

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

LED LCD TV

Model No.	Brand
LTDN50K3201GUWUS	Hisense
50H7GB	
50H7GB*	
50H7GB1	
50H7GB2	
50H7GB3	
50H7GB4	

FCC ID : W9HLCDF0054

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

Prepared By : Audix Technology (Shanghai) Co., Ltd.
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Report No. : ACI-F15058A2
Date of Test : Jul 07-09, 2015
Date of Report : Jul 15, 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 Jul 07-09, 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.F15059A2, a Verification report.

Date of Test : Jul 07-09, 2015 Date of Report : Jul 15, 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.	Brand
LTDN50K3201GUWUS	Hisense
50H7GB	
50H7GB*	
50H7GB1	
50H7GB2	
50H7GB3	
50H7GB4	

Note #1 : The above models are all the same except for the different model No. The LTDN50K3201GUWUS was tested and reported in the report.

Note #2 : The modified histories of report are as follows:

Report No.	Model No.	Rev. Summary	Edition No.	Data of Rev.
ACI-F15058	LTDN50K3201GUWUS, 50H7GB, 50H7GB*	Original Report	0	Jan 19, 2015
ACI-F15058A1	50H7GB1	1. To add one new model name	Rev. A1	Apr 03, 2015
ACI-F15058A2	50H7GB2, 50H7GB3 50H7GB4	1. To add three new model name 2. To change LCD Panel and Power Board	Rev. A2	Jul 15, 2015

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(010)\SO\ ROH
Max Resolution	:	3840*2160@60Hz
HDMI Cable (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:		Manufacture: CE-Link
with RCP (Lab provide)		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 PC
- (4) One Digital Audio out Port : Connected with DVD PLAYER#1
- (5) One component of Video/YPbPr Port : Connected with DVD PLAYER#2

Side Port:

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

2.2 Peripherals

2.2.1 PC

Manufacturer : HP
Model Number : dx7400MT
Serial Number : CNG8130K89
Power Cord : Unshielded, Detachable, 1.8m
Certificate : FCC DoC; CE/EMC; VCCI; C-Tick;

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

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 : 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

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 : CCC

2.2.10 DVD PLAYER #2

Manufacturer : PHILIPS
Model Number : DVP3986K/93
Serial Number : KX1A0902120082
Certificate : CCC

2.2.11 U-Disk#1

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

2.2.12 U-Disk#2

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

2.2.13 U-Disk#3

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

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

FCC registration Number : 91789

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

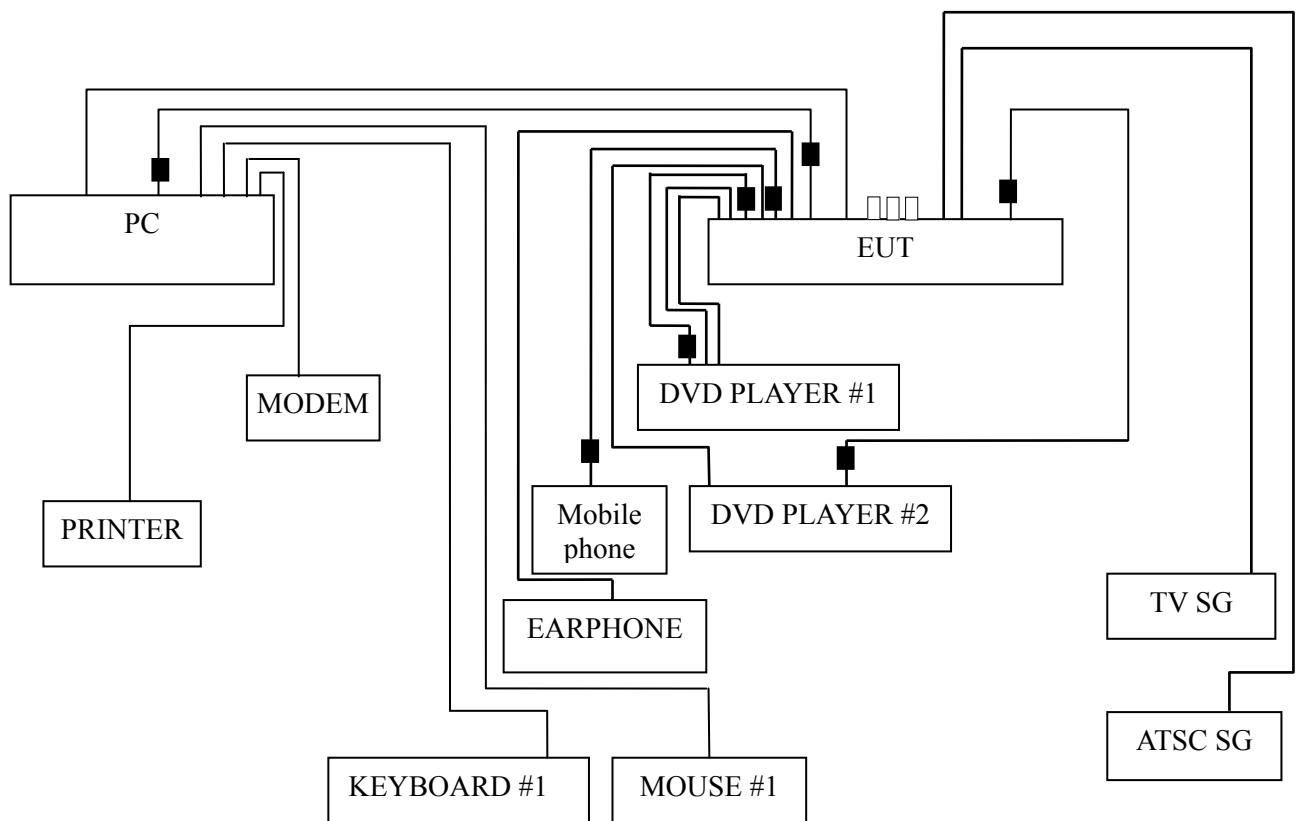
3.1 Test Equipment

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	May 07, 2015	May 06, 2016
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2015	Jun 26, 2016
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	--	--

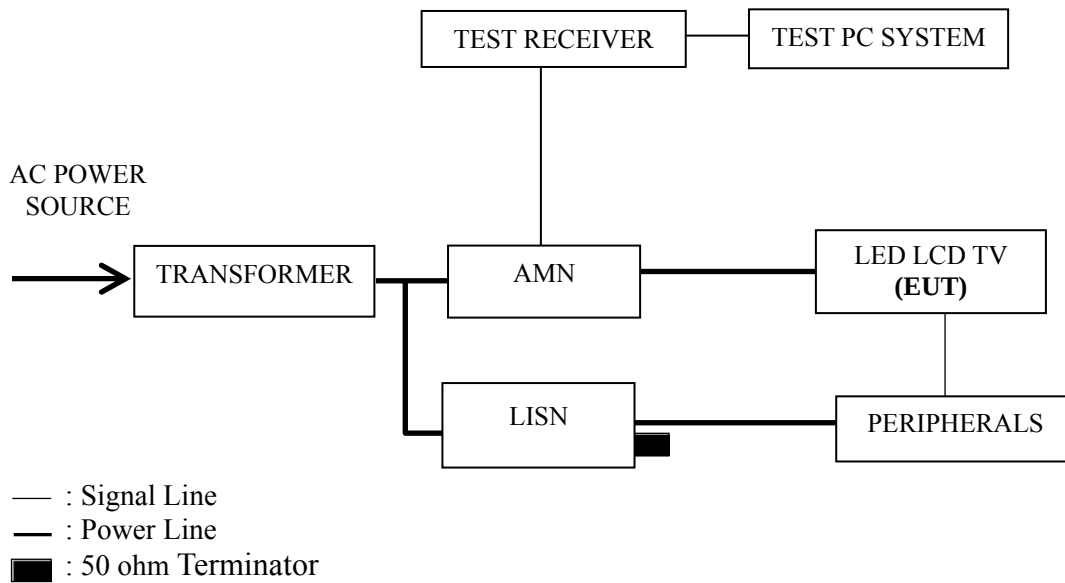
3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



□ : U-Disk
 ■ : Ferrite Core

3.2.2 Conducted Disturbance Test Setup



3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)]

Frequency Range (MHz)	Limits dB (μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56	56~46
0.5 ~ 5	56	46
5 ~ 30	60	50
NOTE 1 – The lower limit shall apply at the transition frequencies. NOTE 2 – The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz		

3.4 Test Configuration

The EUT (listed in Sec.2.1) and the peripherals (listed in Sec 2.2) were installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner that tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

3.5.1 Setup the EUT and peripherals as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipments and the EUT.

3.5.3 Set the contrast & brightness of EUT to maximum.

3.5.4 PC system ran the self-test program “EMC Test” by windows XP and sent “H” characters to EUT through graphic card, the EUT’s screen displayed and filled with “H” pattern by its resolution (Via 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 3840*2160@60Hz & 1kHz playing
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 3840*2160@60Hz & 1kHz playing	P15
HDMI 1920*1080@60Hz & 1kHz playing	P16
HDMI 1280*1024@60Hz & 1kHz playing	P17
HDMI 640*480@60Hz & 1kHz playing	P18
USB Play	P19
LAN Play	P20

NOTE 1 – Factor = Cable Loss + AMN Factor.

NOTE 2 – Emission Level = Meter Reading + Factor.

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

NOTE 4 – The worst case is for HDMI 1280*1024@60Hz & 1kHz Playing test mode. The worst emission is detected at 0.464 MHz (Average Value) with corrected signal level of 34.70 dB (μV) (limit is 46.61 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 3840*2160@60Hz Date of Test : Jul 09, 2015
& 1kHz playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.200	32.50	10.52	43.02	63.62	20.60	QP
	0.449	30.50	10.41	40.91	56.89	15.98	
	0.679	30.61	10.38	40.99	56.00	15.01	
	1.092	27.80	10.38	38.18	56.00	17.82	
	1.970	26.50	10.40	36.90	56.00	19.10	
	6.712	26.60	10.45	37.05	60.00	22.95	
	0.200	21.30	10.52	31.82	53.62	21.80	AV
	0.449	20.80	10.41	31.21	46.89	15.68	
	0.679	21.51	10.38	31.89	46.00	14.11	
	1.092	17.20	10.38	27.58	46.00	18.42	
	1.970	15.10	10.40	25.50	46.00	20.50	
	6.712	19.20	10.45	29.65	50.00	20.35	
Neutral	0.197	34.30	10.51	44.81	63.76	18.95	QP
	0.456	32.30	10.39	42.69	56.76	14.07	
	0.585	29.80	10.38	40.18	56.00	15.82	
	1.192	27.20	10.40	37.60	56.00	18.40	
	3.293	23.59	10.47	34.06	56.00	21.94	
	7.329	24.10	10.54	34.64	60.00	25.36	
	0.197	23.90	10.51	34.41	53.76	19.35	AV
	0.456	21.20	10.39	31.59	46.76	15.17	
	0.585	18.50	10.38	28.88	46.00	17.12	
	1.192	13.90	10.40	24.30	46.00	21.70	
	3.293	14.09	10.47	24.56	46.00	21.44	
	7.329	18.30	10.54	28.84	50.00	21.16	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 48%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Jul 09, 2015
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.202	34.60	10.52	45.12	63.54	18.42	QP
	0.463	32.70	10.40	43.10	56.63	13.53	
	0.607	31.41	10.38	41.79	56.00	14.21	
	1.149	29.00	10.38	39.38	56.00	16.62	
	2.792	25.29	10.42	35.71	56.00	20.29	
	6.812	30.60	10.45	41.05	60.00	18.95	
	0.202	24.50	10.52	35.02	53.54	18.52	AV
	0.463	24.20	10.40	34.60	46.63	12.03	
	0.607	21.51	10.38	31.89	46.00	14.11	
	1.149	19.60	10.38	29.98	46.00	16.02	
	2.792	15.69	10.42	26.11	46.00	19.89	
	6.812	25.00	10.45	35.45	50.00	14.55	
Neutral	0.151	35.69	10.59	46.28	65.93	19.65	QP
	0.463	31.50	10.39	41.89	56.63	14.74	
	0.602	31.51	10.37	41.88	56.00	14.12	
	1.260	27.80	10.40	38.20	56.00	17.80	
	3.480	26.30	10.47	36.77	56.00	19.23	
	6.797	29.30	10.53	39.83	60.00	20.17	
	0.151	11.79	10.59	22.38	55.93	33.55	AV
	0.463	23.00	10.39	33.39	46.63	13.24	
	0.602	21.21	10.37	31.58	46.00	14.42	
	1.260	18.00	10.40	28.40	46.00	17.60	
	3.480	17.50	10.47	27.97	46.00	18.03	
	6.797	22.60	10.53	33.13	50.00	16.87	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 48%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : Jul 09, 2015
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	34.49	10.59	45.08	65.94	20.86	QP
	0.464	32.80	10.40	43.20	56.61	13.41	
	0.605	31.91	10.38	42.29	56.00	13.71	
	1.141	29.10	10.38	39.48	56.00	16.52	
	2.909	27.70	10.42	38.12	56.00	17.88	
	6.770	30.30	10.45	40.75	60.00	19.25	
	0.151	11.29	10.59	21.88	55.94	34.06	AV
	0.464	24.30	10.40	34.70	46.61	11.91	
	0.605	22.11	10.38	32.49	46.00	13.51	
	1.141	17.40	10.38	27.78	46.00	18.22	
	2.909	15.60	10.42	26.02	46.00	19.98	
	6.770	20.80	10.45	31.25	50.00	18.75	
Neutral	0.204	33.20	10.51	43.71	63.46	19.75	QP
	0.607	31.61	10.37	41.98	56.00	14.02	
	0.696	32.30	10.37	42.67	56.00	13.33	
	1.935	27.10	10.42	37.52	56.00	18.48	
	3.467	26.30	10.47	36.77	56.00	19.23	
	6.968	28.30	10.53	38.83	60.00	21.17	
	0.204	22.50	10.51	33.01	53.46	20.45	AV
	0.607	21.71	10.37	32.08	46.00	13.92	
	0.696	23.40	10.37	33.77	46.00	12.23	
	1.935	15.80	10.42	26.22	46.00	19.78	
	3.467	17.40	10.47	27.87	46.00	18.13	
	6.968	22.50	10.53	33.03	50.00	16.97	

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 : Jul 09, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.199	33.60	10.52	44.12	63.66	19.54	QP
	0.468	32.90	10.40	43.30	56.56	13.26	
	0.603	32.11	10.38	42.49	56.00	13.51	
	1.214	29.00	10.39	39.39	56.00	16.61	
	2.900	26.40	10.42	36.82	56.00	19.18	
	6.627	28.60	10.45	39.05	60.00	20.95	
	0.199	23.40	10.52	33.92	53.66	19.74	AV
	0.468	23.60	10.40	34.00	46.56	12.56	
	0.603	22.21	10.38	32.59	46.00	13.41	
	1.214	18.10	10.39	28.49	46.00	17.51	
	2.900	14.50	10.42	24.92	46.00	21.08	
	6.627	21.70	10.45	32.15	50.00	17.85	
Neutral	0.151	36.99	10.59	47.58	65.97	18.39	QP
	0.468	31.90	10.39	42.29	56.55	14.26	
	0.600	31.91	10.37	42.28	56.00	13.72	
	1.262	29.80	10.40	40.20	56.00	15.80	
	1.800	27.80	10.42	38.22	56.00	17.78	
	6.810	30.70	10.53	41.23	60.00	18.77	
	0.151	13.49	10.59	24.08	55.97	31.89	AV
	0.468	22.60	10.39	32.99	46.55	13.56	
	0.600	21.41	10.37	31.78	46.00	14.22	
	1.262	18.90	10.40	29.30	46.00	16.70	
	1.800	17.70	10.42	28.12	46.00	17.88	
	6.810	24.10	10.53	34.63	50.00	15.37	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 48%RH

Test Mode : USB Play Date of Test : Jul 09, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	36.59	10.59	47.18	65.94	18.76	QP
	0.462	32.60	10.40	43.00	56.65	13.65	
	0.701	31.40	10.38	41.78	56.00	14.22	
	1.143	29.50	10.38	39.88	56.00	16.12	
	2.754	27.89	10.42	38.31	56.00	17.69	
	6.800	30.10	10.45	40.55	60.00	19.45	
	0.151	14.29	10.59	24.88	55.94	31.06	AV
	0.462	24.10	10.40	34.50	46.65	12.15	
	0.701	22.50	10.38	32.88	46.00	13.12	
	1.143	18.70	10.38	29.08	46.00	16.92	
	2.754	17.19	10.42	27.61	46.00	18.39	
	6.800	22.50	10.45	32.95	50.00	17.05	
Neutral	0.150	38.30	10.59	48.89	66.00	17.11	QP
	0.460	31.30	10.39	41.69	56.69	15.00	
	0.604	32.31	10.37	42.68	56.00	13.32	
	1.269	29.10	10.40	39.50	56.00	16.50	
	4.070	24.30	10.48	34.78	56.00	21.22	
	6.810	30.60	10.53	41.13	60.00	18.87	
	0.150	21.40	10.59	31.99	56.00	24.01	AV
	0.460	22.20	10.39	32.59	46.69	14.10	
	0.604	22.41	10.37	32.78	46.00	13.22	
	1.269	18.40	10.40	28.80	46.00	17.20	
	4.070	17.40	10.48	27.88	46.00	18.12	
	6.810	24.20	10.53	34.73	50.00	15.27	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 48%RH

Test Mode : LAN Play Date of Test : Jul 09, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	36.29	10.59	46.88	65.93	19.05	QP
	0.202	34.90	10.52	45.42	63.54	18.12	
	0.607	32.01	10.38	42.39	56.00	13.61	
	1.261	29.80	10.39	40.19	56.00	15.81	
	2.810	27.49	10.42	37.91	56.00	18.09	
	6.627	28.90	10.45	39.35	60.00	20.65	
	0.151	13.89	10.59	24.48	55.93	31.45	AV
	0.202	25.20	10.52	35.72	53.54	17.82	
	0.607	22.41	10.38	32.79	46.00	13.21	
	1.261	20.10	10.39	30.49	46.00	15.51	
	2.810	16.89	10.42	27.31	46.00	18.69	
	6.627	21.80	10.45	32.25	50.00	17.75	
Neutral	0.151	37.99	10.59	48.58	65.92	17.34	QP
	0.462	31.60	10.39	41.99	56.65	14.66	
	0.605	32.21	10.37	42.58	56.00	13.42	
	1.210	29.80	10.40	40.20	56.00	15.80	
	4.410	25.80	10.49	36.29	56.00	19.71	
	6.772	28.50	10.53	39.03	60.00	20.97	
	0.151	15.59	10.59	26.18	55.92	29.74	AV
	0.462	23.00	10.39	33.39	46.65	13.26	
	0.605	22.01	10.37	32.38	46.00	13.62	
	1.210	19.10	10.40	29.50	46.00	16.50	
	4.410	16.20	10.49	26.69	46.00	19.31	
	6.772	20.70	10.53	31.23	50.00	18.77	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

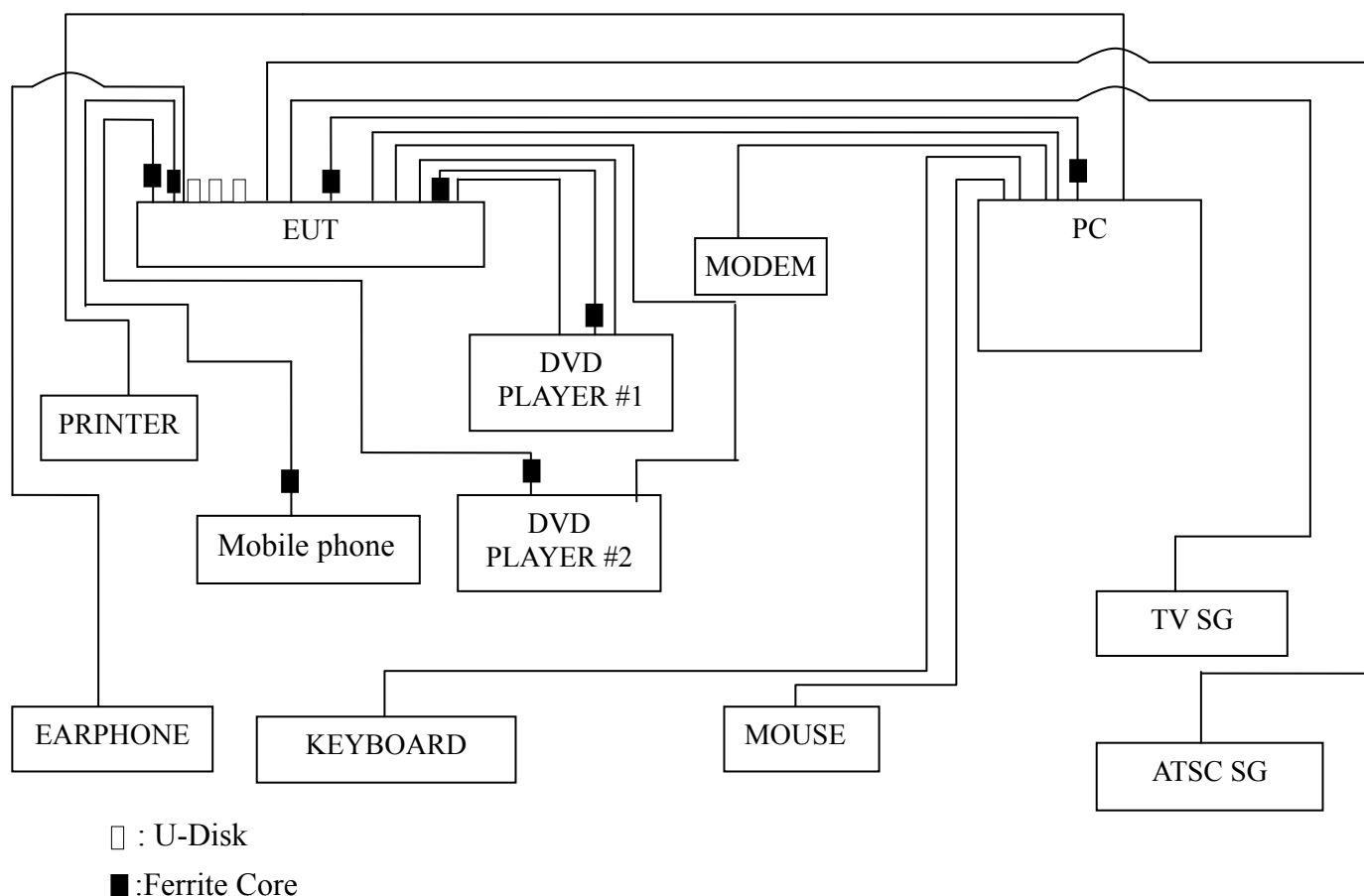
4.1 Test Equipment

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

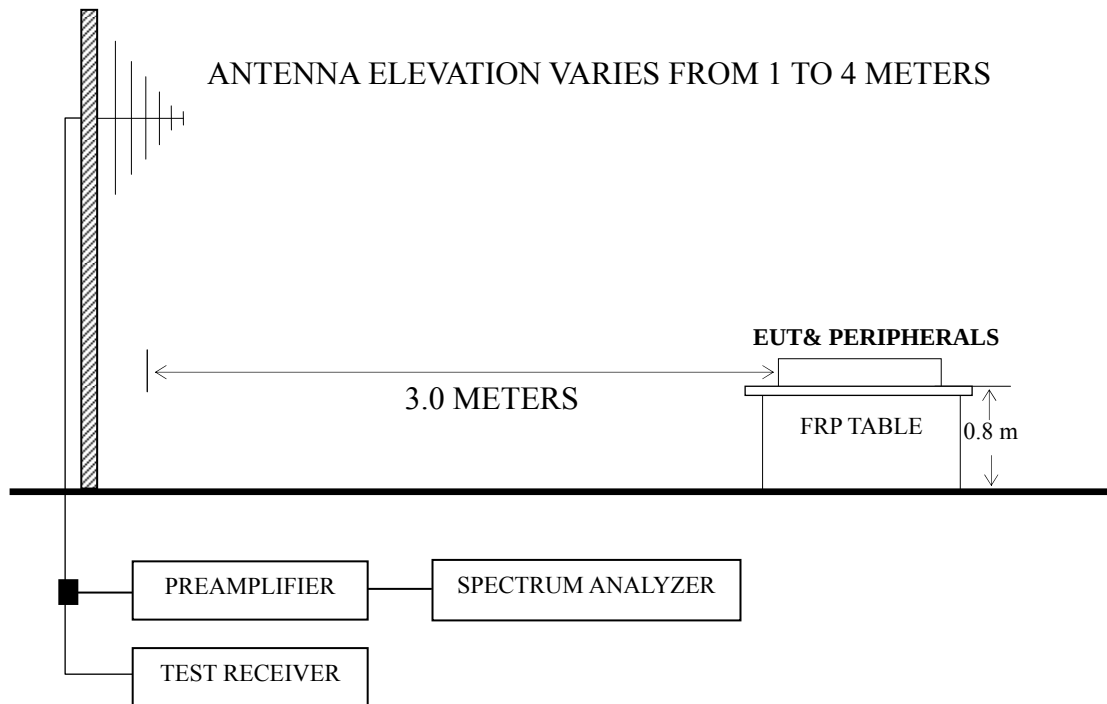
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Apr 27, 2015	Apr 26, 2016
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 20, 2015	Mar 19, 2016
3.	Preamplifier	HP	8449B	3008A00864	May 03, 2015	May 02, 2016
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 11, 2015	May 10, 2016
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



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 3840*2160@60Hz & 1kHz Playing	P25-P26
HDMI 1920*1080@60Hz & 1kHz playing	P27
HDMI 1280*1024@60Hz & 1kHz playing	P28
HDMI 640*480@60Hz & 1kHz playing	P29
USB Play	P30
LAN Play	P31

- 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 3840*2160@60Hz & 1kHz Playing test mode. The worst emission at horizontal polarization was detected at 296.680 MHz with corrected signal level of 43.87dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 2.13 m height and the turntable was at 35°. The worst emission at vertical polarization was detected at 30.970 MHz with corrected signal level of 38.44dB (μV/m) (limit is 40.00 dB (μV/m)), when the antenna was 1.00 m height and the turntable was at 282°.

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 60%RH

Test Mode : HDMI 3840*2160@60Hz & 1kHz Playing Date of Test : Jul 10, 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	30.970	6.47	18.15	0.64	0.00	25.26	40.00	14.74	QP
	73.650	24.05	8.20	0.99	0.00	33.24	40.00	6.76	
	134.760	19.81	12.60	1.55	0.00	33.96	43.50	9.54	
	217.210	21.39	10.32	2.04	0.00	33.75	46.00	12.25	
	296.680	27.21	13.70	2.56	0.00	43.47	46.00	2.53	
	296.680	27.61	13.70	2.56	0.00	43.87	46.00	2.13	
	1214.195	53.39	24.51	3.54	36.11	45.33	74.00	28.67	PK
	1269.271	60.80	24.73	3.61	36.02	53.12	74.00	20.88	
	1359.428	53.84	25.09	3.72	35.88	46.77	74.00	27.23	
	1471.207	60.97	25.51	3.84	35.72	54.60	74.00	19.40	
	1694.665	59.92	26.40	4.07	35.44	54.95	74.00	19.05	
	1840.375	53.05	26.95	4.23	35.27	48.96	74.00	25.04	
	1214.195	35.32	24.51	3.54	36.11	27.26	54.00	26.74	AV
	1269.271	40.59	24.73	3.61	36.02	32.91	54.00	21.09	
	1359.428	39.27	25.09	3.72	35.88	32.20	54.00	21.80	
	1471.207	41.84	25.51	3.84	35.72	35.47	54.00	18.53	
	1694.665	39.95	26.40	4.07	35.44	34.98	54.00	19.02	
	1840.375	34.33	26.95	4.23	35.27	30.24	54.00	23.76	

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 60%RH

Test Mode : HDMI 3840*2160@60Hz & 1kHz Playing Date of Test : Jul 10, 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
Vertical	30.970	19.65	18.15	0.64	0.00	38.44	40.00	1.56	QP
	76.560	25.33	8.78	1.04	0.00	35.15	40.00	4.85	
	153.190	19.42	11.31	1.65	0.00	32.38	43.50	11.12	
	233.700	20.06	11.36	2.10	0.00	33.52	46.00	12.48	
	660.500	11.80	19.60	3.03	0.00	34.43	46.00	11.57	
	843.020	18.88	20.77	4.07	0.00	43.72	46.00	2.28	
	1024.557	58.70	23.62	4.78	36.45	50.65	74.00	23.35	PK
	1109.569	56.92	24.04	4.09	36.29	48.76	74.00	25.24	
	1212.513	60.67	24.51	3.54	36.11	52.61	74.00	21.39	
	1278.099	56.32	24.77	3.63	36.00	48.72	74.00	25.28	
	1482.650	65.27	25.54	3.86	35.71	58.96	74.00	15.04	
	1699.370	64.87	26.42	4.07	35.43	59.93	74.00	14.07	
	1024.557	39.63	23.62	4.78	36.45	31.58	54.00	22.42	AV
	1109.569	38.64	24.04	4.09	36.29	30.48	54.00	23.52	
	1212.513	39.55	24.51	3.54	36.11	31.49	54.00	22.51	
	1278.099	38.89	24.77	3.63	36.00	31.29	54.00	22.71	
	1482.650	45.07	25.54	3.86	35.71	38.76	54.00	15.24	
	1699.370	43.16	26.42	4.07	35.43	38.22	54.00	15.78	

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Jul 10, 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	78.500	24.13	9.12	1.05	34.30	40.00	5.70
	138.640	20.51	12.53	1.57	34.61	43.50	8.89
	216.240	19.99	10.26	2.03	32.28	46.00	13.72
	384.050	8.17	16.50	2.70	27.37	46.00	18.63
	422.850	16.33	16.80	2.76	35.89	46.00	10.11
	742.950	8.90	19.97	3.60	32.47	46.00	13.53
Vertical	31.940	17.82	17.50	0.65	35.97	40.00	4.03
	69.770	22.73	7.26	0.93	30.92	40.00	9.08
	76.560	25.94	8.78	1.04	35.76	40.00	4.24
	141.550	17.86	12.40	1.59	31.85	43.50	11.65
	425.620	22.83	16.80	2.78	42.41	46.00	3.59
	849.660	19.40	20.70	4.17	44.27	46.00	1.73

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 60%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : Jul 10, 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	74.919	18.46	8.50	1.01	27.97	40.00	12.03
	100.934	13.51	12.34	1.33	27.18	43.50	16.32
	135.032	22.42	12.60	1.55	36.57	43.50	6.93
	229.293	19.21	11.12	2.08	32.41	46.00	13.59
	519.065	10.83	18.10	2.78	31.71	46.00	14.29
	844.940	16.58	20.73	4.07	41.38	46.00	4.62
Vertical	40.988	12.14	12.63	0.74	25.51	40.00	14.49
	72.084	23.61	7.83	0.98	32.42	40.00	7.58
	132.685	17.94	12.69	1.54	32.17	43.50	11.33
	204.955	23.00	9.80	1.99	34.79	43.50	8.71
	593.050	13.36	18.85	2.31	34.52	46.00	11.48
	844.340	18.88	20.73	4.07	43.68	46.00	2.32

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 : Jul 10, 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	78.689	23.63	9.17	1.07	33.87	40.00	6.13
	136.939	19.24	12.56	1.56	33.36	43.50	10.14
	222.950	21.24	10.70	2.05	33.99	46.00	12.01
	362.985	18.03	16.03	2.67	36.73	46.00	9.27
	593.050	12.18	18.85	2.31	33.34	46.00	12.66
	704.226	9.69	19.80	3.56	33.05	46.00	12.95
Vertical	43.812	13.74	11.85	0.76	26.35	40.00	13.65
	73.617	20.41	8.20	0.99	29.60	40.00	10.40
	129.923	22.45	12.80	1.52	36.77	43.50	6.73
	220.617	18.50	10.55	2.05	31.10	46.00	14.90
	408.946	10.06	16.60	2.73	29.39	46.00	16.61
	845.960	17.98	20.73	4.07	42.78	46.00	3.22

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 60%RH

Test Mode : USB Play Date of Test : Jul 10, 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	73.359	25.45	8.12	0.99	34.56	40.00	5.44
	127.218	14.23	12.97	1.51	28.71	43.50	14.79
	213.763	21.72	10.17	2.02	33.91	43.50	9.59
	291.036	12.55	13.60	2.52	28.67	46.00	17.33
	504.706	7.76	17.90	2.89	28.55	46.00	17.45
	890.000	16.87	21.30	4.46	42.63	46.00	3.37
Vertical	30.531	12.52	18.53	0.64	31.69	40.00	8.31
	74.657	22.63	8.43	1.01	32.07	40.00	7.93
	128.563	19.22	12.87	1.51	33.60	43.50	9.90
	192.419	21.37	10.20	1.92	33.49	43.50	10.01
	519.065	10.69	18.10	2.78	31.57	46.00	14.43
	842.930	18.78	20.77	4.07	43.62	46.00	2.38

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN50K3201GUWUS Humidity : 60%RH

Test Mode : LAN Play Date of Test : Jul 10, 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	72.592	22.80	7.90	0.98	31.68	40.00	8.32
	135.032	13.57	12.60	1.55	27.72	43.50	15.78
	241.676	15.55	12.00	2.13	29.68	46.00	16.32
	374.623	8.21	16.39	2.69	27.29	46.00	18.71
	515.437	9.75	18.00	2.84	30.59	46.00	15.41
	890.060	16.87	21.30	4.46	42.63	46.00	3.37
Vertical	32.520	9.97	17.21	0.66	27.84	40.00	12.16
	73.103	22.53	8.05	0.98	31.56	40.00	8.44
	128.113	18.31	12.90	1.51	32.72	43.50	10.78
	216.024	18.77	10.26	2.03	31.06	46.00	14.94
	851.060	16.90	20.73	4.17	41.80	46.00	4.20
	928.740	14.04	21.63	4.65	40.32	46.00	5.68

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 Internal Photo Figure 20
Gasket	JCT-RF-5-0.12-50	JOINSET	See Internal Photo Figure 21, 22

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.