

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

LED LCD TV

Model No.	Serial No.	Brand
LTDN42K20US	E1201003-01/02	Hisense
F42K20E	--	

FCC ID : W9HLCDD0014

Prepared For : Hisense Electric Co., Ltd.  
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Report No. : ACI-F12008  
Date of Test : Jan 11 – 13, 2012  
Date of Report : Jan 16, 2012

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## TEST REPORT FOR FCC CERTIFICATE

Applicant : Hisense Electric Co., Ltd.

Manufacturer : Hisense Electric Co., Ltd.

EUT Description : LED LCD TV

Model No.	Serial No.	Brand	Power Supply
LTDN42K20US	E1201003-01/02	Hisense	120V/60Hz
F42K20E	--		

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2010  
AND ANSI C63.4-2003*

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B (Class B) limits both radiated and conducted emissions.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report shows that the EUT (M/N: LTDN42K20US, F42K20E; S/N: E1201003-01/02) which was tested in 3m anechoic chamber Jan 11 – 13, 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.F12007, a Verification report.***


Date of Test : Jan 11 – 13, 2012 Date of Report : Jan 16, 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
<b>EMISSION</b>			
Conducted Disturbance at the Mains Terminal	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2010 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2010 AND ANSI C63.4-2003	15.109(a) Class B	Pass

## 2 GENERAL INFORMATION

### 2.1 Description of Equipment Under Test

Description : LED LCD TV

Type of EUT :  Production  Pre-product  Pro-type

Model No.	:	LTDN42K20US	F42K20E
Serial No.	:	E1201003-01/02	--

Note : The above models are all the same except for the different model name.  
The LTDN42K20US was tested and recorded in the report.

Brand : Hisense

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 : Hisense  
M/N : HE420FF-B57(1000)\PW1\ROH

Tuner : Manufacturer : XuGuang Tech.Co.,Ltd  
M/N : DVT-8C/W41FOHS\ROH

Max Resolution : 1024\*768@60Hz

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

HDMI Cable : Shielded, Detachable, 1.00m,

Power Cord : Unshielded, Detachable, 1.80m

**Remark:**

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

## Bottom Port:

- (1) One VGA Port : Connected with PC
- (2) One VGA AUDIO IN Port : Connected with PC
- (3) One HDMI1 Port : Connected with DVD #1
- (4) One HDMI2 Port : Connected with DVD #2
- (5) One HDMI3 Port : Connected with PC
- (6) One Service Port : Do not open to customer
- (7) One DIGITAL AUDIO OUT Port : Connected with DVD #1

## Side Port:

- (8) One component of YPbPr Port : Connected with DVD #2
- (9) One component of YPbPr Audio Port : Connected with DVD #2
- (10) One Headphone Port : Connected with Earphone
- (11) One ANT Port : Connected with ATSC SG
- (12) One component of AV Port : Connected with DVD #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 #1

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

### 2.2.10 DVD #2

Manufacturer : LG  
Model Number : DF9921N  
Serial Number : 3850R-M846W  
Certificate : FCC DoC, CE/EMC, CCC

## 2.3 Description of Test Facility

Site Description (No.3 3m Chamber) : Sept. 17, 1998 file on  
Apr 29, 2009 Renewed  
Federal Communications Commission  
FCC Engineering Laboratory  
7435 Oakland Mills Road  
Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3F 34Bldg 680 Guiping Rd,  
Caohejing Hi-Tech Park,  
Shanghai 200233, China

NVLAP Lab Code : 200371-0

## 2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty: U = 3.38dB  
Radiated Emission Expanded Uncertainty (30-200MHz):  
U = 4.58 dB (horizontal)  
U = 4.70 dB (vertical)

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



### 3 CONDUCTED EMISSION TEST

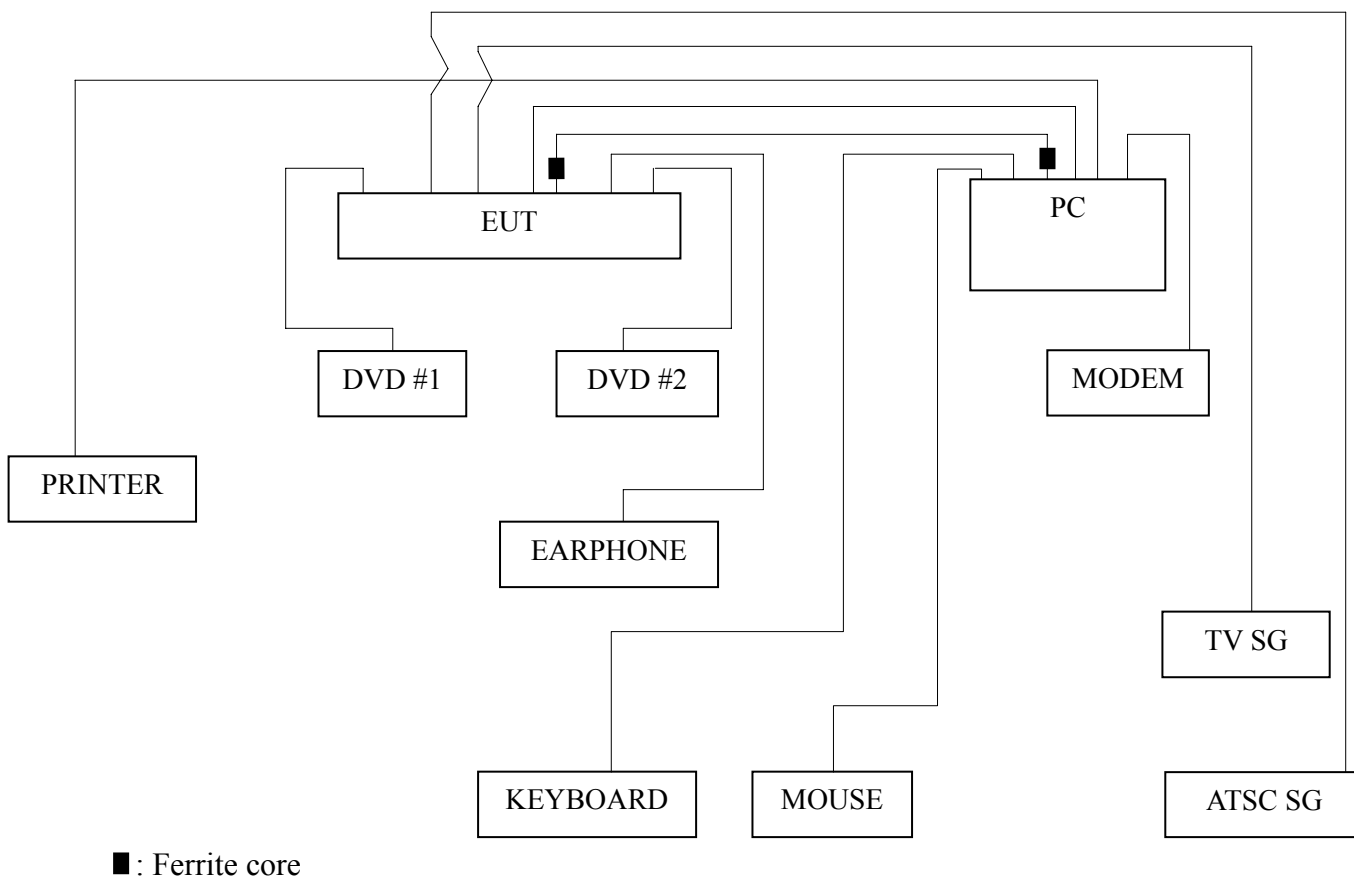
#### 3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

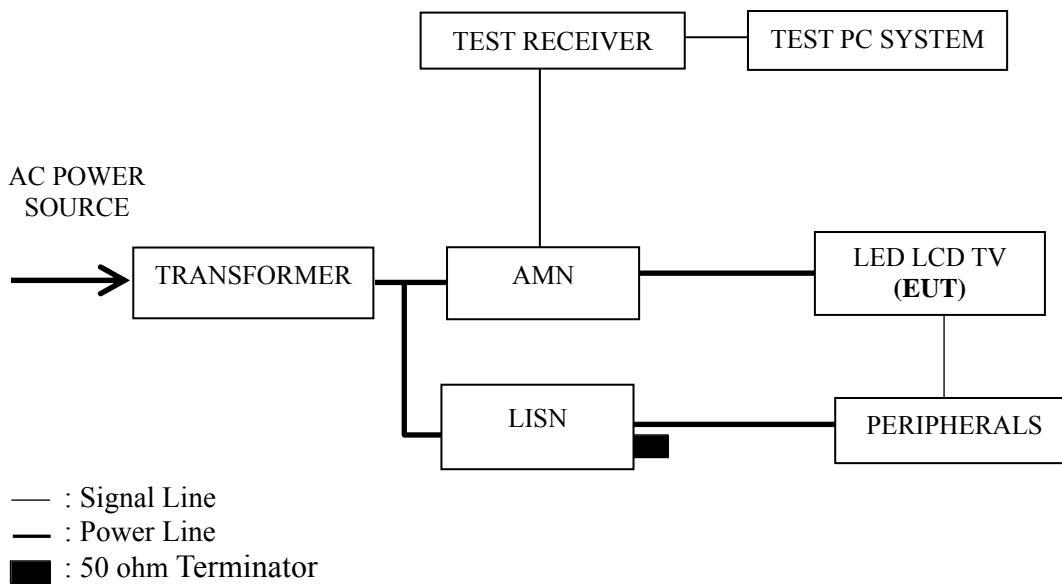
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	100841	Mar 22, 2011	Mar 22, 2012
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Mar 22, 2011	Mar 22, 2012
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 22, 2011	Mar 22, 2012
4.	50 $\Omega$ Coaxial Switch	Anritsu	MP59B	6200426389	Sep 18, 2011	Mar 18, 2012
5.	50 $\Omega$ Terminator	Anritsu	BNC	001	Mar 22, 2011	Mar 22, 2012
6.	Software	Audix	E3	SET00200 9804M592	--	--

#### 3.2 Block Diagram of Test Setup

##### 3.2.1 EUT & Peripherals



### 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 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 D-Sub 640\*480@60Hz test mode. The worst emission is detected at 0.184 MHz (Quasi-Peak Value) with corrected signal level of 42.54 dB (μV) (limit is 64.28 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN42K20US Humidity : 48%RH

Serial No. : E1201003-01/02 Date of Test : Jan 11, 2012

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	<b>0.184</b>	<b>32.73</b>	<b>9.81</b>	<b>42.54</b>	<b>64.28</b>	<b>21.74</b>	QP
	0.317	18.18	9.75	27.93	59.80	31.87	
	0.541	14.59	9.78	24.37	56.00	31.63	
	1.032	16.45	10.20	26.65	56.00	29.35	
	6.285	13.11	10.15	23.26	60.00	36.74	
	16.839	23.80	10.27	34.07	60.00	25.93	
	0.184	21.40	9.81	31.21	54.28	23.07	AV
	0.317	9.10	9.75	18.85	49.80	30.95	
	0.541	6.50	9.78	16.28	46.00	29.72	
	1.032	7.90	10.20	18.10	46.00	27.90	
	6.285	6.30	10.15	16.45	50.00	33.55	
	16.839	11.20	10.27	21.47	50.00	28.53	
Neutral	0.183	31.17	9.79	40.96	64.33	23.37	QP
	0.320	18.62	9.74	28.36	59.71	31.35	
	0.535	15.43	9.76	25.19	56.00	30.81	
	1.054	15.88	9.92	25.80	56.00	30.20	
	6.056	13.32	10.29	23.61	60.00	36.39	
	17.383	22.96	10.16	33.12	60.00	26.88	
	0.183	20.80	9.79	30.59	54.33	23.74	AV
	0.320	10.40	9.74	20.14	49.71	29.57	
	0.535	7.20	9.76	16.96	46.00	29.04	
	1.054	7.50	9.92	17.42	46.00	28.58	
	6.056	6.30	10.29	16.59	50.00	33.41	
	17.383	11.79	10.16	21.95	50.00	28.05	

TEST ENGINEER: LVY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN42K20US Humidity : 48%RH

Serial No. : E1201003-01/02 Date of Test : Jan 11, 2012

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	<b>0.184</b>	<b>32.58</b>	<b>9.81</b>	<b>42.39</b>	<b>64.28</b>	<b>21.89</b>	QP
	0.317	18.37	9.75	28.12	59.80	31.68	
	0.546	14.46	9.79	24.25	56.00	31.75	
	1.032	16.57	10.20	26.77	56.00	29.23	
	7.526	13.22	10.21	23.43	60.00	36.57	
	16.839	23.01	10.27	33.28	60.00	26.72	
	0.184	21.70	9.81	31.51	54.28	22.77	AV
	0.317	9.60	9.75	19.35	49.80	30.45	
	0.546	6.10	9.79	15.89	46.00	30.11	
	1.032	7.20	10.20	17.40	46.00	28.60	
	7.526	6.29	10.21	16.50	50.00	33.50	
	16.839	12.10	10.27	22.37	50.00	27.63	
Neutral	0.184	31.13	9.79	40.92	64.28	23.36	QP
	0.320	18.39	9.74	28.13	59.71	31.58	
	0.546	14.19	9.76	23.95	56.00	32.05	
	1.054	16.59	9.92	26.51	56.00	29.49	
	5.929	14.05	10.28	24.33	60.00	35.67	
	17.018	25.09	10.18	35.27	60.00	24.73	
	0.184	21.10	9.79	30.89	54.28	23.39	AV
	0.320	9.40	9.74	19.14	49.71	30.57	
	0.546	7.20	9.76	16.96	46.00	29.04	
	1.054	8.30	9.92	18.22	46.00	27.78	
	5.929	6.39	10.28	16.67	50.00	33.33	
	17.018	14.70	10.18	24.88	50.00	25.12	

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN42K20US Humidity : 48%RH

Serial No. : E1201003-01/02 Date of Test : Jan 11, 2012

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	<b>0.183</b>	<b>32.61</b>	<b>9.81</b>	<b>42.42</b>	<b>64.33</b>	<b>21.91</b>	QP
	0.313	17.85	9.76	27.61	59.88	32.27	
	0.535	13.26	9.78	23.04	56.00	32.96	
	1.054	17.36	10.20	27.56	56.00	28.44	
	7.526	14.23	10.21	24.44	60.00	35.56	
	16.839	22.79	10.27	33.06	60.00	26.94	
	0.183	22.50	9.81	32.31	54.33	22.02	AV
	0.313	8.60	9.76	18.36	49.88	31.52	
	0.535	6.80	9.78	16.58	46.00	29.42	
	1.054	9.10	10.20	19.30	46.00	26.70	
	7.526	7.09	10.21	17.30	50.00	32.70	
	16.839	11.70	10.27	21.97	50.00	28.03	
Neutral	0.184	30.92	9.79	40.71	64.28	23.57	QP
	0.320	18.23	9.74	27.97	59.71	31.74	
	0.558	15.95	9.76	25.71	56.00	30.29	
	1.054	15.86	9.92	25.78	56.00	30.22	
	6.056	13.66	10.29	23.95	60.00	36.05	
	12.124	23.60	10.30	33.90	60.00	26.10	
	0.184	20.80	9.79	30.59	54.28	23.69	AV
	0.320	9.20	9.74	18.94	49.71	30.77	
	0.558	8.10	9.76	17.86	46.00	28.14	
	1.054	8.60	9.92	18.52	46.00	27.48	
	6.056	6.20	10.29	16.49	50.00	33.51	
	12.124	12.90	10.30	23.20	50.00	26.80	

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN42K20US Humidity : 48%RH

Serial No. : E1201003-01/02 Date of Test : Jan 11, 2012

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	<b>0.186</b>	<b>32.31</b>	<b>9.80</b>	<b>42.11</b>	<b>64.20</b>	<b>22.09</b>	QP
	0.320	17.97	9.75	27.72	59.71	31.99	
	0.541	14.29	9.78	24.07	56.00	31.93	
	1.043	17.06	10.20	27.26	56.00	28.74	
	7.252	13.30	10.20	23.50	60.00	36.50	
	16.839	23.43	10.27	33.70	60.00	26.30	
	0.186	21.70	9.80	31.50	54.20	22.70	AV
	0.320	9.10	9.75	18.85	49.71	30.86	
	0.541	7.50	9.78	17.28	46.00	28.72	
	1.043	8.70	10.20	18.90	46.00	27.10	
	7.252	6.20	10.20	16.40	50.00	33.60	
	16.839	12.50	10.27	22.77	50.00	27.23	
Neutral	0.186	30.52	9.78	40.30	64.20	23.90	QP
	0.320	17.94	9.74	27.68	59.71	32.03	
	0.546	14.64	9.76	24.40	56.00	31.60	
	1.032	15.75	9.92	25.67	56.00	30.33	
	6.056	13.34	10.29	23.63	60.00	36.37	
	17.383	22.66	10.16	32.82	60.00	27.18	
	0.186	20.50	9.78	30.28	54.20	23.92	AV
	0.320	9.40	9.74	19.14	49.71	30.57	
	0.546	7.60	9.76	17.36	46.00	28.64	
	1.032	8.10	9.92	18.02	46.00	27.98	
	6.056	7.50	10.29	17.79	50.00	32.21	
	17.383	12.09	10.16	22.25	50.00	27.75	

TEST ENGINEER: LVY LV



EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN42K20US Humidity : 48%RH

Serial No. : E1201003-01/02 Date of Test : Jan 11, 2012

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	<b>0.184</b>	<b>32.38</b>	<b>9.81</b>	<b>42.19</b>	<b>64.28</b>	<b>22.09</b>	QP
	0.317	18.13	9.75	27.88	59.80	31.92	
	0.546	14.78	9.79	24.57	56.00	31.43	
	1.032	15.98	10.20	26.18	56.00	29.82	
	7.526	13.55	10.21	23.76	60.00	36.24	
	16.839	23.26	10.27	33.53	60.00	26.47	
	0.184	21.90	9.81	31.71	54.28	22.57	AV
	0.317	9.60	9.75	19.35	49.80	30.45	
	0.546	6.40	9.79	16.19	46.00	29.81	
	1.032	8.30	10.20	18.50	46.00	27.50	
	7.526	6.79	10.21	17.00	50.00	33.00	
	16.839	12.60	10.27	22.87	50.00	27.13	
Neutral	0.183	31.62	9.79	41.41	64.33	22.92	QP
	0.317	18.32	9.74	28.06	59.80	31.74	
	0.564	14.97	9.76	24.73	56.00	31.27	
	1.054	15.58	9.92	25.50	56.00	30.50	
	6.186	13.77	10.29	24.06	60.00	35.94	
	16.839	23.42	10.18	33.60	60.00	26.40	
	0.183	20.80	9.79	30.59	54.33	23.74	AV
	0.317	9.30	9.74	19.04	49.80	30.76	
	0.564	7.11	9.76	16.87	46.00	29.13	
	1.054	8.70	9.92	18.62	46.00	27.38	
	6.186	6.91	10.29	17.20	50.00	32.80	
	16.839	12.30	10.18	22.48	50.00	27.52	

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN42K20US Humidity : 48%RH

Serial No. : E1201003-01/02 Date of Test : Jan 11, 2012

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	<b>0.183</b>	<b>32.39</b>	<b>9.81</b>	<b>42.20</b>	<b>64.33</b>	<b>22.13</b>	QP
	0.320	18.13	9.75	27.88	59.71	31.83	
	0.541	13.91	9.78	23.69	56.00	32.31	
	1.117	16.25	10.20	26.45	56.00	29.55	
	7.329	12.89	10.20	23.09	60.00	36.91	
	11.933	23.33	10.21	33.54	60.00	26.46	
	0.183	22.30	9.81	32.11	54.33	22.22	AV
	0.320	9.40	9.75	19.15	49.71	30.56	
	0.541	6.70	9.78	16.48	46.00	29.52	
	1.117	8.30	10.20	18.50	46.00	27.50	
	7.329	6.40	10.20	16.60	50.00	33.40	
	11.933	12.30	10.21	22.51	50.00	27.49	
Neutral	0.183	31.53	9.79	41.32	64.33	23.01	QP
	0.320	18.57	9.74	28.31	59.71	31.40	
	0.541	15.01	9.76	24.77	56.00	31.23	
	1.032	17.55	9.92	27.47	56.00	28.53	
	6.627	13.13	10.35	23.48	60.00	36.52	
	17.018	23.75	10.18	33.93	60.00	26.07	
	0.183	20.90	9.79	30.69	54.33	23.64	AV
	0.320	9.20	9.74	18.94	49.71	30.77	
	0.541	7.90	9.76	17.66	46.00	28.34	
	1.032	8.40	9.92	18.32	46.00	27.68	
	6.627	6.89	10.35	17.24	50.00	32.76	
	17.018	12.60	10.18	22.78	50.00	27.22	

TEST ENGINEER: L V Y L V

## 4 RADIATED EMISSION TEST

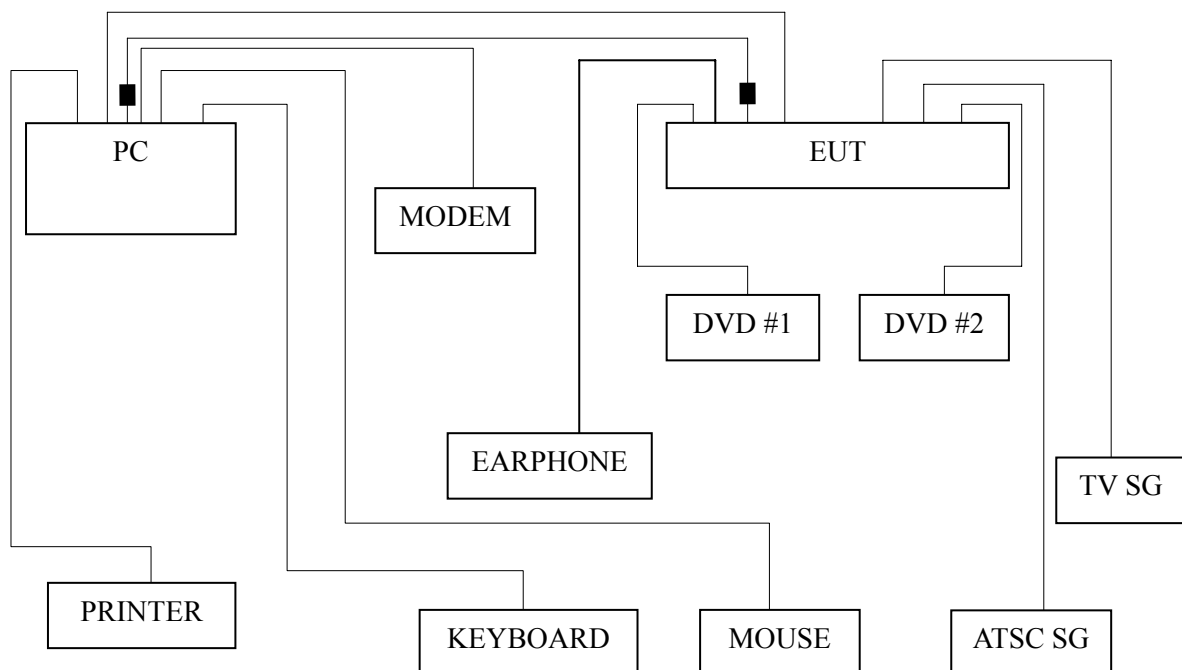
### 4.1 Test Equipment

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, 2011	Mar 22, 2012
2.	Preamplifier	Agilent	8447D	2944A10548	Sep 18, 2011	Mar 18, 2012
3.	Bi-log Antenna	TESEQ	CBL6112D	23192	Dec 01, 2010	Dec 01, 2011
4.	Spectrum Analyzer	Agilent	E7405A	MY45106600	Mar 22, 2011	Mar 22, 2012
5.	50 $\Omega$ Coaxial Switch	Anritsu	MP59B	6200426390	Sep 18, 2011	Mar 18, 2012
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

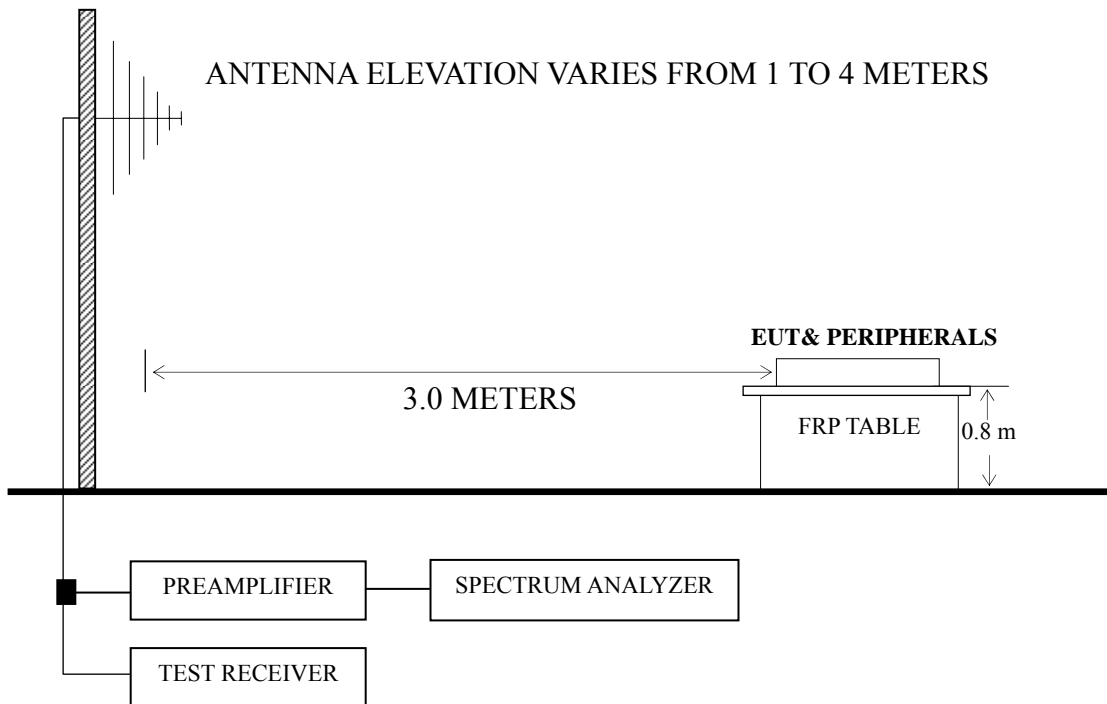
### 4.2 Block Diagram of Test Setup

#### 4.2.1 EUT and Peripherals



■: Ferrite core

### 4.2.2 Radiated emission test setup



■ : 50 ohm Coaxial Switch

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

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

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

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

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

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

### 4.4 Test Configuration

The configuration of the EUT and peripherals are same as those used in conducted emission test.

Please refer to Sec.3.4.

### 4.5 Operating Condition of EUT

Same as conducted emission test which is listed in Sec.3.5, except for the test setup replaced by Sec.4.2.

## 4.6 Test Procedures

The EUT and peripherals were placed on a FRP turntable that is 0.8 meter above ground. The FRP turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. Broadband antenna (Calibrated Bilog Antenna) was used as receiving antenna. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.4:2003 requirements during radiated emission test.

The I.F. bandwidth of Test Receiver R&S ESVS10 was set at 120 kHz.

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

The test modes were done on radiated disturbance test and all the test results are listed in Sec.4.7.

## 4.7 Test Results

**<PASS>**

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

Test Mode	Data Page
D-Sub 640*480@60Hz	P23
D-Sub 800*600@60Hz	P24
D-Sub 1024*768@60Hz	P25
HDMI 640*480@60Hz	P26
HDMI 800*600@60Hz	P27
HDMI 1024*768@60Hz	P28

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

NOTE 2 – All readings are Quasi-Peak values.

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

NOTE 4 – The worst case is for D-Sub 640\*480@60Hz test mode. The worst emission at horizontal polarization was detected at 740.800MHz with corrected signal level of 43.76 dB ( $\mu\text{V}/\text{m}$ ) (limit is 46.00 dB ( $\mu\text{V}/\text{m}$ )), when the antenna was 2.00 m height and the turntable was at 80°. The worst emission at vertical polarization was detected at 85.290 MHz with corrected signal level of 35.73 dB ( $\mu\text{V}/\text{m}$ ) (limit is 40.00 dB ( $\mu\text{V}/\text{m}$ )), when the antenna was 1.90 m height and the turntable was at 220°.

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN42K20US Humidity : 60%RH

Serial No. : E1201003-01/02 Date of Test : Jan 13, 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	35.820	47.27	15.19	0.84	35.13	40.00	4.87
	67.830	48.74	9.70	1.36	31.99	40.00	8.01
	88.200	52.58	10.93	1.70	37.31	43.50	6.19
	223.030	46.56	10.76	2.51	32.86	46.00	13.14
	462.620	40.97	17.14	3.17	33.35	46.00	12.65
	<b>740.800</b>	<b>20.00</b>	<b>19.98</b>	<b>3.78</b>	<b>43.76</b>	<b>46.00</b>	<b>2.24</b>
Vertical	<b>85.290</b>	<b>51.18</b>	<b>10.80</b>	<b>1.66</b>	<b>35.73</b>	<b>40.00</b>	<b>4.27</b>
	148.340	53.65	10.44	2.22	38.80	43.50	4.70
	185.200	48.41	9.94	2.38	33.44	43.50	10.06
	234.670	45.92	11.28	2.56	32.84	46.00	13.16
	343.310	41.83	14.91	2.86	32.42	46.00	13.58
	464.560	44.33	17.17	3.17	36.73	46.00	9.27

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN42K20US Humidity : 60%RH

Serial No. : E1201003-01/02 Date of Test : Jan 13, 2012

Test Mode : D-Sub 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	<b>34.850</b>	<b>48.73</b>	<b>15.70</b>	<b>0.84</b>	<b>37.09</b>	<b>40.00</b>	<b>2.91</b>
	90.140	48.38	11.00	1.73	33.22	43.50	10.28
	182.290	51.77	9.97	2.36	36.77	43.50	6.73
	226.910	48.46	10.93	2.53	34.96	46.00	11.04
	468.000	22.00	17.22	3.17	42.39	46.00	3.61
	773.020	41.49	20.34	3.84	37.85	46.00	8.15
Vertical	137.670	49.59	10.66	2.15	34.86	43.50	8.64
	184.230	47.89	9.95	2.37	32.91	43.50	10.59
	276.380	50.75	13.02	2.68	39.57	46.00	6.43
	<b>468.000</b>	<b>23.00</b>	<b>17.22</b>	<b>3.17</b>	<b>43.39</b>	<b>46.00</b>	<b>2.61</b>
	622.670	42.48	18.49	3.51	36.19	46.00	9.81
	780.780	39.38	20.40	3.86	35.84	46.00	10.16

TEST ENGINEER: RAVEN JIN



EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN42K20US Humidity : 60%RH

Serial No. : E1201003-01/02 Date of Test : Jan 13, 2012

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

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	<b>34.850</b>	<b>47.99</b>	<b>15.70</b>	<b>0.84</b>	<b>36.35</b>	<b>40.00</b>	<b>3.65</b>
	94.020	50.41	11.15	1.78	35.45	43.50	8.05
	184.230	50.49	9.95	2.37	35.51	43.50	7.99
	233.700	47.11	11.23	2.56	33.97	46.00	12.03
	462.620	42.80	17.14	3.17	35.18	46.00	10.82
	774.960	42.34	20.34	3.84	38.70	46.00	7.30
Vertical	<b>152.220</b>	<b>53.63</b>	<b>10.37</b>	<b>2.24</b>	<b>38.73</b>	<b>43.50</b>	<b>4.77</b>
	211.390	51.35	10.26	2.47	37.06	43.50	6.44
	339.430	40.89	14.83	2.85	31.41	46.00	14.59
	466.500	44.76	17.19	3.17	37.17	46.00	8.83
	620.730	41.84	18.46	3.51	35.51	46.00	10.49
	774.960	43.83	20.34	3.84	40.19	46.00	5.81

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN42K20US Humidity : 60%RH

Serial No. : E1201003-01/02 Date of Test : Jan 13, 2012

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	<b>34.850</b>	<b>47.99</b>	<b>15.70</b>	<b>0.84</b>	<b>36.35</b>	<b>40.00</b>	<b>3.65</b>
	92.080	49.61	11.08	1.75	34.55	43.50	8.95
	185.200	49.69	9.94	2.38	34.72	43.50	8.78
	229.820	46.60	11.05	2.53	33.24	46.00	12.76
	340.400	39.99	14.83	2.86	30.52	46.00	15.48
	462.620	42.80	17.14	3.17	35.18	46.00	10.82
Vertical	86.260	45.42	10.83	1.68	30.03	40.00	9.97
	<b>145.430</b>	<b>51.91</b>	<b>10.50</b>	<b>2.20</b>	<b>37.10</b>	<b>43.50</b>	<b>6.40</b>
	210.420	49.41	10.22	2.46	35.06	43.50	8.44
	340.400	41.06	14.83	2.86	31.59	46.00	14.41
	466.500	44.76	17.19	3.17	37.17	46.00	8.83
	624.610	44.79	18.53	3.51	38.55	46.00	7.45

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN42K20US Humidity : 60%RH

Serial No. : E1201003-01/02 Date of Test : Jan 13, 2012

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	33.880	46.50	16.26	0.83	35.42	40.00	4.58
	90.140	48.38	11.00	1.73	33.22	43.50	10.28
	182.290	51.77	9.97	2.36	36.77	43.50	6.73
	226.910	48.46	10.93	2.53	34.96	46.00	11.04
	<b>468.000</b>	<b>22.00</b>	<b>17.22</b>	<b>3.17</b>	<b>42.39</b>	<b>46.00</b>	<b>3.61</b>
	926.280	38.86	20.44	5.07	36.98	46.00	9.02
Vertical	147.370	53.19	10.46	2.22	38.36	43.50	5.14
	184.230	47.89	9.95	2.37	32.91	43.50	10.59
	226.910	46.38	10.93	2.53	32.88	46.00	13.12
	396.660	46.04	16.24	2.98	37.75	46.00	8.25
	<b>468.000</b>	<b>23.00</b>	<b>17.22</b>	<b>3.17</b>	<b>43.39</b>	<b>46.00</b>	<b>2.61</b>
	622.670	42.48	18.49	3.51	36.19	46.00	9.81

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN42K20US Humidity : 60%RH

Serial No. : E1201003-01/02 Date of Test : Jan 13, 2012

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	<b>35.820</b>	<b>48.27</b>	<b>15.19</b>	<b>0.84</b>	<b>36.13</b>	<b>40.00</b>	<b>3.87</b>
	72.680	47.30	10.08	1.47	31.03	40.00	8.97
	91.110	49.07	11.05	1.75	33.98	43.50	9.52
	154.160	43.04	10.34	2.25	28.12	43.50	15.38
	231.760	46.14	11.14	2.55	32.89	46.00	13.11
	497.540	42.55	17.58	3.27	35.29	46.00	10.71
Vertical	93.050	45.98	11.12	1.77	30.98	43.50	12.52
	140.580	49.94	10.60	2.18	35.20	43.50	8.30
	<b>153.190</b>	<b>53.52</b>	<b>10.36</b>	<b>2.24</b>	<b>38.61</b>	<b>43.50</b>	<b>4.89</b>
	186.170	48.13	9.93	2.38	33.17	43.50	10.33
	467.470	45.32	17.22	3.17	37.76	46.00	8.24
	774.960	43.83	20.34	3.84	40.19	46.00	5.81

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
Conductive Foam	DAA25X20X150\ROH	SZTAT	See Internal Photos Figure 15, 16

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)