.326	31.40	0.82	32.22	50.00	17.78	

TEST ENGINEER: LVY LV

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LTDN55XT710XWUS3D	Humidity	:	48%RH
Test Mode	:	HDMI 1024*768@60Hz	Date of Test	:	Nov 08, 2012

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	58.96	0.23	59.19	66.00	6.81	QP
	0.283	31.70	0.26	31.96	60.72	28.76	
	0.431	36.50	0.35	36.85	57.24	20.39	
	1.032	30.33	0.32	30.65	56.00	25.35	
	4.114	27.92	0.49	28.41	56.00	27.59	
	18.820	42.04	0.92	42.96	60.00	17.04	
	0.150	48.60	0.23	48.83	56.00	7.17	AV
	0.283	21.10	0.26	21.36	50.72	29.36	
	0.431	26.49	0.35	26.84	47.24	20.40	
	1.032	20.50	0.32	20.82	46.00	25.18	
	4.114	17.30	0.49	17.79	46.00	28.21	
	18.820	32.59	0.92	33.51	50.00	16.49	
Neutral	**0.150**	**60.93**	**0.13**	**61.06**	**66.00**	**4.94**	QP
	0.264	31.79	0.12	31.91	61.29	29.38	
	0.417	37.18	0.17	37.35	57.51	20.16	
	0.989	33.62	0.22	33.84	56.00	22.16	
	1.839	31.98	0.17	32.15	56.00	23.85	
	22.896	42.28	0.99	43.27	60.00	16.73	
	0.150	50.70	0.13	50.83	56.00	5.17	AV
	0.264	21.60	0.12	21.72	51.29	29.57	
	0.417	27.79	0.17	27.96	47.51	19.55	
	0.989	23.50	0.22	23.72	46.00	22.28	
	1.839	21.40	0.17	21.57	46.00	24.43	
	22.896	32.10	0.99	33.09	50.00	16.91	

TEST ENGINEER: LVY LV

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LTDN55XT710XWUS3D	Humidity	:	48%RH
Test Mode	:	HDMI 800*600@60Hz	Date of Test	:	Nov 08, 2012

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	60.61	0.23	60.84	66.00	5.16	QP
	0.280	32.40	0.26	32.66	60.81	28.15	
	0.417	36.64	0.34	36.98	57.51	20.53	
	0.989	30.24	0.32	30.56	56.00	25.44	
	3.293	27.46	0.43	27.89	56.00	28.11	
	18.820	41.28	0.92	42.20	60.00	17.80	
	0.150	**50.70**	**0.23**	**50.93**	**56.00**	**5.07**	AV
	0.280	22.90	0.26	23.16	50.81	27.65	
	0.417	26.40	0.34	26.74	47.51	20.77	
	0.989	20.20	0.32	20.52	46.00	25.48	
	3.293	17.90	0.43	18.33	46.00	27.67	
	18.820	31.29	0.92	32.21	50.00	17.79	
Neutral	0.150	60.35	0.13	60.48	66.00	5.52	QP
	0.283	31.21	0.12	31.33	60.72	29.39	
	0.426	37.14	0.17	37.31	57.33	20.02	
	0.989	33.27	0.22	33.49	56.00	22.51	
	1.839	31.49	0.17	31.66	56.00	24.34	
	23.888	41.56	1.04	42.60	60.00	17.40	
	0.150	50.40	0.13	50.53	56.00	5.47	AV
	0.283	21.40	0.12	21.52	50.72	29.20	
	0.426	27.39	0.17	27.56	47.33	19.77	
	0.989	23.90	0.22	24.12	46.00	21.88	
	1.839	21.90	0.17	22.07	46.00	23.93	
	23.888	31.59	1.04	32.63	50.00	17.37	

TEST ENGINEER: LVY LV

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LTDN55XT710XWUS3D	Humidity	:	48%RH
Test Mode	:	HDMI 640*480@60Hz	Date of Test	:	Nov 08, 2012

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	**0.150**	**60.99**	**0.23**	**61.22**	**66.00**	**4.78**	QP
	0.286	31.69	0.26	31.95	60.63	28.68	
	0.426	36.57	0.34	36.91	57.33	20.42	
	0.989	30.25	0.32	30.57	56.00	25.43	
	3.547	27.63	0.47	28.10	56.00	27.90	
	22.535	41.24	1.08	42.32	60.00	17.68	
	0.150	50.63	0.23	50.86	56.00	5.14	AV
	0.286	21.70	0.26	21.96	50.63	28.67	
	0.426	26.60	0.34	26.94	47.33	20.39	
	0.989	20.80	0.32	21.12	46.00	24.88	
	3.547	17.69	0.47	18.16	46.00	27.84	
	22.535	31.50	1.08	32.58	50.00	17.42	
Neutral	0.150	60.55	0.13	60.68	66.00	5.32	QP
	0.264	31.42	0.12	31.54	61.29	29.75	
	0.421	37.20	0.17	37.37	57.42	20.05	
	0.984	33.52	0.22	33.74	56.00	22.26	
	1.839	31.75	0.17	31.92	56.00	24.08	
	16.661	42.72	0.75	43.47	60.00	16.53	
	0.150	50.40	0.13	50.53	56.00	5.47	AV
	0.264	21.10	0.12	21.22	51.29	30.07	
	0.421	27.29	0.17	27.46	47.42	19.96	
	0.984	23.30	0.22	23.52	46.00	22.48	
	1.839	21.90	0.17	22.07	46.00	23.93	
	16.661	32.50	0.75	33.25	50.00	16.75	

TEST ENGINEER: LVY LV

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LTDN55XT710XWUS3D	Humidity	:	48%RH
Test Mode	:	USB Play	Date of Test	:	Nov 08, 2012

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	**0.150**	**61.47**	**0.23**	**61.70**	**66.00**	**4.30**	QP
	0.283	31.12	0.26	31.38	60.72	29.34	
	0.417	36.47	0.34	36.81	57.51	20.70	
	0.974	29.54	0.32	29.86	56.00	26.14	
	3.840	28.10	0.48	28.58	56.00	27.42	
	19.950	41.78	0.92	42.70	60.00	17.30	
	0.150	51.30	0.23	51.53	56.00	4.47	AV
	0.283	21.60	0.26	21.86	50.72	28.86	
	0.417	26.20	0.34	26.54	47.51	20.97	
	0.974	19.90	0.32	20.22	46.00	25.78	
	3.840	18.90	0.48	19.38	46.00	26.62	
	19.950	31.50	0.92	32.42	50.00	17.58	
Neutral	0.150	58.87	0.13	59.00	66.00	7.00	QP
	0.283	32.06	0.12	32.18	60.72	28.54	
	0.431	37.40	0.17	37.57	57.24	19.67	
	0.989	33.47	0.22	33.69	56.00	22.31	
	2.133	31.48	0.17	31.65	56.00	24.35	
	19.021	42.34	0.82	43.16	60.00	16.84	
	0.150	48.70	0.13	48.83	56.00	7.17	AV
	0.283	22.20	0.12	22.32	50.72	28.40	
	0.431	27.50	0.17	27.67	47.24	19.57	
	0.989	23.70	0.22	23.92	46.00	22.08	
	2.133	21.31	0.17	21.48	46.00	24.52	
	19.021	32.79	0.82	33.61	50.00	16.39	

TEST ENGINEER: LVY LV

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LTDN55XT710XWUS3D	Humidity	:	48%RH
Test Mode	:	LAN	Date of Test	:	Nov 08, 2012

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	59.64	0.23	59.87	66.00	6.13	QP
	0.277	32.02	0.26	32.28	60.90	28.62	
	0.417	36.69	0.34	37.03	57.51	20.48	
	1.000	29.80	0.32	30.12	56.00	25.88	
	3.840	28.90	0.48	29.38	56.00	26.62	
	23.140	41.03	1.11	42.14	60.00	17.86	
	0.150	49.30	0.23	49.53	56.00	6.47	AV
	0.277	22.10	0.26	22.36	50.90	28.54	
	0.417	26.70	0.34	27.04	47.51	20.47	
	1.000	19.20	0.32	19.52	46.00	26.48	
	3.840	18.20	0.48	18.68	46.00	27.32	
	23.140	31.61	1.11	32.72	50.00	17.28	
Neutral	**0.150**	**59.92**	**0.13**	**60.05**	**66.00**	**5.95**	QP
	0.280	31.74	0.12	31.86	60.81	28.95	
	0.431	37.12	0.17	37.29	57.24	19.95	
	0.989	33.30	0.22	33.52	56.00	22.48	
	2.110	31.51	0.17	31.68	56.00	24.32	
	23.140	41.34	1.00	42.34	60.00	17.66	
	0.150	49.50	0.13	49.63	56.00	6.37	AV
	0.280	21.90	0.12	22.02	50.81	28.79	
	0.431	27.60	0.17	27.77	47.24	19.47	
	0.989	23.40	0.22	23.62	46.00	22.38	
	2.110	21.80	0.17	21.97	46.00	24.03	
	23.140	31.50	1.00	32.50	50.00	17.50	

TEST ENGINEER: LVY LV

4 RADIATED EMISSION TEST

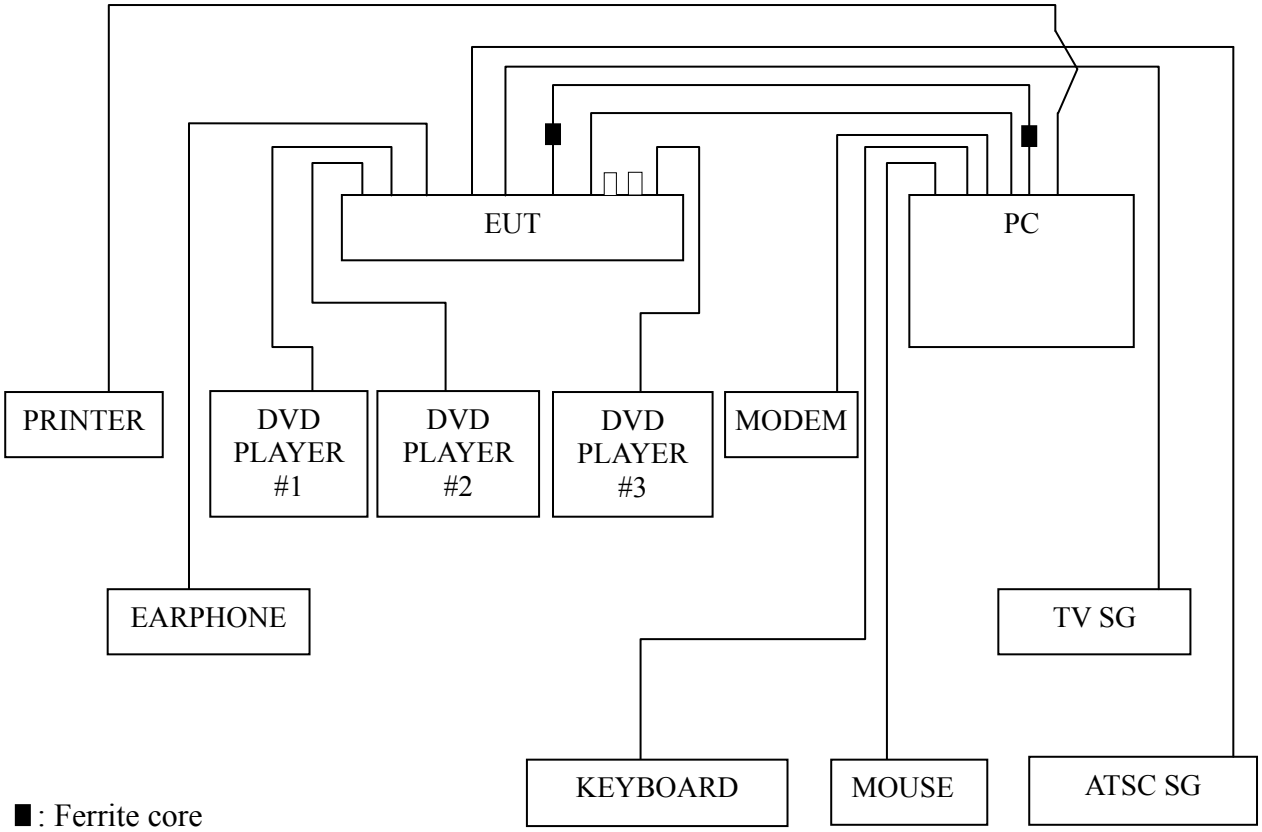
4.1 Test Equipment

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	ESVS10	844594/001	Mar 22, 2012	Mar 22, 2013
2.	Preamplifier	Agilent	8447D	2944A10548	Sep 18, 2012	Mar 18, 2013
3.	Bi-log Antenna	TESEQ	CBL6112D	23192	Dec 01, 2011	Dec 01, 2012
4.	Spectrum	Agilent	E7405A	MY45106600	Mar 22, 2012	Mar 22, 2013
5.	50Ω Coaxial Switch	Anritsu	MP59B	6200426390	Sep 18, 2012	Mar 18, 2013
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

4.2 Block Diagram of Test Setup

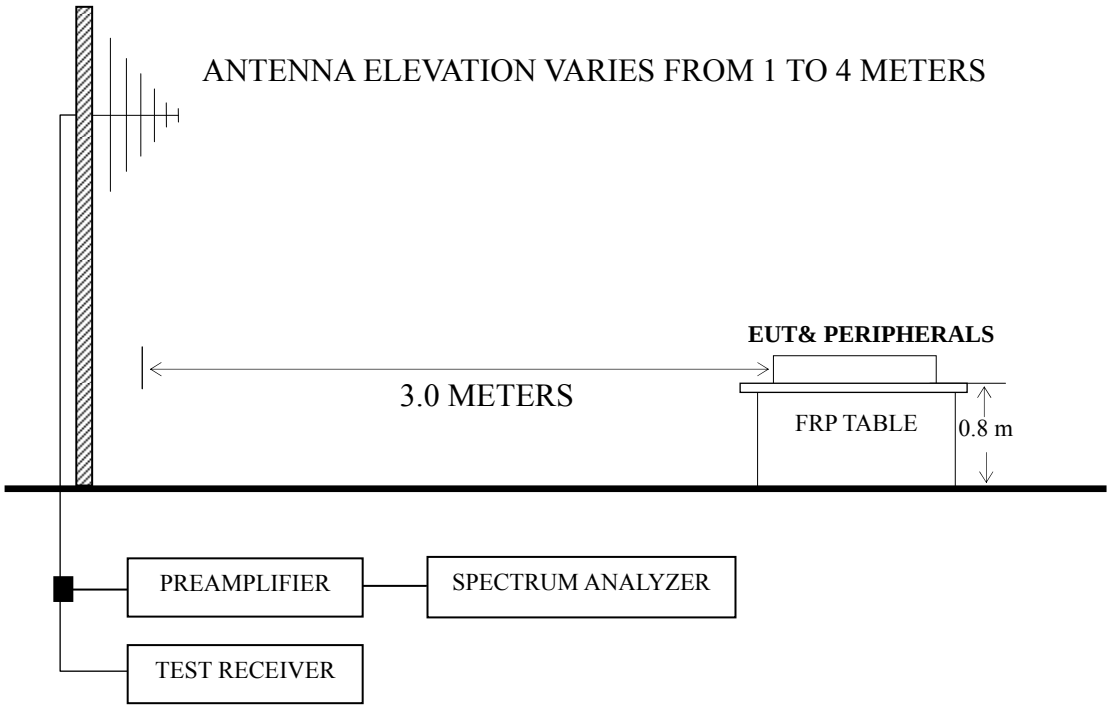
4.2.1 EUT and Peripherals



■ : 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 ESVS10 was set at 120 kHz.

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

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
D-Sub 1024*768@60Hz	P22
HDMI 1024*768@60Hz	P23
D-Sub 800*600@60Hz	P24
D-Sub 640*480@60Hz	P25
USB Play	P26
LAN	P27

NOTE 1 – Emission Level = Antenna Factor + Cable Loss + Meter Reading.

NOTE 2 – All readings are Quasi-Peak values.

NOTE 3 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

NOTE 4 – The worst case is for D-Sub 1024*768@60Hz test mode. The worst emission at horizontal polarization was detected at 596.603 MHz with corrected signal level of 41.09 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.30 m height and the turntable was at 300°. The worst emission at vertical polarization was detected at 43.580 MHz with corrected signal level of 36.53 dB (μV/m) (limit is 40.00 dB (μV/m)), when the antenna was 1.30 m height and the turntable was at 160°.

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LTDN55XT710XWUS3D	Humidity :	60%RH
Test Mode	:	D-Sub 1024*768@60Hz	Date of Test :	Nov 14, 2012

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	87.230	22.00	8.96	0.88	31.84	40.00	8.16
	218.180	26.72	11.52	1.66	39.90	46.00	6.10
	281.230	24.53	13.57	2.00	40.10	46.00	5.90
	446.130	19.69	17.17	3.21	40.07	46.00	5.93
	596.603	**18.40**	**19.17**	**3.52**	**41.09**	**46.00**	**4.91**
	895.240	15.45	21.67	3.74	40.86	46.00	5.14
Vertical	**43.580**	**24.08**	**11.88**	**0.57**	**36.53**	**40.00**	**3.47**
	87.230	22.37	8.96	0.88	32.21	40.00	7.79
	218.180	25.71	11.52	1.66	38.89	46.00	7.11
	446.130	18.61	17.17	3.21	38.99	46.00	7.01
	552.830	19.18	18.62	3.37	41.17	46.00	4.83
	887.480	16.64	21.60	3.87	42.11	46.00	3.89

TEST ENGINEER: RAVEN JIN

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LTDN55XT710XWUS3D	Humidity :	60%RH
Test Mode	:	HDMI 1024*768@60Hz	Date of Test :	Nov 14, 2012

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	87.230	19.00	8.96	0.88	28.84	40.00	11.16
	159.980	20.37	10.50	1.33	32.20	43.50	11.30
	218.180	23.72	11.52	1.66	36.90	46.00	9.10
	281.230	21.53	13.57	2.00	37.10	46.00	8.90
	446.130	16.69	17.17	3.21	37.07	46.00	8.93
	594.540	**18.42**	**19.14**	**3.45**	**41.01**	**46.00**	**4.99**
Vertical	43.580	18.08	11.88	0.57	30.53	40.00	9.47
	62.980	19.13	6.57	0.71	26.41	40.00	13.59
	87.230	19.37	8.96	0.88	29.21	40.00	10.79
	126.030	17.67	12.71	1.08	31.46	43.50	12.04
	218.180	22.71	11.52	1.66	35.89	46.00	10.11
	446.130	**16.61**	**17.17**	**3.21**	**36.99**	**46.00**	**9.01**

TEST ENGINEER: RAVEN JIN

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LTDN55XT710XWUS3D	Humidity :	60%RH
Test Mode	:	D-Sub 800*600@60Hz	Date of Test :	Nov 14, 2012

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	87.230	21.00	8.96	0.88	30.84	40.00	9.16
	126.030	20.00	12.71	1.08	33.79	43.50	9.71
	159.980	22.08	10.50	1.33	33.91	43.50	9.59
	266.680	**25.74**	**13.25**	**1.79**	**40.78**	**46.00**	**5.22**
	449.040	19.46	17.20	3.20	39.86	46.00	6.14
	819.580	13.36	20.91	3.72	37.99	46.00	8.01
Vertical	**42.610**	**22.67**	**12.39**	**0.60**	**35.66**	**40.00**	**4.34**
	87.230	23.00	8.96	0.88	32.84	40.00	7.16
	135.730	20.15	12.28	1.19	33.62	43.50	9.88
	198.780	24.08	10.64	1.32	36.04	43.50	7.46
	266.680	20.80	13.25	1.79	35.84	46.00	10.16
	449.040	19.04	17.20	3.20	39.44	46.00	6.56

TEST ENGINEER: RAVEN JIN

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LTDN55XT710XWUS3D	Humidity :	60%RH
Test Mode	:	D-Sub 640*480@60Hz	Date of Test :	Nov 14, 2012

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	87.230	21.52	8.96	0.88	31.36	40.00	8.64
	198.780	23.84	10.64	1.32	35.80	43.50	7.70
	223.030	24.57	11.80	1.62	37.99	46.00	8.01
	259.890	21.43	13.10	1.72	36.25	46.00	9.75
	444.190	**19.26**	**17.14**	**3.20**	**39.60**	**46.00**	**6.40**
	814.730	13.64	20.84	3.71	38.19	46.00	7.81
Vertical	43.580	20.03	11.88	0.57	32.48	40.00	7.52
	87.230	18.47	8.96	0.88	28.31	40.00	11.69
	135.730	16.18	12.28	1.19	29.65	43.50	13.85
	223.030	18.41	11.80	1.62	31.83	46.00	14.17
	444.190	13.82	17.14	3.20	34.16	46.00	11.84
	596.480	**18.17**	**19.17**	**3.52**	**40.86**	**46.00**	**5.14**

TEST ENGINEER: RAVEN JIN

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LTDN55XT710XWUS3D	Humidity	:	60%RH
Test Mode	:	USB Play	Date of Test	:	Nov 14, 2012

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	62.980	16.92	6.57	0.71	24.20	40.00	15.80
	126.030	16.62	12.71	1.08	30.41	43.50	13.09
	159.980	20.37	10.50	1.33	32.20	43.50	11.30
	218.180	22.72	11.52	1.66	35.90	46.00	10.10
	281.230	20.53	13.57	2.00	36.10	46.00	9.90
	446.130	**16.69**	**17.17**	**3.21**	**37.07**	**46.00**	**8.93**
Vertical	62.980	18.13	6.57	0.71	25.41	40.00	14.59
	124.090	14.66	12.81	1.00	28.47	43.50	15.03
	196.840	21.42	10.57	1.48	33.47	43.50	10.03
	347.190	15.33	15.24	2.39	32.96	46.00	13.04
	446.130	15.61	17.17	3.21	35.99	46.00	10.01
	887.480	**13.64**	**21.60**	**3.87**	**39.11**	**46.00**	**6.89**

TEST ENGINEER: RAVEN JIN

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LTDN55XT710XWUS3D	Humidity :	60%RH
Test Mode	:	LAN	Date of Test :	Nov 14, 2012

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	159.980	18.08	10.50	1.33	29.91	43.50	13.59
	225.940	18.90	11.94	1.82	32.66	46.00	13.34
	266.680	21.74	13.25	1.79	36.78	46.00	9.22
	298.690	14.27	13.88	2.21	30.36	46.00	15.64
	449.040	15.46	17.20	3.20	35.86	46.00	10.14
	596.480	**17.41**	**19.17**	**3.52**	**40.10**	**46.00**	**5.90**
Vertical	62.980	16.44	6.57	0.71	23.72	40.00	16.28
	99.840	13.54	11.42	1.10	26.06	43.50	17.44
	135.730	16.15	12.28	1.19	29.62	43.50	13.88
	194.900	20.01	10.51	1.49	32.01	43.50	11.49
	266.680	16.80	13.25	1.79	31.84	46.00	14.16
	449.040	**15.04**	**17.20**	**3.20**	**35.44**	**46.00**	**10.56**

TEST ENGINEER: RAVEN JIN

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Gasket	DAA1001\ROH	Qingdao Joinset S&T Co., Ltd. TAT ELECTRONIC TECH CO.,LTD.	See Internal Photo Figure 27
Gasket	DAA25X20X150\ROH	Qingdao Joinset S&T Co., Ltd. TAT ELECTRONIC TECH CO.,LTD.	See Internal Photo Figure 25, 26
Gasket	35X0.7X41mm\VGA\ROH	Qingdao Joinset S&T Co., Ltd.	See Internal Photo Figure 23, 24

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: Raven Jin

(RAVEN JIN)

6 DEVIATION TO TEST SPECIFICATIONS

None.