

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

LED LCD TV

Model No.	Brand
LC-50N6000U, LC-50N6000C	Sharp

FCC ID : W9HLCDF0071

Prepared For : Hisense Electric Co., Ltd.
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Report No. : ACI-F16014A1
Date of Test : Apr 25 – May 09, 2016
Date of Report : May 17, 2016

TABLE OF CONTENTS

	Page
1 SUMMARY OF STANDARDS AND RESULTS.....	4
1.1 Description of Standards and Results.....	4
2 GENERAL INFORMATION.....	5
2.1 Description of Equipment Under Test.....	5
2.2 Peripherals.....	6
2.3 Description of Test Facility.....	8
2.4 Measurement Uncertainty.....	9
3 CONDUCTED EMISSION TEST.....	10
3.1 Test Equipment.....	10
3.2 Block Diagram of Test Setup.....	10
3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)].....	11
3.4 Test Configuration.....	11
3.5 Operating Condition of EUT.....	12
3.6 Test Procedures.....	12
3.7 Test Results.....	13
4 RADIATED EMISSION TEST.....	22
4.1 Test Equipment.....	22
4.2 Block Diagram of Test Setup.....	22
4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)].....	24
4.4 Test Configuration.....	24
4.5 Operating Condition of EUT.....	24
4.6 Test Procedures.....	24
4.7 Test Results.....	25
5 DEVIATION TO TEST SPECIFICATIONS.....	36

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.
Factory #3 : HISENSE ELECTRONICA MEXICO, S.A. DE C.V.
EUT Description : LED LCD TV

Model No.	Brand	Power Supply
LC-50N6000U, LC-50N6000C	Sharp	120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2015
AND ANSI C63.4-2014*

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 Apr 25 – May 09, 2016 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.F16013A1, a Verification report.

Date of Test : Apr 25 – May 09, 2016 Date of Report : May 17, 2016

Producer : HUI MIN YAN
HUI MIN YAN / Assistant

Review : BYRON WU
BYRON WU / Deputy Assistant 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 2015 AND ANSI C63.4-2014	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2015 AND ANSI C63.4-2014	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 : LC-50N6000U, LC-50N6000C

Note#1 : The above models are all the same except for model number. LC-50N6000U model is tested and recorded 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-F16014	LC-50N6000U, LC-50N6000C	Original Report	0	Jan 15, 2016
ACI-F16014A1	LC-50N6000U, LC-50N6000C	To add a new panel	Rev. A1	May 17, 2016

Brand : Sharp

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

Manufacturer : same as Applicant

Factory #1 : same as Applicant

Factory #2 : Tatung Mexico S.A. de C.V.
Miguel Catalán 420, Parque Industrial Rio Bravo,
Cd. Juarez, Chih., CP 32557

Factory #3 : HISENSE ELECTRONICA MEXICO, S.A.DE C.V.
Blvd. Sharp #3510 Parque Industrial Rosarito,
C.P. 22710 Playas de Rosarito, B.C.

LCD Panel : Manufacturer : Hisense
M/N : HD500DU-B52 (110)

Tuner : Manufacturer : XuGuang Tech. Co., Ltd.
M/N : HFT-96S3/W11FJ2H/ROH

Max Resolution : 3840*2160@60Hz

HDMI Cable*4 : Shielded, Detachable, 1.50m
(Lab provide)

Power Cord : Unshielded, Detachable, 1.80m, 2C

LAN Cable	:	Shielded, Detachable, 1.50m
USB Cable*3	:	Shielded, Detachable, 1.00m, 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 Hard-Disk #1
- (2) One HDMI2/ARC Port : Connected with PC
- (3) One HDMI1/MHL Port : Connected with Smart Mobile Phone
- (4) One Service Port : This port does not open to user
- (5) One Audio out Port : Connected with Earphone
- (6) One USB1 Port : Connected with Hard-Disk #2
- (7) One USB2 Port : Connected with Hard-Disk #3
- (8) One ANT/CABLE IN Port : Connected with ATSC SG / TV SG

Back Port:

- (9) One LAN Port : Connected with PC
- (10) One HDMI3 Port : Connected with DVD PLAYER #1
- (11) One HDMI4 Port : Connected with DVD PLAYER #2
- (12) One Digital Audio Out Port : Connected with DVD PLAYER #1
- (13) One COMPONENT IN/AV IN Port : Connected with DVD PLAYER #1

2.2 Peripherals

2.2.1 PC

Manufacturer	:	HP
Model Number	:	Pro3340
Serial Number	:	6CR2512VFD
Power Cord	:	Unshielded, Detachable, 1.8m
Certificate	:	FCC DoC; CE/EMC; VCCI; C-Tick;

2.2.2 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

2.2.3 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

2.2.4 Modem

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

2.2.5 Earphone*2

Manufacturer : Edifier
Model Number : H210

2.2.6 TV Signal Generator

Manufacturer : FLUKE
Model Number : 54200M01
Serial Number : 814008

2.2.7 ATSC Signal Generator

Manufacturer : SENCORE
Model Number : ATSC997
Serial Number : 6790071

2.2.8 DVD PLAYER #1

Manufacturer : PHILIPS
Model Number : DVP3986K/93
Serial Number : KX1A0902120108
Certificate : CCC

2.2.9 DVD PLAYER #2

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

2.2.10 Hard Disk #1

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

2.2.11 Hard Disk #2

Manufacturer	:	Tetasys
Model Number	:	F12
Serial Number	:	A010022-4A60007
Data Cable	:	Shielded, Undetachable, 1.8m.
Certificate	:	CE, FCC DoC

2.2.12 Hard Disk #3

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

2.2.13 Smart 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 : $U = 3.4\text{dB}$

Radiated Emission Expanded Uncertainty (30-200MHz):

$U = 4.6\text{dB}$ (Horizontal)

$U = 4.3\text{dB}$ (Vertical)

Radiated Emission Expanded Uncertainty (200M-1GHz):

$U = 4.5\text{dB}$ (Horizontal)

$U = 5.4\text{dB}$ (Vertical)

Radiated Emission Expanded Uncertainty (1GHz-6GHz):

$U = 5.1\text{dB}$

3 CONDUCTED EMISSION TEST

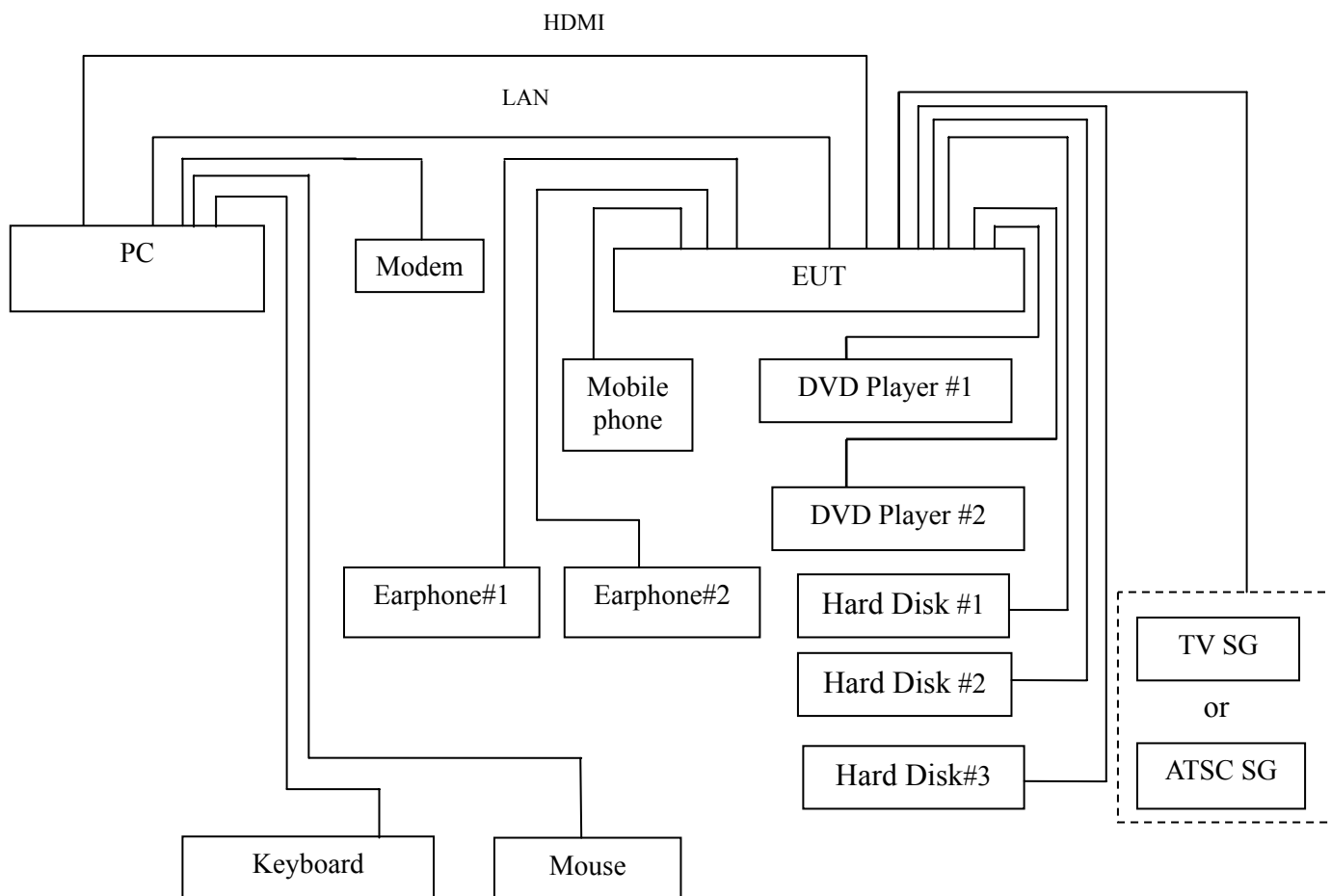
3.1 Test Equipment

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

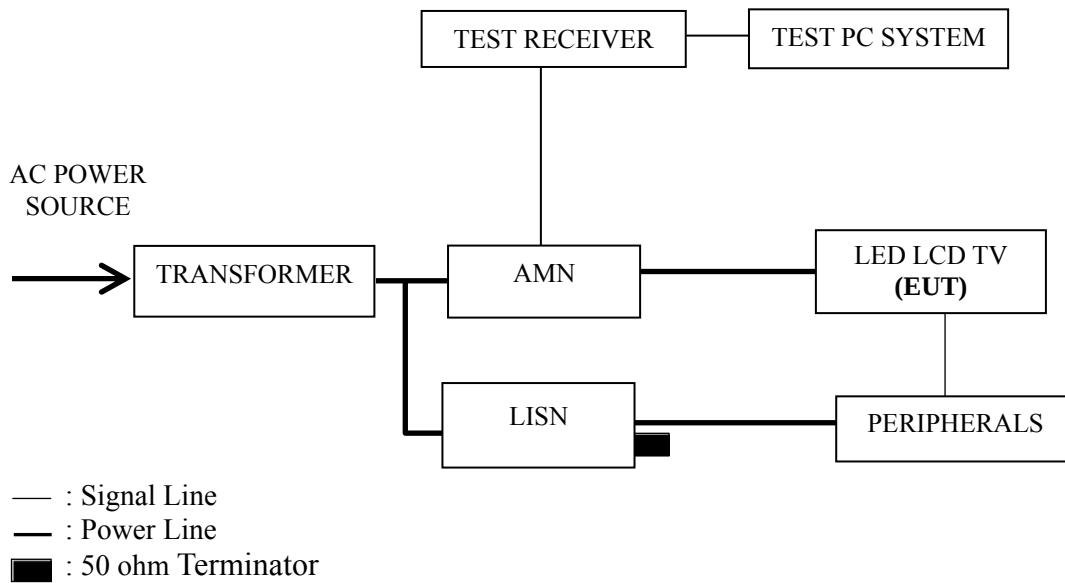
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Jul 03, 2015	Jul 02, 2016
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2015	Jun 26, 2016
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 19, 2016	Mar 18, 2017
4.	50Ω Terminator	Anritsu	BNC	001	Mar 18, 2016	Sep 17, 2016
5.	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 (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 Hard 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
HDMI1080P
MHL
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 C63.4:2014 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	P14
HDMI 1920*1080@60Hz & 1kHz playing	P15
HDMI 1280*1024@60Hz & 1kHz playing	P16
HDMI 640*480@60Hz & 1kHz playing	P17
HDMI1080P	P18
MHL	P19
USB Play	P20
LAN Play	P21

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 0.654MHz (Average Value) with corrected signal level of 42.78 dB (μV) (limit is 56.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 48%RH

Test Mode : HDMI 3840*2160@60Hz Date of Test : Apr 25, 2016
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.183	34.40	10.54	44.94	64.37	19.43	QP
	0.423	32.39	10.42	42.81	57.39	14.58	
	0.629	31.20	10.38	41.58	56.00	14.42	
	1.707	28.09	10.41	38.50	56.00	17.50	
	4.892	26.90	10.48	37.38	56.00	18.62	
	7.257	34.80	10.47	45.27	60.00	14.73	
	0.183	24.10	10.54	34.64	54.37	19.73	AV
	0.423	21.19	10.42	31.61	47.39	15.78	
	0.629	19.10	10.38	29.48	46.00	16.52	
	1.707	17.29	10.41	27.70	46.00	18.30	
	4.892	18.40	10.48	28.88	46.00	17.12	
	7.257	23.90	10.47	34.37	50.00	15.63	
Neutral	0.183	30.90	10.53	41.43	64.34	22.91	QP
	0.419	30.89	10.40	41.29	57.47	16.18	
	0.625	30.60	10.36	40.96	56.00	15.04	
	1.086	29.31	10.37	39.68	56.00	16.32	
	2.600	27.41	10.42	37.83	56.00	18.17	
	7.042	33.70	10.51	44.21	60.00	15.79	
	0.183	21.70	10.53	32.23	54.34	22.11	AV
	0.419	21.09	10.40	31.49	47.47	15.98	
	0.625	19.40	10.36	29.76	46.00	16.24	
	1.086	17.01	10.37	27.38	46.00	18.62	
	2.600	17.11	10.42	27.53	46.00	18.47	
	7.042	23.80	10.51	34.31	50.00	15.69	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 48%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Apr 25, 2016
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.186	34.70	10.54	45.24	64.23	18.99	QP
	0.427	31.80	10.41	42.21	57.31	15.10	
	1.123	28.91	10.38	39.29	56.00	16.71	
	2.095	29.30	10.41	39.71	56.00	16.29	
	4.466	27.20	10.47	37.67	56.00	18.33	
	7.280	31.60	10.47	42.07	60.00	17.93	
	0.186	24.30	10.54	34.84	54.23	19.39	AV
	0.427	19.20	10.41	29.61	47.31	17.70	
	1.123	16.81	10.38	27.19	46.00	18.81	
	2.095	16.70	10.41	27.11	46.00	18.89	
	4.466	17.00	10.47	27.47	46.00	18.53	
	7.280	21.70	10.47	32.17	50.00	17.83	
Neutral	0.194	29.90	10.51	40.41	63.86	23.45	QP
	0.436	30.80	10.39	41.19	57.15	15.96	
	0.654	31.11	10.35	41.46	56.00	14.54	
	1.151	28.81	10.37	39.18	56.00	16.82	
	2.612	27.11	10.42	37.53	56.00	18.47	
	7.059	30.71	10.51	41.22	60.00	18.78	
	0.194	20.70	10.51	31.21	53.86	22.65	AV
	0.436	18.40	10.39	28.79	47.15	18.36	
	0.654	18.01	10.35	28.36	46.00	17.64	
	1.151	16.51	10.37	26.88	46.00	19.12	
	2.612	18.81	10.42	29.23	46.00	16.77	
	7.059	22.51	10.51	33.02	50.00	16.98	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 48%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : Apr 25, 2016
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.195	34.19	10.53	44.72	63.80	19.08	QP
	0.437	32.30	10.41	42.71	57.12	14.41	
	0.629	31.70	10.38	42.08	56.00	13.92	
	1.123	29.71	10.38	40.09	56.00	15.91	
	2.793	28.80	10.44	39.24	56.00	16.76	
	7.290	31.30	10.47	41.77	60.00	18.23	
	0.195	22.49	10.53	33.02	53.80	20.78	AV
	0.437	18.80	10.41	29.21	47.12	17.91	
	0.629	20.00	10.38	30.38	46.00	15.62	
	1.123	19.01	10.38	29.39	46.00	16.61	
	2.793	17.10	10.44	27.54	46.00	18.46	
	7.290	21.10	10.47	31.57	50.00	18.43	
Neutral	0.189	31.30	10.52	41.82	64.08	22.26	QP
	0.423	30.09	10.40	40.49	57.38	16.89	
	0.627	31.90	10.36	42.26	56.00	13.74	
	1.874	28.60	10.41	39.01	56.00	16.99	
	4.477	25.30	10.46	35.76	56.00	20.24	
	7.062	31.71	10.51	42.22	60.00	17.78	
	0.189	21.90	10.52	32.42	54.08	21.66	AV
	0.423	18.69	10.40	29.09	47.38	18.29	
	0.627	20.10	10.36	30.46	46.00	15.54	
	1.874	18.40	10.41	28.81	46.00	17.19	
	4.477	15.90	10.46	26.36	46.00	19.64	
	7.062	23.31	10.51	33.82	50.00	16.18	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 48%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Apr 25, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.192	34.30	10.53	44.83	63.96	19.13	QP
	0.419	31.09	10.42	41.51	57.47	15.96	
	0.623	32.20	10.38	42.58	56.00	13.42	
	1.072	29.00	10.38	39.38	56.00	16.62	
	2.611	27.50	10.43	37.93	56.00	18.07	
	7.273	31.50	10.47	41.97	60.00	18.03	
	0.192	23.60	10.53	34.13	53.96	19.83	AV
	0.419	20.69	10.42	31.11	47.47	16.36	
	0.623	20.70	10.38	31.08	46.00	14.92	
	1.072	16.60	10.38	26.98	46.00	19.02	
	2.611	18.90	10.43	29.33	46.00	16.67	
	7.273	21.60	10.47	32.07	50.00	17.93	
Neutral	0.187	31.40	10.52	41.92	64.16	22.24	QP
	0.438	30.80	10.39	41.19	57.11	15.92	
	0.575	30.50	10.36	40.86	56.00	15.14	
	1.120	29.91	10.37	40.28	56.00	15.72	
	2.843	27.10	10.43	37.53	56.00	18.47	
	7.411	29.50	10.52	40.02	60.00	19.98	
	0.187	22.00	10.52	32.52	54.16	21.64	AV
	0.438	18.50	10.39	28.89	47.11	18.22	
	0.575	16.20	10.36	26.56	46.00	19.44	
	1.120	19.01	10.37	29.38	46.00	16.62	
	2.843	15.20	10.43	25.63	46.00	20.37	
	7.411	20.60	10.52	31.12	50.00	18.88	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 48%RH

Test Mode : HDMI1080P Date of Test : Apr 25, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.193	34.50	10.53	45.03	63.90	18.87	QP
	0.434	32.80	10.41	43.21	57.17	13.96	
	0.622	32.20	10.38	42.58	56.00	13.42	
	1.257	29.10	10.39	39.49	56.00	16.51	
	2.637	27.49	10.44	37.93	56.00	18.07	
	7.206	29.50	10.47	39.97	60.00	20.03	
	0.193	23.10	10.53	33.63	53.90	20.27	AV
	0.434	20.40	10.41	30.81	47.17	16.36	
	0.622	20.30	10.38	30.68	46.00	15.32	
	1.257	17.20	10.39	27.59	46.00	18.41	
	2.637	18.79	10.44	29.23	46.00	16.77	
	7.206	22.00	10.47	32.47	50.00	17.53	
Neutral	0.202	29.50	10.50	40.00	63.55	23.55	QP
	0.437	30.50	10.39	40.89	57.12	16.23	
	0.622	32.20	10.36	42.56	56.00	13.44	
	1.146	28.81	10.37	39.18	56.00	16.82	
	2.598	26.91	10.42	37.33	56.00	18.67	
	7.032	31.90	10.51	42.41	60.00	17.59	
	0.202	19.60	10.50	30.10	53.55	23.45	AV
	0.437	17.60	10.39	27.99	47.12	19.13	
	0.622	20.30	10.36	30.66	46.00	15.34	
	1.146	16.01	10.37	26.38	46.00	19.62	
	2.598	18.11	10.42	28.53	46.00	17.47	
	7.032	23.30	10.51	33.81	50.00	16.19	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 48%RH

Test Mode : MHL Date of Test : Apr 25, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.191	34.40	10.53	44.93	64.01	19.08	QP
	0.436	32.80	10.41	43.21	57.15	13.94	
	0.627	32.20	10.38	42.58	56.00	13.42	
	1.159	29.21	10.38	39.59	56.00	16.41	
	3.542	26.10	10.45	36.55	56.00	19.45	
	7.368	30.50	10.47	40.97	60.00	19.03	
	0.191	23.90	10.53	34.43	54.01	19.58	AV
	0.436	19.90	10.41	30.31	47.15	16.84	
	0.627	19.80	10.38	30.18	46.00	15.82	
	1.159	16.71	10.38	27.09	46.00	18.91	
	3.542	16.00	10.45	26.45	46.00	19.55	
	7.368	21.20	10.47	31.67	50.00	18.33	
Neutral	0.189	31.30	10.52	41.82	64.10	22.28	QP
	0.434	30.90	10.39	41.29	57.18	15.89	
	0.628	31.30	10.36	41.66	56.00	14.34	
	1.126	30.31	10.37	40.68	56.00	15.32	
	2.012	29.40	10.41	39.81	56.00	16.19	
	7.377	29.90	10.52	40.42	60.00	19.58	
	0.189	22.10	10.52	32.62	54.10	21.48	AV
	0.434	19.20	10.39	29.59	47.18	17.59	
	0.628	19.40	10.36	29.76	46.00	16.24	
	1.126	18.41	10.37	28.78	46.00	17.22	
	2.012	17.30	10.41	27.71	46.00	18.29	
	7.377	21.00	10.52	31.52	50.00	18.48	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 48%RH

Test Mode : USB Play Date of Test : Apr 25, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.188	34.89	10.54	45.43	64.14	18.71	QP
	0.431	32.60	10.41	43.01	57.23	14.22	
	0.653	31.91	10.37	42.28	56.00	13.72	
	1.115	30.30	10.38	40.68	56.00	15.32	
	3.562	26.20	10.45	36.65	56.00	19.35	
	7.034	32.65	10.46	43.11	60.00	16.89	
	0.188	24.49	10.54	35.03	54.14	19.11	AV
	0.431	20.50	10.41	30.91	47.23	16.32	
	0.653	18.81	10.37	29.18	46.00	16.82	
	1.115	19.50	10.38	29.88	46.00	16.12	
	3.562	16.00	10.45	26.45	46.00	19.55	
	7.034	24.30	10.46	34.76	50.00	15.24	
Neutral	0.185	31.00	10.52	41.52	64.26	22.74	QP
	0.418	30.39	10.40	40.79	57.48	16.69	
	0.626	32.00	10.36	42.36	56.00	13.64	
	1.315	29.30	10.39	39.69	56.00	16.31	
	2.629	27.00	10.43	37.43	56.00	18.57	
	7.046	33.60	10.51	44.11	60.00	15.89	
	0.185	20.80	10.52	31.32	54.26	22.94	AV
	0.418	20.29	10.40	30.69	47.48	16.79	
	0.626	20.10	10.36	30.46	46.00	15.54	
	1.315	16.80	10.39	27.19	46.00	18.81	
	2.629	18.20	10.43	28.63	46.00	17.37	
	7.046	23.50	10.51	34.01	50.00	15.99	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 48%RH

Test Mode : LAN Play Date of Test : Apr 25, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.195	34.50	10.53	45.03	63.83	18.80	QP
	0.429	32.30	10.41	42.71	57.27	14.56	
	0.654	32.41	10.37	42.78	56.00	13.22	
	1.171	29.51	10.38	39.89	56.00	16.11	
	2.783	28.10	10.44	38.54	56.00	17.46	
	7.326	32.70	10.47	43.17	60.00	16.83	
	0.195	22.60	10.53	33.13	53.83	20.70	AV
	0.429	20.00	10.41	30.41	47.27	16.86	
	0.654	20.01	10.37	30.38	46.00	15.62	
	1.171	17.61	10.38	27.99	46.00	18.01	
	2.783	17.80	10.44	28.24	46.00	17.76	
	7.326	22.10	10.47	32.57	50.00	17.43	
Neutral	0.188	32.70	10.52	43.22	64.11	20.89	QP
	0.432	31.10	10.39	41.49	57.21	15.72	
	0.577	31.20	10.36	41.56	56.00	14.44	
	1.043	28.40	10.37	38.77	56.00	17.23	
	1.944	29.40	10.41	39.81	56.00	16.19	
	7.446	31.90	10.52	42.42	60.00	17.58	
	0.188	22.10	10.52	32.62	54.11	21.49	AV
	0.432	19.20	10.39	29.59	47.21	17.62	
	0.577	17.30	10.36	27.66	46.00	18.34	
	1.043	18.50	10.37	28.87	46.00	17.13	
	1.944	18.70	10.41	29.11	46.00	16.89	
	7.446	21.70	10.52	32.22	50.00	17.78	

TEST ENGINEER: SEVEN LU

4 RADIATED EMISSION TEST

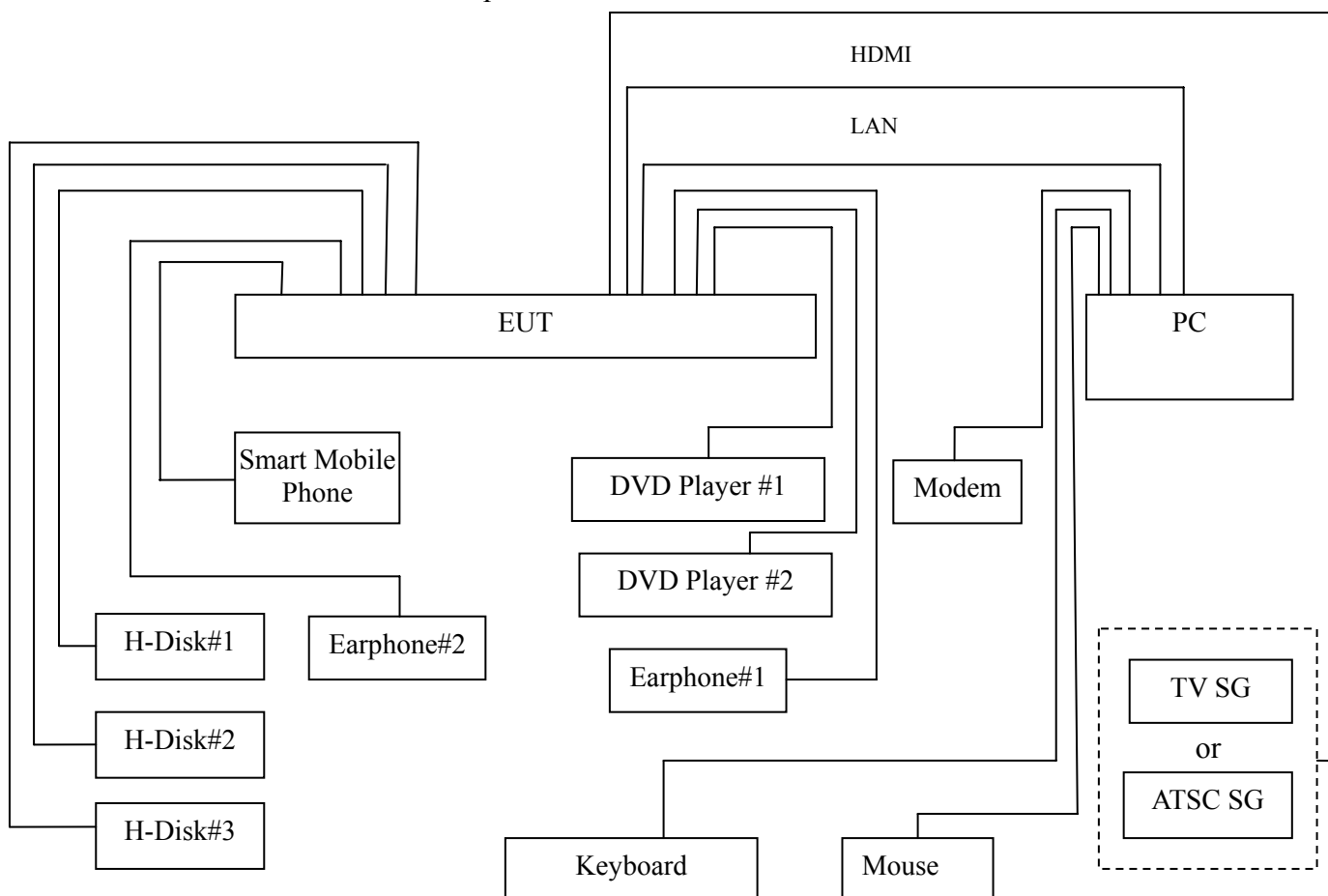
4.1 Test Equipment

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	101303	May 07, 2016	May 06, 2017
2.	Preamplifier	Agilent	8447D	2944A06664	Apr 27, 2016	Apr 26, 2017
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2016	Mar 19, 2017
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 15, 2015	May 14, 2016
5.	Horn Antenna	EMCO	3115	9607-4878	Jun 03, 2015	Jun 02, 2016
6.	Spectrum	Agilent	E7405A	MY45106600	Feb 26, 2016	Feb 25, 2017
7.	Spectrum	HP	8591EM	3628A00908	May 07, 2016	May 06, 2017
8.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426390	Mar 18, 2016	Sep 17, 2016
9.	Software	Audix	e3	6.2007-9-10	--	--

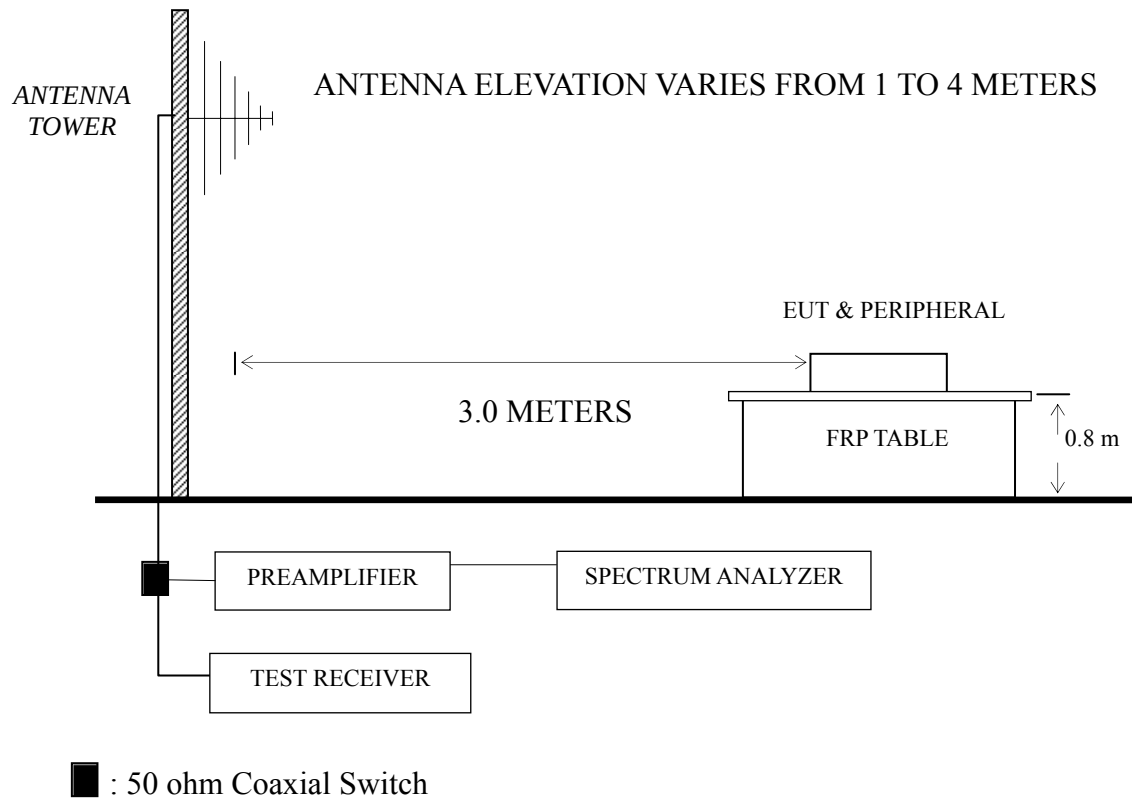
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



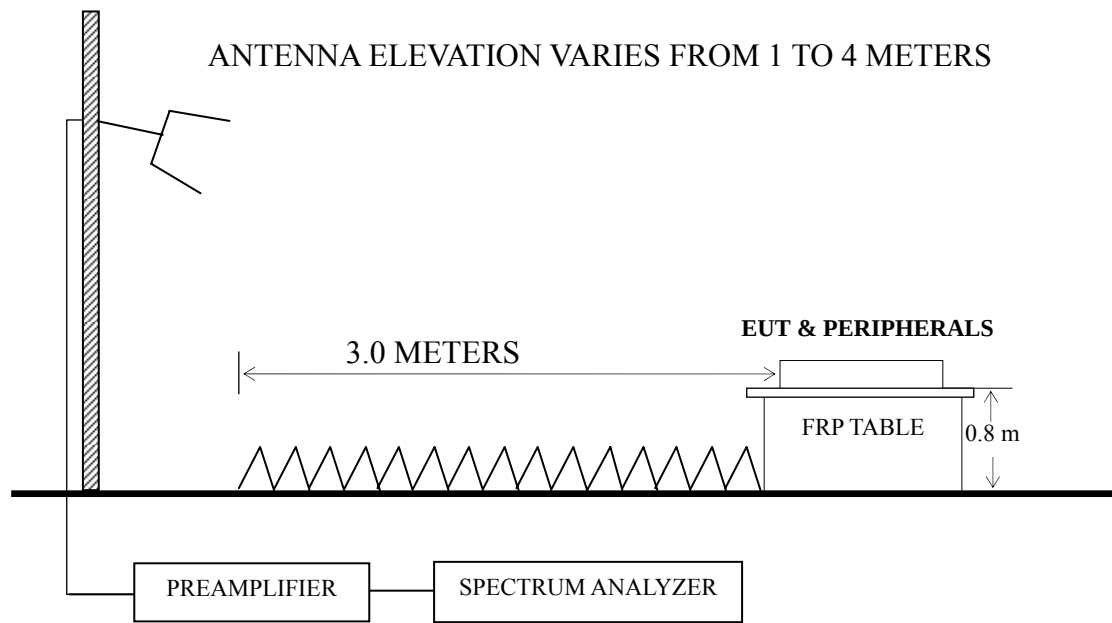
4.2.2 Test Setup

4.2.2.1 Below 1GHz



4.2.2.2 Above 1GHz

BORE-SIGHT ANTENNA TOWER



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 C63.4:2014 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 6 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	P26 - P27
HDMI 1920*1080@60Hz & 1kHz playing	P28
HDMI 1280*1024@60Hz & 1kHz playing	P29
HDMI 640*480@60Hz & 1kHz playing	P30
HDMI1080P	P31
MHL	P32
USB Play	P33
LAN Play	P34

NOTE 1 – Emission Level = Antenna Factor + Cable Loss + Meter Reading.
($< 1\text{GHz}$);

Emission Level = Antenna Factor + Cable Loss – Preamp Factor
+ Meter Reading. ($> 1\text{GHz}$)

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 845.088 MHz with corrected signal level of 42.60 dB ($\mu\text{V/m}$) (limit is 46.00 dB ($\mu\text{V/m}$)), when the antenna was 1.8 m height and the turntable was at 300° . The worst emission at vertical polarization was detected at 665.804 MHz with corrected signal level of 42.33 dB ($\mu\text{V/m}$) (limit is 46.00 dB ($\mu\text{V/m}$)), when the antenna was 1.0m height and the turntable was at 75° .

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 60%RH

Test Mode : HDMI 3840*2160@60Hz & 1kHz Playing Date of Test : May 09, 2016

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	83.230	21.85	9.66	1.12	--	32.63	40.00	7.37	QP
	134.088	22.16	12.62	1.54	--	36.32	43.50	7.18	
	164.908	24.93	11.30	1.75	--	37.98	43.50	5.52	
	232.532	27.50	11.32	2.09	--	40.91	46.00	5.09	
	665.804	18.64	19.60	3.16	--	41.40	46.00	4.60	
	845.088	17.80	20.73	4.07	--	42.60	46.00	3.40	
	2557.121	28.67	63.63	4.96	35.16	62.10	74.00	11.90	PK
	2956.525	30.33	59.42	5.69	35.20	60.24	74.00	13.76	
	3387.825	31.29	59.40	6.10	34.82	61.97	74.00	12.03	
	5914.609	35.07	49.81	8.31	34.08	59.11	74.00	14.89	
	2557.121	28.67	45.39	4.96	35.16	43.86	54.00	10.14	AV
	2956.525	30.33	42.10	5.69	35.20	42.92	54.00	11.08	
	3387.825	31.29	42.11	6.10	34.82	44.68	54.00	9.32	
	5914.609	35.07	33.49	8.31	34.08	42.79	54.00	11.21	

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 60%RH

Test Mode : HDMI 3840*2160@60Hz & 1kHz Playing Date of Test : May 09, 2016

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	30.211	15.52	18.71	0.64	--	34.87	40.00	5.13	QP
	70.090	24.87	7.30	0.95	--	33.12	40.00	6.88	
	82.359	22.53	9.57	1.12	--	33.22	40.00	6.78	
	164.908	26.33	11.30	1.75	--	39.38	43.50	4.12	
	197.200	27.57	9.97	1.95	--	39.49	43.50	4.01	
	665.804	19.57	19.60	3.16	--	42.33	46.00	3.67	
	2122.382	27.73	61.25	4.58	35.11	58.45	74.00	15.55	PK
	2543.413	28.60	65.19	4.96	35.16	63.59	74.00	10.41	
	2967.138	30.37	60.31	5.76	35.20	61.24	74.00	12.76	
	3406.085	31.33	53.37	6.10	34.80	56.00	74.00	18.00	
	2122.382	27.73	45.40	4.58	35.11	42.60	54.00	11.40	AV
	2543.413	28.60	45.21	4.96	35.16	43.61	54.00	10.39	
	2967.138	30.37	42.10	5.76	35.20	43.03	54.00	10.97	
	3406.085	31.33	35.31	6.10	34.80	37.94	54.00	16.06	

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : May 09, 2016

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	20.63	9.49	1.10	31.22	40.00	8.78
	148.963	25.13	11.57	1.63	38.33	43.50	5.17
	164.908	25.76	11.30	1.75	38.81	43.50	4.69
	230.907	25.94	11.24	2.09	39.27	46.00	6.73
	670.489	15.01	19.60	3.16	37.77	46.00	8.23
	848.056	16.22	20.70	4.07	40.99	46.00	5.01
Vertical	30.638	13.97	18.43	0.64	33.04	40.00	6.96
	70.090	24.99	7.30	0.95	33.24	40.00	6.76
	148.963	22.40	11.57	1.63	35.60	43.50	7.90
	199.986	26.10	9.70	1.97	37.77	43.50	5.73
	665.804	17.12	19.60	3.16	39.88	46.00	6.12
	848.056	14.02	20.70	4.07	38.79	46.00	7.21

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 60%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : May 09, 2016
& 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	82.071	21.46	9.57	1.10	32.13	40.00	7.87
	134.559	23.10	12.62	1.55	37.27	43.50	6.23
	183.844	23.21	10.50	1.87	35.58	43.50	7.92
	230.099	27.91	11.20	2.09	41.20	46.00	4.80
	670.489	16.87	19.60	3.16	39.63	46.00	6.37
	845.088	14.77	20.73	4.07	39.57	46.00	6.43
Vertical	30.745	15.66	18.34	0.64	34.64	40.00	5.36
	70.584	26.65	7.45	0.95	35.05	40.00	4.95
	134.088	23.10	12.62	1.54	37.26	43.50	6.24
	151.067	24.45	11.43	1.65	37.53	43.50	5.97
	196.510	26.98	9.97	1.95	38.90	43.50	4.60
	668.142	16.56	19.60	3.16	39.32	46.00	6.68

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 60%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : May 09, 2016

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	83.522	20.80	9.69	1.13	31.62	40.00	8.38
	137.903	22.40	12.54	1.56	36.50	43.50	7.00
	193.773	23.92	10.17	1.94	36.03	43.50	7.47
	593.050	19.43	18.85	2.31	40.59	46.00	5.41
	842.130	16.91	20.77	4.07	41.75	46.00	4.25
	890.728	14.47	21.30	4.46	40.23	46.00	5.77
Vertical	30.853	15.11	18.25	0.64	34.00	40.00	6.00
	134.088	23.66	12.62	1.54	37.82	43.50	5.68
	202.100	25.86	9.73	1.98	37.57	43.50	5.93
	297.224	23.21	13.70	2.56	39.47	46.00	6.53
	519.065	17.85	18.10	2.78	38.73	46.00	7.27
	663.473	17.44	19.60	3.16	40.20	46.00	5.80

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 60%RH

Test Mode : HDMI1080P Date of Test : May 09, 2016

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	70.584	24.54	7.45	0.95	32.94	40.00	7.06
	138.387	22.77	12.53	1.56	36.86	43.50	6.64
	204.955	27.58	9.80	1.99	39.37	43.50	4.13
	231.718	28.62	11.28	2.09	41.99	46.00	4.01
	305.680	23.46	13.99	2.60	40.05	46.00	5.95
	851.035	16.77	20.73	4.17	41.67	46.00	4.33
Vertical	30.424	14.56	18.62	0.64	33.82	40.00	6.18
	70.584	25.23	7.45	0.95	33.63	40.00	6.37
	195.822	25.01	10.03	1.94	36.98	43.50	6.52
	303.544	21.19	13.91	2.60	37.70	46.00	8.30
	668.142	17.93	19.60	3.16	40.69	46.00	5.31
	848.056	15.33	20.70	4.07	40.10	46.00	5.90

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 60%RH

Test Mode : MHL Date of Test : May 09, 2016

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	82.359	22.02	9.57	1.12	32.71	40.00	7.29
	135.032	22.88	12.60	1.55	37.03	43.50	6.47
	163.755	23.67	11.24	1.73	36.64	43.50	6.86
	297.224	21.66	13.70	2.56	37.92	46.00	8.08
	663.473	16.18	19.60	3.16	38.94	46.00	7.06
	845.088	14.62	20.73	4.07	39.42	46.00	6.58
Vertical	31.731	15.96	17.69	0.65	34.30	40.00	5.70
	53.131	24.61	6.88	0.83	32.32	40.00	7.68
	135.032	24.13	12.60	1.55	38.28	43.50	5.22
	207.123	26.83	9.88	1.99	38.70	43.50	4.80
	517.248	18.57	18.05	2.84	39.46	46.00	6.54
	665.804	18.34	19.60	3.16	41.10	46.00	4.90

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 60%RH

Test Mode : USB Play Date of Test : May 09, 2016

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	108.267	21.53	12.57	1.39	35.49	43.50	8.01
	136.939	22.52	12.56	1.56	36.64	43.50	6.86
	192.419	24.70	10.20	1.92	36.82	43.50	6.68
	308.913	18.14	14.06	2.60	34.80	46.00	11.20
	668.142	14.31	19.60	3.16	37.07	46.00	8.93
	845.088	14.00	20.73	4.07	38.80	46.00	7.20
Vertical	31.399	14.20	17.87	0.65	32.72	40.00	7.28
	53.505	24.62	6.79	0.84	32.25	40.00	7.75
	131.297	21.84	12.73	1.53	36.10	43.50	7.40
	194.453	24.73	10.13	1.94	36.80	43.50	6.70
	668.142	16.17	19.60	3.16	38.93	46.00	7.07
	845.088	13.42	20.73	4.07	38.22	46.00	7.78

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N6000U Humidity : 60%RH

Test Mode : LAN Play Date of Test : May 09, 2016

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	71.581	24.39	7.68	0.96	33.03	40.00	6.97
	122.404	22.26	12.95	1.48	36.69	43.50	6.81
	182.559	24.52	10.50	1.87	36.89	43.50	6.61
	262.896	21.67	13.16	2.29	37.12	46.00	8.88
	401.839	17.72	16.60	2.72	37.04	46.00	8.96
	665.804	16.12	19.60	3.16	38.88	46.00	7.12
Vertical	55.805	25.85	6.34	0.85	33.04	40.00	6.96
	139.361	21.44	12.51	1.57	35.52	43.50	7.98
	196.510	24.79	9.97	1.95	36.71	43.50	6.79
	318.817	21.82	14.45	2.62	38.89	46.00	7.11
	566.622	14.38	18.45	2.47	35.30	46.00	10.70
	689.565	16.12	19.75	3.41	39.28	46.00	6.72

TEST ENGINEER: BILL WU

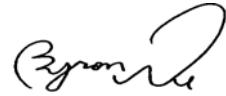
5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Ferrite Core	ZCAT1519-0830	Jiangsu Ruifeng Electronics Co., Ltd	See Appendix Figure 23
SMcontact	SMR-TSL-4-3.5-5R	Qingdao Joinset Co., Ltd	See Appendix Figure 24

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:



(BYRON WU)

6 DEVIATION TO TEST SPECIFICATIONS

None.

