

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

LED LCD TV

Model No.	Serial No.	Brand
LHD32D77WUS	E1204418-01/01	Hisense
32D77W	--	

FCC ID : W9HLCDC0014

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

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Report No. : ACI-F12077
Date of Test : Apr 14 – 22, 2012
Date of Report : May 03, 2012

TABLE OF CONTENTS

	Page
1 SUMMARY OF STANDARDS AND RESULTS	4
1.1 Description of Standards and Results.....	4
2 GENERAL INFORMATION	5
2.1 Description of Equipment Under Test.....	5
2.2 Peripherals.....	6
2.3 Description of Test Facility.....	8
2.4 Measurement Uncertainty.....	8
3 CONDUCTED EMISSION TEST	9
3.1 Test Equipment.....	9
3.2 Block Diagram of Test Setup.....	9
3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)].....	10
3.4 Test Configuration.....	10
3.5 Operating Condition of EUT.....	11
3.6 Test Procedures.....	11
3.7 Test Results.....	12
4 RADIATED EMISSION TEST	19
4.1 Test Equipment.....	19
4.2 Block Diagram of Test Setup.....	19
4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)].....	20
4.4 Test Configuration.....	20
4.5 Operating Condition of EUT.....	20
4.6 Test Procedures.....	21
4.7 Test Results.....	21
5 DEBUG DESCRIPTION	28
6 DEVIATION TO TEST SPECIFICATIONS	29

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
LHD32D77WUS	E1204418-01/01	Hisense	120V/60Hz
32D77W	--		

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 – 22, 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.

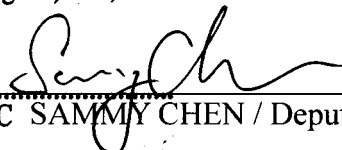
The test results for EUT's TV functions are contained in No.F12078, a Verification report.

Date of Test : Apr 14 – 22, 2012 Date of Report : May 03, 2012

Producer : 
KATHY WANG / 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 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
LHD32D77WUS	E1204418-01/01	Hisense
32D77W	--	

Brand : Hisense

Note : The above models are all the same except for the different model name.
The LHD32D77WUS 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 : LG Display Co., Ltd.
M/N : LC320DXN-SER1

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 HDMI1 Port : Connected with PC
- (2) One ANT Port : Connected with ATSC SG / TV SG
- (3) One component of YPbPr Port : Connected with DVD PLAYER #1
- (4) One component of YPbPr Audio Port : Connected with DVD PLAYER #1
- (5) One component of AV Port : Connected with DVD PLAYER #1
- (6) One VGA Port : Connected with PC
- (7) One PC/DVI Audio In Port : Connected with PC
- (8) One LAN Port : Connected with PC
- (9) One USB Port : Connected with U-Disk

Back Port:

- (10) One HDMI2 Port : Connected with DVD PLAYER #1
- (11) One HDMI3 Port : Connected with DVD PLAYER #2
- (12) One HDMI4 Port : Connected with DVD PLAYER #3
- (13) One Headphone Port : Connected with Earphone
- (14) One DIGITAL AUDIO OUT Port : Connected with DVD PLAYER #1

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

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

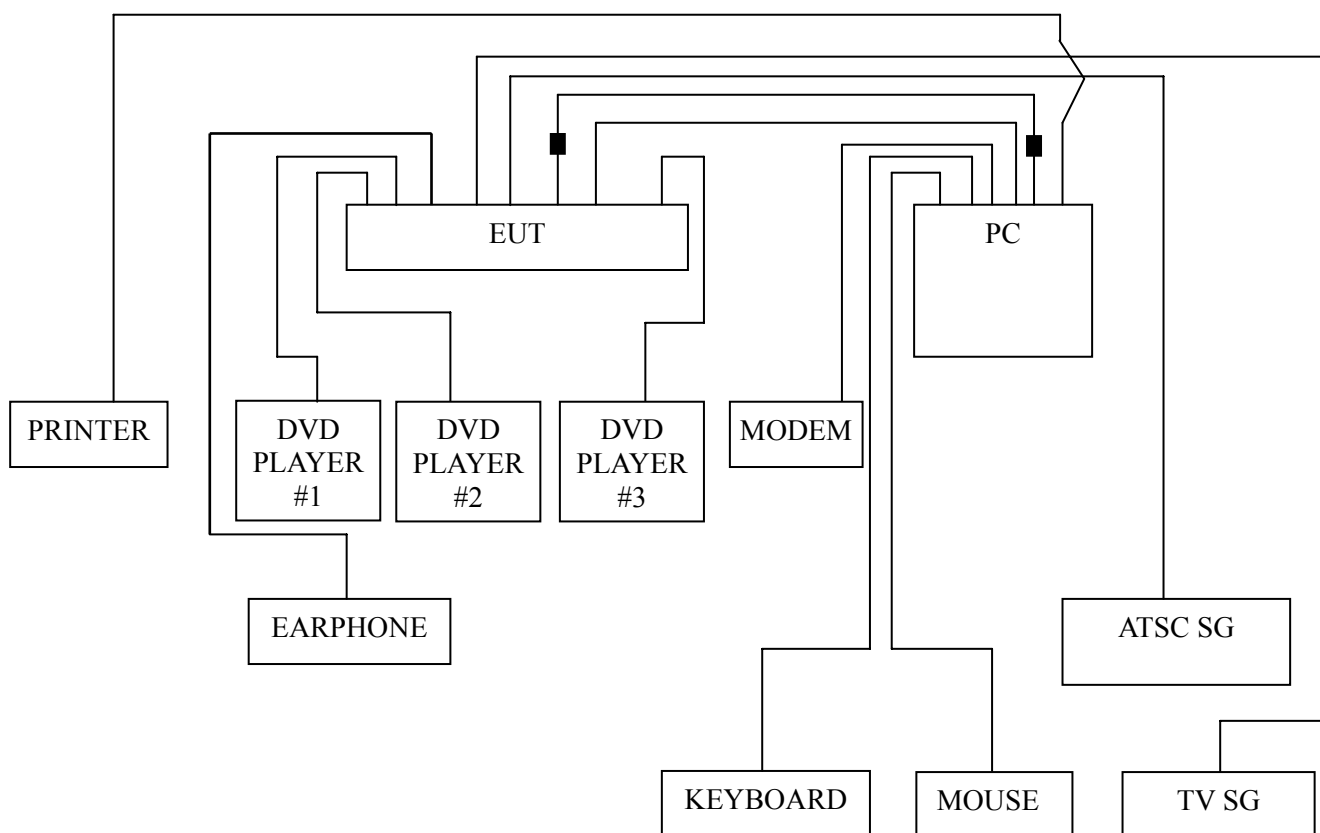
3.1 Test Equipment

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	--	--

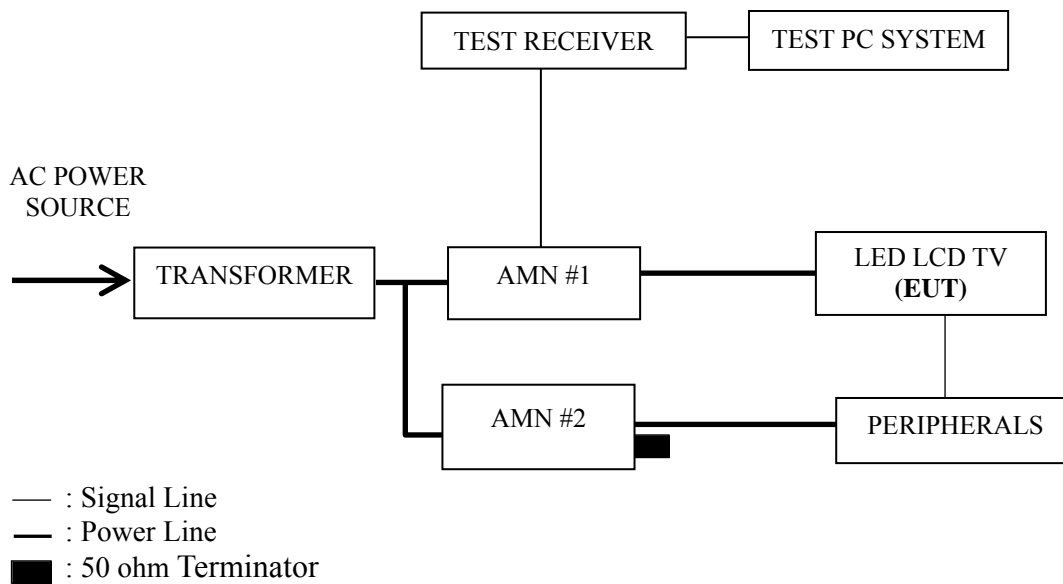
3.2 Block Diagram of Test Setup

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
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 LAN test mode. The worst emission is detected at 11.996 MHz (Quasi- Peak Value) with corrected signal level of 41.43 dB (μ V) (limit is 60.00 dB (μ V)), when the Neutral of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32D77WUS Humidity : 48%RH

Serial No. : E1204418-01/01 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	0.170	38.90	0.24	39.14	64.94	25.80	QP
	0.489	27.84	0.35	28.19	56.19	28.00	
	1.487	27.35	0.37	27.72	56.00	28.28	
	3.840	31.52	0.48	32.00	56.00	24.00	
	11.559	37.23	0.75	37.98	60.00	22.02	
	19.740	30.79	0.92	31.71	60.00	28.29	
	0.170	28.60	0.24	28.84	54.94	26.10	AV
	0.489	17.90	0.35	18.25	46.19	27.94	
	1.487	17.60	0.37	17.97	46.00	28.03	
	3.840	21.60	0.48	22.08	46.00	23.92	
	11.559	27.30	0.75	28.05	50.00	21.95	
	19.740	20.45	0.92	21.37	50.00	28.63	
Neutral	0.169	40.11	0.12	40.23	64.99	24.76	QP
	0.621	28.18	0.19	28.37	56.00	27.63	
	1.197	27.17	0.21	27.38	56.00	28.62	
	3.328	30.70	0.32	31.02	56.00	24.98	
	12.920	38.55	0.67	39.22	60.00	20.78	
	19.021	31.76	0.82	32.58	60.00	27.42	
	0.169	30.20	0.12	30.32	54.99	24.67	AV
	0.621	18.30	0.19	18.49	46.00	27.51	
	1.197	17.41	0.21	17.62	46.00	28.38	
	3.328	20.50	0.32	20.82	46.00	25.18	
	12.920	28.60	0.67	29.27	50.00	20.73	
	19.021	21.59	0.82	22.41	50.00	27.59	

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32D77WUS Humidity : 48%RH

Serial No. : E1204418-01/01 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	0.166	38.52	0.24	38.76	65.16	26.40	QP	
	0.494	29.11	0.35	29.46	56.10	26.64		
	1.197	27.29	0.33	27.62	56.00	28.38		
	4.224	30.68	0.49	31.17	56.00	24.83		
	10.905	38.67	0.74	39.41	60.00	20.59		
	19.532	30.93	0.92	31.85	60.00	28.15		
	0.166	28.75	0.24	28.99	55.16	26.17	AV	
	0.494	18.80	0.35	19.15	46.10	26.95		
	1.197	17.40	0.33	17.73	46.00	28.27		
	4.224	20.70	0.49	21.19	46.00	24.81		
	10.905	28.70	0.74	29.44	50.00	20.56		
	19.532	20.80	0.92	21.72	50.00	28.28		
	Neutral	0.168	40.32	0.13	40.45	65.08	24.63	QP
		0.494	28.28	0.17	28.45	56.10	27.65	
1.269		26.87	0.22	27.09	56.00	28.91		
2.962		30.35	0.23	30.58	56.00	25.42		
12.124		40.38	0.58	40.96	60.00	19.04		
19.740		32.17	0.82	32.99	60.00	27.01		
0.168		30.39	0.13	30.52	55.08	24.56	AV	
0.494		18.35	0.17	18.52	46.10	27.58		
1.269		16.90	0.22	17.12	46.00	28.88		
2.962		20.40	0.23	20.63	46.00	25.37		
12.124		30.44	0.58	31.02	50.00	18.98		
19.740		22.30	0.82	23.12	50.00	26.88		

TEST ENGINEER: L V Y L V

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32D77WUS Humidity : 48%RH

Serial No. : E1204418-01/01 Date of Test : Apr 14, 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	0.168	38.90	0.24	39.14	65.08	25.94	QP	
	0.592	28.23	0.26	28.49	56.00	27.51		
	1.269	27.35	0.34	27.69	56.00	28.31		
	4.027	30.50	0.49	30.99	56.00	25.01		
	11.996	38.80	0.76	39.56	60.00	20.44		
	19.740	29.49	0.92	30.41	60.00	29.59		
	0.168	28.70	0.24	28.94	55.08	26.14	AV	
	0.592	18.35	0.26	18.61	46.00	27.39		
	1.269	17.43	0.34	17.77	46.00	28.23		
	4.027	20.60	0.49	21.09	46.00	24.91		
	11.996	28.47	0.76	29.23	50.00	20.77		
	19.740	19.64	0.92	20.56	50.00	29.44		
	Neutral	0.172	39.17	0.12	39.29	64.86	25.57	QP
		0.489	28.47	0.17	28.64	56.19	27.55	
1.269		27.18	0.22	27.40	56.00	28.60		
4.315		31.51	0.40	31.91	56.00	24.09		
11.683		40.36	0.54	40.90	60.00	19.10		
19.224		30.23	0.82	31.05	60.00	28.95		
0.172		29.15	0.12	29.27	54.86	25.59	AV	
0.489		18.65	0.17	18.82	46.19	27.37		
1.269		17.35	0.22	17.57	46.00	28.43		
4.315		21.60	0.40	22.00	46.00	24.00		
11.683		30.45	0.54	30.99	50.00	19.01		
19.224		20.43	0.82	21.25	50.00	28.75		

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32D77WUS Humidity : 48%RH

Serial No. : E1204418-01/01 Date of Test : Apr 14, 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	0.169	38.14	0.24	38.38	64.99	26.61	QP
	0.489	28.55	0.35	28.90	56.19	27.29	
	1.480	27.33	0.37	27.70	56.00	28.30	
	3.799	30.36	0.48	30.84	56.00	25.16	
	11.021	37.36	0.74	38.10	60.00	21.90	
	20.377	28.55	0.92	29.47	60.00	30.53	
	0.169	28.30	0.24	28.54	54.99	26.45	AV
	0.489	18.60	0.35	18.95	46.19	27.24	
	1.480	17.41	0.37	17.78	46.00	28.22	
	3.799	20.60	0.48	21.08	46.00	24.92	
	11.021	27.60	0.74	28.34	50.00	21.66	
	20.377	18.61	0.92	19.53	50.00	30.47	
Neutral	0.168	39.94	0.13	40.07	65.08	25.01	QP
	0.627	28.16	0.19	28.35	56.00	27.65	
	1.269	26.92	0.22	27.14	56.00	28.86	
	4.027	31.33	0.40	31.73	56.00	24.27	
	11.807	40.50	0.55	41.05	60.00	18.95	
	19.532	31.74	0.82	32.56	60.00	27.44	
	0.168	29.79	0.13	29.92	55.08	25.16	AV
	0.627	18.15	0.19	18.34	46.00	27.66	
	1.269	16.80	0.22	17.02	46.00	28.98	
	4.027	21.49	0.40	21.89	46.00	24.11	
	11.807	30.59	0.55	31.14	50.00	18.86	
	19.532	21.89	0.82	22.71	50.00	27.29	

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32D77WUS Humidity : 48%RH

Serial No. : E1204418-01/01 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	0.169	36.62	0.24	36.86	64.99	28.13	QP
	0.489	28.75	0.35	29.10	56.19	27.09	
	1.480	27.15	0.37	27.52	56.00	28.48	
	4.070	31.16	0.49	31.65	56.00	24.35	
	11.021	37.50	0.74	38.24	60.00	21.76	
	19.740	29.58	0.92	30.50	60.00	29.50	
	0.169	26.80	0.24	27.04	54.99	27.95	AV
	0.489	18.60	0.35	18.95	46.19	27.24	
	1.480	17.43	0.37	17.80	46.00	28.20	
	4.070	21.30	0.49	21.79	46.00	24.21	
	11.021	27.36	0.74	28.10	50.00	21.90	
	19.740	19.45	0.92	20.37	50.00	29.63	
Neutral	0.170	37.31	0.12	37.43	64.94	27.51	QP
	0.567	28.08	0.17	28.25	56.00	27.75	
	1.262	27.13	0.22	27.35	56.00	28.65	
	3.509	31.14	0.34	31.48	56.00	24.52	
	10.125	39.27	0.48	39.75	60.00	20.25	
	19.326	30.56	0.82	31.38	60.00	28.62	
	0.170	27.45	0.12	27.57	54.94	27.37	AV
	0.567	18.31	0.17	18.48	46.00	27.52	
	1.262	17.45	0.22	17.67	46.00	28.33	
	3.509	21.33	0.34	21.67	46.00	24.33	
	10.125	29.19	0.48	29.67	50.00	20.33	
	19.326	20.60	0.82	21.42	50.00	28.58	

TEST ENGINEER: L V Y L V

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32D77WUS Humidity : 48%RH

Serial No. : E1204418-01/01 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	0.166	38.02	0.24	38.26	65.16	26.90	QP
	0.489	28.41	0.35	28.76	56.19	27.43	
	1.269	27.36	0.34	27.70	56.00	28.30	
	3.565	30.71	0.47	31.18	56.00	24.82	
	12.253	39.05	0.78	39.83	60.00	20.17	
	18.820	29.53	0.92	30.45	60.00	29.55	
	0.166	28.36	0.24	28.60	55.16	26.56	AV
	0.489	18.74	0.35	19.09	46.19	27.10	
	1.269	17.48	0.34	17.82	46.00	28.18	
	3.565	20.61	0.47	21.08	46.00	24.92	
	12.253	29.13	0.78	29.91	50.00	20.09	
	18.820	19.67	0.92	20.59	50.00	29.41	
Neutral	0.168	39.32	0.13	39.45	65.08	25.63	QP
	0.634	28.13	0.19	28.32	56.00	27.68	
	1.403	26.68	0.20	26.88	56.00	29.12	
	4.361	30.99	0.40	31.39	56.00	24.61	
	11.996	40.87	0.56	41.43	60.00	18.57	
	19.950	31.09	0.82	31.91	60.00	28.09	
	0.168	29.44	0.13	29.57	55.08	25.51	AV
	0.634	18.28	0.19	18.47	46.00	27.53	
	1.403	16.98	0.20	17.18	46.00	28.82	
	4.361	20.49	0.40	20.89	46.00	25.11	
	11.996	30.76	0.56	31.32	50.00	18.68	
	19.950	21.36	0.82	22.18	50.00	27.82	

TEST ENGINEER: LUY LV

4 RADIATED EMISSION TEST

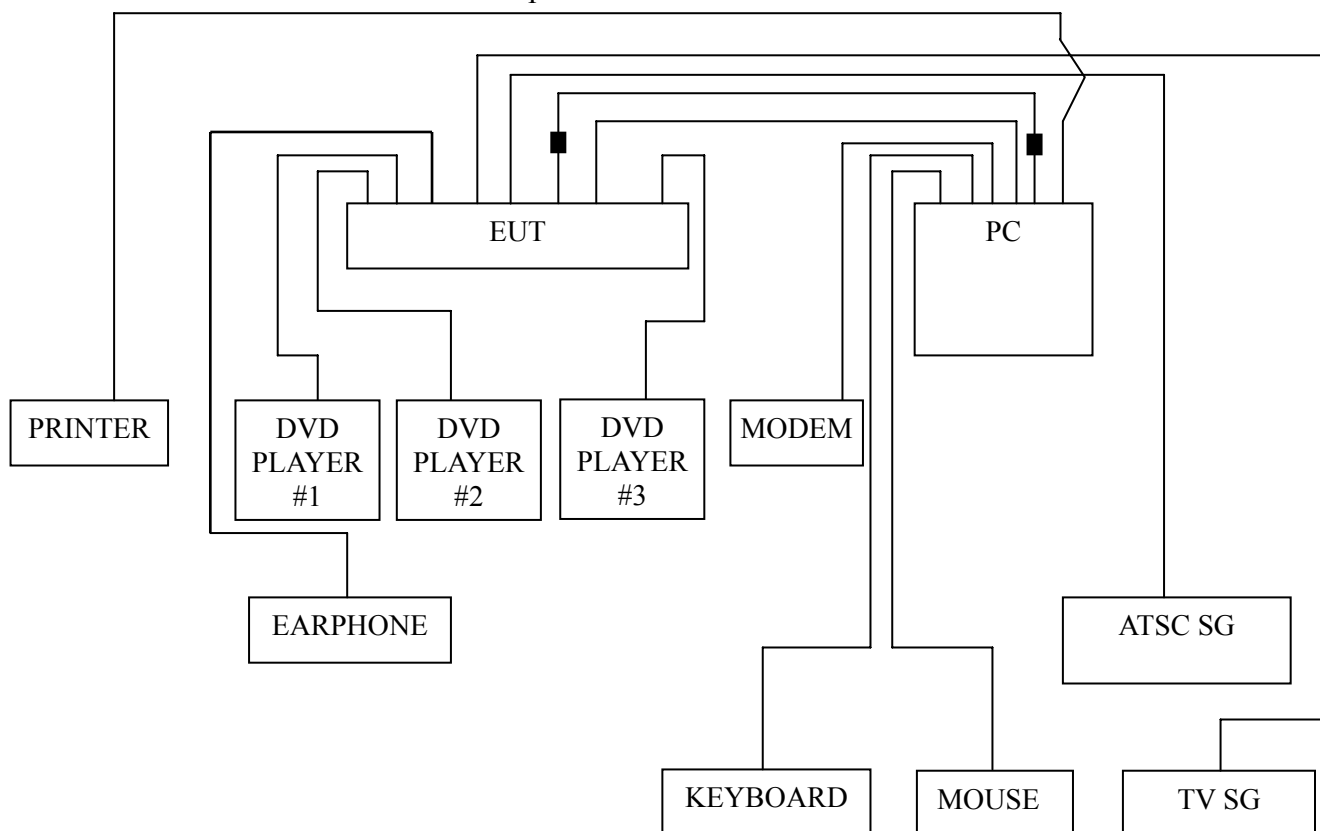
4.1 Test Equipment

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	--	--

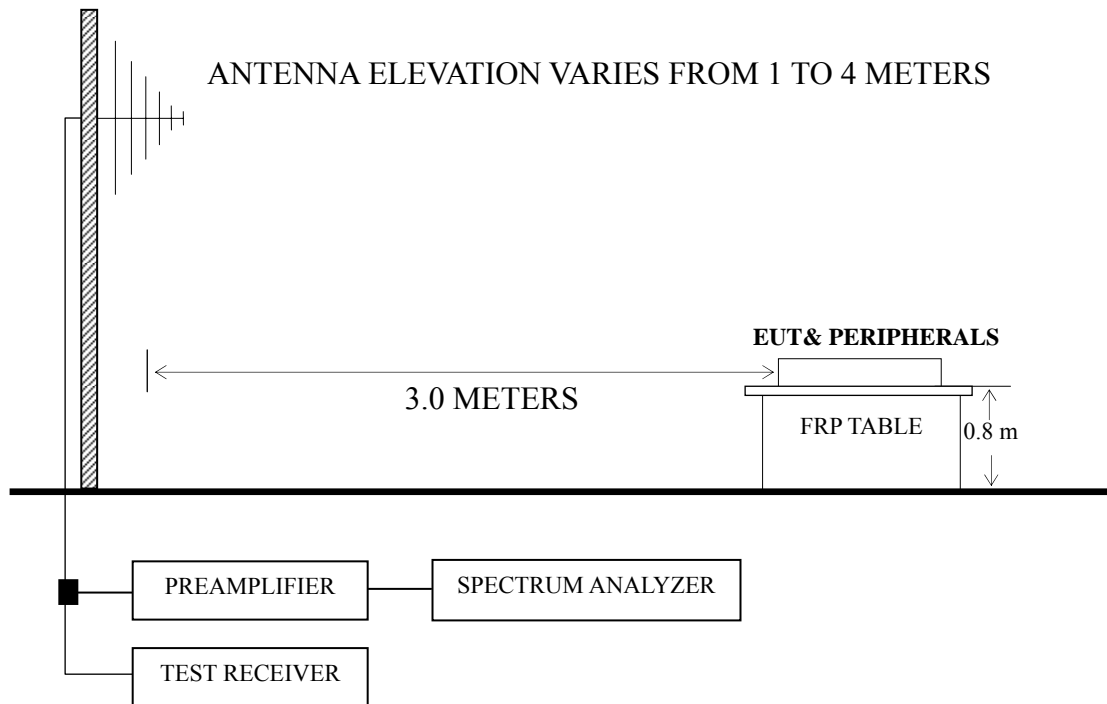
4.2 Block Diagram of Test Setup

4.2.1 EUT and Peripherals



■: 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.

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 USB Play test mode. The worst emission at horizontal polarization was detected at 79.470 MHz with corrected signal level of 30.35 dB ($\mu\text{V}/\text{m}$) (limit is 40.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.50 m height and the turntable was at 220°. The worst emission at vertical polarization was detected at 741.980 MHz with corrected signal level of 39.24 dB ($\mu\text{V}/\text{m}$) (limit is 46.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.50 m height and the turntable was at 100°.

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32D77WUS Humidity : 60%RH

Serial No. : E1204418-01/01 Date of Test : Apr 28, 2012

Test Mode : D-Sub 1024*768@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	63.950	17.03	9.41	1.28	27.72	40.00	12.28
	82.380	15.21	10.67	1.63	27.51	40.00	12.49
	185.200	22.02	9.94	2.38	34.34	43.50	9.16
	343.310	18.27	14.91	2.86	36.04	46.00	9.96
	613.940	7.42	18.39	3.49	29.30	46.00	16.70
	806.970	12.47	20.58	3.99	37.04	46.00	8.96
Vertical	68.800	21.48	9.79	1.39	32.66	40.00	7.34
	149.310	17.69	10.43	2.23	30.35	43.50	13.15
	293.840	21.67	13.53	2.74	37.94	46.00	8.06
	343.310	17.77	14.91	2.86	35.54	46.00	10.46
	623.640	13.21	18.53	3.51	35.25	46.00	10.75
	806.970	14.23	20.58	3.99	38.80	46.00	7.20

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32D77WUS Humidity : 60%RH

Serial No. : E1204418-01/01 Date of Test : Apr 28, 2012

Test Mode : HDMI 1024*768@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	65.890	20.30	9.55	1.32	31.17	40.00	8.83
	149.310	17.42	10.43	2.23	30.08	43.50	13.42
	223.030	20.50	10.76	2.51	33.77	46.00	12.23
	296.750	21.09	13.63	2.75	37.47	46.00	8.53
	343.310	16.92	14.91	2.86	34.69	46.00	11.31
	446.130	10.39	16.92	3.11	30.42	46.00	15.58
Vertical	58.130	17.96	9.02	1.14	28.12	40.00	11.88
	155.130	18.02	10.33	2.25	30.60	43.50	12.90
	230.790	21.45	11.10	2.55	35.10	46.00	10.90
	346.220	18.08	15.00	2.88	35.96	46.00	10.04
	508.210	7.38	17.65	3.28	28.31	46.00	17.69
	671.170	11.67	19.15	3.62	34.44	46.00	11.56

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32D77WUS Humidity : 60%RH

Serial No. : E1204418-01/01 Date of Test : Apr 28, 2012

Test Mode : D-Sub 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	65.890	21.41	9.55	1.32	32.28	40.00	7.72
	144.460	14.23	10.52	2.19	26.94	43.50	16.56
	204.600	17.77	9.97	2.44	30.18	43.50	13.32
	343.310	16.23	14.91	2.86	34.00	46.00	12.00
	494.630	4.66	17.53	3.25	25.44	46.00	20.56
	913.670	9.36	20.36	5.05	34.77	46.00	11.23
Vertical	64.920	17.68	9.49	1.30	28.47	40.00	11.53
	204.600	17.85	9.97	2.44	30.26	43.50	13.24
	230.790	18.61	11.10	2.55	32.26	46.00	13.74
	282.200	16.43	13.21	2.71	32.35	46.00	13.65
	343.310	17.32	14.91	2.86	35.09	46.00	10.91
	572.230	6.51	18.05	3.40	27.96	46.00	18.04

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32D77WUS Humidity : 60%RH

Serial No. : E1204418-01/01 Date of Test : Apr 28, 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	65.890	20.99	9.55	1.32	31.86	40.00	8.14
	149.310	23.25	10.43	2.23	35.91	43.50	7.59
	185.200	16.70	9.94	2.38	29.02	43.50	14.48
	255.040	16.33	12.22	2.63	31.18	46.00	14.82
	445.160	16.61	16.90	3.11	36.62	46.00	9.38
	676.020	13.43	19.22	3.64	36.29	46.00	9.71
Vertical	63.950	18.58	9.41	1.28	29.27	40.00	10.73
	149.310	22.84	10.43	2.23	35.50	43.50	8.00
	185.200	19.40	9.94	2.38	31.72	43.50	11.78
	296.750	16.64	13.63	2.75	33.02	46.00	12.98
	518.880	8.81	17.72	3.31	29.84	46.00	16.16
	668.260	11.58	19.12	3.62	34.32	46.00	11.68

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32D77WUS Humidity : 60%RH

Serial No. : E1204418-01/01 Date of Test : Apr 28, 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	79.470	18.26	10.51	1.58	30.35	40.00	9.65
	152.220	17.93	10.37	2.24	30.54	43.50	12.96
	210.420	17.50	10.22	2.46	30.18	43.50	13.32
	323.910	11.88	14.38	2.82	29.08	46.00	16.92
	461.650	10.54	17.14	3.17	30.85	46.00	15.15
	575.140	13.90	18.06	3.42	35.38	46.00	10.62
Vertical	58.130	20.14	9.02	1.14	30.30	40.00	9.70
	149.310	18.53	10.43	2.23	31.19	43.50	12.31
	223.030	19.91	10.76	2.51	33.18	46.00	12.82
	343.310	20.83	14.91	2.86	38.60	46.00	7.40
	518.880	13.33	17.72	3.31	34.36	46.00	11.64
	741.980	15.48	19.98	3.78	39.24	46.00	6.76

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LHD32D77WUS Humidity : 60%RH

Serial No. : E1204418-01/01 Date of Test : Apr 28, 2012

Test Mode : LAN

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	80.440	17.18	10.56	1.59	29.33	40.00	10.67
	152.220	16.80	10.37	2.24	29.41	43.50	14.09
	207.510	20.08	10.11	2.45	32.64	43.50	10.86
	343.310	15.10	14.91	2.86	32.87	46.00	13.13
	508.210	10.50	17.65	3.28	31.43	46.00	14.57
	806.970	14.56	20.58	3.99	39.13	46.00	6.87
Vertical	58.130	18.08	9.02	1.14	28.24	40.00	11.76
	96.930	11.37	11.24	1.82	24.43	43.50	19.07
	154.160	16.72	10.34	2.25	29.31	43.50	14.19
	232.730	21.02	11.19	2.55	34.76	46.00	11.24
	343.310	17.91	14.91	2.86	35.68	46.00	10.32
	447.100	10.50	16.92	3.11	30.53	46.00	15.47

TEST ENGINEER: RAVEN JIN

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Al Tape	DBA40X100H	SZTAT	See Internal Photos Figure 18
Ferrite Core	BNF-12\ZCAT1519-0830	Rui Feng Electronic Co., Ltd.	See Internal Photos Figure 18
		FEELUX	
		Haian County Magnetic Material No. 2 Factory	

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.