

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

LCD TV

Model No.	Serial No.	Brand
LTDN40W07US	E2009031801	Hisense
LTDN40V68US	--	
LTDN40V57US	--	
40LE45S	--	Element
40LC45S	--	Proscan
40LC45S57	--	

FCC ID : W9HLTDN40W07US

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

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Report No. : ACI-F09025
Date of Test : Mar 21 – 22, 2009
Date of Report : Mar 31, 2009

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.....	7
2.3 Description of Test Facility.....	8
2.4 Measurement Uncertainty.....	8
3 CONDUCTED EMISSION TEST	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	21
4.1 Test Equipment.....	21
4.2 Block Diagram of Test Setup.....	21
4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)].....	22
4.4 Test Configuration.....	22
4.5 Operating Condition of EUT.....	23
4.6 Test Procedures.....	23
4.7 Test Results.....	24
5 DEVIATION TO TEST SPECIFICATIONS	33
6 DEBUG DESCRIPTION	34

TEST REPORT FOR FCC CERTIFICATE

Applicant : Hisense Electric Co., Ltd.
 Manufacturer : Hisense Electric Co., Ltd.
 EUT Description : LCD TV

Model No.	Serial No.	Brand	Power Supply
LTDN40W07US	E2009031801	Hisense	120V/60Hz
LTDN40V68US	--		
LTDN40V57US	--		
40LE45S	--	Element	
40LC45S	--	Proscan	
40LC45S57	--		

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2008
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 21 – 22, 2009 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 function are contained in No.F09024, a Verification report.

Date of Test : Mar 21 – 22, 2009 Date of Report : Mar 31, 2009

Producer : Zeno Gu
ZENO GU / Assistant

Review : Dio Yang
DIO YANG / Supervisor

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

Signatory : Sunny Chen
Authorized Signature EMC SAMMY CHEN / Assistant 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 2008 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2008 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 Number	Serial Number	Brand
LTDN40W07US	E2009031801	Hisense
LTDN40V68US	--	
LTDN40V57US	--	
40LE45S	--	Element
40LC45S	--	Proscan
40LC45S57	--	

Note 1 : The above models are all the same except for the different model number and brand.

Note 2 : The LTDN40W07US was tested and recorded in this 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 : LTA400HA07
S/N : 7N9B1NC39A

Max Resolution : 1920*1080@60Hz

D-Sub Cable : Shielded, Detachable, 1.85m,
with two cores on cable

HDMI Cable : Shielded, Detachable, 1.85m,
without core on cable

RS232 Cable : Shielded, Detachable, 1.80m,
with one core on cable

Power Cord : Unshielded, Detachable, 1.80m

Remark:

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

Bottom View:

- | | | |
|-----|-----------------------------|----------------------------------|
| (1) | One Optical Port | Connected with DVD #1 |
| (2) | One Headphone Port | Connected with Earphone |
| (3) | One RS232 Port | Connected with PC |
| (4) | Three component of AV Ports | Connected with DVD #1 and DVD #2 |
| (5) | One S-Video Port | Connected with TV SG |

Side Port:

- | | | |
|------|------------------------------------|------------------------------|
| (6) | One ANT Port | Connected with TV SG/ATSC SG |
| (7) | One VGA Port | Connected with PC |
| (8) | One VGA Audio In Port | Connected with PC |
| (9) | One component of YPbPr1 Port | Connected with DVD #1 |
| (10) | One component of YPbPr1 Audio Port | Connected with DVD #1 |
| (11) | One component of YPbPr2 Port | Connected with DVD #2 |
| (12) | One component of YPbPr2 Audio Port | Connected with DVD #2 |
| (13) | One HDMI1 Port | Connected with DVD #1 |
| (14) | One HDMI2 Port | Connected with DVD #2 |
| (15) | One HDMI3 Port | Connected with PC |

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 Earphone

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

2.2.6 TV Signal Generator

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

2.2.7 ATSC Signal Generator

Manufacturer : SENCORE
Model Number : ATSC997
Serial Number : 6790071

2.2.8 DVD#1

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

2.2.9 DVD#2

Manufacturer : PHILIPS
Model Number : DVP3986K/93
Serial Number : KX1A0902120082
Certificate : FCC DoC, CE/EMC, CCC

2.3 Description of Test Facility

Site Description (Semi-Anechoic Chamber) : Sept. 17, 1998 file on
July 26, 2006 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 = 1.26 dB
Radiated Emission Expanded Uncertainty : U = 3.02 dB

3 CONDUCTED EMISSION TEST

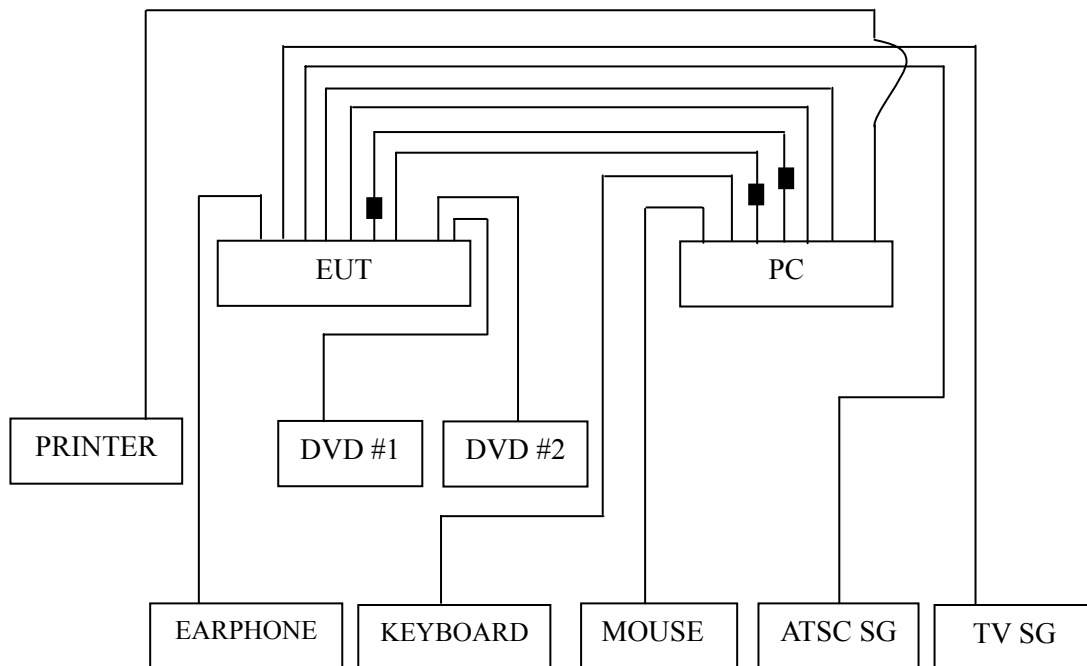
3.1.1 Test Equipment

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	Nov 21, 2008	Nov 21, 2009
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Apr 02, 2008	Apr 02, 2009
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Apr 02, 2008	Apr 02, 2009
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Mar 19, 2009	Sep 19, 2009
5.	50 Ω Terminator	Anritsu	BNC	001	Apr 02, 2008	Apr 02, 2009
6.	Software	Audix	E3	SET00200 9804M592	--	--

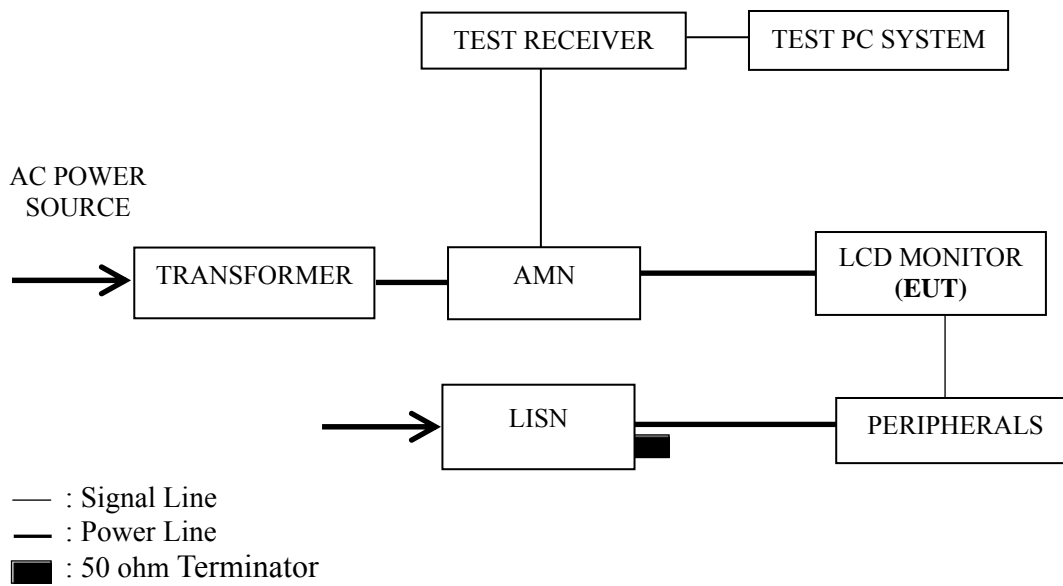
3.2 Block Diagram of Test Setup

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 from 3.5.3 to 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 1024*768@60Hz
D-Sub 1680*1050@60Hz
D-Sub 1920*1080@60Hz
HDMI 640*480@60Hz
HDMI 1024*768@60Hz
HDMI 1680*1050@60Hz
HDMI 1920*1080@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	P13
D-Sub 1024*768@60Hz	P14
D-Sub 1680*1050@60Hz	P15
D-Sub 1920*1080@60Hz	P16
HDMI 640*480@60Hz	P17
HDMI 1024*768@60Hz	P18
HDMI 1680*1050@60Hz	P19
HDMI 1920*1080@60Hz	P20

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 1024*768@60Hz test mode. The worst emission is detected at 0.408 MHz (Average) with corrected signal level of 44.48 dB (μ V) (limit is 47.68 dB (μ V)), when the Neutral of the EUT is connected to AMN.

EUT : LCD TV Temperature : 20°C

Model No. : LTDN40W07US Humidity : 46%RH

Serial No. : E2009031801 Date of Test : Mar 22, 2009

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	0.194	49.12	0.20	49.32	63.84	14.52	QP
	0.406	53.41	0.22	53.63	57.73	4.10	
	0.621	27.74	0.22	27.96	56.00	28.04	
	0.830	19.70	0.24	19.94	56.00	36.06	
	17.383	42.68	0.72	43.40	60.00	16.60	
	24.400	43.09	0.88	43.97	60.00	16.03	
	AV	0.194	39.53	0.20	39.73	53.84	14.11
		0.406	43.26	0.22	43.48	47.73	4.25
		0.621	17.56	0.22	17.78	46.00	28.22
		0.830	11.36	0.24	11.60	46.00	34.40
		17.383	32.36	0.72	33.08	50.00	16.92
		24.400	33.36	0.88	34.24	50.00	15.76
Neutral	0.194	48.55	0.20	48.75	63.84	15.09	QP
	0.408	52.70	0.22	52.92	57.68	4.76	
	1.223	31.09	0.24	31.33	56.00	24.67	
	2.581	24.14	0.28	24.42	56.00	31.58	
	17.383	39.90	0.56	40.46	60.00	19.54	
	24.142	43.09	0.67	43.76	60.00	16.24	
	AV	0.194	38.65	0.20	38.85	53.84	14.99
		0.413	41.70	0.22	41.92	47.59	5.67
		1.223	21.26	0.24	21.50	46.00	24.50
		2.581	14.25	0.28	14.53	46.00	31.47
		17.383	31.86	0.56	32.42	50.00	17.58
		24.142	33.72	0.67	34.39	50.00	15.61

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 20°C

Model No. : LTDN40W07US Humidity : 46%RH

Serial No. : E2009031801 Date of Test : Mar 22, 2009

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	0.197	47.45	0.20	47.65	63.76	16.11	QP
	0.406	52.60	0.22	52.82	57.73	4.91	
	0.621	26.31	0.22	26.53	56.00	29.47	
	0.830	18.47	0.24	18.71	56.00	37.29	
	18.232	40.94	0.72	41.66	60.00	18.34	
	23.888	43.88	0.86	44.74	60.00	15.26	
	0.197	37.26	0.20	37.46	53.76	16.30	AV
	0.406	42.38	0.22	42.60	47.73	5.13	
	0.621	16.49	0.22	16.71	46.00	29.29	
	0.830	11.32	0.24	11.56	46.00	34.44	
	18.232	30.36	0.72	31.08	50.00	18.92	
	23.888	33.72	0.86	34.58	50.00	15.42	
Neutral	0.194	48.66	0.20	48.86	63.84	14.98	QP
	0.408	52.77	0.22	52.99	57.68	4.69	
	0.621	27.77	0.22	27.99	56.00	28.01	
	1.236	18.41	0.25	18.66	56.00	37.34	
	17.199	43.93	0.56	44.49	60.00	15.51	
	24.142	42.32	0.67	42.99	60.00	17.01	
	0.194	40.13	0.20	40.33	53.84	13.51	AV
	0.408	44.26	0.22	44.48	47.68	3.20	
	0.621	19.68	0.22	19.90	46.00	26.10	
	1.236	10.36	0.25	10.61	46.00	35.39	
	17.199	35.83	0.56	36.39	50.00	13.61	
	24.142	34.56	0.67	35.23	50.00	14.77	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 20°C

Model No. : LTDN40W07US Humidity : 46%RH

Serial No. : E2009031801 Date of Test : Mar 22, 2009

Test Mode : D-Sub 1680*1050@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	0.197	47.49	0.20	47.69	63.76	16.07	QP
	0.408	51.74	0.22	51.96	57.68	5.72	
	0.614	26.28	0.22	26.50	56.00	29.50	
	0.822	17.97	0.24	18.21	56.00	37.79	
	17.199	41.17	0.71	41.88	60.00	18.12	
	23.888	43.82	0.86	44.68	60.00	15.32	
	AV	0.197	34.16	0.20	34.36	53.76	19.40
		0.408	41.26	0.22	41.48	47.68	6.20
		0.614	16.36	0.22	16.58	46.00	29.42
		0.822	12.00	0.24	12.24	46.00	33.76
		17.199	31.23	0.71	31.94	50.00	18.06
		23.888	33.26	0.86	34.12	50.00	15.88
Neutral	0.194	46.62	0.20	46.82	63.84	17.02	QP
	0.408	52.78	0.22	53.00	57.68	4.68	
	0.621	27.62	0.22	27.84	56.00	28.16	
	0.830	19.54	0.23	19.77	56.00	36.23	
	17.199	43.19	0.56	43.75	60.00	16.25	
	23.636	41.23	0.66	41.89	60.00	18.11	
	AV	0.194	36.35	0.20	36.55	53.84	17.29
		0.408	42.15	0.22	42.37	47.68	5.31
		0.621	17.26	0.22	17.48	46.00	28.52
		0.830	10.32	0.23	10.55	46.00	35.45
		17.199	33.62	0.56	34.18	50.00	15.82
		23.636	31.26	0.66	31.92	50.00	18.08

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 20°C

Model No. : LTDN40W07US Humidity : 46%RH

Serial No. : E2009031801 Date of Test : Mar 22, 2009

Test Mode : D-Sub 1920*1080@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	0.194	47.38	0.20	47.58	63.84	16.26	QP	
	0.408	52.88	0.22	53.10	57.68	4.58		
	0.621	26.43	0.22	26.65	56.00	29.35		
	0.830	18.36	0.24	18.60	56.00	37.40		
	18.232	41.79	0.72	42.51	60.00	17.49		
	23.888	45.44	0.86	46.30	60.00	13.70		
	0.194	37.26	0.20	37.46	53.84	16.38	AV	
	0.408	42.15	0.22	42.37	47.68	5.31		
	0.621	16.59	0.22	16.81	46.00	29.19		
	0.830	9.35	0.24	9.59	46.00	36.41		
	18.232	31.26	0.72	31.98	50.00	18.02		
	23.888	35.26	0.86	36.12	50.00	13.88		
	Neutral	0.197	46.73	0.20	46.93	63.76	16.83	QP
		0.408	52.81	0.22	53.03	57.68	4.65	
0.614		27.54	0.22	27.76	56.00	28.24		
0.822		19.13	0.23	19.36	56.00	36.64		
18.232		43.27	0.55	43.82	60.00	16.18		
23.888		44.38	0.67	45.05	60.00	14.95		
0.197		36.26	0.20	36.46	53.76	17.30	AV	
0.408		42.36	0.22	42.58	47.68	5.10		
0.614		17.82	0.22	18.04	46.00	27.96		
0.822		10.35	0.23	10.58	46.00	35.42		
18.232		33.96	0.55	34.51	50.00	15.49		
23.888		34.36	0.67	35.03	50.00	14.97		

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 20°C

Model No. : LTDN40W07US Humidity : 46%RH

Serial No. : E2009031801 Date of Test : Mar 22, 2009

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	0.197	47.46	0.20	47.66	63.76	16.10	QP
	0.406	51.36	0.22	51.58	57.73	6.15	
	0.614	26.21	0.22	26.43	56.00	29.57	
	0.830	17.14	0.24	17.38	56.00	38.62	
	17.383	40.13	0.72	40.85	60.00	19.15	
	23.888	41.50	0.86	42.36	60.00	17.64	
	0.197	37.46	0.20	37.66	53.76	16.10	AV
	0.406	41.26	0.22	41.48	47.73	6.25	
	0.614	16.38	0.22	16.60	46.00	29.40	
	0.830	10.32	0.24	10.56	46.00	35.44	
	17.383	30.26	0.72	30.98	50.00	19.02	
	23.888	31.35	0.86	32.21	50.00	17.79	
Neutral	0.194	48.77	0.20	48.97	63.84	14.87	QP
	0.406	52.43	0.22	52.65	57.73	5.08	
	0.621	27.31	0.22	27.53	56.00	28.47	
	0.830	18.71	0.23	18.94	56.00	37.06	
	17.199	40.23	0.56	40.79	60.00	19.21	
	23.636	43.32	0.66	43.98	60.00	16.02	
	0.194	38.59	0.20	38.79	53.84	15.05	AV
	0.406	42.36	0.22	42.58	47.73	5.15	
	0.621	17.35	0.22	17.57	46.00	28.43	
	0.830	9.35	0.23	9.58	46.00	36.42	
	17.199	30.22	0.56	30.78	50.00	19.22	
	23.636	33.16	0.66	33.82	50.00	16.18	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 20°C

Model No. : LTDN40W07US Humidity : 46%RH

Serial No. : E2009031801 Date of Test : Mar 22, 2009

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	0.197	47.65	0.20	47.85	63.76	15.91	QP
	0.406	51.52	0.22	51.74	57.73	5.99	
	0.621	26.47	0.22	26.69	56.00	29.31	
	0.830	17.59	0.24	17.83	56.00	38.17	
	17.199	40.79	0.71	41.50	60.00	18.50	
	24.142	42.20	0.86	43.06	60.00	16.94	
	0.197	37.26	0.20	37.46	53.76	16.30	AV
	0.406	41.35	0.22	41.57	47.73	6.16	
	0.621	16.35	0.22	16.57	46.00	29.43	
	0.830	11.36	0.24	11.60	46.00	34.40	
	17.199	31.20	0.71	31.91	50.00	18.09	
	24.142	32.17	0.86	33.03	50.00	16.97	
Neutral	0.197	48.54	0.20	48.74	63.76	15.02	QP
	0.406	52.39	0.22	52.61	57.73	5.12	
	0.614	27.32	0.22	27.54	56.00	28.46	
	1.184	16.59	0.24	16.83	56.00	39.17	
	17.755	42.95	0.56	43.51	60.00	16.49	
	24.142	41.77	0.67	42.44	60.00	17.56	
	0.197	38.46	0.20	38.66	53.76	15.10	AV
	0.406	42.36	0.22	42.58	47.73	5.15	
	0.614	17.68	0.22	17.90	46.00	28.10	
	1.184	10.35	0.24	10.59	46.00	35.41	
	17.755	32.15	0.56	32.71	50.00	17.29	
	24.142	31.62	0.67	32.29	50.00	17.71	

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 20°C

Model No. : LTDN40W07US Humidity : 46%RH

Serial No. : E2009031801 Date of Test : Mar 22, 2009

Test Mode : HDMI 1680*1050@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	0.197	48.36	0.20	48.56	63.76	15.20	QP	
	0.402	52.47	0.22	52.69	57.81	5.12		
	0.621	26.44	0.22	26.66	56.00	29.34		
	1.296	25.38	0.28	25.66	56.00	30.34		
	18.232	41.30	0.72	42.02	60.00	17.98		
	23.888	45.23	0.86	46.09	60.00	13.91		
	0.197	38.56	0.20	38.76	53.76	15.00	AV	
	0.402	42.68	0.22	42.90	47.81	4.91		
	0.621	16.95	0.22	17.17	46.00	28.83		
	1.296	15.38	0.28	15.66	46.00	30.34		
	18.232	31.65	0.72	32.37	50.00	17.63		
	23.888	35.92	0.86	36.78	50.00	13.22		
	Neutral	0.197	48.57	0.20	48.77	63.76	14.99	QP
		0.406	51.32	0.22	51.54	57.73	6.19	
0.621		26.45	0.22	26.67	56.00	29.33		
0.830		18.07	0.23	18.30	56.00	37.70		
17.199		41.98	0.56	42.54	60.00	17.46		
24.142		44.23	0.67	44.90	60.00	15.10		
0.197		38.59	0.20	38.79	53.76	14.97	AV	
0.406		41.26	0.22	41.48	47.73	6.25		
0.621		16.59	0.22	16.81	46.00	29.19		
0.830		11.23	0.23	11.46	46.00	34.54		
17.199		31.06	0.56	31.62	50.00	18.38		
24.142		34.16	0.67	34.83	50.00	15.17		

TEST ENGINEER: WENCY YANG

EUT : LCD TV Temperature : 20°C

Model No. : LTDN40W07US Humidity : 46%RH

Serial No. : E2009031801 Date of Test : Mar 22, 2009

Test Mode : HDMI 1920*1080@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	0.197	47.35	0.20	47.55	63.76	16.21	QP	
	0.406	52.69	0.22	52.91	57.73	4.82		
	0.621	27.26	0.22	27.48	56.00	28.52		
	1.433	23.37	0.29	23.66	56.00	32.34		
	17.568	41.27	0.72	41.99	60.00	18.01		
	23.888	42.83	0.86	43.69	60.00	16.31		
	0.197	37.82	0.20	38.02	53.76	15.74	AV	
	0.406	42.36	0.22	42.58	47.73	5.15		
	0.621	17.86	0.22	18.08	46.00	27.92		
	1.433	13.65	0.29	13.94	46.00	32.06		
	17.568	31.68	0.72	32.40	50.00	17.60		
	23.888	32.68	0.86	33.54	50.00	16.46		
	Neutral	0.194	47.43	0.20	47.63	63.84	16.21	QP
		0.408	51.81	0.22	52.03	57.68	5.65	
0.621		26.67	0.22	26.89	56.00	29.11		
0.830		18.31	0.23	18.54	56.00	37.46		
18.232		41.48	0.55	42.03	60.00	17.97		
23.888		43.46	0.67	44.13	60.00	15.87		
0.194		34.36	0.20	34.56	53.84	19.28	AV	
0.408		41.02	0.22	41.24	47.68	6.44		
0.621		16.38	0.22	16.60	46.00	29.40		
0.830		11.02	0.23	11.25	46.00	34.75		
18.232		31.27	0.55	31.82	50.00	18.18		
23.888		33.64	0.67	34.31	50.00	15.69		

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

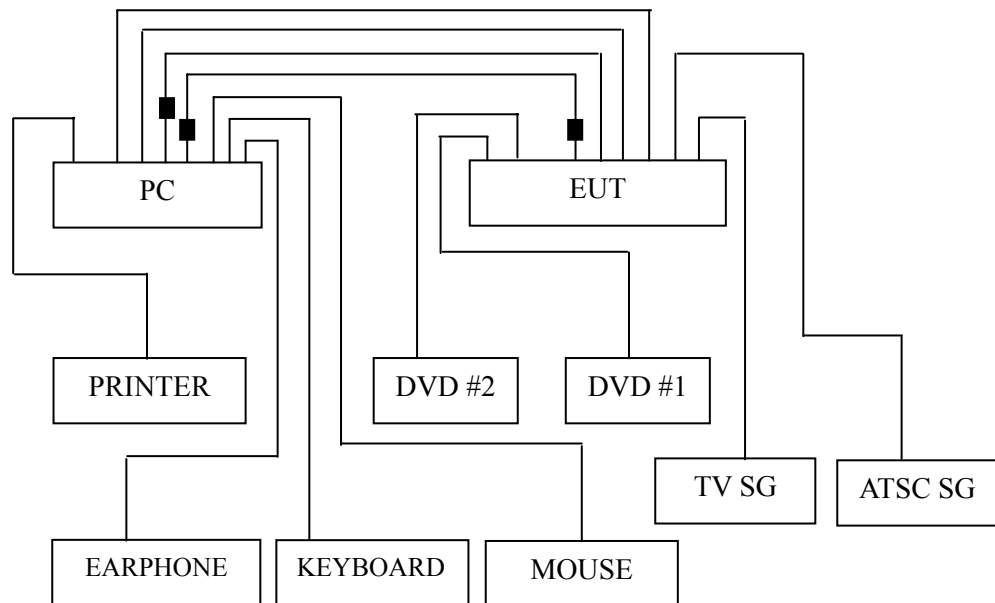
4.1 Test Equipment

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 07, 2009	Mar 07, 2010
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 19, 2009	Sep 19, 2009
3.	Preamplifier	HP	8449B	3008A00864	May 19, 2008	May 19, 2009
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 14, 2008	May 14, 2009
5.	Spectrum	Agilent	E7405A	MY45106600	May 19, 2008	May 19, 2009
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

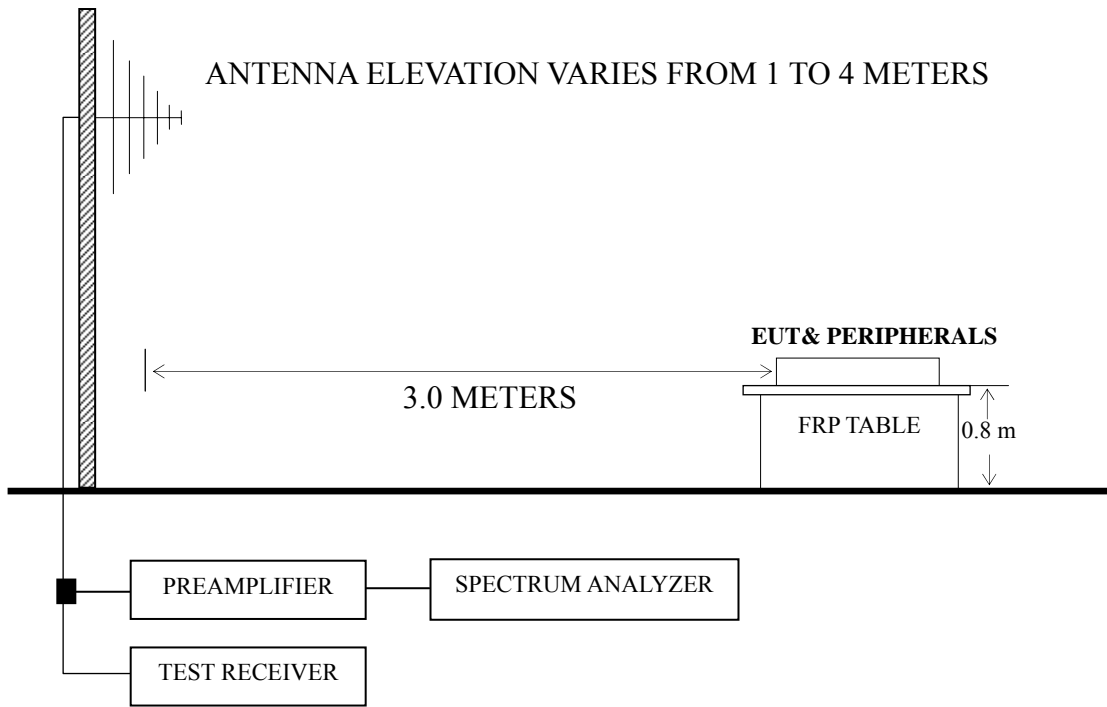
4.2 Block Diagram of Test Setup

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 below or equal to 1GHz and Average value detector above 1GHz.

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 bandwidth of Test Receiver R&S ESVS10 was set at 120 kHz below 1GHz and The Spectrum Agilent E7405A was set at 1MHz above 1GHz.

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

The frequency range from 1 GHz to 2 GHz was checked for D-Sub/HDMI 1680*1050@60Hz and 1920*1080@60Hz 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	P25
D-Sub 1024*768@60Hz	P26
D-Sub 1680*1050@60Hz	P27
D-Sub 1920*1080@60Hz	P28
HDMI 640*480@60Hz	P29
HDMI 1024*768@60Hz	P30
HDMI 1680*1050@60Hz	P31
HDMI 1920*1080@60Hz	P32

- NOTE 1 – Emission Level = Antenna Factor + Cable Loss + Meter Reading. (< 1GHz)
- NOTE 2 – Emission Level = Antenna Factor + Cable Loss – Preamp Factor + Meter Reading. (> 1GHz)
- NOTE 3 – The emission levels that are 20dB below the official limit are not reported.
- NOTE 4 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.
- NOTE 5 – All reading are Quasi-Peak values below or equal to 1GHz and Peak values above 1GHz. For measurements above 1 GHz, the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.
- NOTE 6 – The worst case is for D-Sub 1920*1080@60Hz test mode. The worst emission at horizontal polarization was detected at 76.560 MHz with corrected signal level of 37.81 dB (μV/m) (limit is 40.00dB (μV/m)), when the antenna was 2.00 m height and the turntable was at 210°. The worst emission at vertical polarization was detected at 115.360 MHz with corrected signal level of 41.42 dB (μV/m) (limit is 43.50 dB (μV/m)), when the antenna was 2.00 m height and the turntable was at 50°.

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40W07US Humidity : 60%RH

Serial No. : E2009031801 Date of Test : Mar 21, 2009

Test Mode : D-Sub 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	30.970	10.09	19.03	0.57	29.69	40.00	10.31
	77.530	26.28	7.49	0.86	34.63	40.00	5.37
	142.520	21.83	11.91	0.91	34.65	43.50	8.85
	214.230	24.50	11.35	1.14	36.99	43.50	6.51
	538.460	21.21	18.42	2.46	42.09	46.00	3.91
	809.880	18.91	20.80	3.34	43.05	46.00	2.95
Vertical	33.880	18.14	17.44	0.61	36.19	40.00	3.81
	142.520	24.36	11.91	0.91	37.18	43.50	6.32
	215.270	23.51	11.39	1.14	36.04	43.50	7.46
	321.970	18.53	14.50	1.66	34.69	46.00	11.31
	540.580	19.20	18.42	2.48	40.10	46.00	5.90
	809.880	17.80	20.80	3.34	41.94	46.00	4.06

TEST ENGINEER: JACKY CHEN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40W07US Humidity : 60%RH

Serial No. : E2009031801 Date of Test : Mar 21, 2009

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	30.970	10.34	19.03	0.57	29.94	40.00	10.06
	87.230	24.62	8.96	0.86	34.44	40.00	5.56
	152.220	28.00	11.09	0.93	40.02	43.50	3.48
	215.270	28.33	11.39	1.14	40.86	43.50	2.64
	517.840	22.00	18.12	2.42	42.54	46.00	3.46
	809.880	19.34	20.80	3.34	43.48	46.00	2.52
Vertical	31.940	17.26	18.49	0.59	36.34	40.00	3.66
	87.230	26.46	8.96	0.86	36.28	40.00	3.72
	151.610	28.20	11.14	0.93	40.27	43.50	3.23
	214.300	22.98	11.35	1.14	35.47	43.50	8.03
	523.730	20.86	18.21	2.43	41.50	46.00	4.50
	809.880	19.59	20.80	3.34	43.73	46.00	2.27

TEST ENGINEER: JACKY CHEN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40W07US Humidity : 60%RH

Serial No. : E2009031801 Date of Test : Mar 21, 2009

Test Mode : D-Sub 1680*1050@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	64.920	29.53	6.55	0.85	--	36.93	40.00	3.07	QP
	81.410	27.57	8.02	0.86	--	36.45	40.00	3.55	
	97.900	25.65	11.11	0.85	--	37.61	43.50	5.89	
	302.570	24.21	13.97	1.56	--	39.74	46.00	6.26	
	510.150	20.79	18.04	2.40	--	41.23	46.00	4.77	
	809.880	18.71	20.80	3.34	--	42.85	46.00	3.15	
	1012.000	57.60	24.16	3.88	37.67	47.97	74.00	26.03	PK
	1167.000	54.96	24.68	4.16	37.25	46.55	74.00	27.45	
	1215.000	54.58	24.86	4.24	37.14	46.54	74.00	27.46	
	1327.000	51.94	25.24	4.42	36.89	44.71	74.00	29.29	
	1549.000	57.37	26.15	4.81	36.44	51.89	74.00	22.11	
	1823.000	52.81	27.23	5.21	35.97	49.28	74.00	24.72	
Vertical	81.410	26.96	8.02	0.86	--	35.84	40.00	4.16	QP
	97.900	24.24	11.11	0.85	--	36.20	43.50	7.30	
	195.000	28.49	10.51	1.07	--	40.07	43.50	3.43	
	244.370	27.01	12.68	1.25	--	40.94	46.00	5.06	
	522.760	21.37	18.21	2.43	--	42.01	46.00	3.99	
	809.880	17.47	20.80	3.34	--	41.61	46.00	4.39	
	1023.000	56.83	24.16	3.88	37.63	47.24	74.00	26.76	PK
	1208.000	47.45	24.80	4.21	37.15	39.31	74.00	34.69	
	1316.000	47.98	25.24	4.42	36.90	40.74	74.00	33.26	
	1511.000	46.40	26.00	4.74	36.51	40.63	74.00	33.37	
	1632.000	46.05	26.50	4.99	36.28	41.26	74.00	32.74	
	1823.000	47.58	27.23	5.21	35.97	44.05	74.00	29.95	

TEST ENGINEER: JACKY CHEN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40W07US Humidity : 60%RH

Serial No. : E2009031801 Date of Test : Mar 21, 2009

Test Mode : D-Sub 1920*1080@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	76.560	29.58	7.36	0.87	--	37.81	40.00	2.19	QP
	134.760	27.52	12.30	0.90	--	40.72	43.50	2.78	
	154.160	29.04	10.94	0.94	--	40.92	43.50	2.58	
	219.150	28.00	11.57	1.15	--	40.72	46.00	5.28	
	511.120	20.43	18.04	2.40	--	40.87	46.00	5.13	
	809.880	16.92	20.80	3.34	--	41.06	46.00	4.94	PK
	1020.000	60.03	24.16	3.88	37.64	50.43	74.00	23.57	
	1056.000	58.91	24.27	3.96	37.54	49.60	74.00	24.40	
	1167.000	54.88	24.68	4.16	37.25	46.47	74.00	27.53	
	1359.000	49.23	25.38	4.48	36.82	42.27	74.00	31.73	
	1530.000	48.03	26.07	4.78	36.47	42.41	74.00	31.59	
1823.000	47.55	27.23	5.21	35.97	44.02	74.00	29.98		
Vertical	58.130	28.17	6.96	0.82	--	35.95	40.00	4.05	QP
	76.800	29.21	7.41	0.86	--	37.48	40.00	2.52	
	115.360	27.83	12.71	0.88	--	41.42	43.50	2.08	
	134.760	27.93	12.30	0.90	--	41.13	43.50	2.37	
	509.180	19.43	18.01	2.40	--	39.84	46.00	6.16	
	809.880	18.40	20.80	3.34	--	42.54	46.00	3.46	PK
	1064.000	59.86	24.33	3.99	37.52	50.66	74.00	23.34	
	1180.000	53.57	24.74	4.18	37.22	45.27	74.00	28.73	
	1384.000	56.25	25.51	4.54	36.76	49.54	74.00	24.46	
	1569.000	53.47	26.22	4.85	36.40	48.14	74.00	25.86	
	1697.000	54.18	26.78	5.11	36.17	49.90	74.00	24.10	
1823.000	54.53	27.23	5.21	35.97	51.00	74.00	23.00		

TEST ENGINEER: JACKY CHEN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40W07US Humidity : 60%RH

Serial No. : E2009031801 Date of Test : Mar 21, 2009

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	194.900	25.71	10.51	1.07	37.29	43.50	6.21
	214.300	27.15	11.35	1.14	39.64	43.50	3.86
	389.870	21.17	16.30	2.00	39.47	46.00	6.53
	538.280	21.36	18.39	2.46	42.21	46.00	3.79
	809.880	19.15	20.80	3.34	43.29	46.00	2.71
	909.790	18.08	21.76	3.56	43.40	46.00	2.60
Vertical	30.970	15.44	19.03	0.57	35.04	40.00	4.96
	129.910	19.35	12.52	0.90	32.77	43.50	10.73
	215.270	25.13	11.39	1.14	37.66	43.50	5.84
	389.870	20.51	16.30	2.00	38.81	46.00	7.19
	538.280	21.76	18.39	2.46	42.61	46.00	3.39
	809.880	18.90	20.80	3.34	43.04	46.00	2.96

TEST ENGINEER: JACKY CHEN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40W07US Humidity : 60%RH

Serial No. : E2009031801 Date of Test : Mar 21, 2009

Test Mode : HDMI 1680*1050@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	31.940	17.36	18.49	0.59	--	36.44	40.00	3.56	QP
	215.270	24.51	11.39	1.14	--	37.04	43.50	6.46	
	445.160	19.23	17.14	2.20	--	38.57	46.00	7.43	
	537.310	20.97	18.39	2.46	--	41.82	46.00	4.18	
	741.010	17.95	20.13	3.17	--	41.25	46.00	4.75	
	809.880	19.54	20.80	3.34	--	43.68	46.00	2.32	PK
	1020.000	61.03	24.16	3.88	37.64	51.43	74.00	22.57	
	1057.000	59.44	24.27	3.96	37.54	50.13	74.00	23.87	
	1166.000	51.65	24.68	4.16	37.26	43.23	74.00	30.77	
	1328.000	50.41	25.24	4.42	36.88	43.19	74.00	30.81	
	1530.000	48.71	26.07	4.78	36.47	43.09	74.00	30.91	
1700.000	45.85	26.78	5.11	36.17	41.57	74.00	32.43		
Vertical	148.340	24.37	11.41	0.92	--	36.70	43.50	6.80	QP
	214.300	26.24	11.35	1.14	--	38.73	43.50	4.77	
	445.160	23.54	17.14	2.20	--	42.88	46.00	3.12	
	537.310	22.71	18.39	2.46	--	43.56	46.00	2.44	
	741.010	18.58	20.13	3.17	--	41.88	46.00	4.12	
	888.960	17.40	21.60	3.50	--	42.50	46.00	3.50	PK
	1063.000	61.25	24.33	3.99	37.53	52.04	74.00	21.96	
	1200.000	54.46	24.80	4.21	37.17	46.30	74.00	27.70	
	1386.000	55.11	25.51	4.54	36.76	48.40	74.00	25.60	
	1549.000	55.75	26.15	4.81	36.44	50.27	74.00	23.73	
	1697.000	52.65	26.78	5.11	36.17	48.37	74.00	25.63	
1823.000	54.71	27.23	5.21	35.97	51.18	74.00	22.82		

TEST ENGINEER: JACKY CHEN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40W07US Humidity : 60%RH

Serial No. : E2009031801 Date of Test : Mar 21, 2009

Test Mode : HDMI 1920*1080@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	148.340	22.31	11.41	0.92	--	34.64	43.50	8.86	QP
	215.270	28.30	11.39	1.14	--	40.83	43.50	2.67	
	445.160	21.79	17.14	2.20	--	41.13	46.00	4.87	
	537.310	22.06	18.39	2.46	--	42.91	46.00	3.09	
	741.010	20.19	20.13	3.17	--	43.49	46.00	2.51	
	809.880	19.43	20.80	3.34	--	43.57	46.00	2.43	PK
	1007.000	60.39	24.10	3.84	37.68	50.65	74.00	23.35	
	1082.000	57.51	24.38	4.02	37.47	48.44	74.00	25.56	
	1348.000	53.57	25.31	4.45	36.83	46.50	74.00	27.50	
	1549.000	55.91	26.15	4.81	36.44	50.43	74.00	23.57	
	1675.000	53.39	26.71	5.08	36.21	48.97	74.00	25.03	
1823.000	51.56	27.23	5.21	35.97	48.03	74.00	25.97		
Vertical	148.340	21.71	11.41	0.92	--	34.04	43.50	9.46	QP
	214.300	23.91	11.35	1.14	--	36.40	43.50	7.10	
	445.160	23.23	17.14	2.20	--	42.57	46.00	3.43	
	537.310	21.81	18.39	2.46	--	42.66	46.00	3.34	
	592.600	20.81	19.11	2.58	--	42.50	46.00	3.50	
	809.880	18.04	20.80	3.34	--	42.18	46.00	3.82	PK
	1019.000	58.00	24.16	3.88	37.65	48.39	74.00	25.61	
	1057.000	57.69	24.27	3.96	37.54	48.38	74.00	25.62	
	1175.000	52.37	24.68	4.16	37.23	43.98	74.00	30.02	
	1358.000	48.71	25.38	4.48	36.82	41.75	74.00	32.25	
	1583.000	47.01	26.29	4.88	36.38	41.80	74.00	32.20	
1823.000	49.52	27.23	5.21	35.97	45.99	74.00	28.01		

TEST ENGINEER: JACKY CHEN

5 DEVIATION TO TEST SPECIFICATIONS

None.

6 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Specifications (mm)	Manufacturer	Location
Ferrite Core	ZCAT2132-1130	121*32*11	ROH	See External Photo Figure 17, 18, 19
Aluminum foil	DBA40X100	40*100	ROH	See External Photo Figure 17