

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

LED LCD TV

Model No.	Brand
LTDN50K3201GUWUS	Hisense
50H7GB	
50H7GB*	

FCC ID : W9HLCDF0054

Prepared For : Hisense Electric Co., Ltd.
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Report No. : ACI-F15058
Date of Test : Mar 22-25, 2015
Date of Report : Mar 31, 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 Mar 22-25, 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 No.F15059, a Verification report.

Date of Test : Mar 22-25, 2015 Date of Report : Mar 31, 2015

Producer : Alan He
ALAN HE / Assistant

Review : Sammy Chen
SAMMY CHEN / Manager

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

Signatory : Byron Kwo
Authorized Signature EMC 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
EMISSION			
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	:	☒ Production ☐ Pre-product ☐ Pro-type
Model No.	:	LTDN50K3201GUWUS, 50H7GB, 50H7GB*
Note	:	The above models are all the same except for model name. LTDN50K3201GUWUS 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 : HD500DU-B01\S4\GM\ROH
Max Resolution	:	1920*1080@60Hz
HDMI Cable	:	Shielded, Detachable, 1.00m, without core
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:

Back Port:

- (1) One LAN Port : Connected with PC
- (2) One HDMI3 Port : Connected with DVD PLAYER#1
- (3) One HDMI4 Port : Connected with DVD PLAYER#2
- (4) One Digital Audio out Port : Connected with DVD PLAYER#1
- (5) One component of Video/YPbPr Port : Connected with DVD PLAYER#1

Side Port:

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

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 : C8060A
Serial Number : CN3J195644
Data Cable : Shielded, detachable, 1.8m
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 : HP
Model Number : CS105
Serial Number : 9GTRNB1300120632
Data Cable : Shielded, Undetachable, 1.8m.
Certificate : CE/EMC, FCC DoC, VCCI, MIC,
C-Tick, BSMI

2.2.5 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 : audio-technica
Model Number : ATH-CKL200

2.2.7 TV Signal Generator

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

2.2.8 ATSC Signal Generator

Manufacturer : SENCORE
Model Number : ATSC997
Serial Number : 6790071

2.2.9 DVD PLAYER #1

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

2.2.10 DVD PLAYER #2

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

2.2.11 Hard Disk #1

Manufacturer : Tetasy
Model Number : F12
Serial Number : A010022-486006
Data Cable : Shielded, Undetachable, 1.8m.
Certificate : CE/EMC, FCC DoC

2.2.12 Hard Disk #2

Manufacturer : Tetasy
Model Number : F12
Serial Number : A010022-4860010X
Data Cable : Shielded, Undetachable, 1.8m.
Certificate : CE/EMC, FCC DoC

2.2.13 U-Disk

Manufacturer : audio-technica
Model Number : 8G

2.2.14 Mobile Phone

Manufacturer : SAMSUNG
Model Number : GT-I9100G
Serial Number : 6935152011519
Certificate : CE/EMC

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 = 5.1 dB

3 CONDUCTED EMISSION TEST

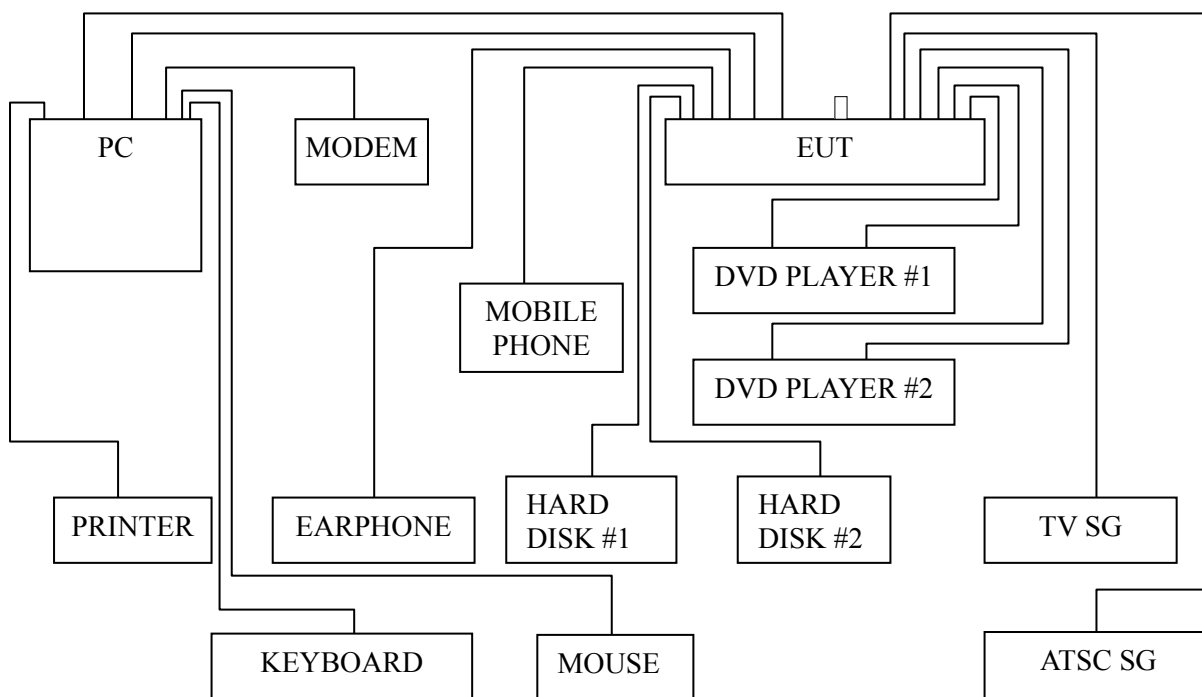
3.1 Test Equipment

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	101303	Sep 11, 2014	Sep 10, 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	--	--

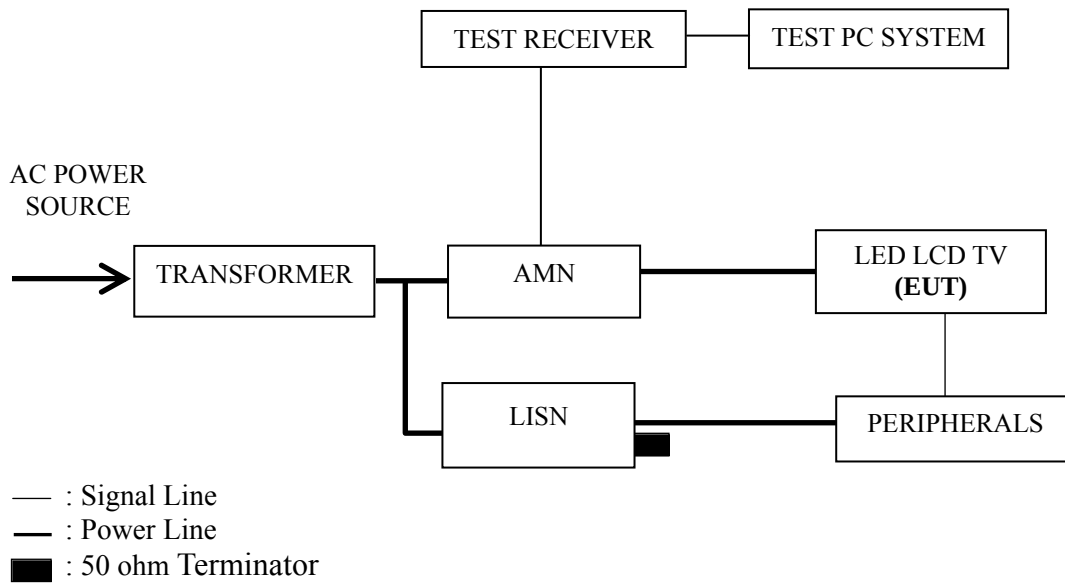
3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



□ : U-Disk

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 D-Sub & 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 In MHL mode, set the EUT play digital media from mobile phone.

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

3.5.10 The test modes are as follows:

Test Mode
HDMI 1920*1080@60Hz & 1kHz playing
HDMI 1280*1024@75Hz & 1kHz playing
HDMI 640*480@60Hz & 1kHz playing
USB Play
LAN Play
MHL

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@75Hz & 1kHz playing	P15
HDMI 640*480@60Hz & 1kHz playing	P16
USB Play	P17
LAN Play	P18
MHL	P19

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 1920*1080@60Hz & 1kHz playing test mode. The worst emission is detected at 0.181 MHz (Average Value) with corrected signal level of 51.15 dB (μV) (limit is 54.45 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 48%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Mar 25, 2015
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.181	48.50	10.55	59.05	64.45	5.40	QP
	0.409	30.20	10.43	40.63	57.66	17.03	
	0.610	28.50	10.43	38.93	56.00	17.07	
	0.972	27.10	10.40	37.50	56.00	18.50	
	4.649	31.40	10.47	41.87	56.00	14.13	
	17.380	22.29	10.58	32.87	60.00	27.13	
	0.181	40.60	10.55	51.15	54.45	3.30	AV
	0.409	18.80	10.43	29.23	47.66	18.43	
	0.610	17.20	10.43	27.63	46.00	18.37	
	0.972	17.90	10.40	28.30	46.00	17.70	
	4.649	29.60	10.47	40.07	46.00	5.93	
	17.380	20.29	10.58	30.87	50.00	19.13	
Neutral	0.181	48.30	10.55	58.85	64.44	5.59	QP
	0.412	27.69	10.43	38.12	57.60	19.48	
	0.616	28.40	10.42	38.82	56.00	17.18	
	0.965	27.30	10.41	37.71	56.00	18.29	
	4.649	30.69	10.53	41.22	56.00	14.78	
	17.110	26.30	10.68	36.98	60.00	23.02	
	0.181	40.20	10.55	50.75	54.44	3.69	AV
	0.412	17.49	10.43	27.92	47.60	19.68	
	0.616	17.30	10.42	27.72	46.00	18.28	
	0.965	18.30	10.41	28.71	46.00	17.29	
	4.649	29.09	10.53	39.62	46.00	6.38	
	17.110	22.90	10.68	33.58	50.00	16.42	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 48%RH

Test Mode : HDMI 1280*1024@75Hz Date of Test : Mar 25, 2015
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.182	48.40	10.55	58.95	64.40	5.45	QP
	0.413	29.99	10.44	40.43	57.60	17.17	
	0.614	28.00	10.43	38.43	56.00	17.57	
	0.963	27.00	10.40	37.40	56.00	18.60	
	4.645	30.80	10.47	41.27	56.00	14.73	
	17.750	25.50	10.58	36.08	60.00	23.92	
	0.182	40.40	10.55	50.95	54.40	3.45	AV
	0.413	18.89	10.44	29.33	47.60	18.27	
	0.614	18.60	10.43	29.03	46.00	16.97	
	0.963	16.20	10.40	26.60	46.00	19.40	
	4.645	28.00	10.47	38.47	46.00	7.53	
	17.750	21.80	10.58	32.38	50.00	17.62	
Neutral	0.183	47.60	10.54	58.14	64.33	6.19	QP
	0.408	27.40	10.42	37.82	57.69	19.87	
	0.614	28.10	10.42	38.52	56.00	17.48	
	0.974	28.20	10.41	38.61	56.00	17.39	
	4.647	31.49	10.53	42.02	56.00	13.98	
	17.750	25.40	10.69	36.09	60.00	23.91	
	0.183	39.60	10.54	50.14	54.33	4.19	AV
	0.408	18.50	10.42	28.92	47.69	18.77	
	0.614	16.40	10.42	26.82	46.00	19.18	
	0.974	17.60	10.41	28.01	46.00	17.99	
	4.647	29.19	10.53	39.72	46.00	6.28	
	17.750	22.60	10.69	33.29	50.00	16.71	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 48%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Mar 25, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.180	48.40	10.55	58.95	64.47	5.52	QP
	0.408	30.10	10.43	40.53	57.68	17.15	
	0.621	28.20	10.43	38.63	56.00	17.37	
	0.974	26.90	10.40	37.30	56.00	18.70	
	4.646	31.60	10.47	42.07	56.00	13.93	
	17.750	24.80	10.58	35.38	60.00	24.62	
	0.180	40.50	10.55	51.05	54.47	3.42	AV
	0.408	18.50	10.43	28.93	47.68	18.75	
	0.621	18.30	10.43	28.73	46.00	17.27	
	0.974	17.50	10.40	27.90	46.00	18.10	
	4.646	29.20	10.47	39.67	46.00	6.33	
	17.750	20.30	10.58	30.88	50.00	19.12	
Neutral	0.182	48.20	10.55	58.75	64.41	5.66	QP
	0.408	28.40	10.42	38.82	57.68	18.86	
	0.621	27.40	10.42	37.82	56.00	18.18	
	0.974	27.90	10.41	38.31	56.00	17.69	
	4.648	31.49	10.53	42.02	56.00	13.98	
	17.750	25.40	10.69	36.09	60.00	23.91	
	0.182	40.10	10.55	50.65	54.41	3.76	AV
	0.408	17.60	10.42	28.02	47.68	19.66	
	0.621	17.90	10.42	28.32	46.00	17.68	
	0.974	16.80	10.41	27.21	46.00	18.79	
	4.648	29.69	10.53	40.22	46.00	5.78	
	17.750	21.10	10.69	31.79	50.00	18.21	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 48%RH

Test Mode : USB Play Date of Test : Mar 25, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.181	48.40	10.55	58.95	64.46	5.51	QP
	0.413	29.89	10.44	40.33	57.60	17.27	
	0.614	26.40	10.43	36.83	56.00	19.17	
	1.000	27.00	10.40	37.40	56.00	18.60	
	4.646	31.70	10.47	42.17	56.00	13.83	
	17.750	25.30	10.58	35.88	60.00	24.12	
	0.181	40.50	10.55	51.05	54.46	3.41	AV
	0.413	18.59	10.44	29.03	47.60	18.57	
	0.614	15.90	10.43	26.33	46.00	19.67	
	1.000	17.30	10.40	27.70	46.00	18.30	
	4.646	29.20	10.47	39.67	46.00	6.33	
	17.750	22.20	10.58	32.78	50.00	17.22	
Neutral	0.183	48.00	10.55	58.55	64.37	5.82	QP
	0.406	28.10	10.42	38.52	57.73	19.21	
	0.610	26.10	10.42	36.52	56.00	19.48	
	0.974	27.40	10.41	37.81	56.00	18.19	
	4.648	31.59	10.53	42.12	56.00	13.88	
	17.010	25.20	10.68	35.88	60.00	24.12	
	0.183	39.90	10.55	50.45	54.37	3.92	AV
	0.406	18.80	10.42	29.22	47.73	18.51	
	0.610	17.20	10.42	27.62	46.00	18.38	
	0.974	18.10	10.41	28.51	46.00	17.49	
	4.648	29.79	10.53	40.32	46.00	5.68	
	17.010	23.10	10.68	33.78	50.00	16.22	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 48%RH

Test Mode : LAN Play Date of Test : Mar 25, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.183	48.20	10.55	58.75	64.36	5.61	QP
	0.408	30.30	10.43	40.73	57.68	16.95	
	0.610	28.60	10.43	39.03	56.00	16.97	
	0.989	28.10	10.40	38.50	56.00	17.50	
	4.647	31.80	10.47	42.27	56.00	13.73	
	17.750	25.40	10.58	35.98	60.00	24.02	
	0.183	40.30	10.55	50.85	54.36	3.51	AV
	0.408	19.20	10.43	29.63	47.68	18.05	
	0.610	17.50	10.43	27.93	46.00	18.07	
	0.989	17.90	10.40	28.30	46.00	17.70	
	4.647	30.20	10.47	40.67	46.00	5.33	
	17.750	22.60	10.58	33.18	50.00	16.82	
Neutral	0.181	48.20	10.55	58.75	64.44	5.69	QP
	0.406	27.80	10.42	38.22	57.73	19.51	
	0.614	28.30	10.42	38.72	56.00	17.28	
	0.974	27.40	10.41	37.81	56.00	18.19	
	4.648	31.49	10.53	42.02	56.00	13.98	
	17.750	25.90	10.69	36.59	60.00	23.41	
	0.181	40.10	10.55	50.65	54.44	3.79	AV
	0.406	17.50	10.42	27.92	47.73	19.81	
	0.614	17.50	10.42	27.92	46.00	18.08	
	0.974	18.20	10.41	28.61	46.00	17.39	
	4.648	29.79	10.53	40.32	46.00	5.68	
	17.750	23.10	10.69	33.79	50.00	16.21	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 48%RH

Test Mode : MHL Date of Test : Mar 25, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.183	48.20	10.55	58.75	64.37	5.62	QP
	0.413	29.99	10.44	40.43	57.60	17.17	
	0.614	28.40	10.43	38.83	56.00	17.17	
	1.000	28.60	10.40	39.00	56.00	17.00	
	4.647	32.00	10.47	42.47	56.00	13.53	
	17.750	27.70	10.58	38.28	60.00	21.72	
	0.183	40.20	10.55	50.75	54.37	3.62	AV
	0.413	18.59	10.44	29.03	47.60	18.57	
	0.614	18.30	10.43	28.73	46.00	17.27	
	1.000	18.20	10.40	28.60	46.00	17.40	
	4.647	30.20	10.47	40.67	46.00	5.33	
	17.750	19.80	10.58	30.38	50.00	19.62	
Neutral	0.181	48.30	10.55	58.85	64.44	5.59	QP
	0.413	28.89	10.43	39.32	57.60	18.28	
	0.621	28.20	10.42	38.62	56.00	17.38	
	0.974	28.50	10.41	38.91	56.00	17.09	
	4.647	31.59	10.53	42.12	56.00	13.88	
	17.750	26.10	10.69	36.79	60.00	23.21	
	0.181	40.10	10.55	50.65	54.44	3.79	AV
	0.413	18.49	10.43	28.92	47.60	18.68	
	0.621	17.90	10.42	28.32	46.00	17.68	
	0.974	18.30	10.41	28.71	46.00	17.29	
	4.647	29.99	10.53	40.52	46.00	5.48	
	17.750	20.50	10.69	31.19	50.00	18.81	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

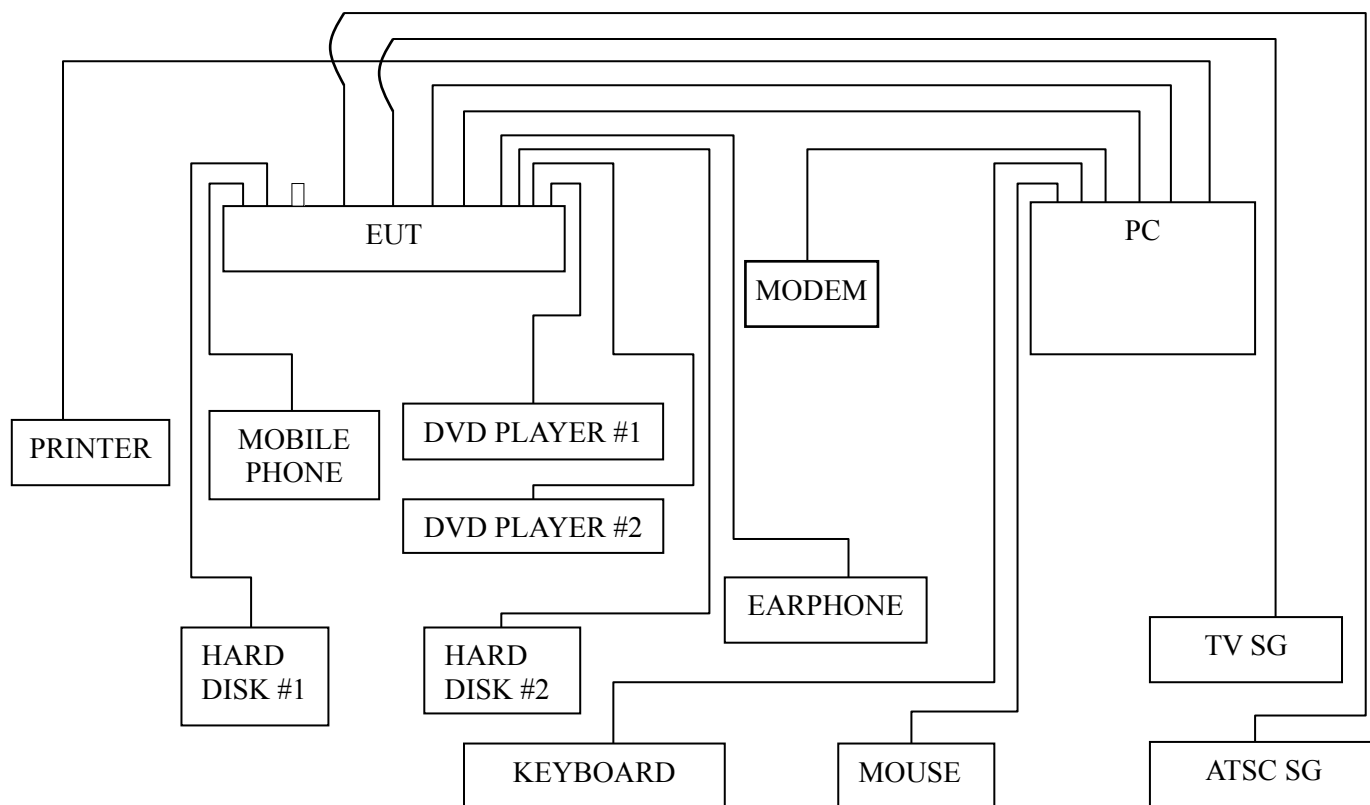
4.1 Test Equipment

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	Mar 18, 2015	Sep 17, 2015
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 20, 2015	Mar 19, 2016
3.	Preamplifier	HP	8449B	3008A00864	May 03, 2014	May 02, 2015
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 11, 2014	May 10, 2015
5.	Horn Antenna	EMCO	3115	9607-4878	Nov 11, 2014	Nov 10, 2015
6.	Spectrum	Agilent	E7405A	MY45106600	Mar 18, 2015	Sep 17, 2015
7.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426390	Mar 18, 2015	Sep 17, 2015
8.	Software	Audix	E3	6.2007-9-10	--	--

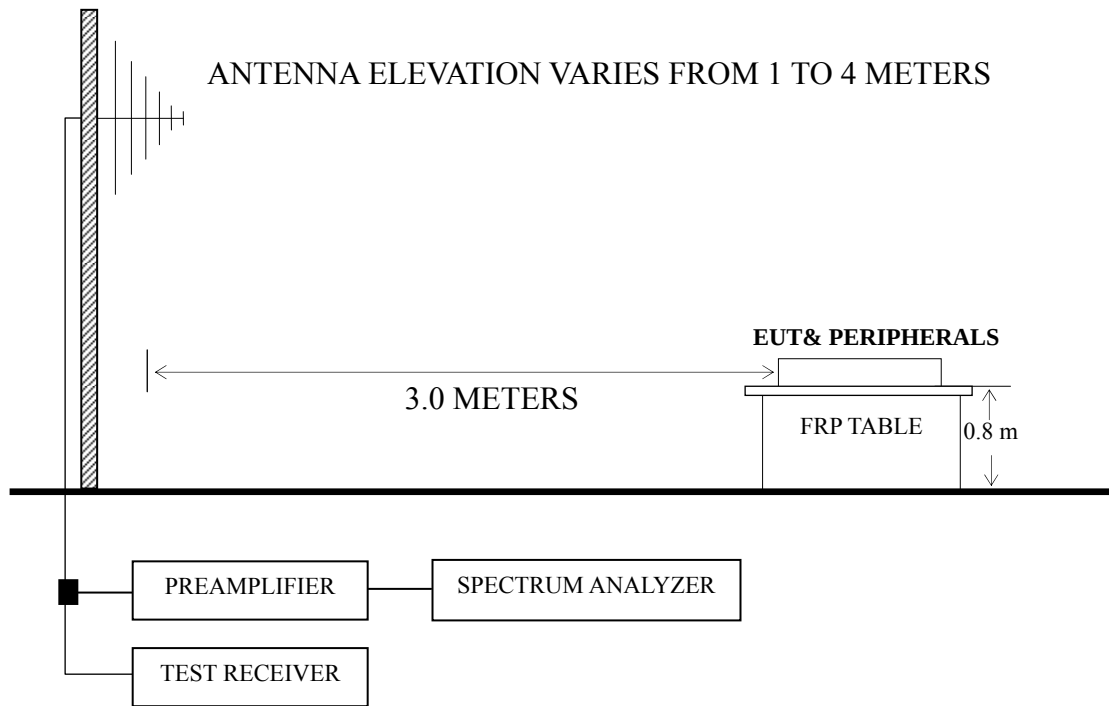
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



□ : U-Disk

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	P24-P25
HDMI 1280*1024@75Hz & 1kHz playing	P26
HDMI 640*480@60Hz & 1kHz playing	P27
USB Play	P28
LAN Play	P29
MHL	P30

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 928.120 MHz with corrected signal level of 45.52dB ($\mu\text{V/m}$) (limit is 46.00 dB ($\mu\text{V/m}$)), when the antenna was 2.10 m height and the turntable was at 314°. The worst emission at vertical polarization was detected at 928.120 MHz with corrected signal level of 45.12 dB ($\mu\text{V/m}$) (limit is 46.00 dB ($\mu\text{V/m}$)), when the antenna was 1.40 m height and the turntable was at 154°.

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Mar 22, 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	82.938	25.38	9.57	0.91	--	35.86	40.00	4.14	QP
	129.015	24.71	12.12	1.15	--	37.98	43.50	5.52	
	234.991	28.16	8.90	1.56	--	38.62	46.00	7.38	
	296.184	27.90	11.95	1.77	--	41.62	46.00	4.38	
	742.560	21.30	20.40	2.78	--	44.48	46.00	1.52	
	928.120	20.51	21.93	3.08	--	45.52	46.00	0.48	
	1078.000	48.36	23.59	3.32	36.59	38.68	74.00	35.32	PK
	1201.000	47.95	24.29	3.52	36.39	39.37	74.00	34.63	
	1393.000	46.33	25.33	3.84	36.05	39.45	74.00	34.55	
	1595.000	49.02	26.03	4.09	35.70	43.44	74.00	30.56	
	1767.000	50.83	26.69	4.29	35.50	46.31	74.00	27.69	
	1860.000	49.64	27.02	4.41	35.41	45.66	74.00	28.34	
	1078.000	39.62	23.59	3.32	36.59	29.94	54.00	24.06	AV
	1201.000	37.36	24.29	3.52	36.39	28.78	54.00	25.22	
	1393.000	37.32	25.33	3.84	36.05	30.44	54.00	23.56	
	1595.000	38.30	26.03	4.09	35.70	32.72	54.00	21.28	
	1767.000	40.02	26.69	4.29	35.50	35.50	54.00	18.50	
	1860.000	37.22	27.02	4.41	35.41	33.24	54.00	20.76	

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Mar 22, 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	31.955	16.80	17.00	0.55	--	34.35	40.00	5.65	QP
	82.938	25.73	9.57	0.91	--	36.21	40.00	3.79	
	145.861	25.74	11.48	1.22	--	38.44	43.50	5.06	
	291.036	29.68	11.28	1.76	--	42.72	46.00	3.28	
	851.035	19.59	19.67	2.97	--	42.23	46.00	3.77	
	928.120	20.11	21.93	3.08	--	45.12	46.00	0.88	
	1128.000	46.71	23.87	3.41	36.51	37.48	74.00	36.52	PK
	1259.000	47.02	24.67	3.64	36.30	39.03	74.00	34.97	
	1386.000	45.85	25.29	3.81	36.06	38.89	74.00	35.11	
	1520.000	46.26	25.77	4.01	35.81	40.23	74.00	33.77	
	1645.000	49.88	26.20	4.15	35.63	44.60	74.00	29.40	
	1808.000	48.47	26.84	4.35	35.46	44.20	74.00	29.80	
	1128.000	37.64	23.87	3.41	36.51	28.41	54.00	25.59	AV
	1259.000	38.26	24.67	3.64	36.30	30.27	54.00	23.73	
	1386.000	37.65	25.29	3.81	36.06	30.69	54.00	23.31	
	1520.000	35.20	25.77	4.01	35.81	29.17	54.00	24.83	
	1645.000	37.94	26.20	4.15	35.63	32.66	54.00	21.34	
	1808.000	38.03	26.84	4.35	35.46	33.76	54.00	20.24	

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 60%RH

Test Mode : HDMI 1280*1024@75Hz Date of Test : Mar 22, 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	82.938	24.35	9.57	0.91	34.83	40.00	5.17
	129.923	24.52	12.10	1.15	37.77	43.50	5.73
	288.800	28.49	10.98	1.75	41.22	46.00	4.78
	539.478	21.41	17.20	2.36	40.97	46.00	5.03
	675.208	18.16	21.40	2.66	42.22	46.00	3.78
	810.080	22.60	19.90	2.89	45.39	46.00	0.61
Vertical	32.979	17.24	16.57	0.56	34.37	40.00	5.63
	77.051	27.00	8.44	0.87	36.31	40.00	3.69
	135.982	25.03	11.97	1.17	38.17	43.50	5.33
	289.002	24.24	10.98	1.75	36.97	46.00	9.03
	851.035	20.65	19.67	2.97	43.29	46.00	2.71
	930.680	19.80	22.00	3.08	44.88	46.00	1.12

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 60%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Mar 22, 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	82.071	25.52	9.43	0.90	35.85	40.00	4.15
	129.923	25.12	12.10	1.15	38.37	43.50	5.13
	288.720	30.99	10.98	1.75	43.72	46.00	2.28
	381.249	20.07	17.50	2.00	39.57	46.00	6.43
	629.477	11.28	22.10	2.57	35.95	46.00	10.05
	916.069	18.64	21.63	3.07	43.34	46.00	2.66
Vertical	30.962	14.42	18.31	0.54	33.27	40.00	6.73
	82.071	25.41	9.43	0.90	35.74	40.00	4.26
	135.982	24.76	11.97	1.17	37.90	43.50	5.60
	290.017	28.68	11.10	1.75	41.53	46.00	4.47
	848.056	21.96	19.50	2.95	44.41	46.00	1.59
	927.240	15.61	21.93	3.08	40.62	46.00	5.38

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 60%RH

Test Mode : USB Play Date of Test : Mar 22, 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	76.244	21.96	8.25	0.87	31.08	40.00	8.92
	121.123	20.87	11.96	1.10	33.93	43.50	9.57
	231.718	29.69	8.60	1.54	39.83	46.00	6.17
	311.087	23.12	13.11	1.81	38.04	46.00	7.96
	574.626	15.38	17.50	2.45	35.33	46.00	10.67
	836.244	18.86	19.60	2.93	41.39	46.00	4.61
Vertical	33.562	16.76	16.36	0.57	33.69	40.00	6.31
	72.592	27.23	7.50	0.85	35.58	40.00	4.42
	141.826	24.74	11.50	1.20	37.44	43.50	6.06
	317.701	20.71	13.18	1.84	35.73	46.00	10.27
	696.857	16.93	21.03	2.70	40.66	46.00	5.34
	884.503	18.41	20.90	3.01	42.32	46.00	3.68

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 60%RH

Test Mode : LAN Play Date of Test : Mar 22, 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	81.212	25.14	9.21	0.90	35.25	40.00	4.75
	138.874	22.61	11.63	1.19	35.43	43.50	8.07
	244.232	28.16	9.08	1.60	38.84	46.00	7.16
	302.481	26.80	12.57	1.79	41.16	46.00	4.84
	675.208	13.31	21.40	2.66	37.37	46.00	8.63
	909.667	17.66	21.30	3.05	42.01	46.00	3.99
Vertical	30.638	14.70	18.87	0.54	34.11	40.00	5.89
	59.859	26.84	6.60	0.76	34.20	40.00	5.80
	127.665	21.74	12.14	1.14	35.02	43.50	8.48
	303.544	22.13	12.66	1.80	36.59	46.00	9.41
	790.619	17.99	19.40	2.87	40.26	46.00	5.74
	935.546	17.58	21.95	3.08	42.61	46.00	3.39

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 60%RH

Test Mode : MHL Date of Test : Mar 22, 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	90.855	21.92	10.90	0.94	33.76	43.50	9.74
	124.569	22.00	12.17	1.12	35.29	43.50	8.21
	223.733	27.38	8.07	1.52	36.97	46.00	9.03
	327.887	24.83	14.20	1.87	40.90	46.00	5.10
	560.693	20.35	18.00	2.41	40.76	46.00	5.24
	815.968	18.44	19.70	2.91	41.05	46.00	4.95
Vertical	43.353	19.16	10.63	0.64	30.43	40.00	9.57
	81.212	24.03	9.21	0.90	34.14	40.00	5.86
	260.144	21.74	9.50	1.65	32.89	46.00	13.11
	504.706	19.72	16.00	2.28	38.00	46.00	8.00
	739.661	14.69	20.60	2.78	38.07	46.00	7.93
	919.287	15.03	21.80	3.07	39.90	46.00	6.10

TEST ENGINEER: MARK LI

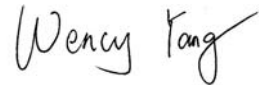
5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Al Tape	FFC-80-65-P	Foshan City Shunde District Hehui Electronic CO.,Ltd	See Appendix Figure 26
Gasket	JCT-RF-5-0.12-50	JOINSET	See Appendix Figure 27, 28

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:



(WENCY YANG)

6 DEVIATION TO TEST SPECIFICATIONS

None.