

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

LED LCD TV

Model No.	Brand
65H10B	Hisense
65H10B0	
65H10B1	
65H10B2	

FCC ID : W9HLCDF0059

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

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Report No. : ACI-F15102  
Date of Test : May 21 – Jun 03, 2015  
Date of Report : Jun 08, 2015

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## TEST REPORT FOR FCC CERTIFICATE

Applicant : Hisense Electric Co., Ltd.  
Manufacturer : Hisense Electric Co., Ltd.  
Factory #1 : Hisense Electric Co., Ltd.  
Factory #2 : Tatung Mexico S.A. de C.V.  
EUT Description : LED LCD TV

Model No.	Brand	Power Supply
Refer to Sec2.1	Hisense	120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2014  
AND ANSI C63.4-2003*

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

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report shows that the EUT (M/N: Refer to Sec2.1) which was tested in 3m anechoic chamber May 21 – Jun 03, 2015 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 Nso.F15101, a Verification report.***

Date of Test : May 21 – Jun 03, 2015 Date of Report : Jun 08, 2015

Producer :

Kathy Wang  
KATHY WANG / Assistant

Review :



For and on behalf of

Audix Technology (Shanghai) Co., Ltd.

Wency Yang  
WENCY YANG / Deputy Assistant Manager

Signatory :

Authorized Signature BYRON KWO / Assistant General 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 2014 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2014 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	:	<input checked="" type="checkbox"/> Production <input type="checkbox"/> Pre-product <input type="checkbox"/> Pro-type
Model No.	:	65H10B, 65H10B0, 65H10B1, 65H10B2
Note	:	The above models are all the same except for model name. 65H10B model is tested and recorded in the report.
Brand Name	:	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
Factory #1	:	Hisense Electric Co., Ltd. No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China
Factory #2	:	Tatung Mexico S.A. de C.V. Miguel Catalán 420, Parque Industrial Rio Bravo, Cd. Juarez, Chih., CP 32557
LCD Panel	:	Manufacturer : Hisense M/N : HD650FUD-B31(100)\ROH
Max Resolution	:	1920*1080@60Hz
HDMI Cable*3 (Lab provide)	:	Shielded, Detachable, 1.00m, with two cores
Power Cord	:	Unshielded, Detachable, 1.80m, without core
LAN Cable (Lab provide)	:	Unshielded, Detachable, 1.50m, without core
USB Cable (Lab provide)	:	Shielded, Detachable, 1.50m, without core
MHL to HDMI Adaptor: with RCP (Lab provide)	:	Manufacture : CE-Link M/N : 3002

**Remark:**

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

**Side Port:**

- (1) One USB3 Port : Connected with U-Disk
- (2) One HDMI2/ARC Port : Connected with PC
- (3) One HDMI1/MHL Port : Connected with Smart Mobile Phone
- (4) One Audio out Port : Connected with Earphone
- (5) One Service Port : Do not open to the costumers
- (6) One USB2 Port : Connected with U-Disk
- (7) One USB1 Port : Connected with U-Disk
- (8) One ANT/CABLE IN Port : Connected with Antenna or ATSC SG / TV SG

**Back Port:**

- (1) One LAN Port : Connected with PC
- (2) One Digital Audio out Port : Connected with DVD PLAYER #2
- (3) One HDMI3 Port : Connected with DVD PLAYER #2
- (4) One HDMI4 Port : Connected with DVD PLAYER #1
- (5) One AV In Port : Connected with DVD PLAYER #1
- (6) One component of Video/YPbPr Port : Connected with DVD PLAYER #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;  
BSMI, 3C, MIC

## 2.2.2 Printer

Manufacturer : HP  
Model Number : P1007  
Serial Number : VNFN713831  
Data Cable : Shielded, detachable, 1.8m  
Certificate : GS, CE/EMC, C-Tick, FCC DoC

## 2.2.3 Keyboard #1

Manufacturer : HP  
Model Number : CS105  
Serial Number : 9GTRNB1300120632  
Data Cable : Shielded, undetachable, 1.8m  
Certificate : CE/EMC, FCC DoC, VCCI, MIC, C-Tick, BSMI

## 2.2.4 Keyboard #2

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

## 2.2.5 Mouse #1

Manufacturer : HP  
Model Number : CS105  
Serial Number : 9GTRNB1300120632  
Data Cable : Shielded, Undetachable, 1.8m.  
Certificate : CE/EMC, FCC DoC, VCCI, MIC, C-Tick, BSMI

## 2.2.6 Mouse #2

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

## 2.2.7 Modem

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

## 2.2.8 Earphone

Manufacturer : audio-technica  
Model Number : ATH-CKL200

### 2.2.9 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

### 2.2.10 ATSC Signal Generator

Manufacturer : SENCORE  
Model Number : ATSC997  
Serial Number : 6790071

### 2.2.11 DVD PLAYER #1

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

### 2.2.12 DVD PLAYER #2

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

### 2.2.13 U-Disk #1

Manufacturer : Kingmax  
Model Number : 8G  
Certificate : CE/EMC, FCC DoC, IC

### 2.2.14 U-Disk #2

Manufacturer : Kingmax  
Model Number : 8G  
Certificate : CE/EMC, FCC DoC, IC

### 2.2.15 U-Disk #3

Manufacturer : Transcend  
Model Number : 8G  
Certificate : CE/EMC, FCC DoC, IC

### 2.2.16 Smart Mobile Phone

Manufacturer : SAMSUNG  
Model Number : GT-I9100G  
Serial Number : RV1C2250B7J  
Certificate : CE/EMC, CCC



## 2.3 Description of Test Facility

Site Description (No.3 3m Chamber) : Sept. 17, 1998 file on  
Jan.15, 2015 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 = 2.8dB

Radiated Emission Expanded Uncertainty (30-200MHz):  
U = 4.4dB (Horizontal)  
U = 4.4dB (Vertical)

Radiated Emission Expanded Uncertainty (200M-1GHz):  
U = 4.4dB (Horizontal)  
U = 5.5dB (Vertical)

Radiated Emission Expanded Uncertainty (1GHz-6GHz):  
U = 5.1dB

### 3 CONDUCTED EMISSION TEST

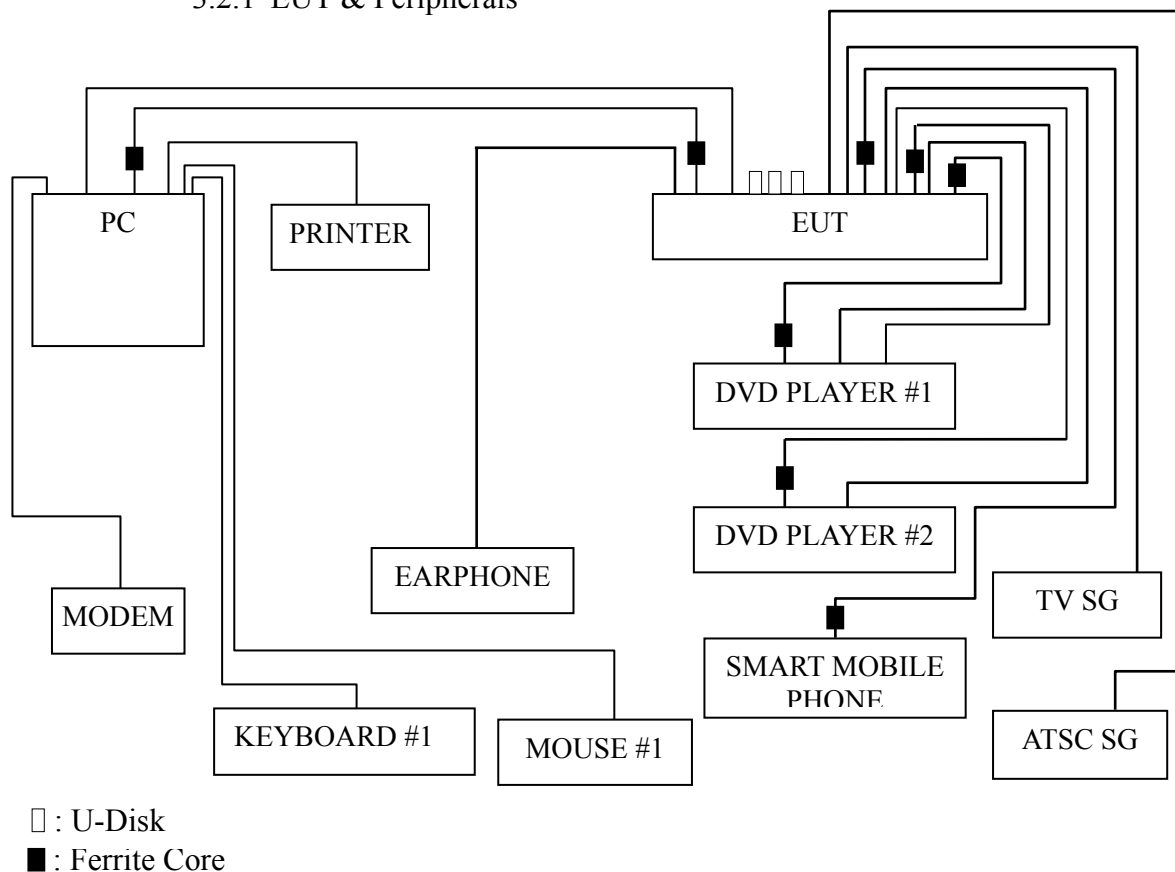
#### 3.1 Test Equipment

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

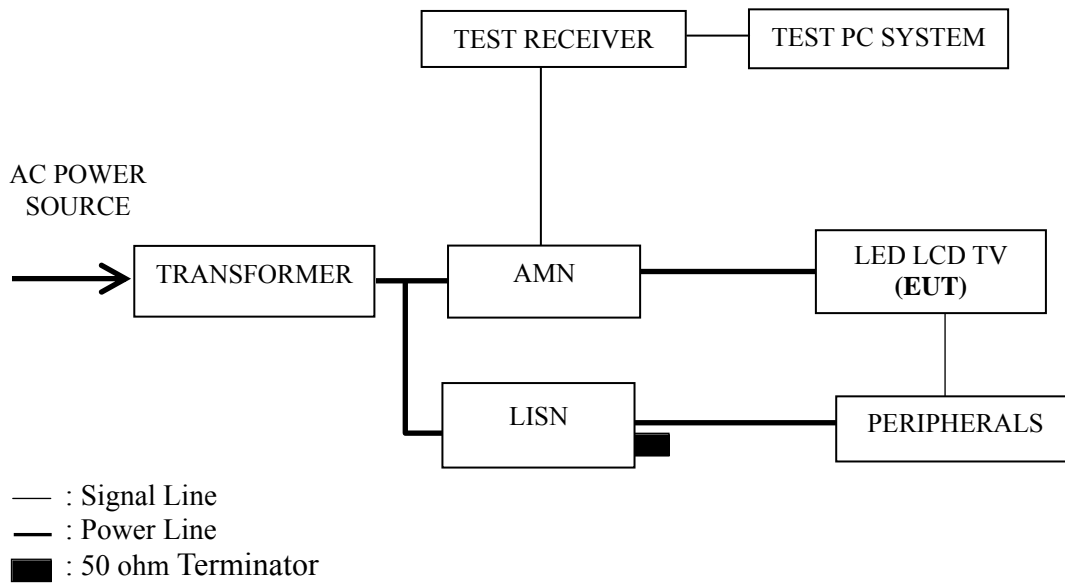
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101303	Jul 01, 2014	Jun 30, 2015
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2014	Jun 26, 2015
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2015	Mar 19, 2016
4.	50Ω Coaxial Switch	Anritsu	MP59B	6200426389	Mar 18, 2015	Sep 17, 2015
5.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2015	Mar 19, 2016
6.	Software	Audix	E3	6.111206	--	--

#### 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 (μV)	
	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 HDMI Input).

3.5.5 PC system sent the 1kHz audio signal to EUT through audio port, the EUT speak out 1kHz audio signal.

3.5.6 In USB Play mode, set the EUT play digital media from U-Disk.

3.5.7 In LAN Play mode, set the EUT play digital media through LAN port.

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

3.5.9 The test modes are as follows:

Test Mode
HDMI 1920*1080@60Hz & 1kHz playing
HDMI 1280*1024@60Hz & 1kHz playing
HDMI 640*480@60Hz & 1kHz playing
USB Play
LAN Play

### 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
HDMI 1920*1080@60Hz & 1kHz playing	P14
HDMI 1280*1024@60Hz & 1kHz playing	P15
HDMI 640*480@60Hz & 1kHz playing	P16
USB Play	P17
LAN Play	P18

NOTE 1 – Factor = Cable Loss + AMN Factor.

NOTE 2 – Emission Level = Meter Reading + Factor.

NOTE 3 – “QP” means “Quasi-Peak” values, “AV” means “Average” values.

NOTE 4 – The worst case is for LAN Play test mode. The worst emission is detected at 4.622 MHz (Average Value) with corrected signal level of 41.47 dB (μV) (limit is 46.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H10B Humidity : 48%RH

Test Mode : HDMI 1920\*1080@60Hz Date of Test : May 21, 2015  
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.483	33.31	10.43	43.74	56.29	12.55	QP
	0.683	36.30	10.43	46.73	56.00	9.27	
	1.861	36.70	10.43	47.13	56.00	8.87	
	4.634	39.40	10.47	49.87	56.00	6.13	
	6.198	38.90	10.41	49.31	60.00	10.69	
	7.394	39.90	10.46	50.36	60.00	9.64	
	0.483	22.81	10.43	33.24	46.29	13.05	AV
	0.683	27.00	10.43	37.43	46.00	8.57	
	1.861	27.80	10.43	38.23	46.00	7.77	
	<b>4.634</b>	<b>29.80</b>	<b>10.47</b>	<b>40.27</b>	<b>46.00</b>	<b>5.73</b>	
	6.198	33.60	10.41	44.01	50.00	5.99	
	7.394	31.60	10.46	42.06	50.00	7.94	
Neutral	0.299	33.90	10.49	44.39	60.28	15.89	QP
	0.681	36.30	10.42	46.72	56.00	9.28	
	0.891	35.90	10.41	46.31	56.00	9.69	
	1.857	36.70	10.45	47.15	56.00	8.85	
	4.691	39.50	10.53	50.03	56.00	5.97	
	7.449	38.30	10.54	48.84	60.00	11.16	
	0.299	26.30	10.49	36.79	50.28	13.49	AV
	0.681	26.90	10.42	37.32	46.00	8.68	
	0.891	27.00	10.41	37.41	46.00	8.59	
	1.857	26.90	10.45	37.35	46.00	8.65	
	4.691	29.60	10.53	40.13	46.00	5.87	
	7.449	30.80	10.54	41.34	50.00	8.66	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H10B Humidity : 48%RH

Test Mode : HDMI 1280\*1024@60Hz Date of Test : May 21, 2015  
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.205	35.70	10.54	46.24	63.41	17.17	QP
	0.342	35.50	10.47	45.97	59.16	13.19	
	0.682	36.80	10.43	47.23	56.00	8.77	
	1.300	36.60	10.40	47.00	56.00	9.00	
	2.403	36.10	10.44	46.54	56.00	9.46	
	6.190	40.90	10.41	51.31	60.00	8.69	
	0.205	27.80	10.54	38.34	53.41	15.07	AV
	0.342	26.40	10.47	36.87	49.16	12.29	
	0.682	28.20	10.43	38.63	46.00	7.37	
	1.300	25.90	10.40	36.30	46.00	9.70	
	2.403	25.40	10.44	35.84	46.00	10.16	
	<b>6.190</b>	<b>34.10</b>	<b>10.41</b>	<b>44.51</b>	<b>50.00</b>	<b>5.49</b>	
Neutral	0.343	34.80	10.46	45.26	59.13	13.87	QP
	0.680	36.30	10.42	46.72	56.00	9.28	
	1.305	36.60	10.41	47.01	56.00	8.99	
	2.473	35.89	10.48	46.37	56.00	9.63	
	4.685	39.60	10.53	50.13	56.00	5.87	
	6.264	38.80	10.49	49.29	60.00	10.71	
	0.343	25.30	10.46	35.76	49.13	13.37	AV
	0.680	26.50	10.42	36.92	46.00	9.08	
	1.305	27.30	10.41	37.71	46.00	8.29	
	2.473	25.79	10.48	36.27	46.00	9.73	
	4.685	29.40	10.53	39.93	46.00	6.07	
	6.264	32.20	10.49	42.69	50.00	7.31	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H10B Humidity : 48%RH

Test Mode : HDMI 640\*480@60Hz & 1kHz Playing Date of Test : May 21, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.206	35.60	10.54	46.14	63.38	17.24	QP
	0.478	33.90	10.44	44.34	56.37	12.03	
	0.892	36.50	10.40	46.90	56.00	9.10	
	1.853	37.30	10.43	47.73	56.00	8.27	
	4.602	39.91	10.46	50.37	56.00	5.63	
	7.351	39.80	10.46	50.26	60.00	9.74	
	0.206	27.80	10.54	38.34	53.38	15.04	AV
	0.478	24.50	10.44	34.94	46.37	11.43	
	0.892	25.70	10.40	36.10	46.00	9.90	
	1.853	26.80	10.43	37.23	46.00	8.77	
	4.602	29.71	10.46	40.17	46.00	5.83	
	7.351	32.50	10.46	42.96	50.00	7.04	
Neutral	0.205	35.10	10.53	45.63	63.40	17.77	QP
	0.495	30.90	10.43	41.33	56.08	14.75	
	0.677	36.40	10.42	46.82	56.00	9.18	
	1.918	37.10	10.45	47.55	56.00	8.45	
	<b>4.598</b>	<b>39.90</b>	<b>10.52</b>	<b>50.42</b>	<b>56.00</b>	<b>5.58</b>	
	6.324	38.59	10.50	49.09	60.00	10.91	
	0.205	27.70	10.53	38.23	53.40	15.17	AV
	0.495	26.50	10.43	36.93	46.08	9.15	
	0.677	26.20	10.42	36.62	46.00	9.38	
	1.918	26.80	10.45	37.25	46.00	8.75	
	4.598	29.50	10.52	40.02	46.00	5.98	
	6.324	33.29	10.50	43.79	50.00	6.21	

TEST ENGINEER: WENCY YANG



EUT : LED LCD TV Temperature : 22°C

Model No. : 65H10B Humidity : 48%RH

Test Mode : USB Play Date of Test : May 21, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.204	36.10	10.54	46.64	63.44	16.80	QP
	0.477	34.30	10.44	44.74	56.39	11.65	
	0.883	37.70	10.40	48.10	56.00	7.90	
	1.911	37.90	10.43	48.33	56.00	7.67	
	4.632	37.90	10.47	48.37	56.00	7.63	
	7.252	41.30	10.46	51.76	60.00	8.24	
	0.204	28.20	10.54	38.74	53.44	14.70	AV
	0.477	24.80	10.44	35.24	46.39	11.15	
	0.883	29.80	10.40	40.20	46.00	5.80	
	1.911	26.50	10.43	36.93	46.00	9.07	
	<b>4.632</b>	<b>30.70</b>	<b>10.47</b>	<b>41.17</b>	<b>46.00</b>	<b>4.83</b>	
	7.252	33.00	10.46	43.46	50.00	6.54	
Neutral	0.300	34.70	10.49	45.19	60.24	15.05	QP
	0.681	37.30	10.42	47.72	56.00	8.28	
	1.289	36.90	10.41	47.31	56.00	8.69	
	2.463	37.49	10.48	47.97	56.00	8.03	
	4.552	28.10	10.52	38.62	56.00	17.38	
	7.189	39.30	10.53	49.83	60.00	10.17	
	0.300	24.80	10.49	35.29	50.24	14.95	AV
	0.681	28.00	10.42	38.42	46.00	7.58	
	1.289	26.80	10.41	37.21	46.00	8.79	
	2.463	26.39	10.48	36.87	46.00	9.13	
	4.552	30.50	10.52	41.02	46.00	4.98	
	7.189	32.70	10.53	43.23	50.00	6.77	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H10B Humidity : 48%RH

Test Mode : LAN Play Date of Test : May 21, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.301	34.30	10.50	44.80	60.21	15.41	QP
	0.882	37.10	10.40	47.50	56.00	8.50	
	1.844	37.70	10.43	48.13	56.00	7.87	
	4.622	37.90	10.47	48.37	56.00	7.63	
	7.329	37.80	10.46	48.26	60.00	11.74	
	20.460	33.70	10.62	44.32	60.00	15.68	
	0.301	24.10	10.50	34.60	50.21	15.61	AV
	0.882	28.30	10.40	38.70	46.00	7.30	
	1.844	26.80	10.43	37.23	46.00	8.77	
	<b>4.622</b>	<b>31.00</b>	<b>10.47</b>	<b>41.47</b>	<b>46.00</b>	<b>4.53</b>	
	7.329	32.20	10.46	42.66	50.00	7.34	
	20.460	29.90	10.62	40.52	50.00	9.48	
Neutral	0.297	35.20	10.49	45.69	60.34	14.65	QP
	0.678	37.40	10.42	47.82	56.00	8.18	
	1.837	37.60	10.45	48.05	56.00	7.95	
	4.549	37.90	10.52	48.42	56.00	7.58	
	7.248	40.30	10.54	50.84	60.00	9.16	
	12.480	34.69	10.64	45.33	60.00	14.67	
	0.297	27.90	10.49	38.39	50.34	11.95	AV
	0.678	28.90	10.42	39.32	46.00	6.68	
	1.837	28.50	10.45	38.95	46.00	7.05	
	4.549	30.30	10.52	40.82	46.00	5.18	
	7.248	32.60	10.54	43.14	50.00	6.86	
	12.480	28.99	10.64	39.63	50.00	10.37	

TEST ENGINEER: WENCY YANG

## 4 RADIATED EMISSION TEST

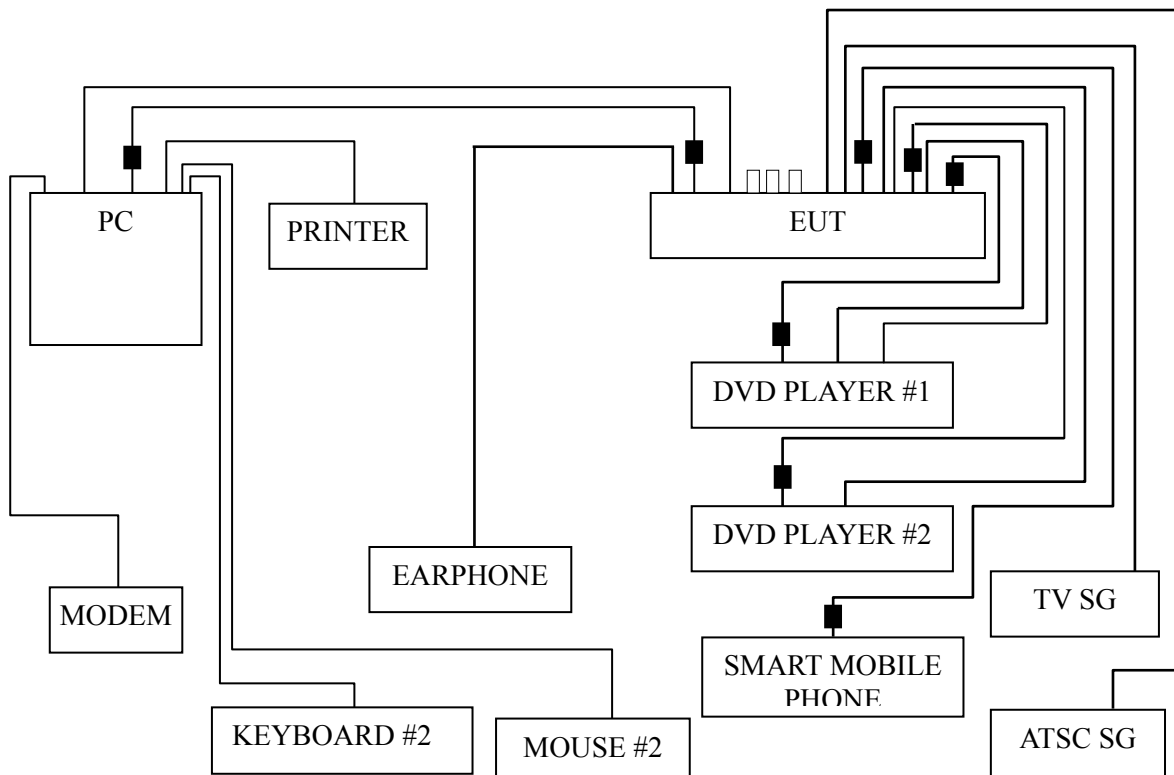
### 4.1 Test Equipment

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	ESCI	101302	Jul 03, 2014	Jul 02, 2015
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 18, 2015	Sep 17, 2015
3.	Preamplifier	HP	8449B	3008A00864	May 20, 2015	May 19, 2016
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 24, 2015	May 23, 2016
5.	Horn Antenna	EMCO	3115	9607-4878	Jun 16, 2014	Jun 15, 2015
6.	Spectrum	Agilent	E7405A	MY45106600	Jul 03, 2014	Jul 02, 2015
7.	50 $\Omega$ Coaxial Switch	Anritsu	MP59B	6200426390	Mar 18, 2015	Sep 17, 2015
8.	Software	Audix	E3	6.2007-9-10	--	--

### 4.2 Block Diagram of Test Setup

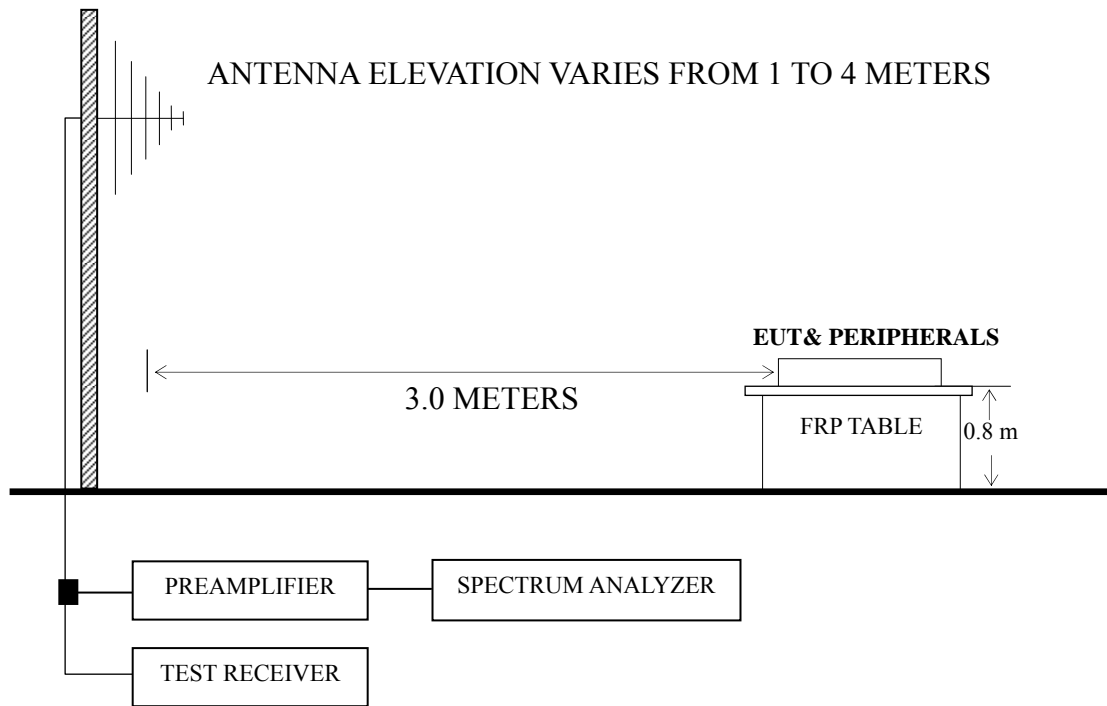
#### 4.2.1 EUT & Peripherals



□ : U-Disk

■ : Ferrite Core

#### 4.2.2 Radiated emission test setup



■ : 50 ohm Coaxial Switch

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

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

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

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

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

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

NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT.

#### 4.4 Test Configuration

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

Please refer to Sec.3.4.

#### 4.5 Operating Condition of EUT

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

## 4.6 Test Procedures

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

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

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 the maximum resolution test mode.

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
HDMI 1920*1080@60Hz & 1kHz playing	P23 – P24
HDMI 1280*1024@60Hz & 1kHz playing	P25
HDMI 640*480@60Hz & 1kHz playing	P26
USB Play	P27
LAN Play	P28

NOTE 1 – Emission Level = Antenna Factor + Cable Loss + Meter Reading. (< 1GHz);

Emission Level = Antenna Factor + Cable Loss – Preamp Factor + Meter Reading. (> 1GHz)

NOTE 2 – All readings are Quasi-Peak values below or equal to 1GHz, Peak and Average values above 1GHz.

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 HDMI 1920\*1080@60Hz & 1kHz playing test mode. The worst emission at horizontal polarization was detected at 679.720 MHz with corrected signal level of 42.86 dB ( $\mu\text{V/m}$ ) (limit is 46.00 dB ( $\mu\text{V/m}$ )), when the antenna was 2.14 m height and the turntable was at 32°. The worst emission at vertical polarization was detected at 891.240 MHz with corrected signal level of 41.66 dB ( $\mu\text{V/m}$ ) (limit is 46.00 dB ( $\mu\text{V/m}$ )), when the antenna was 1.60m height and the turntable was at 342°.

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H10B Humidity : 60%RH

Test Mode : HDMI 1920\*1080@60Hz & 1kHz Playing Date of Test : Jun 03, 2015

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	50.942	22.69	7.38	0.69	--	30.76	40.00	9.24	QP
	85.898	22.50	9.90	0.93	--	33.33	40.00	6.67	
	140.835	17.69	12.45	1.20	--	31.34	43.50	12.16	
	239.987	20.00	11.80	1.57	--	33.37	46.00	12.63	
	324.456	18.18	14.63	1.86	--	34.67	46.00	11.33	
	<b>679.720</b>	<b>20.30</b>	<b>19.90</b>	<b>2.66</b>	<b>--</b>	<b>42.86</b>	<b>46.00</b>	<b>3.14</b>	
	1037.000	51.35	23.39	3.24	36.65	41.33	74.00	32.67	PK
	1199.000	52.90	24.29	3.52	36.40	44.31	74.00	29.69	
	1413.000	51.75	25.41	3.87	36.01	45.02	74.00	28.98	
	1632.000	53.30	26.15	4.15	35.65	47.95	74.00	26.05	
	1830.000	49.46	26.91	4.35	35.44	45.28	74.00	28.72	
	1954.000	50.92	27.29	4.49	35.34	47.36	74.00	26.64	
	1037.000	42.20	23.39	3.24	36.65	32.18	54.00	21.82	AV
	1199.000	41.03	24.29	3.52	36.40	32.44	54.00	21.56	
	1413.000	40.12	25.41	3.87	36.01	33.39	54.00	20.61	
	1632.000	42.27	26.15	4.15	35.65	36.92	54.00	17.08	
	1830.000	38.46	26.91	4.35	35.44	34.28	54.00	19.72	
	1954.000	39.14	27.29	4.49	35.34	35.58	54.00	18.42	

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H10B Humidity : 60%RH

Test Mode : HDMI 1920\*1080@60Hz & 1kHz Playing Date of Test : Jun 03, 2015

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
Vertical	30.962	15.47	18.15	0.54	--	34.16	40.00	5.84	QP
	50.057	24.46	7.60	0.68	--	32.74	40.00	7.26	
	96.099	23.77	11.84	0.97	--	36.58	43.50	6.92	
	170.793	24.37	10.87	1.31	--	36.55	43.50	6.95	
	682.348	17.35	19.85	2.66	--	39.86	46.00	6.14	
	<b>891.240</b>	<b>17.33</b>	<b>21.30</b>	<b>3.03</b>	<b>--</b>	<b>41.66</b>	<b>46.00</b>	<b>4.34</b>	
	1044.000	52.44	23.42	3.27	36.64	42.49	74.00	31.51	PK
	1193.000	54.37	24.25	3.52	36.41	45.73	74.00	28.27	
	1387.000	51.32	25.29	3.81	36.06	44.36	74.00	29.64	
	1517.000	49.54	25.76	4.01	35.82	43.49	74.00	30.51	
	1635.000	49.47	26.17	4.15	35.65	44.14	74.00	29.86	
	1802.000	50.14	26.82	4.32	35.46	45.82	74.00	28.18	
	1044.000	42.16	23.42	3.27	36.64	32.21	54.00	21.79	AV
	1193.000	43.27	24.25	3.52	36.41	34.63	54.00	19.37	
	1387.000	41.03	25.29	3.81	36.06	34.07	54.00	19.93	
	1517.000	39.82	25.76	4.01	35.82	33.77	54.00	20.23	
	1635.000	38.25	26.17	4.15	35.65	32.92	54.00	21.08	
	1802.000	40.36	26.82	4.32	35.46	36.04	54.00	17.96	

TEST ENGINEER: MARK LI



EUT : LED LCD TV Temperature : 22°C

Model No. : 65H10B Humidity : 60%RH

Test Mode : HDMI 1280\*1024@60Hz Date of Test : Jun 03, 2015  
& 1kHz Playing

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	49.533	21.81	7.99	0.68	30.48	40.00	9.52
	84.702	21.49	9.77	0.92	32.18	40.00	7.82
	145.861	17.76	11.95	1.22	30.93	43.50	12.57
	245.090	15.97	12.30	1.60	29.87	46.00	16.13
	377.259	14.48	16.44	2.00	32.92	46.00	13.08
	<b>677.580</b>	<b>17.83</b>	<b>19.80</b>	<b>2.66</b>	<b>40.29</b>	<b>46.00</b>	<b>5.71</b>
Vertical	32.179	16.12	17.35	0.56	34.03	40.00	5.97
	54.452	24.97	6.61	0.72	32.30	40.00	7.70
	98.833	23.97	12.16	0.98	37.11	43.50	6.39
	167.824	23.80	11.07	1.30	36.17	43.50	7.33
	675.208	17.11	19.70	2.66	39.47	46.00	6.53
	<b>890.728</b>	<b>16.68</b>	<b>21.30</b>	<b>3.03</b>	<b>41.01</b>	<b>46.00</b>	<b>4.99</b>

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H10B Humidity : 60%RH

Test Mode : HDMI 640\*480@60Hz & 1kHz Playing Date of Test : Jun 03, 2015

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	49.533	21.81	7.99	0.68	30.48	40.00	9.52
	84.702	21.49	9.77	0.92	32.18	40.00	7.82
	145.861	17.76	11.95	1.22	30.93	43.50	12.57
	245.090	15.97	12.30	1.60	29.87	46.00	16.13
	377.259	14.48	16.44	2.00	32.92	46.00	13.08
	<b>677.580</b>	<b>17.83</b>	<b>19.80</b>	<b>2.66</b>	<b>40.29</b>	<b>46.00</b>	<b>5.71</b>
Vertical	32.979	15.04	16.91	0.56	32.51	40.00	7.49
	52.945	24.50	6.92	0.71	32.13	40.00	7.87
	100.581	23.20	12.32	0.99	36.51	43.50	6.99
	171.995	25.31	10.81	1.31	37.43	43.50	6.07
	679.960	16.85	19.90	2.66	39.41	46.00	6.59
	<b>890.728</b>	<b>16.90</b>	<b>21.30</b>	<b>3.03</b>	<b>41.23</b>	<b>46.00</b>	<b>4.77</b>

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H10B Humidity : 60%RH

Test Mode : USB Play Date of Test : Jun 03, 2015

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	43.659	13.33	11.89	0.64	25.86	40.00	14.14
	65.803	18.73	6.63	0.80	26.16	40.00	13.84
	104.903	14.79	12.50	1.02	28.31	43.50	15.19
	199.286	19.75	9.77	1.41	30.93	43.50	12.57
	425.028	15.14	16.80	2.11	34.05	46.00	11.95
	<b>771.449</b>	<b>14.96</b>	<b>20.50</b>	<b>2.84</b>	<b>38.30</b>	<b>46.00</b>	<b>7.70</b>
Vertical	32.864	15.18	16.99	0.56	32.73	40.00	7.27
	67.202	21.58	6.86	0.82	29.26	40.00	10.74
	185.138	21.58	10.50	1.37	33.45	43.50	10.05
	354.183	16.01	15.73	1.94	33.68	46.00	12.32
	<b>554.825</b>	<b>18.38</b>	<b>18.85</b>	<b>2.39</b>	<b>39.62</b>	<b>46.00</b>	<b>6.38</b>
	<b>663.473</b>	<b>17.38</b>	<b>19.60</b>	<b>2.64</b>	<b>39.62</b>	<b>46.00</b>	<b>6.38</b>

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H10B Humidity : 60%RH

Test Mode : LAN Play Date of Test : Jun 03, 2015

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	54.071	23.00	6.70	0.72	30.42	40.00	9.58
	91.495	21.60	10.90	0.95	33.45	43.50	10.05
	181.283	18.86	10.50	1.35	30.71	43.50	12.79
	264.746	16.56	13.20	1.67	31.43	46.00	14.57
	<b>622.890</b>	<b>17.69</b>	<b>19.35</b>	<b>2.55</b>	<b>39.59</b>	<b>46.00</b>	<b>6.41</b>
	760.704	14.84	20.30	2.82	37.96	46.00	8.04
Vertical	<b>37.548</b>	<b>18.02</b>	<b>13.64</b>	<b>0.60</b>	<b>32.26</b>	<b>40.00</b>	<b>7.74</b>
	62.213	20.63	6.34	0.78	27.75	40.00	12.25
	142.824	19.50	12.25	1.21	32.96	43.50	10.54
	248.552	15.36	12.42	1.61	29.39	46.00	16.61
	531.964	13.55	18.35	2.34	34.24	46.00	11.76
	815.968	12.77	20.67	2.91	36.35	46.00	9.65

TEST ENGINEER: MARK LI

## **5 DEVIATION TO TEST SPECIFICATIONS**

None.