

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

LCD TV

Model No.	Serial No.	Brand
LTDN40V68NUS	E2010041301	Hisense
LD4068	--	APEX DIGITAL

FCC ID : W9HLCDD0004

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

Prepared By : Audix Technology (Shanghai) Co., Ltd.  
3F 34Bldg 680 Guiping Rd,  
Caohejing Hi-Tech Park,  
Shanghai 200233, China

Tel: +86-21-64955500  
Fax: +86-21-64955491

Report No. : ACI-F10050  
Date of Test : Apr 16-17, 2010  
Date of Report : Apr 21, 2010

## TABLE OF CONTENTS

	Page
<b>1 SUMMARY OF STANDARDS AND RESULTS</b> .....	<b>4</b>
1.1 Description of Standards and Results.....	4
<b>2 GENERAL INFORMATION</b> .....	<b>5</b>
2.1 Description of Equipment Under Test.....	5
2.2 Peripherals.....	7
2.3 Description of Test Facility.....	8
2.4 Measurement Uncertainty.....	8
<b>3 CONDUCTED EMISSION TEST</b> .....	<b>9</b>
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
<b>4 RADIATED EMISSION TEST</b> .....	<b>19</b>
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
<b>5 DEVIATION TO TEST SPECIFICATIONS</b> .....	<b>28</b>
<b>6 DEBUG DESCRIPTION</b> .....	<b>29</b>

## 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
LTDN40V68NUS	E2010041301	Hisense	120V/60Hz
LD4068	--	APEX DIGITAL	

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2009  
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 Apr 16-17, 2010 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.F10049, a Verification report.***

Date of Test : Apr 16-17, 2010 Date of Report : Apr 21, 2010

Producer :   
KATHY WANG / Assistant

Review :   
DIO YANG / Deputy Assistant Manager

**AUDIX**<sup>®</sup> For and on behalf of  
Audix Technology (Shanghai) Co., Ltd.

Signatory :   
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:

<b>Description of Test Item</b>	<b>Standard</b>	<b>Limits</b>	<b>Results</b>
<b>EMISSION</b>			
Conducted Disturbance at the Mains Terminal	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2009 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2009 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.	Serial No.	Brand
LTDN40V68NUS	E2010041301	Hisense
LD4068	--	APEX DIGITAL

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

Note 2 : The LTDN40V68NUS 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 : SHARP  
M/N : LK400D3LA14

Tuner : Manufacturer : XuGuang Tech. Co., Ltd.  
M/N : DVT-8ADC1/W41F2\ROH

Max Resolution : 1024\*768@60Hz

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

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

Power Cord : Unshielded, Detachable, 1.80m

**Remark:**

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

## Side View:

- (1) One HDMI1 Port : Connected with PC
- (2) One VGA Port : Connected with PC
- (3) One VGA Audio Port : Connected with PC
- (4) One Component of AV Port : Connected with DVD #1
- (5) One Component of YPbPr Port : Connected with DVD #1
- (6) One ANT Port : Connected with ATSC SG/TV SG
- (7) One Headphone Port : Connected with Earphone
- (8) One Service Port : Do not open to customer

## Back View:

- (9) One HDMI2 Port : Connected with DVD #1
- (10) One HDMI3 Port : Connected with DVD #2
- (11) One Digital Audio Out Port: : Connected with DVD #2

## 2.2 Peripherals

### 2.2.1 PC

Manufacturer : HP  
Model Number : dx7200MT  
Serial Number : CNG622017W  
Power Cord : Unshielded, Detachable, 1.8m  
Certificate : FCC DoC; CE/EMC; VCCI; C-Tick; UL  
BSMI (R33001) 3C (A000111)  
MIC (E-A011-04-2659(B))

### 2.2.2 Printer

Manufacturer : HP  
Model Number : C3990A  
Serial Number : JPZX020487  
Data Cable : Shielded, detachable, 1.5m  
Certificate : GS, CE/EMC, C-Tick, FCC DoC

### 2.2.3 Keyboard

Manufacturer : Microsoft  
Model Number : RT2300  
Serial Number : 7668200662248  
Data Cable : Shielded, undetachable, 1.8m  
Certificate : CE/EMC, FCC DoC, VCCI, MIC, C-Tick,  
BSMI

### 2.2.4 Mouse

Manufacturer : Microsoft  
Model Number : RT2300  
Serial Number : 6965712071551  
Data Cable : Shielded, undetachable, 1.8m.  
Certificate : CE/EMC, FCC DoC, VCCI, MIC, C-Tick,  
BSMI

### 2.2.5 Modem

Manufacturer : TP-LINK  
Model Number : TM-EC5658V  
Serial Number : 07123301053  
Data Cable : Shielded, Detachable, 1.8m  
Certificate : FCC DoC, CE/EMC, CCC

### 2.2.6 Earphone

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

### 2.2.7 TV Signal Generator

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

### 2.2.8 ATSC Signal Generator

Manufacturer : SENCORE  
Model Number : ATSC997  
Serial Number : 6790071

### 2.2.9 DVD #1

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

### 2.2.10 DVD#2

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

## 2.3 Description of Test Facility

Site Description (Semi-Anechoic 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 = 1.26 dB  
Radiated Emission Expanded Uncertainty : U = 3.02 dB



### 3 CONDUCTED EMISSION TEST

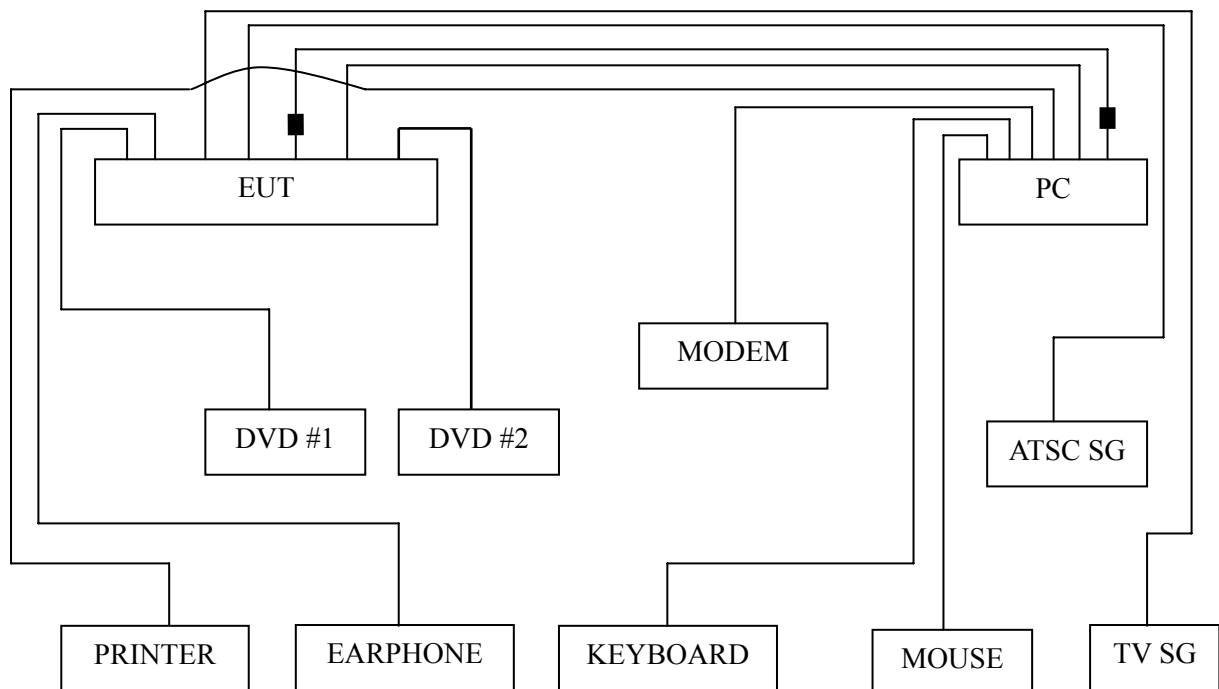
#### 3.1 Test Equipment

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	Oct 15, 2009	Oct 15, 2010
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Apr 02, 2010	Apr 02, 2011
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Apr 02, 2010	Apr 02, 2011
4.	50 $\Omega$ Coaxial Switch	Anritsu	MP59B	6200426389	Mar 19, 2010	Sep 19, 2010
5.	50 $\Omega$ Terminator	Anritsu	BNC	001	Apr 02, 2010	Apr 02, 2011
6.	Software	Audix	E3	SET00200 9804M592	--	--

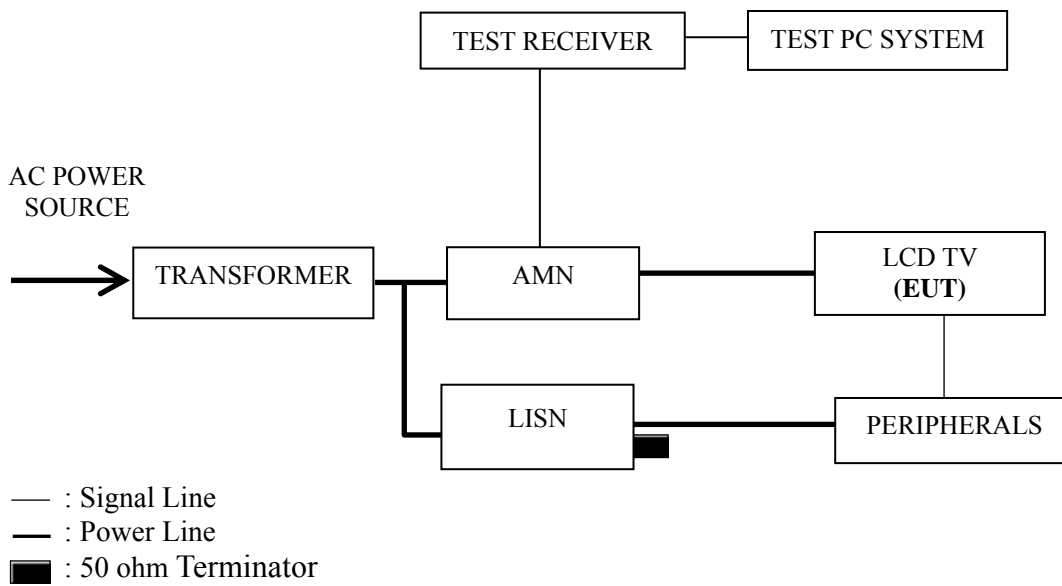
#### 3.2 Block Diagram of Test Setup

##### 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 ( $\mu$ 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 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	P13
D-Sub 800*600@60Hz	P14
D-Sub 1024*768@60Hz	P15
HDMI 640*480@60Hz	P16
HDMI 800*600@60Hz	P17
HDMI 1024*768@60Hz	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 HDMI 1024\*768@60Hz test mode. The worst emission is detected at 0.151 MHz (Average value) with corrected signal level of 47.54 dB (μV) (limit is 55.96 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40V68NUS Humidity : 48%RH

Serial No. : E2010041301 Date of Test : Apr 16, 2010

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

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark	
Line	0.152	50.02	0.26	50.28	65.91	15.63	QP	
	0.435	26.37	0.44	26.81	57.15	30.34		
	0.720	19.86	0.46	20.32	56.00	35.68		
	4.822	25.51	0.64	26.15	56.00	29.85		
	5.774	26.32	0.67	26.99	60.00	33.01		
	18.820	27.45	1.10	28.55	60.00	31.45		
		<b>0.152</b>	<b>46.99</b>	<b>0.26</b>	<b>47.25</b>	<b>55.91</b>	<b>8.66</b>	AV
		0.435	8.76	0.44	9.20	47.15	37.95	
		0.720	9.38	0.46	9.84	46.00	36.16	
		4.822	14.56	0.64	15.20	46.00	30.80	
		5.774	12.44	0.67	13.11	50.00	36.89	
		18.820	17.94	1.10	19.04	50.00	30.96	
Neutral	0.153	50.17	0.23	50.40	65.82	15.42	QP	
	0.435	26.44	0.41	26.85	57.15	30.30		
	1.010	21.65	0.49	22.14	56.00	33.86		
	4.874	25.98	0.65	26.63	56.00	29.37		
	5.200	27.27	0.65	27.92	60.00	32.08		
	23.636	22.68	1.04	23.72	60.00	36.28		
		0.153	44.68	0.23	44.91	55.82	10.91	AV
		0.435	10.56	0.41	10.97	47.15	36.18	
		1.010	9.47	0.49	9.96	46.00	36.04	
		4.874	13.26	0.65	13.91	46.00	32.09	
		5.200	14.07	0.65	14.72	50.00	35.28	
		23.636	11.20	1.04	12.24	50.00	37.76	

TEST ENGINEER: TED ZHU

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40V68NUS Humidity : 48%RH

Serial No. : E2010041301 Date of Test : Apr 16, 2010

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

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	0.155	49.38	0.26	49.64	65.74	16.10	QP
	0.435	26.15	0.44	26.59	57.15	30.56	
	0.720	18.87	0.46	19.33	56.00	36.67	
	4.926	27.71	0.64	28.35	56.00	27.65	
	5.362	28.34	0.65	28.99	60.00	31.01	
	18.820	30.12	1.10	31.22	60.00	28.78	
	0.155	42.19	0.26	42.45	55.74	13.29	AV
	0.435	12.45	0.44	12.89	47.15	34.26	
	0.720	8.74	0.46	9.20	46.00	36.80	
	4.926	12.17	0.64	12.81	46.00	33.19	
	5.362	14.30	0.65	14.95	50.00	35.05	
	18.820	20.60	1.10	21.70	50.00	28.30	
Neutral	0.151	52.80	0.23	53.03	65.96	12.93	QP
	0.435	26.16	0.41	26.57	57.15	30.58	
	0.720	20.07	0.46	20.53	56.00	35.47	
	4.926	26.19	0.65	26.84	56.00	29.16	
	5.419	26.92	0.66	27.58	60.00	32.42	
	23.888	20.05	1.03	21.08	60.00	38.92	
	<b>0.151</b>	<b>45.12</b>	<b>0.23</b>	<b>45.35</b>	<b>55.96</b>	<b>10.61</b>	AV
	0.435	11.07	0.41	11.48	47.15	35.67	
	0.720	9.36	0.46	9.82	46.00	36.18	
	4.926	11.84	0.65	12.49	46.00	33.51	
	5.419	13.19	0.66	13.85	50.00	36.15	
	23.888	8.75	1.03	9.78	50.00	40.22	

TEST ENGINEER: TED ZHU

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40V68NUS Humidity : 48%RH

Serial No. : E2010041301 Date of Test : Apr 16, 2010

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

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark	
Line	0.153	49.23	0.26	49.49	65.82	16.33	QP	
	0.307	24.26	0.37	24.63	60.06	35.43		
	0.720	18.96	0.46	19.42	56.00	36.58		
	5.005	27.71	0.64	28.35	60.00	31.65		
	5.653	28.70	0.66	29.36	60.00	30.64		
	19.326	29.08	1.11	30.19	60.00	29.81	AV	
	0.153	44.78	0.26	45.04	55.82	10.78		
	0.307	14.91	0.37	15.28	50.06	34.78		
	0.720	9.32	0.46	9.78	46.00	36.22		
	5.005	12.74	0.64	13.38	50.00	36.62		
5.653	13.79	0.66	14.45	50.00	35.55	AV		
19.326	16.67	1.11	17.78	50.00	32.22			
Neutral	0.151	50.04	0.23	50.27	65.96		15.69	QP
	0.435	25.08	0.41	25.49	57.15		31.66	
	0.720	19.64	0.46	20.10	56.00		35.90	
	4.926	25.26	0.65	25.91	56.00	30.09		
	5.535	26.01	0.67	26.68	60.00	33.32		
	23.636	21.82	1.04	22.86	60.00	37.14	AV	
	<b>0.151</b>	<b>47.10</b>	<b>0.23</b>	<b>47.33</b>	<b>55.96</b>	<b>8.63</b>		
	0.435	10.79	0.41	11.20	47.15	35.95		
	0.720	12.33	0.46	12.79	46.00	33.21		
	4.926	10.90	0.65	11.55	46.00	34.45		
5.535	13.73	0.67	14.40	50.00	35.60	AV		
23.636	10.83	1.04	11.87	50.00	38.13			

TEST ENGINEER: TED ZHU

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40V68NUS Humidity : 48%RH

Serial No. : E2010041301 Date of Test : Apr 16, 2010

Test Mode : HDMI 640\*480@60Hz

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	0.155	48.28	0.26	48.54	65.74	17.20	QP
	0.440	24.85	0.45	25.30	57.07	31.77	
	1.480	26.88	0.52	27.40	56.00	28.60	
	4.874	27.79	0.64	28.43	56.00	27.57	
	5.362	28.89	0.65	29.54	60.00	30.46	
	17.568	27.96	1.04	29.00	60.00	31.00	
	0.155	43.67	0.26	43.93	55.74	11.81	AV
	0.440	15.34	0.45	15.79	47.07	31.28	
	1.480	24.45	0.52	24.97	46.00	21.03	
	4.874	11.14	0.64	11.78	46.00	34.22	
	5.362	15.70	0.65	16.35	50.00	33.65	
	17.568	16.08	1.04	17.12	50.00	32.88	
Neutral	0.152	49.53	0.23	49.76	65.91	16.15	QP
	0.435	25.34	0.41	25.75	57.15	31.40	
	1.480	27.10	0.52	27.62	56.00	28.38	
	4.315	28.26	0.63	28.89	56.00	27.11	
	5.653	28.92	0.67	29.59	60.00	30.41	
	18.426	25.56	1.04	26.60	60.00	33.40	
	<b>0.152</b>	<b>45.97</b>	<b>0.23</b>	<b>46.20</b>	<b>55.91</b>	<b>9.71</b>	AV
	0.435	9.37	0.41	9.78	47.15	37.37	
	1.480	23.09	0.52	23.61	46.00	22.39	
	4.315	9.65	0.63	10.28	46.00	35.72	
	5.653	12.53	0.67	13.20	50.00	36.80	
	18.426	16.60	1.04	17.64	50.00	32.36	

TEST ENGINEER: TED ZHU



EUT : LCD TV Temperature : 22°C

Model No. : LTDN40V68NUS Humidity : 48%RH

Serial No. : E2010041301 Date of Test : Apr 16, 2010

Test Mode : HDMI 800\*600@60Hz

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	0.153	49.39	0.26	49.65	65.82	16.17	QP
	0.435	25.33	0.44	25.77	57.15	31.38	
	0.720	19.66	0.46	20.12	56.00	35.88	
	4.772	27.84	0.64	28.48	56.00	27.52	
	5.419	27.75	0.65	28.40	60.00	31.60	
	19.224	27.01	1.11	28.12	60.00	31.88	
	<b>0.153</b>	<b>45.38</b>	<b>0.26</b>	<b>45.64</b>	<b>55.82</b>	<b>10.18</b>	AV
	0.435	15.30	0.44	15.74	47.15	31.41	
	0.720	11.06	0.46	11.52	46.00	34.48	
	4.772	15.56	0.64	16.20	46.00	29.80	
	5.419	13.87	0.65	14.52	50.00	35.48	
	19.224	17.33	1.11	18.44	50.00	31.56	
Neutral	0.152	50.37	0.23	50.60	65.91	15.31	QP
	0.435	26.11	0.41	26.52	57.15	30.63	
	1.374	25.98	0.51	26.49	56.00	29.51	
	4.315	27.26	0.63	27.89	56.00	28.11	
	5.166	29.73	0.65	30.38	60.00	29.62	
	10.790	27.71	0.78	28.49	60.00	31.51	
	0.152	43.87	0.23	44.10	55.91	11.81	AV
	0.435	13.33	0.41	13.74	47.15	33.41	
	1.374	20.65	0.51	21.16	46.00	24.84	
	4.315	15.68	0.63	16.31	46.00	29.69	
	5.166	17.57	0.65	18.22	50.00	31.78	
	10.790	15.01	0.78	15.79	50.00	34.21	

TEST ENGINEER: TED ZHU

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40V68NUS Humidity : 48%RH

Serial No. : E2010041301 Date of Test : Apr 16, 2010

Test Mode : HDMI 1024\*768@60Hz

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	0.155	48.36	0.26	48.62	65.74	17.12	QP
	0.435	25.01	0.44	25.45	57.15	31.70	
	0.720	20.42	0.46	20.88	56.00	35.12	
	4.501	25.44	0.63	26.07	56.00	29.93	
	5.993	27.49	0.67	28.16	60.00	31.84	
	19.224	28.77	1.11	29.88	60.00	30.12	
	0.155	43.22	0.26	43.48	55.74	12.26	AV
	0.435	13.08	0.44	13.52	47.15	33.63	
	0.720	11.64	0.46	12.10	46.00	33.90	
	4.501	13.17	0.63	13.80	46.00	32.20	
5.993	13.10	0.67	13.77	50.00	36.23		
19.224	17.31	1.11	18.42	50.00	31.58		
Neutral	0.151	49.94	0.23	50.17	65.96	15.79	QP
	0.435	25.38	0.41	25.79	57.15	31.36	
	0.720	21.36	0.46	21.82	56.00	34.18	
	4.772	25.54	0.65	26.19	56.00	29.81	
	5.362	26.46	0.66	27.12	60.00	32.88	
	28.003	19.87	1.07	20.94	60.00	39.06	
	<b>0.151</b>	<b>47.31</b>	<b>0.23</b>	<b>47.54</b>	<b>55.96</b>	<b>8.42</b>	AV
	0.435	8.34	0.41	8.75	47.15	38.40	
	0.720	10.23	0.46	10.69	46.00	35.31	
	4.772	10.73	0.65	11.38	46.00	34.62	
5.362	12.02	0.66	12.68	50.00	37.32		
28.003	10.73	1.07	11.80	50.00	38.20		

TEST ENGINEER: TED ZHU

## 4 RADIATED EMISSION TEST

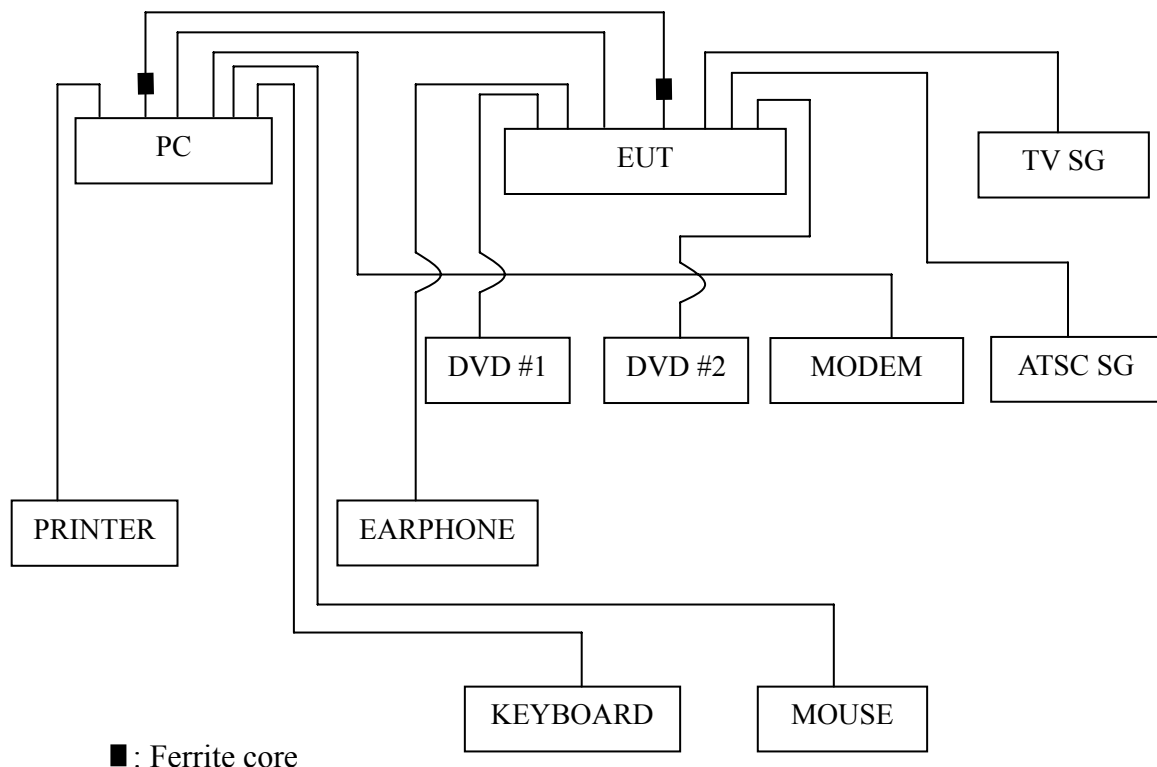
### 4.1 Test Equipment

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

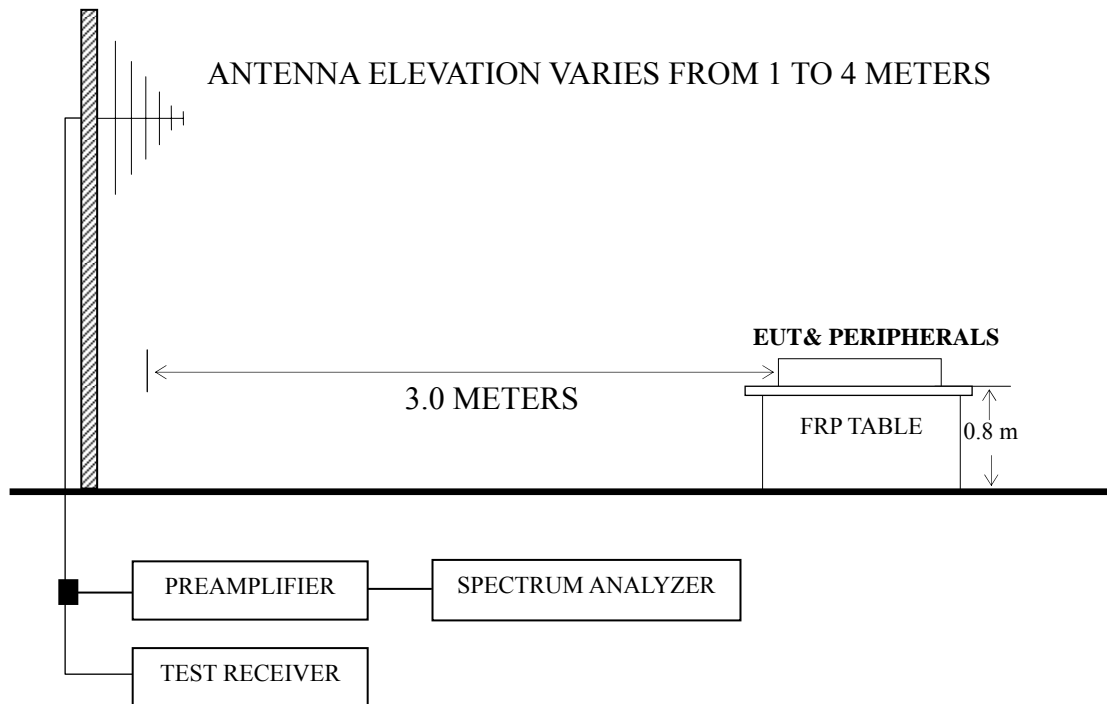
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESVS10	844594/001	Mar 07, 2010	Mar 07, 2011
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 19, 2010	Sep 19, 2010
3.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 14, 2008	May 14, 2010
4.	Spectrum Analyzer	Agilent	E7405A	MY45106600	May 19, 2009	May 19, 2010
5.	Software	Audix	E3	SET00200 9912M295-2	--	--

### 4.2 Block Diagram of Test Setup

#### 4.2.1 EUT and Peripherals



#### 4.2.2 Radiated emission test setup



■ : 50 ohm Coaxial Switch

#### 4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)]

Frequency (MHz)	Distance (m)	Field strength limits	
		( $\mu\text{V/m}$ )	dB ( $\mu\text{V/m}$ )
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level dB ( $\mu\text{V/m}$ ) = 20 log Emission Level ( $\mu\text{V/m}$ )

NOTE 2 - The tighter limit applies at the band edges.

NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

NOTE 4 - The limits shown are based on Quasi-peak value detector.

#### 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.

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

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

NOTE 2 – The emission levels that are 20dB below the official limit are not reported.

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

NOTE 4 – The worst case is for D-Sub 1024\*768@60Hz test mode. The worst emission at horizontal polarization was detected at 300.630 MHz with corrected signal level of 42.81dB ( $\mu\text{V}/\text{m}$ ) (limit is 46.00dB ( $\mu\text{V}/\text{m}$ )), when the antenna was 1.30 m height and the turntable was at 45°. The worst emission at vertical polarization was detected at 829.280 MHz with corrected signal level of 44.13 dB ( $\mu\text{V}/\text{m}$ ) (limit is 46.00 dB ( $\mu\text{V}/\text{m}$ )), when the antenna was 1.20 m height and the turntable was at 110°.

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40V68NUS Humidity : 60%RH

Serial No. : E2010041301 Date of Test : Apr 17, 2010

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

Polarization	Frequency (MHz)	Meter Reading dB ( $\mu$ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB ( $\mu$ V/m)	Limits dB ( $\mu$ V/m)	Margin (dB)
Horizontal	75.590	50.33	7.24	0.92	30.31	40.00	9.69
	213.330	45.79	11.30	1.49	31.07	43.50	12.43
	300.630	52.79	13.93	1.77	41.31	46.00	4.69
	526.640	50.30	18.24	2.32	42.22	46.00	3.78
	567.380	49.93	18.81	2.39	42.52	46.00	3.48
	<b>754.590</b>	<b>48.49</b>	<b>20.27</b>	<b>2.80</b>	<b>43.14</b>	<b>46.00</b>	<b>2.86</b>
Vertical	31.940	36.60	18.49	0.65	27.28	40.00	12.72
	80.440	47.12	7.85	0.95	27.80	40.00	12.20
	150.280	50.38	11.25	1.24	34.96	43.50	8.54
	240.490	44.78	12.56	1.58	31.61	46.00	14.39
	<b>300.630</b>	<b>54.18</b>	<b>13.93</b>	<b>1.77</b>	<b>42.70</b>	<b>46.00</b>	<b>3.30</b>
	337.490	44.95	14.94	1.88	33.90	46.00	12.10

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40V68NUS Humidity : 60%RH

Serial No. : E2010041301 Date of Test : Apr 17, 2010

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	30.970	41.49	19.03	0.64	32.72	40.00	7.28
	155.130	45.72	10.89	1.26	30.02	43.50	13.48
	310.330	50.84	14.17	1.80	39.46	46.00	6.54
	<b>450.980</b>	<b>51.86</b>	<b>17.23</b>	<b>2.17</b>	<b>42.48</b>	<b>46.00</b>	<b>3.52</b>
	526.640	46.91	18.24	2.32	38.83	46.00	7.17
	829.280	44.74	20.98	2.93	40.16	46.00	5.84
Vertical	80.440	51.78	7.85	0.95	32.46	40.00	7.54
	130.880	46.43	12.47	1.18	32.03	43.50	11.47
	300.630	54.99	13.93	1.77	43.51	46.00	2.49
	<b>376.290</b>	<b>54.33</b>	<b>15.99</b>	<b>1.99</b>	<b>43.71</b>	<b>46.00</b>	<b>2.29</b>
	450.980	52.32	17.23	2.17	42.94	46.00	3.06
	526.640	50.43	18.24	2.32	42.35	46.00	3.65

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40V68NUS Humidity : 60%RH

Serial No. : E2010041301 Date of Test : Apr 17, 2010

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

Polarization	Frequency (MHz)	Meter Reading dB ( $\mu$ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB ( $\mu$ V/m)	Limits dB ( $\mu$ V/m)	Margin (dB)
Horizontal	31.940	43.11	18.49	0.65	33.79	40.00	6.21
	80.440	48.93	7.85	0.95	29.61	40.00	10.39
	<b>300.630</b>	<b>54.29</b>	<b>13.93</b>	<b>1.77</b>	<b>42.81</b>	<b>46.00</b>	<b>3.19</b>
	415.090	52.45	16.72	2.09	42.35	46.00	3.65
	526.640	48.93	18.24	2.32	40.85	46.00	5.15
	829.280	44.83	20.98	2.93	40.25	46.00	5.75
Vertical	31.940	41.09	18.49	0.65	31.77	40.00	8.23
	80.440	52.53	7.85	0.95	33.21	40.00	6.79
	288.990	53.15	13.71	1.73	41.39	46.00	4.61
	378.230	49.95	16.03	2.00	39.34	46.00	6.66
	567.380	49.09	18.81	2.39	41.68	46.00	4.32
	<b>829.280</b>	<b>48.71</b>	<b>20.98</b>	<b>2.93</b>	<b>44.13</b>	<b>46.00</b>	<b>1.87</b>

TEST ENGINEER: RAVEN JIN



EUT : LCD TV Temperature : 22°C

Model No. : LTDN40V68NUS Humidity : 60%RH

Serial No. : E2010041301 Date of Test : Apr 17, 2010

Test Mode : HDMI 640\*480@60Hz

Polarization	Frequency (MHz)	Meter Reading dB ( $\mu$ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB ( $\mu$ V/m)	Limits dB ( $\mu$ V/m)	Margin (dB)
Horizontal	75.590	49.33	7.24	0.92	29.31	40.00	10.69
	245.340	37.70	12.72	1.59	24.72	46.00	21.28
	300.630	48.79	13.93	1.77	37.31	46.00	8.69
	526.640	48.30	18.24	2.32	40.22	46.00	5.78
	<b>754.590</b>	<b>46.49</b>	<b>20.27</b>	<b>2.80</b>	<b>41.14</b>	<b>46.00</b>	<b>4.86</b>
	979.630	45.32	22.27	4.01	43.80	54.00	10.20
Vertical	80.440	44.12	7.85	0.95	24.80	40.00	15.20
	150.280	47.38	11.25	1.24	31.96	43.50	11.54
	<b>300.630</b>	<b>51.18</b>	<b>13.93</b>	<b>1.77</b>	<b>39.70</b>	<b>46.00</b>	<b>6.30</b>
	509.180	35.02	18.01	2.27	26.66	46.00	19.34
	676.990	35.30	19.59	2.63	28.96	46.00	17.04
	979.630	39.20	22.27	4.01	37.68	54.00	16.32

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40V68NUS Humidity : 60%RH

Serial No. : E2010041301 Date of Test : Apr 17, 2010

Test Mode : HDMI 800\*600@60Hz

Polarization	Frequency (MHz)	Meter Reading dB ( $\mu$ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB ( $\mu$ V/m)	Limits dB ( $\mu$ V/m)	Margin (dB)
Horizontal	150.280	45.31	11.25	1.24	29.89	43.50	13.61
	310.330	46.84	14.17	1.80	35.46	46.00	10.54
	<b>450.980</b>	<b>47.86</b>	<b>17.23</b>	<b>2.17</b>	<b>38.48</b>	<b>46.00</b>	<b>7.52</b>
	567.380	41.59	18.81	2.39	34.18	46.00	11.82
	754.590	42.13	20.27	2.80	36.78	46.00	9.22
	943.740	38.67	22.02	3.58	35.97	46.00	10.03
Vertical	80.440	50.78	7.85	0.95	31.46	40.00	8.54
	150.280	50.18	11.25	1.24	34.76	43.50	8.74
	300.630	49.99	13.93	1.77	38.51	46.00	7.49
	376.290	50.33	15.99	1.99	39.71	46.00	6.29
	<b>526.640</b>	<b>48.43</b>	<b>18.24</b>	<b>2.32</b>	<b>40.35</b>	<b>46.00</b>	<b>5.65</b>
	829.280	43.64	20.98	2.93	39.06	46.00	6.94

TEST ENGINEER: RAVEN JIN

EUT : LCD TV Temperature : 22°C

Model No. : LTDN40V68NUS Humidity : 60%RH

Serial No. : E2010041301 Date of Test : Apr 17, 2010

Test Mode : HDMI 1024\*768@60Hz

Polarization	Frequency (MHz)	Meter Reading dB ( $\mu$ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB ( $\mu$ V/m)	Limits dB ( $\mu$ V/m)	Margin (dB)
Horizontal	32.910	37.50	17.95	0.66	27.63	40.00	12.37
	<b>300.630</b>	<b>50.29</b>	<b>13.93</b>	<b>1.77</b>	<b>38.81</b>	<b>46.00</b>	<b>7.19</b>
	415.090	48.45	16.72	2.09	38.35	46.00	7.65
	526.640	44.93	18.24	2.32	36.85	46.00	9.15
	829.280	40.83	20.98	2.93	36.25	46.00	9.75
	979.630	39.85	22.27	4.01	38.33	54.00	15.67
Vertical	284.140	49.16	13.62	1.72	37.30	46.00	8.70
	324.880	49.91	14.58	1.84	38.71	46.00	7.29
	421.880	45.57	16.79	2.10	35.58	46.00	10.42
	567.380	46.09	18.81	2.39	38.68	46.00	7.32
	<b>829.280</b>	<b>45.71</b>	<b>20.98</b>	<b>2.93</b>	<b>41.13</b>	<b>46.00</b>	<b>4.87</b>
	979.630	45.15	22.27	4.01	43.63	54.00	10.37

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 20, 22
		Rui Feng Electronic Co., Ltd.	
		Hai An Magnetic Material No.2 Factory	
Ferrite core	ZCAT2132-1130\ROH	FEELUX	See Internal Photos Figure 21
		Rui Feng Electronic Co., Ltd.	
		Hai An 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)**