

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

LCD TV

Model No.	Serial No.	Brand
LHD32V77MH	E1202222-01/01	Hisense

FCC ID : W9HLCDC0008

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

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Report No. : ACI-F11102A1
Date of Test : Mar 20 – 27, 2012
Date of Report : Mar 28, 2012

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TEST REPORT FOR FCC CERTIFICATE

Applicant : Hisense Electric Co., Ltd.
 Manufacturer #1 : Hisense Electric Co., Ltd.
 Manufacturer #2 : DELTA ELECTRONICS MEXICO S.A.DE C.V.
 EUT Description : LCD TV

Model No.	Serial No.	Brand	Power Supply
LHD32V77MH	E1202222-01/01	Hisense	120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2010
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 Sec.2.1; S/N: Refer to Sec.2.1) which was tested in 3m anechoic chamber Mar 20 – 27, 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.F11103A1, a Verification report.

Date of Test : Mar 20 – 27, 2012 Date of Report : Mar 28, 2012

Producer : 
 YENNY YU / Assistant

Review : 
 DIO YANG / Assistant 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 2010 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2010 AND ANSI C63.4-2003	15.109(a) Class B	Pass

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description : LCD TV

Type of EUT : Production Pre-product Pro-type

Model No. : LHD32V77MH

Serial No. : E1202222-01/01

Brand : Hisense

Note : The different list for all the models are as follows:

Report No.	Model No.	Rev. Summary	Edition No.	Data of Rev.
ACI-F11102	LHD32V77MH	Original Report.	0	Jul 27, 2011
ACI- F11102A1	LHD32V77MH	1. To add a new Panel. 2. To add a new power board.	Rev. A1	Mar 28, 2012

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

Manufacturer #1 : Hisense Electric Co., Ltd.
No.218 Qianwangang Road, Economy &
Technology Development Zone, Qingdao, China

Manufacturer #2 : DELTA ELECTRONICS MEXICO S.A.DE C.V.
UNO PONIENTE NO. 19955 CD INDUSTRIAL
NUEVA TIJUANA, B.C., MEXICO C.P.22444

LCD Panel : Manufacturer : LG Display
M/N : LC320WXE-SBV2

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

Remark:

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

Back Port:

- (1) One component of YPbPr2 Port
: Connected with DVD PLAYER #2
- (2) One component of YPbPr2 Audio Port
: Connected with DVD PLAYER #2
- (3) One HDMI1 Port
: Connected with DVD PLAYER #1
- (4) One HDMI2 Port
: Connected with DVD PLAYER #2
- (5) One AUDIO OUT Port
: Connected with Speaker
- (6) One component of AV Port
: Connected with DVD PLAYER #2
- (7) One Headphone Port
: Connected with Earphone
- (8) One ANT Port
: Connected with ATSC SG
- (9) One DIGITAL OUT Port
: Connected with DVD PLAYER #1
- (10) One SERVICE port
: Connected with PC as terminator

Side Port

- (1) One PC AUDIO Port
: Connected with PC
- (2) One VGA Port
: Connected with PC
- (3) One HDMI3 Port
: Connected with PC
- (4) One component of YPbPr1 Port
: Connected with DVD PLAYER #1
- (5) One component of YPbPr1 Audio Port
: Connected with DVD PLAYER #1
- (6) One USB port
: Connected with U-Disk as terminator

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, undetachable, 1.8m.
Certificate : CE/EMC, FCC DoC, VCCI, MIC, C-Tick,
BSMI

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 Speaker

Manufacturer : DIBA
Model Number : FS-04
Serial Number : 002

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 = 3.38dB
Radiated Emission Expanded Uncertainty (30-200MHz):	U = 4.58 dB (horizontal) U = 4.70 dB (vertical)
Radiated Emission Expanded Uncertainty (200M-1GHz):	U = 4.84 dB (horizontal) U = 4.70 dB (vertical)

3 CONDUCTED EMISSION TEST

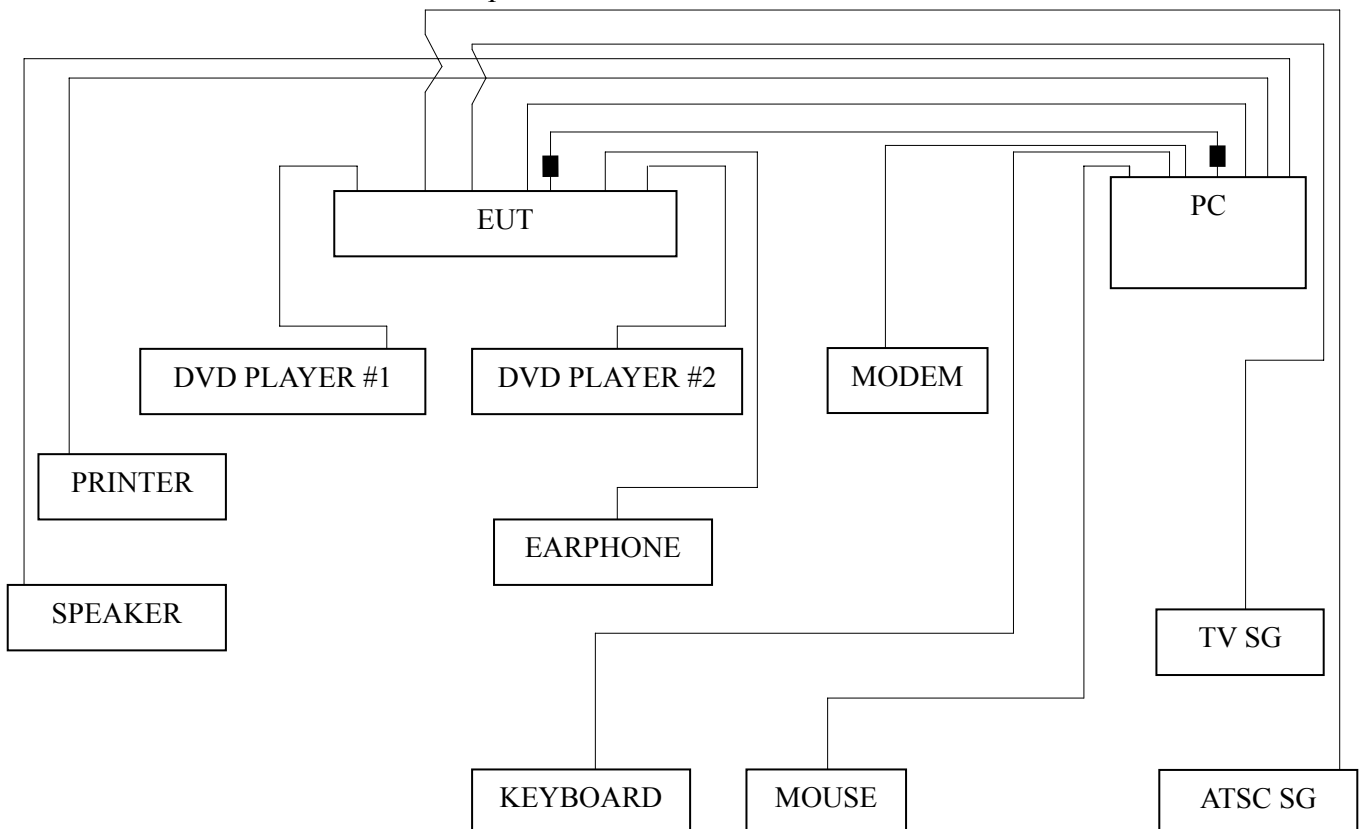
3.1 Test Equipment

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, 2011	Mar 22, 2012
2.	Artificial Mains Network (AMN #1)	R&S	ESH2-Z5	843890/011	Mar 22, 2011	Mar 22, 2012
3.	Artificial Mains Network (AMN #2)	R&S	ENV4200	100125	Mar 22, 2011	Mar 22, 2012
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Mar 18, 2012	Sep 18, 2012
5.	50 Ω Terminator	Anritsu	BNC	001	Mar 22, 2011	Mar 22, 2012
6.	Software	Audix	E3	SET00200 9804M592	--	--

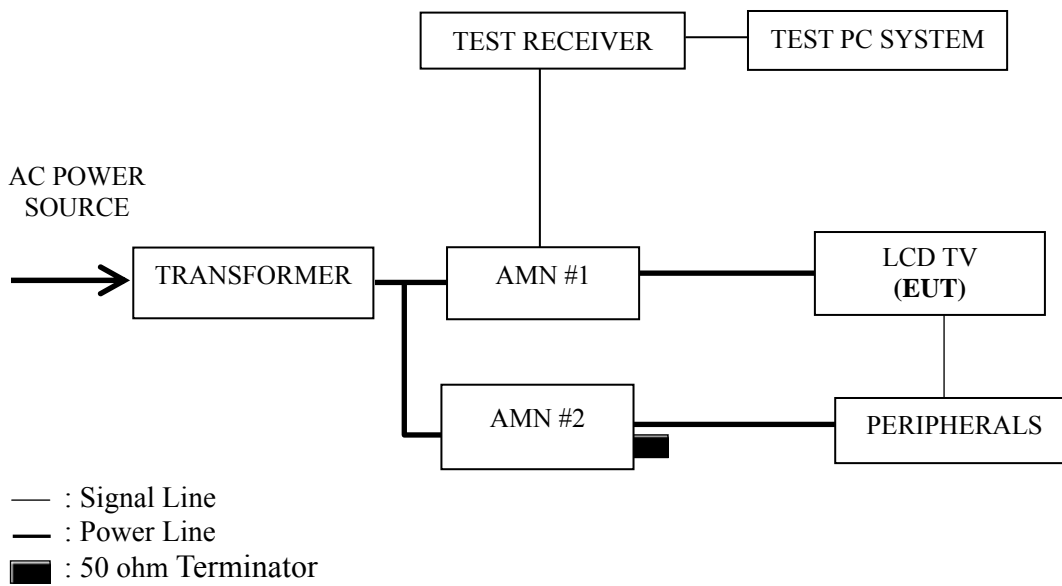
3.2 Block Diagram of Test Setup

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 Repeat above procedure 3.5.4 for difference test mode.

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

3.5.7 The test modes are as follows:

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

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 640*480@60Hz	P14
D-Sub 800*600@60Hz	P15
D-Sub 1024*768@60Hz	P16
HDMI 640*480@60Hz	P17
HDMI 800*600@60Hz	P18
HDMI 1024*768@60Hz	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 800*600@60Hz test mode. The worst emission is detected at 0.779 MHz (Quasi-Peak value) with corrected signal level of 38.75 dB (μ V) (limit is 56.00 dB (μ V)), when the Neutral of the EUT is connected to AMN.

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77MH Humidity : 48%RH

Serial No. : E1202222-01/01 Date of Test : Mar 20, 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	0.182	44.18	0.23	44.41	64.42	20.01	QP
	0.300	39.42	0.24	39.66	60.24	20.58	
	0.421	37.24	0.31	37.55	57.42	19.87	
	0.779	37.80	0.39	38.19	56.00	17.81	
	2.527	29.61	0.45	30.06	56.00	25.94	
	24.529	36.01	1.19	37.20	60.00	22.80	
	0.182	33.90	0.23	34.13	54.42	20.29	AV
	0.300	29.20	0.24	29.44	50.24	20.80	
	0.421	26.39	0.31	26.70	47.42	20.72	
	0.779	26.21	0.39	26.60	46.00	19.40	
	2.527	20.40	0.45	20.85	46.00	25.15	
	24.529	25.81	1.19	27.00	50.00	23.00	
Neutral	0.182	43.95	0.19	44.14	64.42	20.28	QP
	0.303	38.95	0.19	39.14	60.15	21.01	
	0.421	37.09	0.24	37.33	57.42	20.09	
	0.899	38.11	0.42	38.53	56.00	17.47	
	2.678	30.05	0.58	30.63	56.00	25.37	
	23.636	36.85	1.31	38.16	60.00	21.84	
	0.182	33.20	0.19	33.39	54.42	21.03	AV
	0.303	28.20	0.19	28.39	50.15	21.76	
	0.421	26.09	0.24	26.33	47.42	21.09	
	0.899	27.30	0.42	27.72	46.00	18.28	
	2.678	20.10	0.58	20.68	46.00	25.32	
	23.636	25.81	1.31	27.12	50.00	22.88	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77MH Humidity : 48%RH

Serial No. : E1202222-01/01 Date of Test : Mar 20, 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	0.182	44.59	0.23	44.82	64.42	19.60	QP
	0.303	38.95	0.24	39.19	60.15	20.96	
	0.421	36.08	0.31	36.39	57.42	21.03	
	0.779	37.97	0.39	38.36	56.00	17.64	
	2.527	30.45	0.45	30.90	56.00	25.10	
	24.400	36.58	1.19	37.77	60.00	22.23	
	0.182	33.20	0.23	33.43	54.42	20.99	AV
	0.303	28.80	0.24	29.04	50.15	21.11	
	0.421	25.39	0.31	25.70	47.42	21.72	
	0.779	26.21	0.39	26.60	46.00	19.40	
	2.527	20.60	0.45	21.05	46.00	24.95	
	24.400	25.51	1.19	26.70	50.00	23.30	
Neutral	0.182	44.10	0.19	44.29	64.42	20.13	QP
	0.300	40.95	0.19	41.14	60.24	19.10	
	0.421	36.66	0.24	36.90	57.42	20.52	
	0.779	38.44	0.31	38.75	56.00	17.25	
	2.707	29.90	0.58	30.48	56.00	25.52	
	24.400	37.23	1.33	38.56	60.00	21.44	
	0.182	34.10	0.19	34.29	54.42	20.13	AV
	0.300	30.60	0.19	30.79	50.24	19.45	
	0.421	26.59	0.24	26.83	47.42	20.59	
	0.779	28.21	0.31	28.52	46.00	17.48	
	2.707	20.10	0.58	20.68	46.00	25.32	
	24.400	27.90	1.33	29.23	50.00	20.77	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77MH Humidity : 48%RH

Serial No. : E1202222-01/01 Date of Test : Mar 20, 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	0.182	44.12	0.23	44.35	64.42	20.07	QP
	0.300	40.81	0.24	41.05	60.24	19.19	
	0.421	37.17	0.31	37.48	57.42	19.94	
	0.899	37.53	0.38	37.91	56.00	18.09	
	2.334	30.78	0.45	31.23	56.00	24.77	
	24.142	36.91	1.19	38.10	60.00	21.90	
	0.182	34.40	0.23	34.63	54.42	19.79	AV
	0.300	29.90	0.24	30.14	50.24	20.10	
	0.421	26.79	0.31	27.10	47.42	20.32	
	0.899	26.19	0.38	26.57	46.00	19.43	
	2.334	20.50	0.45	20.95	46.00	25.05	
	24.142	26.90	1.19	28.09	50.00	21.91	
Neutral	0.180	44.27	0.19	44.46	64.50	20.04	QP
	0.300	39.14	0.19	39.33	60.24	20.91	
	0.421	36.90	0.24	37.14	57.42	20.28	
	0.899	37.79	0.42	38.21	56.00	17.79	
	2.334	29.60	0.57	30.17	56.00	25.83	
	24.142	35.63	1.33	36.96	60.00	23.04	
	0.180	33.50	0.19	33.69	54.50	20.81	AV
	0.300	28.30	0.19	28.49	50.24	21.75	
	0.421	25.89	0.24	26.13	47.42	21.29	
	0.899	27.80	0.42	28.22	46.00	17.78	
	2.334	20.10	0.57	20.67	46.00	25.33	
	24.142	25.50	1.33	26.83	50.00	23.17	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77MH Humidity : 48%RH

Serial No. : E1202222-01/01 Date of Test : Mar 20, 2012

Test Mode : HDMI 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	0.180	44.13	0.23	44.36	64.50	20.14	QP
	0.300	39.90	0.24	40.14	60.24	20.10	
	0.421	37.05	0.31	37.36	57.42	20.06	
	0.779	37.02	0.39	37.41	56.00	18.59	
	2.527	29.95	0.45	30.40	56.00	25.60	
	23.636	36.41	1.17	37.58	60.00	22.42	
	0.180	34.90	0.23	35.13	54.50	19.37	AV
	0.300	29.30	0.24	29.54	50.24	20.70	
	0.421	27.79	0.31	28.10	47.42	19.32	
	0.779	27.41	0.39	27.80	46.00	18.20	
	2.527	20.30	0.45	20.75	46.00	25.25	
	23.636	26.51	1.17	27.68	50.00	22.32	
Neutral	0.180	44.33	0.19	44.52	64.50	19.98	QP
	0.300	39.93	0.19	40.12	60.24	20.12	
	0.421	36.89	0.24	37.13	57.42	20.29	
	0.779	37.23	0.31	37.54	56.00	18.46	
	2.527	30.11	0.57	30.68	56.00	25.32	
	24.400	35.74	1.33	37.07	60.00	22.93	
	0.180	34.60	0.19	34.79	54.50	19.71	AV
	0.300	30.40	0.19	30.59	50.24	19.65	
	0.421	26.19	0.24	26.43	47.42	20.99	
	0.779	27.21	0.31	27.52	46.00	18.48	
	2.527	20.40	0.57	20.97	46.00	25.03	
	24.400	25.90	1.33	27.23	50.00	22.77	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77MH Humidity : 48%RH

Serial No. : E1202222-01/01 Date of Test : Mar 20, 2012

Test Mode : HDMI 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	0.182	44.19	0.23	44.42	64.42	20.00	QP	
	0.300	38.82	0.24	39.06	60.24	21.18		
	0.421	37.19	0.31	37.50	57.42	19.92		
	0.899	36.94	0.38	37.32	56.00	18.68		
	2.707	30.16	0.45	30.61	56.00	25.39		
	23.888	36.96	1.19	38.15	60.00	21.85	AV	
	0.182	34.30	0.23	34.53	54.42	19.89		
	0.300	28.10	0.24	28.34	50.24	21.90		
	0.421	27.29	0.31	27.60	47.42	19.82		
	0.899	26.29	0.38	26.67	46.00	19.33		
2.707	20.31	0.45	20.76	46.00	25.24	QP		
23.888	26.79	1.19	27.98	50.00	22.02			
0.182	44.68	0.19	44.87	64.42	19.55			
0.300	39.33	0.19	39.52	60.24	20.72			
0.421	37.05	0.24	37.29	57.42	20.13			
Neutral	0.899	37.06	0.42	37.48	56.00	18.52	QP	
	2.334	30.93	0.57	31.50	56.00	24.50		
	24.400	36.17	1.33	37.50	60.00	22.50		
	0.182	34.80	0.19	34.99	54.42	19.43		AV
	0.300	29.30	0.19	29.49	50.24	20.75		
	0.421	27.49	0.24	27.73	47.42	19.69		
	0.899	26.90	0.42	27.32	46.00	18.68		
	2.334	20.10	0.57	20.67	46.00	25.33		
	24.400	26.40	1.33	27.73	50.00	22.27		

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77MH Humidity : 48%RH

Serial No. : E1202222-01/01 Date of Test : Mar 20, 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	0.180	43.70	0.23	43.93	64.50	20.57	QP
	0.300	40.72	0.24	40.96	60.24	19.28	
	0.421	36.99	0.31	37.30	57.42	20.12	
	0.779	37.93	0.39	38.32	56.00	17.68	
	2.422	29.65	0.45	30.10	56.00	25.90	
	23.636	37.09	1.17	38.26	60.00	21.74	
	0.180	33.80	0.23	34.03	54.50	20.47	AV
	0.300	30.60	0.24	30.84	50.24	19.40	
	0.421	26.69	0.31	27.00	47.42	20.42	
	0.779	27.71	0.39	28.10	46.00	17.90	
	2.422	18.10	0.45	18.55	46.00	27.45	
	23.636	26.71	1.17	27.88	50.00	22.12	
Neutral	0.180	44.25	0.19	44.44	64.50	20.06	QP
	0.300	39.74	0.19	39.93	60.24	20.31	
	0.481	36.16	0.24	36.40	56.32	19.92	
	0.899	37.98	0.42	38.40	56.00	17.60	
	2.334	30.21	0.57	30.78	56.00	25.22	
	24.142	35.41	1.33	36.74	60.00	23.26	
	0.180	34.90	0.19	35.09	54.50	19.41	AV
	0.300	30.70	0.19	30.89	50.24	19.35	
	0.481	26.60	0.24	26.84	46.32	19.48	
	0.899	27.40	0.42	27.82	46.00	18.18	
	2.334	20.40	0.57	20.97	46.00	25.03	
	24.142	24.80	1.33	26.13	50.00	23.87	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

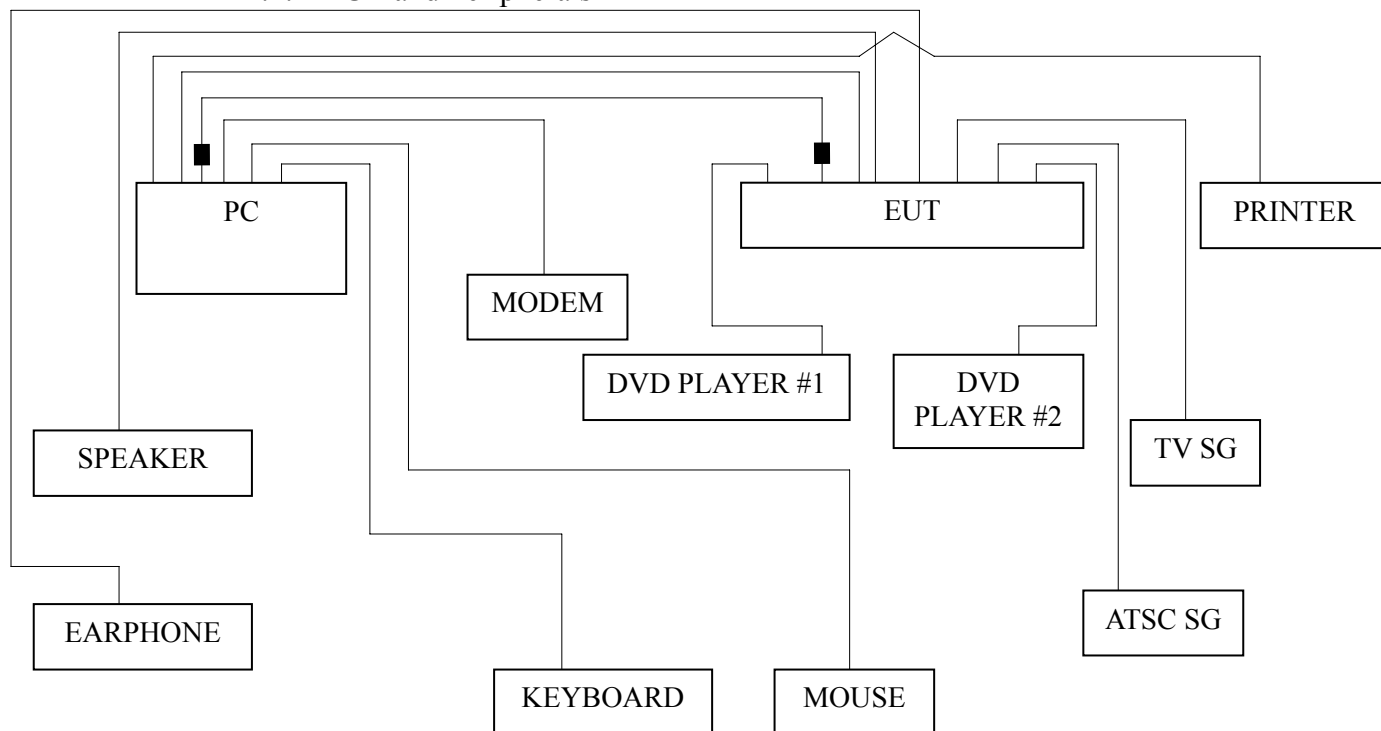
4.1 Test Equipment

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	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 Analyzer	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	--	--

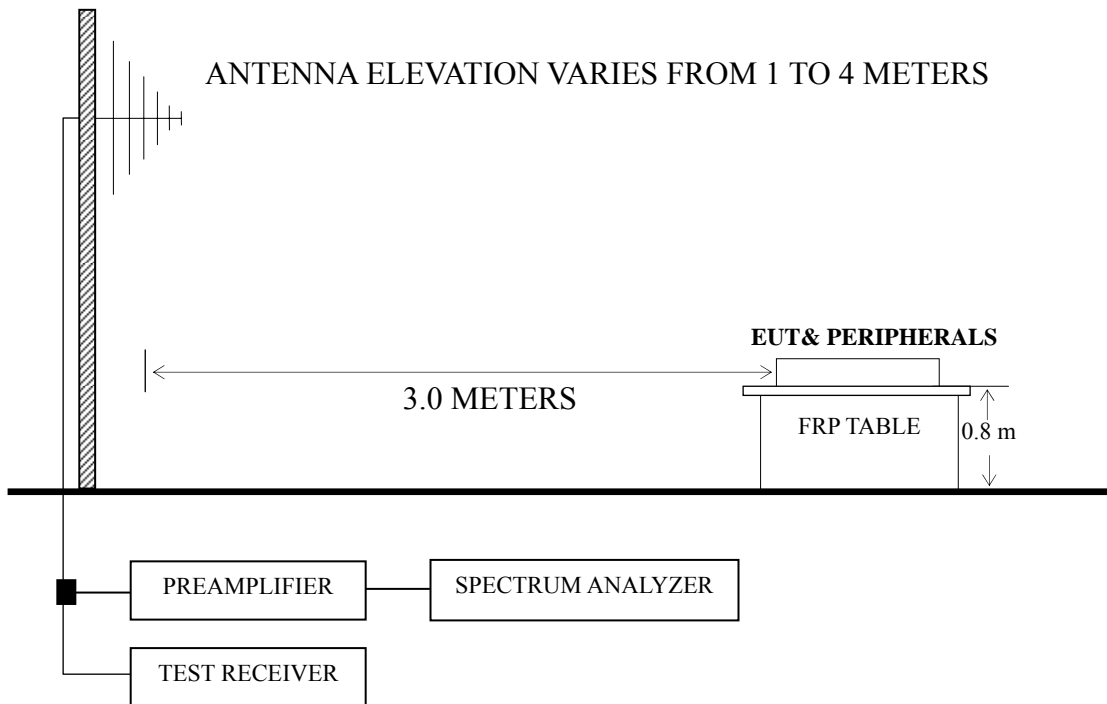
4.2 Block Diagram of Test Setup

4.2.1 EUT and Peripherals



■ : Ferrite core

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.

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 640*480@60Hz	P24
D-Sub 800*600@60Hz	P25
D-Sub 1024*768@60Hz	P26
HDMI 640*480@60Hz	P27
HDMI 800*600@60Hz	P28
HDMI 1024*768@60Hz	P29

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 800*600@60Hz test mode. The worst emission at horizontal polarization was detected at 30.000MHz with corrected signal level of 35.88 dB ($\mu\text{V}/\text{m}$) (limit is 40.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.70 m height and the turntable was at 350°. The worst emission at vertical polarization was detected at 213.330 MHz with corrected signal level of 35.82 dB ($\mu\text{V}/\text{m}$) (limit is 43.50 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.60 m height and the turntable was at 240°.

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77MH Humidity : 60%RH

Serial No. : E1202222-01/01 Date of Test : Mar 27, 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	75.590	16.96	10.27	1.53	28.76	40.00	11.24
	150.280	20.58	10.41	2.23	33.22	43.50	10.28
	210.420	21.99	10.22	2.46	34.67	43.50	8.83
	267.650	20.69	12.70	2.66	36.05	46.00	9.95
	301.600	21.36	13.77	2.76	37.89	46.00	8.11
	588.720	11.10	18.15	3.44	32.69	46.00	13.31
Vertical	59.100	17.38	9.07	1.16	27.61	40.00	12.39
	93.050	16.48	11.12	1.77	29.37	43.50	14.13
	159.980	18.61	10.25	2.27	31.13	43.50	12.37
	209.450	20.52	10.18	2.46	33.16	43.50	10.34
	300.630	24.58	13.73	2.76	41.07	46.00	4.93
	735.190	10.19	19.90	3.78	33.87	46.00	12.13

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77MH Humidity : 60%RH

Serial No. : E1202222-01/01 Date of Test : Mar 27, 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	30.000	16.78	18.30	0.80	35.88	40.00	4.12
	59.100	18.17	9.07	1.16	28.40	40.00	11.60
	94.020	17.41	11.15	1.78	30.34	43.50	13.16
	159.980	21.78	10.25	2.27	34.30	43.50	9.20
	265.710	14.35	12.62	2.65	29.62	46.00	16.38
	609.090	15.69	18.33	3.49	37.51	46.00	8.49
Vertical	75.590	17.40	10.27	1.53	29.20	40.00	10.80
	151.250	20.08	10.39	2.24	32.71	43.50	10.79
	213.330	23.02	10.33	2.47	35.82	43.50	7.68
	265.710	22.08	12.62	2.65	37.35	46.00	8.65
	297.720	17.86	13.63	2.75	34.24	46.00	11.76
	731.310	10.14	19.83	3.75	33.72	46.00	12.28

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77MH Humidity : 60%RH

Serial No. : E1202222-01/01 Date of Test : Mar 27, 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	88.200	16.95	10.93	1.70	29.58	43.50	13.92
	152.220	22.83	10.37	2.24	35.44	43.50	8.06
	217.200	26.70	10.48	2.50	39.68	46.00	6.32
	301.600	21.62	13.77	2.76	38.15	46.00	7.85
	497.540	12.11	17.58	3.27	32.96	46.00	13.04
	778.840	12.52	20.37	3.86	36.75	46.00	9.25
Vertical	59.100	17.67	9.07	1.16	27.90	40.00	12.10
	93.050	17.04	11.12	1.77	29.93	43.50	13.57
	159.980	20.71	10.25	2.27	33.23	43.50	10.27
	209.450	24.37	10.18	2.46	37.01	43.50	6.49
	301.600	23.67	13.77	2.76	40.20	46.00	5.80
	604.240	12.55	18.26	3.47	34.28	46.00	11.72

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77MH Humidity : 60%RH

Serial No. : E1202222-01/01 Date of Test : Mar 27, 2012

Test Mode : HDMI 640*480@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	74.620	19.89	10.21	1.51	31.61	40.00	8.39
	150.280	19.58	10.41	2.23	32.22	43.50	11.28
	210.420	18.99	10.22	2.46	31.67	43.50	11.83
	301.600	19.36	13.77	2.76	35.89	46.00	10.11
	588.720	8.10	18.15	3.44	29.69	46.00	16.31
	752.650	9.45	20.09	3.80	33.34	46.00	12.66
Vertical	30.970	11.91	17.78	0.81	30.50	40.00	9.50
	93.050	14.48	11.12	1.77	27.37	43.50	16.13
	209.450	17.52	10.18	2.46	30.16	43.50	13.34
	300.630	22.58	13.73	2.76	39.07	46.00	6.93
	526.640	4.72	17.76	3.33	25.81	46.00	20.19
	735.190	8.19	19.90	3.78	31.87	46.00	14.13

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77MH Humidity : 60%RH

Serial No. : E1202222-01/01 Date of Test : Mar 27, 2012

Test Mode : HDMI 800*600@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	30.970	12.97	17.78	0.81	31.56	40.00	8.44
	94.020	12.41	11.15	1.78	25.34	43.50	18.16
	209.450	17.83	10.18	2.46	30.47	43.50	13.03
	301.600	13.00	13.77	2.76	29.53	46.00	16.47
	609.090	10.69	18.33	3.49	32.51	46.00	13.49
	871.960	11.72	20.38	4.60	36.70	46.00	9.30
Vertical	75.590	11.40	10.27	1.53	23.20	40.00	16.80
	151.250	14.08	10.39	2.24	26.71	43.50	16.79
	213.330	17.02	10.33	2.47	29.82	43.50	13.68
	301.600	15.25	13.77	2.76	31.78	46.00	14.22
	506.270	5.59	17.64	3.28	26.51	46.00	19.49
	785.630	4.96	20.47	3.86	29.29	46.00	16.71

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LHD32V77MH Humidity : 60%RH

Serial No. : E1202222-01/01 Date of Test : Mar 27, 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	88.200	12.95	10.93	1.70	25.58	43.50	17.92
	152.220	18.83	10.37	2.24	31.44	43.50	12.06
	217.210	21.10	10.48	2.50	34.08	46.00	11.92
	301.600	17.62	13.77	2.76	34.15	46.00	11.85
	497.540	8.11	17.58	3.27	28.96	46.00	17.04
	872.930	8.34	20.37	4.60	33.31	46.00	12.69
Vertical	33.880	9.91	16.26	0.83	27.00	40.00	13.00
	159.980	15.71	10.25	2.27	28.23	43.50	15.27
	209.450	19.37	10.18	2.46	32.01	43.50	11.49
	301.600	18.67	13.77	2.76	35.20	46.00	10.80
	451.950	5.54	17.01	3.13	25.68	46.00	20.32
	604.240	7.55	18.26	3.47	29.28	46.00	16.72

TEST ENGINEER: RAVEN JIN

5 DEVIATION TO TEST SPECIFICATIONS

None.

6 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Ferrite core	ZCAT3035-1330\ROH	FEELUX	See Internal Photos Figure 12
		Rui Feng Electronic Co., Ltd.	
		Hai An Magnetic Material No.2 Factory	
		JIANGSU LETTALL ELECTRONICS CO., LTD.	
Ferrite core	ZCAT2132-1130\ROH	FEELUX	See Internal Photos Figure 13
		Rui Feng Electronic Co., Ltd.	
		Hai An Magnetic Material No.2 Factory	
		JIANGSU LETTALL ELECTRONICS CO., LTD.	

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)