

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

LED LCD TV

Model No.	Serial No.	Brand
LTDN50K316XWUS3D	E1204416-02/02	Hisense
50K316DW	--	

FCC ID : W9HLCDF0006

Prepared For : Hisense Electric Co., Ltd.
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Development Zone, Qingdao, China

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Report No. : ACI-F12063
Date of Test : Apr 14 – 20, 2012
Date of Report : Apr 24, 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.	Serial No.	Brand	Power Supply
LTDN50K316XWUS3D	E1204416-02/02	Hisense	120V/60Hz
50K316DW	--		

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 Apr 14 – 20, 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.F12064, a Verification report.

Date of Test : Apr 14 – 20, 2012 Date of Report : Apr 24, 2012

Producer : Yenny Yu.
YENNY YU / Assistant

Review : Dio Yang.
DIO YANG / Assistant Manager

AUDIX[®] 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.	Serial No.	Brand
LTDN50K316XWUS3D	E1204416-02/02	Hisense
50K316DW	--	

Brand : Hisense

Note : The above models are all the same except for the different model name.
The LTDN50K316XWUS3D 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 : CHIMEI INNOLUX
M/N : V500HK1 –LS5

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 #1
- (2) One HDMI1 Port : Connected with PC
- (3) One Headphone Port : Connected with Earphone
- (4) One ANT Port : Connected with ATSC SG / TV SG
- (5) One component of YPbPr Port : Connected with DVD #1
- (6) One component of YPbPr Audio Port : Connected with DVD #1
- (7) One component of AV Port : Connected with DVD #1
- (8) One DIGITAL AUDIO OUT Port : Connected with DVD

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 #3
- (15) One HDMI3 Port : Connected with DVD #2

2.2 Peripherals

2.2.1 PC

Manufacturer : HP
Model Number : dx7400MT
Serial Number : CNG8130K89
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

Manufacturer : LG
Model Number : 1GB

2.3 Description of Test Facility

Site Description (No.3 3m Chamber) : Sept. 17, 1998 file on
Apr 29, 2009 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 = 3.43 dB
Radiated Emission Expanded Uncertainty (30-200MHz):
U = 4.67 dB (Horizontal)
U = 4.72 dB (Vertical)

Radiated Emission Expanded Uncertainty (200M-1GHz):
U = 4.81 dB (Horizontal)
U = 4.69 dB (Vertical)

3 CONDUCTED EMISSION TEST

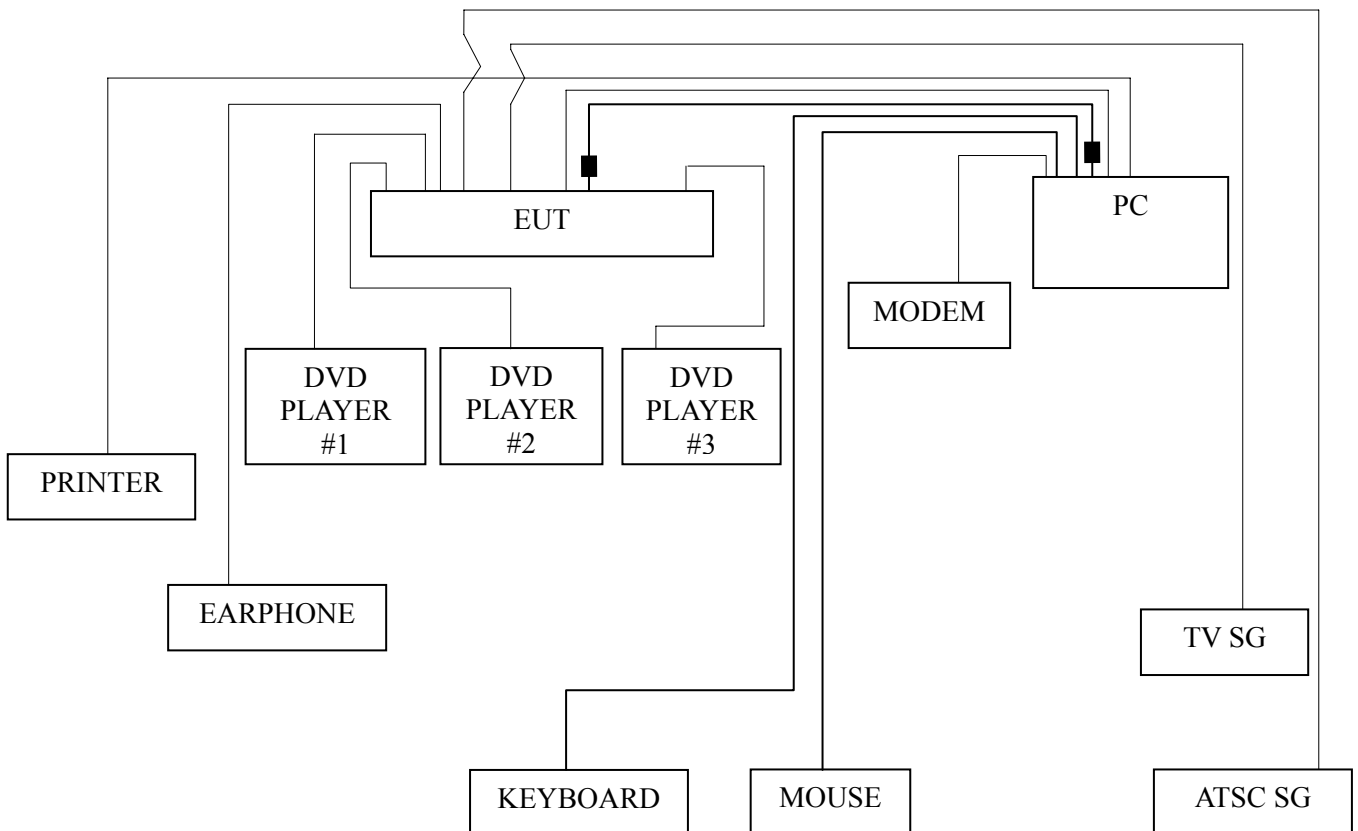
3.1 Test Equipment

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	Mar 18, 2012	Sep 18, 2012
5.	50 Ω Terminator	Anritsu	BNC	001	Mar 22, 2012	Mar 22, 2013
6.	Software	Audix	E3	SET00200 9804M592	--	--

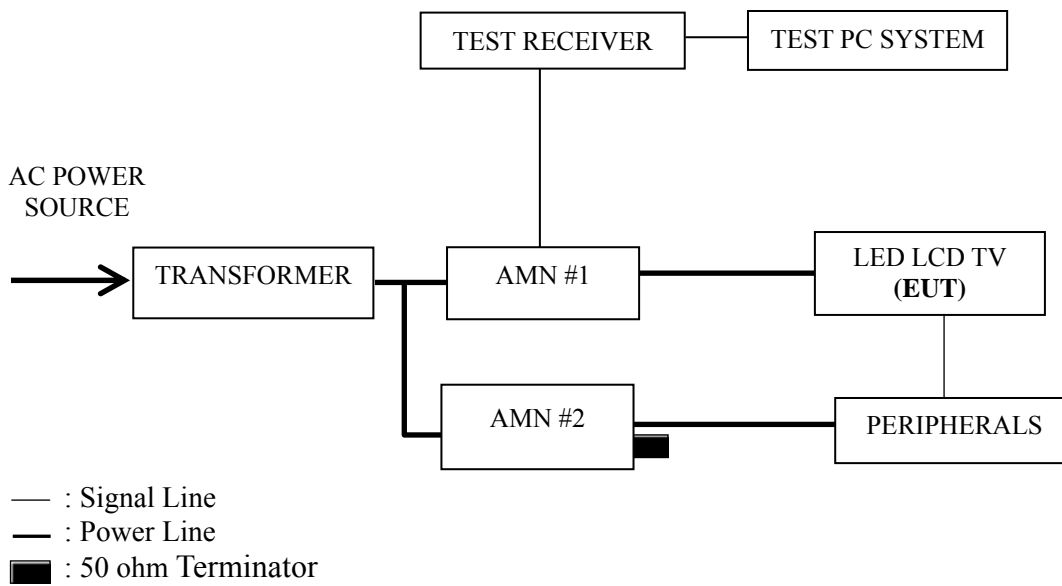
3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



■ : Ferrite core

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 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
D-Sub 800*600@60Hz
D-Sub 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
D-Sub 800*600@60Hz	P15
D-Sub 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 0.151 MHz (Quasi-Peak Value) with corrected signal level of 47.94 dB (μ V) (limit is 65.96 dB (μ V)), when the Neutral of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C
 Model No. : LTDN50K316XWUS3D Humidity : 48%RH
 Serial No. : E1204416-02/02 Date of Test : Apr 14, 2012
 Test Mode : D-Sub 1024*768@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.151	43.46	0.23	43.69	65.96	22.27	QP
	0.413	28.51	0.34	28.85	57.59	28.74	
	1.464	28.43	0.36	28.79	56.00	27.21	
	2.527	26.95	0.40	27.35	56.00	28.65	
	5.419	25.50	0.52	26.02	60.00	33.98	
	11.080	38.03	0.74	38.77	60.00	21.23	
	AV	0.151	33.20	0.23	33.43	55.96	22.53
		0.413	18.60	0.34	18.94	47.59	28.65
		1.464	17.90	0.36	18.26	46.00	27.74
		2.527	17.12	0.40	17.52	46.00	28.48
5.419		15.20	0.52	15.72	50.00	34.28	
11.080		29.80	0.74	30.54	50.00	19.46	
Neutral	0.151	43.62	0.13	43.75	65.96	22.21	QP
	0.408	29.43	0.16	29.59	57.68	28.09	
	1.172	29.47	0.21	29.68	56.00	26.32	
	2.474	26.92	0.19	27.11	56.00	28.89	
	3.840	26.09	0.38	26.47	56.00	29.53	
	11.080	37.78	0.51	38.29	60.00	21.71	
	AV	0.151	33.42	0.13	33.55	55.96	22.41
		0.408	18.68	0.16	18.84	47.68	28.84
		1.172	20.11	0.21	20.32	46.00	25.68
		2.474	16.56	0.19	16.75	46.00	29.25
3.840		14.90	0.38	15.28	46.00	30.72	
	11.080	31.20	0.51	31.71	50.00	18.29	

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C
 Model No. : LTDN50K316XWUS3D Humidity : 48%RH
 Serial No. : E1204416-02/02 Date of Test : Apr 14, 2012
 Test Mode : HDMI 1024*768@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.151	39.34	0.23	39.57	65.96	26.39	QP
	0.529	23.22	0.34	23.56	56.00	32.44	
	1.054	25.03	0.32	25.35	56.00	30.65	
	3.173	23.70	0.42	24.12	56.00	31.88	
	3.985	26.13	0.49	26.62	56.00	29.38	
	11.080	37.75	0.74	38.49	60.00	21.51	
	0.151	28.50	0.23	28.73	55.96	27.23	AV
	0.529	13.10	0.34	13.44	46.00	32.56	
	1.054	14.89	0.32	15.21	46.00	30.79	
	3.173	13.41	0.42	13.83	46.00	32.17	
	3.985	15.69	0.49	16.18	46.00	29.82	
	11.080	29.80	0.74	30.54	50.00	19.46	
Neutral	0.151	45.20	0.13	45.33	65.96	20.63	QP
	0.402	28.73	0.16	28.89	57.81	28.92	
	1.172	28.63	0.21	28.84	56.00	27.16	
	2.554	26.52	0.20	26.72	56.00	29.28	
	5.362	24.86	0.44	25.30	60.00	34.70	
	20.594	38.16	0.84	39.00	60.00	21.00	
	0.151	35.45	0.13	35.58	55.96	20.38	AV
	0.402	18.90	0.16	19.06	47.81	28.75	
	1.172	18.71	0.21	18.92	46.00	27.08	
	2.554	17.40	0.20	17.60	46.00	28.40	
	5.362	15.12	0.44	15.56	50.00	34.44	
	20.594	27.76	0.84	28.60	50.00	21.40	

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K316XWUS3D Humidity : 48%RH

Serial No. : E1204416-02/02 Date of Test : Apr 14, 2012

Test Mode : D-Sub 800*600@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.151	39.71	0.23	39.94	65.96	26.02	QP
	0.529	23.93	0.34	24.27	56.00	31.73	
	1.519	25.17	0.37	25.54	56.00	30.46	
	2.396	23.89	0.40	24.29	56.00	31.71	
	3.840	24.99	0.48	25.47	56.00	30.53	
	11.080	37.89	0.74	38.63	60.00	21.37	
	0.151	30.30	0.23	30.53	55.96	25.43	AV
	0.529	14.25	0.34	14.59	46.00	31.41	
	1.519	14.94	0.37	15.31	46.00	30.69	
	2.396	14.10	0.40	14.50	46.00	31.50	
	2.396	14.10	0.40	14.50	46.00	31.50	
	3.840	14.85	0.48	15.33	46.00	30.67	
Neutral	0.151	43.57	0.13	43.70	65.96	22.26	QP
	0.402	27.99	0.16	28.15	57.81	29.66	
	1.210	28.07	0.21	28.28	56.00	27.72	
	2.285	27.57	0.19	27.76	56.00	28.24	
	3.565	26.77	0.36	27.13	56.00	28.87	
	20.162	38.03	0.82	38.85	60.00	21.15	
	0.151	33.50	0.13	33.63	55.96	22.33	AV
	0.151	33.50	0.13	33.63	55.96	22.33	
	0.402	18.10	0.16	18.26	47.81	29.55	
	1.210	17.87	0.21	18.08	46.00	27.92	
	2.285	17.63	0.19	17.82	46.00	28.18	
	3.565	16.12	0.36	16.48	46.00	29.52	

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K316XWUS3D Humidity : 48%RH

Serial No. : E1204416-02/02 Date of Test : Apr 14, 2012

Test Mode : D-Sub 640*480@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark	
Line	0.151	42.69	0.23	42.92	65.96	23.04	QP	
	0.541	24.24	0.33	24.57	56.00	31.43		
	1.210	25.34	0.33	25.67	56.00	30.33		
	2.594	23.79	0.40	24.19	56.00	31.81		
	5.221	25.98	0.50	26.48	60.00	33.52		
	19.950	38.05	0.92	38.97	60.00	21.03	AV	
	0.151	32.50	0.23	32.73	55.96	23.23		
	0.541	13.90	0.33	14.23	46.00	31.77		
	1.210	15.10	0.33	15.43	46.00	30.57		
	2.594	13.40	0.40	13.80	46.00	32.20		
5.221	15.61	0.50	16.11	50.00	33.89	AV		
19.950	27.80	0.92	28.72	50.00	21.28			
Neutral	0.151	43.61	0.13	43.74	65.96		22.22	QP
	0.402	28.38	0.16	28.54	57.81		29.27	
	1.184	28.36	0.21	28.57	56.00		27.43	
	2.474	26.96	0.19	27.15	56.00	28.85		
	3.840	24.41	0.38	24.79	56.00	31.21		
	20.594	38.59	0.84	39.43	60.00	20.57	AV	
	0.151	33.20	0.13	33.33	55.96	22.63		
	0.402	17.45	0.16	17.61	47.81	30.20		
	1.184	17.87	0.21	18.08	46.00	27.92		
	2.474	16.55	0.19	16.74	46.00	29.26		
3.840	13.81	0.38	14.19	46.00	31.81	AV		
	20.594	28.75	0.84	29.59	50.00	20.41		

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K316XWUS3D Humidity : 48%RH

Serial No. : E1204416-02/02 Date of Test : Apr 14, 2012

Test Mode : USB Play

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.150	41.38	0.23	41.61	66.00	24.39	QP
	0.267	30.64	0.25	30.89	61.20	30.31	
	1.054	29.21	0.32	29.53	56.00	26.47	
	3.173	29.96	0.42	30.38	56.00	25.62	
	8.501	31.81	0.71	32.52	60.00	27.48	
	20.377	38.71	0.92	39.63	60.00	20.37	
	0.150	30.20	0.23	30.43	56.00	25.57	AV
	0.267	20.90	0.25	21.15	51.20	30.05	
	1.054	19.60	0.32	19.92	46.00	26.08	
	3.173	20.31	0.42	20.73	46.00	25.27	
	8.501	21.90	0.71	22.61	50.00	27.39	
	20.377	28.31	0.92	29.23	50.00	20.77	
Neutral	0.151	47.81	0.13	47.94	65.96	18.02	QP
	0.398	32.46	0.16	32.62	57.90	25.28	
	0.923	30.03	0.22	30.25	56.00	25.75	
	1.197	32.23	0.21	32.44	56.00	23.56	
	2.581	31.08	0.20	31.28	56.00	24.72	
	17.568	38.58	0.79	39.37	60.00	20.63	
	0.151	36.60	0.13	36.73	55.96	19.23	AV
	0.398	22.75	0.16	22.91	47.90	24.99	
	0.923	20.10	0.22	20.32	46.00	25.68	
	1.197	22.31	0.21	22.52	46.00	23.48	
	2.581	20.50	0.20	20.70	46.00	25.30	
	17.568	28.70	0.79	29.49	50.00	20.51	

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K316XWUS3D Humidity : 48%RH

Serial No. : E1204416-02/02 Date of Test : Apr 14, 2012

Test Mode : LAN

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.151	39.34	0.23	39.57	65.96	26.39	QP
	0.529	26.22	0.34	26.56	56.00	29.44	
	1.060	26.32	0.32	26.64	56.00	29.36	
	2.384	28.57	0.40	28.97	56.00	27.03	
	3.985	25.13	0.49	25.62	56.00	30.38	
	20.594	38.54	0.94	39.48	60.00	20.52	
	0.151	30.10	0.23	30.33	55.96	25.63	AV
	0.529	18.20	0.34	18.54	46.00	27.46	
	1.060	17.10	0.32	17.42	46.00	28.58	
	2.384	19.50	0.40	19.90	46.00	26.10	
	3.985	16.20	0.49	16.69	46.00	29.31	
20.594	28.30	0.94	29.24	50.00	20.76		
Neutral	0.151	45.20	0.13	45.33	65.96	20.63	QP
	0.402	29.73	0.16	29.89	57.81	27.92	
	1.172	27.63	0.21	27.84	56.00	28.16	
	2.540	26.41	0.20	26.61	56.00	29.39	
	5.362	25.86	0.44	26.30	60.00	33.70	
	20.594	38.16	0.84	39.00	60.00	21.00	
	0.151	34.80	0.13	34.93	55.96	21.03	AV
	0.402	20.20	0.16	20.36	47.81	27.45	
	1.172	18.51	0.21	18.72	46.00	27.28	
	2.540	17.40	0.20	17.60	46.00	28.40	
	5.362	16.60	0.44	17.04	50.00	32.96	
	20.594	27.30	0.84	28.14	50.00	21.86	

TEST ENGINEER: LUY LV

4 RADIATED EMISSION TEST

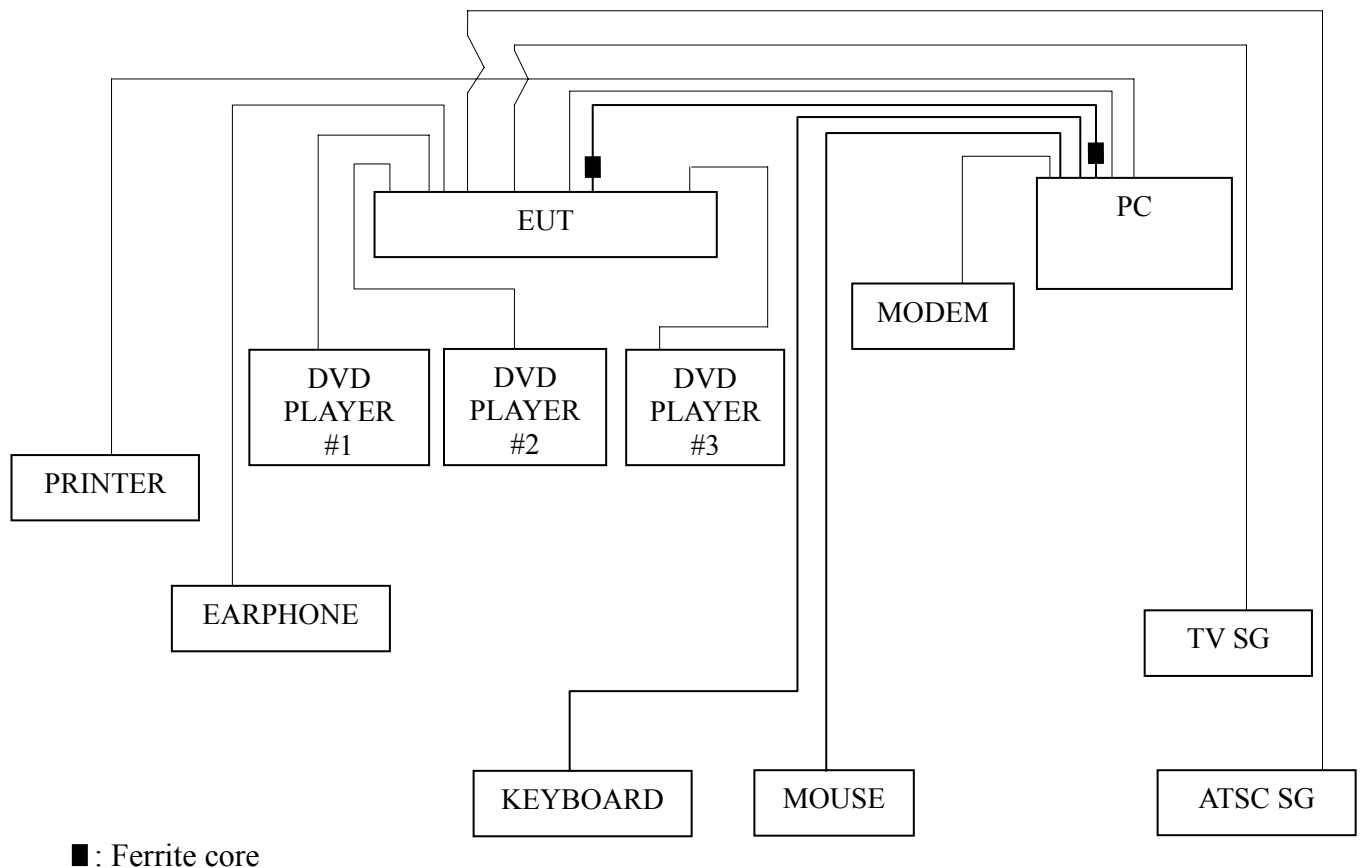
4.1 Test Equipment

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

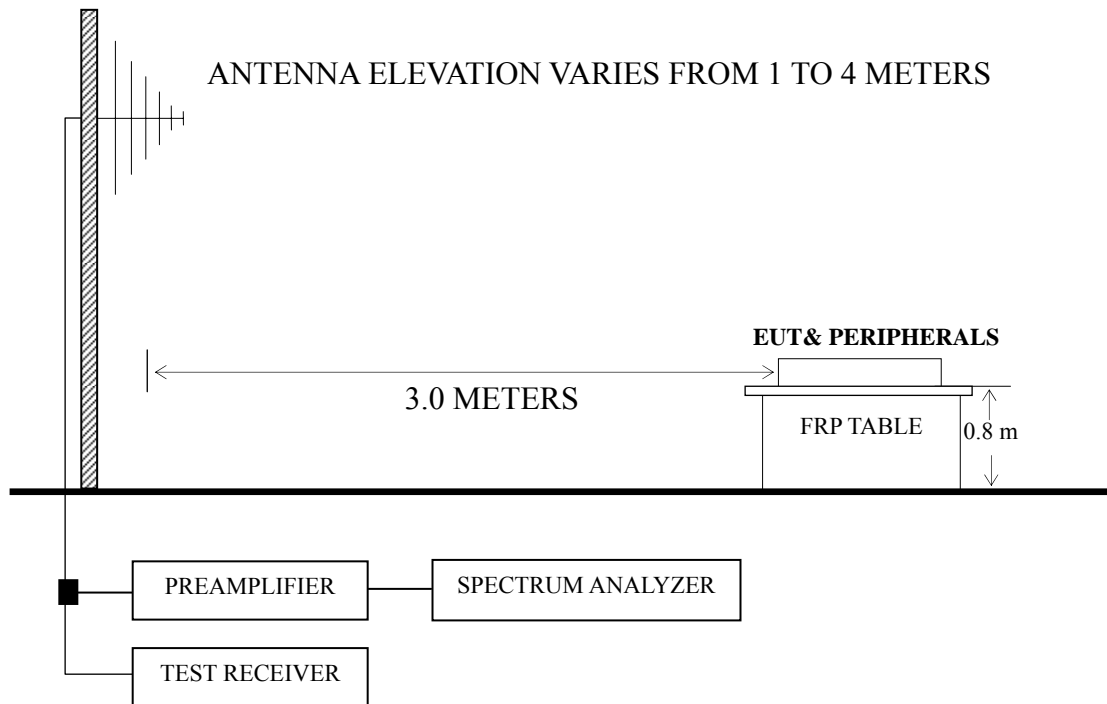
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESVS10	844594/001	Mar 22, 2012	Mar 22, 2013
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 18, 2012	Sep 18, 2012
3.	Bi-log Antenna	TESEQ	CBL6112D	23192	Dec 01, 2011	Dec 01, 2012
4.	Spectrum	Agilent	E7405A	MY45106600	Mar 22, 2012	Mar 22, 2013
5.	50Ω Coaxial Switch	Anritsu	MP59B	6200426390	Mar 18, 2012	Sep 18, 2012
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

4.2 Block Diagram of Test Setup

4.2.1 EUT and 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 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 640*480@60Hz test mode. The worst emission at horizontal polarization was detected at 594.000 MHz with corrected signal level of 42.63 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 330°. The worst emission at vertical polarization was detected at 597.450 MHz with corrected signal level of 39.43 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 80°.

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K316XWUS3D Humidity : 60%RH

Serial No. : E1204416-02/02 Date of Test : Apr 20, 2012

Test Mode : D-Sub 1024*768@60Hz

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	73.650	16.62	10.15	1.49	28.26	40.00	11.74
	132.820	23.66	10.77	2.12	36.55	43.50	6.95
	223.030	25.83	10.76	2.51	39.10	46.00	6.90
	297.720	21.69	13.63	2.75	38.07	46.00	7.93
	445.160	19.29	16.90	3.11	39.30	46.00	6.70
	593.570	16.73	18.17	3.45	38.35	46.00	7.65
Vertical	41.640	21.55	11.78	0.88	34.21	40.00	5.79
	86.260	19.23	10.83	1.68	31.74	40.00	8.26
	114.390	17.44	11.10	1.97	30.51	43.50	12.99
	223.030	25.76	10.76	2.51	39.03	46.00	6.97
	445.160	19.39	16.90	3.11	39.40	46.00	6.60
	585.810	19.93	18.13	3.44	41.50	46.00	4.50

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K316XWUS3D Humidity : 60%RH

Serial No. : E1204416-02/02 Date of Test : Apr 20, 2012

Test Mode : HDMI 1024*768@60Hz

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	41.640	18.58	11.78	0.88	31.24	40.00	8.76
	86.260	19.56	10.83	1.68	32.07	40.00	7.93
	227.880	25.23	10.97	2.53	38.73	46.00	7.27
	307.420	16.62	13.90	2.77	33.29	46.00	12.71
	590.660	14.25	18.16	3.44	35.85	46.00	10.15
	743.920	11.34	20.01	3.78	35.13	46.00	10.87
Vertical	73.650	23.71	10.15	1.49	35.35	40.00	4.65
	133.790	23.02	10.74	2.12	35.88	43.50	7.62
	224.000	23.87	10.80	2.52	37.19	46.00	8.81
	295.780	22.65	13.60	2.75	39.00	46.00	7.00
	448.070	19.47	16.95	3.11	39.53	46.00	6.47
	895.240	14.11	20.31	4.89	39.31	46.00	6.69

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K316XWUS3D Humidity : 60%RH

Serial No. : E1204416-02/02 Date of Test : Apr 20, 2012

Test Mode : D-Sub 800*600@60Hz

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	41.640	21.58	11.78	0.88	34.24	40.00	5.76
	86.260	19.56	10.83	1.68	32.07	40.00	7.93
	227.880	24.23	10.97	2.53	37.73	46.00	8.27
	307.420	18.62	13.90	2.77	35.29	46.00	10.71
	448.070	16.50	16.95	3.11	36.56	46.00	9.44
	590.660	19.25	18.16	3.44	40.85	46.00	5.15
Vertical	75.590	18.36	10.27	1.53	30.16	40.00	9.84
	133.790	24.02	10.74	2.12	36.88	43.50	6.62
	224.000	25.87	10.80	2.52	39.19	46.00	6.81
	295.780	22.65	13.60	2.75	39.00	46.00	7.00
	448.070	19.47	16.95	3.11	39.53	46.00	6.47
	746.830	15.67	20.01	3.80	39.48	46.00	6.52

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K316XWUS3 Humidity : 60%RH
D

Serial No. : E1204416-02/02 Date of Test : Apr 20, 2012

Test Mode : D-Sub 640*480@60Hz

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	43.580	23.31	10.86	0.89	35.06	40.00	4.94
	86.260	19.73	10.83	1.68	32.24	40.00	7.76
	226.910	25.75	10.93	2.53	39.21	46.00	6.79
	307.420	18.33	13.90	2.77	35.00	46.00	11.00
	446.130	17.05	16.92	3.11	37.08	46.00	8.92
	594.000	21.01	18.17	3.45	42.63	46.00	3.37
Vertical	72.680	18.98	10.08	1.47	30.53	40.00	9.47
	132.820	23.69	10.77	2.12	36.58	43.50	6.92
	223.030	24.14	10.76	2.51	37.41	46.00	8.59
	296.750	21.69	13.63	2.75	38.07	46.00	7.93
	446.130	17.97	16.92	3.11	38.00	46.00	8.00
	597.450	17.79	18.19	3.45	39.43	46.00	6.57

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K316XWUS3D Humidity : 60%RH

Serial No. : E1204416-02/02 Date of Test : Apr 20, 2012

Test Mode : USB Play

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	23.62	10.15	1.49	35.26	40.00	4.74
	132.820	23.66	10.77	2.12	36.55	43.50	6.95
	223.030	24.83	10.76	2.51	38.10	46.00	7.90
	297.720	21.69	13.63	2.75	38.07	46.00	7.93
	445.160	19.29	16.90	3.11	39.30	46.00	6.70
	593.570	16.73	18.17	3.45	38.35	46.00	7.65
Vertical	43.580	21.23	10.86	0.89	32.98	40.00	7.02
	73.650	20.95	10.15	1.49	32.59	40.00	7.41
	114.390	22.44	11.10	1.97	35.51	43.50	7.99
	151.250	22.99	10.39	2.24	35.62	43.50	7.88
	226.910	20.66	10.93	2.53	34.12	46.00	11.88
	445.160	19.39	16.90	3.11	39.40	46.00	6.60

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K316XWUS3D Humidity : 60%RH

Serial No. : E1204416-02/02 Date of Test : Apr 20, 2012

Test Mode : LAN

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	48.430	21.24	9.02	0.90	31.16	40.00	8.84
	71.710	20.47	9.99	1.45	31.91	40.00	8.09
	107.600	24.28	11.22	1.92	37.42	43.50	6.08
	296.750	22.27	13.63	2.75	38.65	46.00	7.35
	431.580	19.81	16.72	3.08	39.61	46.00	6.39
	540.220	18.63	17.84	3.34	39.81	46.00	6.19
Vertical	48.430	25.37	9.02	0.90	35.29	40.00	4.71
	107.600	23.77	11.22	1.92	36.91	43.50	6.59
	216.240	24.12	10.45	2.49	37.06	46.00	8.94
	323.910	21.55	14.38	2.82	38.75	46.00	7.25
	431.580	18.26	16.72	3.08	38.06	46.00	7.94
	647.890	14.35	18.85	3.58	36.78	46.00	9.22

TEST ENGINEER: RAVEN JIN

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Gasket	35X0.7X41mm\VGA\ROH	REALFINE	See Internal Photo Figure 24
		Haian County Magnetic Material No. 2 Factory	
		LETTALL	
		FEELUX	
Gasket	DAA25X20X75\ROH	REALFINE	See Internal Photo Figure 23
		Haian County Magnetic Material No. 2 Factory	
		LETTALL	
		FEELUX	
Gasket	DAA1002\ROH	REALFINE	See Internal Photo Figure 25
		Haian County Magnetic Material No. 2 Factory	
		LETTALL	
		FEELUX	

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.