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

LED LCD TV

Model No.	Brand
HU50N3000UW	Hisense
50H6607	
50H6D	
50H6D+	

FCC ID : W9HLCDF0115

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

Prepared By : Audix Technology (Shanghai) Co., Ltd.
3F and 4F, 34Bldg 680 Guiping Rd,
Caohejing Hi-Tech Park,
Shanghai 200233, China

Tel: +86-21-64955500
Fax: +86-21-64955491

Report No. : ACI-F17002
Date of Test : Dec 20- 23, 2016
Date of Report : Jan 04, 2017

TABLE OF CONTENTS

Page

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
Refer to Sec.2.1	Hisense	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 Dec 20- 23, 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 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.F17001, a Verification report.

Date of Test : Dec 20- 23, 2016 Date of Report : Jan 04, 2017

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 :
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	:	HU50N3000UW, 50H6607, 50H6D , 50H6D+
Note#1	:	The above models are all the same except for model number.HU50N3000UW model is tested and recorded in the report.
Note#2	:	"+"represents any of the Arabic numeral.
Brand	:	Hisense
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 : HD500K3U02-T1F1
Tuner	:	Manufacturer : SILICON LABS M/N : Si2151-A10
Max Resolution	:	3840*2160@60Hz
HDMI Cable*3 (Lab provide)	:	Shielded, Detachable, 1.80m
Power Cord	:	Unshielded, Detachable, 1.80m, 2C
LAN Cable	:	Unshielded, Detachable, 1.50m
USB Cable*3 (Lab provide)	:	Shielded, Detachable, 1.00m

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:

Side Port:

(1) One Audio out Port
: Connected with Earphone
(2) One USB 2 Port
: Connected with Hard-Disk
(3) One HDMI1/MHL Port
: Connected with Mobile phone
(4) One USB 1 Port
: Connected with Hard-Disk
(5) One Service Port
: Do not open to the customers
(6) One HDMI 2 Port
: Connected with PC
(7) One USB 3 Port
: Connected with Hard-Disk
(8) One ANT/CABLE IN Port
: Connected with Antenna or ATSC SG / TV SG

Back Port:
(9) One LAN Port
: Connected with PC
(10) One HDMI3 Port
: Connected with DVD PLAYER
(11) One HDMI3 Port
: Connected with DVD PLAYER
(12) One Digital Audio Out Port
: Connected with Audio Converter to Earphone
(13) One COMPONENT IN/AV IN Port
: Connected with DVD PLAYER

2.2 Peripherals

2.2.1 PC

Manufacturer	:	Lenovo
Model Number	:	E73s
Serial Number	:	PC0892JM
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	:	A010022-486006
Data Cable	:	Shielded, Undetachable, 1.8m.
Certificate	:	CE, FCC DoC

2.2.11 Hard Disk #2

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

2.2.12 Hard Disk #3

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

2.2.13 Mobile Phone

Manufacturer	:	SAMSUNG
Model Number	:	GT-I9100G
Serial Number	:	6935152011519

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 = 3.4dB
Radiated Emission Expanded Uncertainty (30-200MHz):
U = 4.6dB (Horizontal)
U = 4.3dB (Vertical)
Radiated Emission Expanded Uncertainty (200M-1GHz):
U = 4.5dB (Horizontal)
U = 5.4dB (Vertical)
Radiated Emission Expanded Uncertainty (1GHz-6GHz):
U = 5.1dB

3 CONDUCTED EMISSION TEST

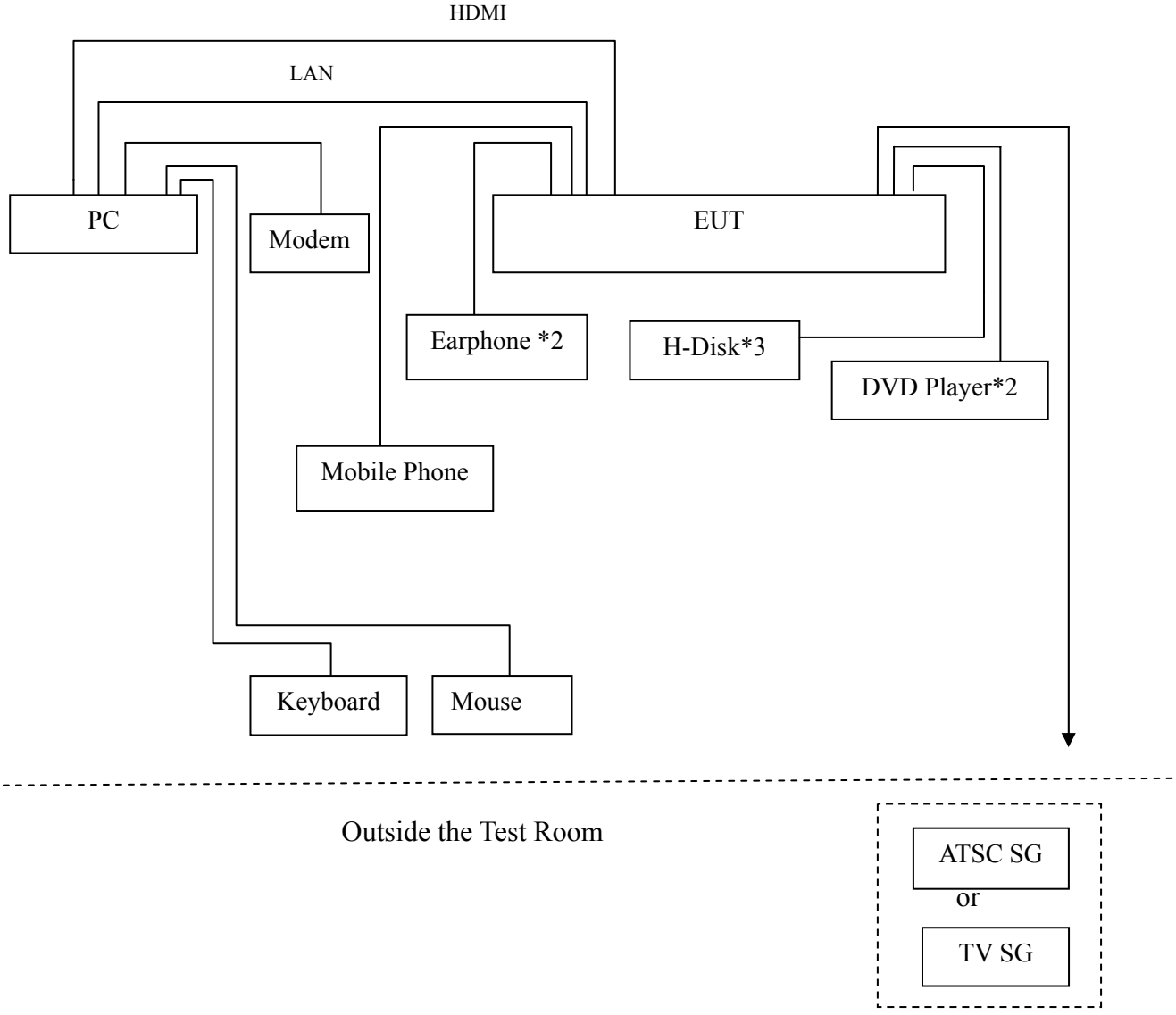
3.1 Test Equipment

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

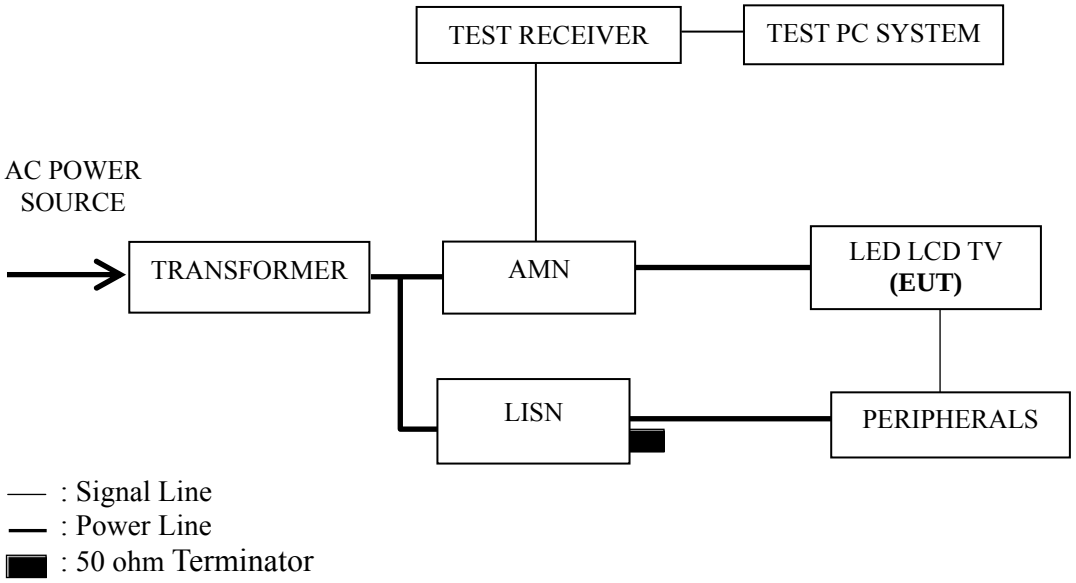
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Apr 27, 2016	Apr 26, 2017
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 25, 2016	Jun 24, 2017
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2016	Mar 19, 2017
4.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2016	Mar 19, 2017
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 (μV)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56	56~46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE 1 – The lower limit shall apply at the transition frequencies.
NOTE 2 – The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz

3.4 Test Configuration

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

3.5 Operating Condition of EUT

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

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

3.5.3 Set the contrast & brightness of EUT to maximum.

3.5.4 PC system ran the self-test program "EMC Test" by windows XP and sent "H" characters to EUT through graphic card, the EUT's screen displayed and filled with "H" pattern by its resolution (Via HDMI Input).

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

3.5.6 In USB Play mode, set the EUT play digital media from 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 MHL test mode. The worst emission is detected at 0.421MHz (Average Value) with corrected signal level of 35.62 dB (μV) (limit is 47.42 dB (μV)), when the Line of the EUT is connected to AMN.

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	HU50N3000UW	Humidity :	48%RH	
Test Mode	:	HDMI 3840*2160@60Hz & 1kHz Playing	Date of Test :	Dec 20, 2016	

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.155	35.30	10.58	45.88	65.74	19.86	QP
	0.417	29.70	10.43	40.13	57.51	17.38	
	0.933	23.00	10.40	33.40	56.00	22.60	
	1.602	21.81	10.40	32.21	56.00	23.79	
	7.175	14.80	10.47	25.27	60.00	34.73	
	17.018	9.00	10.57	19.57	60.00	40.43	
	0.155	17.00	10.58	27.58	55.74	28.16	AV
	0.417	19.70	10.43	30.13	47.51	17.38	
	0.933	11.50	10.40	21.90	46.00	24.10	
	1.602	9.61	10.40	20.01	46.00	25.99	
	7.175	12.30	10.47	22.77	50.00	27.23	
	17.018	2.70	10.57	13.27	50.00	36.73	
Neutral	0.168	39.81	10.55	50.36	65.08	14.72	QP
	0.417	30.00	10.42	40.42	57.51	17.09	
	0.585	26.30	10.39	36.69	56.00	19.31	
	1.172	25.41	10.40	35.81	56.00	20.19	
	2.422	19.00	10.44	29.44	56.00	26.56	
	6.878	13.60	10.53	24.13	60.00	35.87	
	0.168	**30.11**	**10.55**	**40.66**	**55.08**	**14.42**	AV
	0.417	19.80	10.42	30.22	47.51	17.29	
	0.585	15.10	10.39	25.49	46.00	20.51	
	1.172	11.61	10.40	22.01	46.00	23.99	
	2.422	3.80	10.44	14.24	46.00	31.76	
	6.878	6.40	10.53	16.93	50.00	33.07	

TEST ENGINEER: BYRON WU

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	HU50N3000UW	Humidity :	48%RH	
Test Mode	:	HDMI 1920*1080@60Hz & 1kHz Playing	Date of Test :	Dec 20, 2016	

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.157	36.80	10.58	47.38	65.60	18.22	QP
	0.421	31.79	10.43	42.22	57.42	15.20	
	0.672	26.60	10.40	37.00	56.00	19.00	
	1.418	22.21	10.40	32.61	56.00	23.39	
	2.678	19.59	10.43	30.02	56.00	25.98	
	6.878	11.10	10.47	21.57	60.00	38.43	
	0.157	19.78	10.58	30.36	55.60	25.24	AV
	0.421	**24.09**	**10.43**	**34.52**	**47.42**	**12.90**	
	0.672	16.30	10.40	26.70	46.00	19.30	
	1.418	7.61	10.40	18.01	46.00	27.99	
	2.678	4.19	10.43	14.62	46.00	31.38	
	6.878	4.10	10.47	14.57	50.00	35.43	
Neutral	0.169	40.10	10.55	50.65	64.99	14.34	QP
	0.417	30.60	10.42	41.02	57.51	16.49	
	0.839	26.50	10.40	36.90	56.00	19.10	
	1.680	23.00	10.42	33.42	56.00	22.58	
	3.328	12.80	10.47	23.27	56.00	32.73	
	17.018	9.61	10.67	20.28	60.00	39.72	
	0.169	30.40	10.55	40.95	54.99	14.04	AV
	0.417	20.40	10.42	30.82	47.51	16.69	
	0.839	16.10	10.40	26.50	46.00	19.50	
	1.680	9.60	10.42	20.02	46.00	25.98	
	3.328	-0.30	10.47	10.17	46.00	35.83	
	17.018	3.21	10.67	13.88	50.00	36.12	

TEST ENGINEER: BYRON WU

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	HU50N3000UW	Humidity :	48%RH	
Test Mode	:	HDMI 1280*1024@60Hz & 1kHz Playing	Date of Test :	Dec 20, 2016	

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.157	37.00	10.58	47.58	65.60	18.02	QP
	0.417	31.80	10.43	42.23	57.51	15.28	
	0.759	26.60	10.40	37.00	56.00	19.00	
	1.418	23.31	10.40	33.71	56.00	22.29	
	2.527	20.20	10.42	30.62	56.00	25.38	
	6.769	16.50	10.47	26.97	60.00	33.03	
	0.157	20.00	10.58	30.58	55.60	25.02	AV
	0.417	21.40	10.43	31.83	47.51	15.68	
	0.759	16.40	10.40	26.80	46.00	19.20	
	1.418	8.31	10.40	18.71	46.00	27.29	
	2.527	6.40	10.42	16.82	46.00	29.18	
	6.769	11.70	10.47	22.17	50.00	27.83	
Neutral	0.169	41.00	10.55	51.55	64.99	13.44	QP
	0.417	31.30	10.42	41.72	57.51	15.79	
	0.839	26.80	10.40	37.20	56.00	18.80	
	1.602	24.10	10.42	34.52	56.00	21.48	
	2.594	19.80	10.45	30.25	56.00	25.75	
	20.924	4.61	10.73	15.34	60.00	44.66	
	0.169	**31.30**	**10.55**	**41.85**	**54.99**	**13.14**	AV
	0.417	20.70	10.42	31.12	47.51	16.39	
	0.839	16.10	10.40	26.50	46.00	19.50	
	1.602	11.80	10.42	22.22	46.00	23.78	
	2.594	4.30	10.45	14.75	46.00	31.25	
	20.924	-0.29	10.73	10.44	50.00	39.56	

TEST ENGINEER: BYRON WU

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	HU50N3000UW	Humidity :	48%RH	
Test Mode	:	HDMI 640*480@60Hz & 1kHz Playing	Date of Test :	Dec 20, 2016	

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.168	39.41	10.56	49.97	65.08	15.11	QP
	0.421	33.09	10.43	43.52	57.42	13.90	
	0.759	27.30	10.40	37.70	56.00	18.30	
	1.680	23.91	10.40	34.31	56.00	21.69	
	3.276	18.30	10.43	28.73	56.00	27.27	
	7.025	12.30	10.47	22.77	60.00	37.23	
	0.168	31.61	10.56	42.17	55.08	12.91	AV
	0.421	**25.09**	**10.43**	**35.52**	**47.42**	**11.90**	
	0.759	17.20	10.40	27.60	46.00	18.40	
	1.680	9.91	10.40	20.31	46.00	25.69	
	3.276	4.70	10.43	15.13	46.00	30.87	
	7.025	6.10	10.47	16.57	50.00	33.43	
Neutral	0.168	41.31	10.55	51.86	65.08	13.22	QP
	0.417	31.30	10.42	41.72	57.51	15.79	
	0.839	26.90	10.40	37.30	56.00	18.70	
	1.602	23.40	10.42	33.82	56.00	22.18	
	3.173	15.00	10.47	25.47	56.00	30.53	
	17.018	10.01	10.67	20.68	60.00	39.32	
	0.168	31.51	10.55	42.06	55.08	13.02	AV
	0.417	21.00	10.42	31.42	47.51	16.09	
	0.839	16.40	10.40	26.80	46.00	19.20	
	1.602	10.60	10.42	21.02	46.00	24.98	
	3.173	1.10	10.47	11.57	46.00	34.43	
	17.018	3.51	10.67	14.18	50.00	35.82	

TEST ENGINEER: BYRON WU

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	HU50N3000UW	Humidity :	48%RH
Test Mode	:	HDMI1080P	Date of Test :	Dec 20, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	37.90	10.59	48.49	65.91	17.42	QP
	0.421	32.89	10.43	43.32	57.42	14.10	
	0.767	26.90	10.40	37.30	56.00	18.70	
	1.680	24.31	10.40	34.71	56.00	21.29	
	3.276	17.30	10.43	27.73	56.00	28.27	
	7.025	13.40	10.47	23.87	60.00	36.13	
	0.152	18.50	10.59	29.09	55.91	26.82	AV
	0.421	**25.09**	**10.43**	**35.52**	**47.42**	**11.90**	
	0.767	14.70	10.40	25.10	46.00	20.90	
	1.680	10.51	10.40	20.91	46.00	25.09	
	3.276	4.40	10.43	14.83	46.00	31.17	
	7.025	6.70	10.47	17.17	50.00	32.83	
Neutral	0.168	41.71	10.55	52.26	65.08	12.82	QP
	0.417	31.70	10.42	42.12	57.51	15.39	
	0.839	27.70	10.40	38.10	56.00	17.90	
	1.433	26.00	10.42	36.42	56.00	19.58	
	2.358	21.10	10.44	31.54	56.00	24.46	
	6.557	14.10	10.53	24.63	60.00	35.37	
	0.168	32.01	10.55	42.56	55.08	12.52	AV
	0.417	21.20	10.42	31.62	47.51	15.89	
	0.839	16.80	10.40	27.20	46.00	18.80	
	1.433	12.80	10.42	23.22	46.00	22.78	
	2.358	5.80	10.44	16.24	46.00	29.76	
	6.557	6.40	10.53	16.93	50.00	33.07	

TEST ENGINEER: BYRON WU

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	HU50N3000UW	Humidity	:	48%RH
Test Mode	:	MHL	Date of Test	:	Dec 20, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.153	37.91	10.58	48.49	65.82	17.33	QP
	0.421	33.09	10.43	43.52	57.42	13.90	
	0.933	26.00	10.40	36.40	56.00	19.60	
	1.418	23.31	10.40	33.71	56.00	22.29	
	3.107	19.30	10.43	29.73	56.00	26.27	
	17.018	11.30	10.57	21.87	60.00	38.13	
	0.153	19.01	10.58	29.59	55.82	26.23	AV
	0.421	**25.19**	**10.43**	**35.62**	**47.42**	**11.80**	
	0.933	15.00	10.40	25.40	46.00	20.60	
	1.418	8.41	10.40	18.81	46.00	27.19	
	3.107	5.50	10.43	15.93	46.00	30.07	
	17.018	5.00	10.57	15.57	50.00	34.43	
Neutral	0.169	41.80	10.55	52.35	64.99	12.64	QP
	0.421	32.79	10.42	43.21	57.42	14.21	
	0.839	27.90	10.40	38.30	56.00	17.70	
	1.680	25.20	10.42	35.62	56.00	20.38	
	3.173	15.20	10.47	25.67	56.00	30.33	
	6.878	13.60	10.53	24.13	60.00	35.87	
	0.169	32.00	10.55	42.55	54.99	12.44	AV
	0.421	24.69	10.42	35.11	47.42	12.31	
	0.839	16.90	10.40	27.30	46.00	18.70	
	1.680	11.30	10.42	21.72	46.00	24.28	
	3.173	1.80	10.47	12.27	46.00	33.73	
	6.878	6.60	10.53	17.13	50.00	32.87	

TEST ENGINEER: BYRON WU

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	HU50N3000UW	Humidity	:	48%RH
Test Mode	:	USB Play	Date of Test	:	Dec 20, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.170	39.00	10.56	49.56	64.94	15.38	QP
	0.417	32.30	10.43	42.73	57.51	14.78	
	0.759	27.40	10.40	37.80	56.00	18.20	
	1.418	22.61	10.40	33.01	56.00	22.99	
	2.500	16.90	10.42	27.32	56.00	28.68	
	17.018	11.22	10.57	21.79	60.00	38.21	
	0.170	31.00	10.56	41.56	54.94	13.38	AV
	0.417	21.60	10.43	32.03	47.51	15.48	
	0.759	17.60	10.40	28.00	46.00	18.00	
	1.418	8.11	10.40	18.51	46.00	27.49	
	2.500	2.00	10.42	12.42	46.00	33.58	
	17.018	11.30	10.57	21.87	50.00	28.13	
Neutral	0.169	41.50	10.55	52.05	64.99	12.94	QP
	0.417	31.70	10.42	42.12	57.51	15.39	
	0.839	27.50	10.40	37.90	56.00	18.10	
	1.433	25.80	10.42	36.22	56.00	19.78	
	2.839	14.80	10.46	25.26	56.00	30.74	
	6.878	12.10	10.53	22.63	60.00	37.37	
	0.169	**31.80**	**10.55**	**42.35**	**54.99**	**12.64**	AV
	0.417	20.90	10.42	31.32	47.51	16.19	
	0.839	16.80	10.40	27.20	46.00	18.80	
	1.433	12.70	10.42	23.12	46.00	22.88	
	2.839	0.90	10.46	11.36	46.00	34.64	
	6.878	4.90	10.53	15.43	50.00	34.57	

TEST ENGINEER: BYRON WU

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	HU50N3000UW	Humidity	:	48%RH
Test Mode	:	LAN Play	Date of Test	:	Dec 20, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.169	39.20	10.56	49.76	64.99	15.23	QP
	0.421	32.99	10.43	43.42	57.42	14.00	
	0.767	26.90	10.40	37.30	56.00	18.70	
	1.433	25.81	10.40	36.21	56.00	19.79	
	3.436	17.10	10.43	27.53	56.00	28.47	
	17.018	11.20	10.57	21.77	60.00	38.23	
	0.169	31.50	10.56	42.06	54.99	12.93	AV
	0.421	**24.99**	**10.43**	**35.42**	**47.42**	**12.00**	
	0.767	14.70	10.40	25.10	46.00	20.90	
	1.433	12.61	10.40	23.01	46.00	22.99	
	3.436	3.00	10.43	13.43	46.00	32.57	
	17.018	4.80	10.57	15.37	50.00	34.63	
Neutral	0.168	41.71	10.55	52.26	65.08	12.82	QP
	0.421	32.49	10.42	42.91	57.42	14.51	
	0.839	27.20	10.40	37.60	56.00	18.40	
	1.698	23.89	10.43	34.32	56.00	21.68	
	3.364	16.50	10.47	26.97	56.00	29.03	
	17.018	10.81	10.67	21.48	60.00	38.52	
	0.168	31.91	10.55	42.46	55.08	12.62	AV
	0.421	24.39	10.42	34.81	47.42	12.61	
	0.839	16.20	10.40	26.60	46.00	19.40	
	1.698	9.29	10.43	19.72	46.00	26.28	
	3.364	2.80	10.47	13.27	46.00	32.73	
	17.018	4.61	10.67	15.28	50.00	34.72	

TEST ENGINEER: BYRON WU

4 RADIATED EMISSION TEST

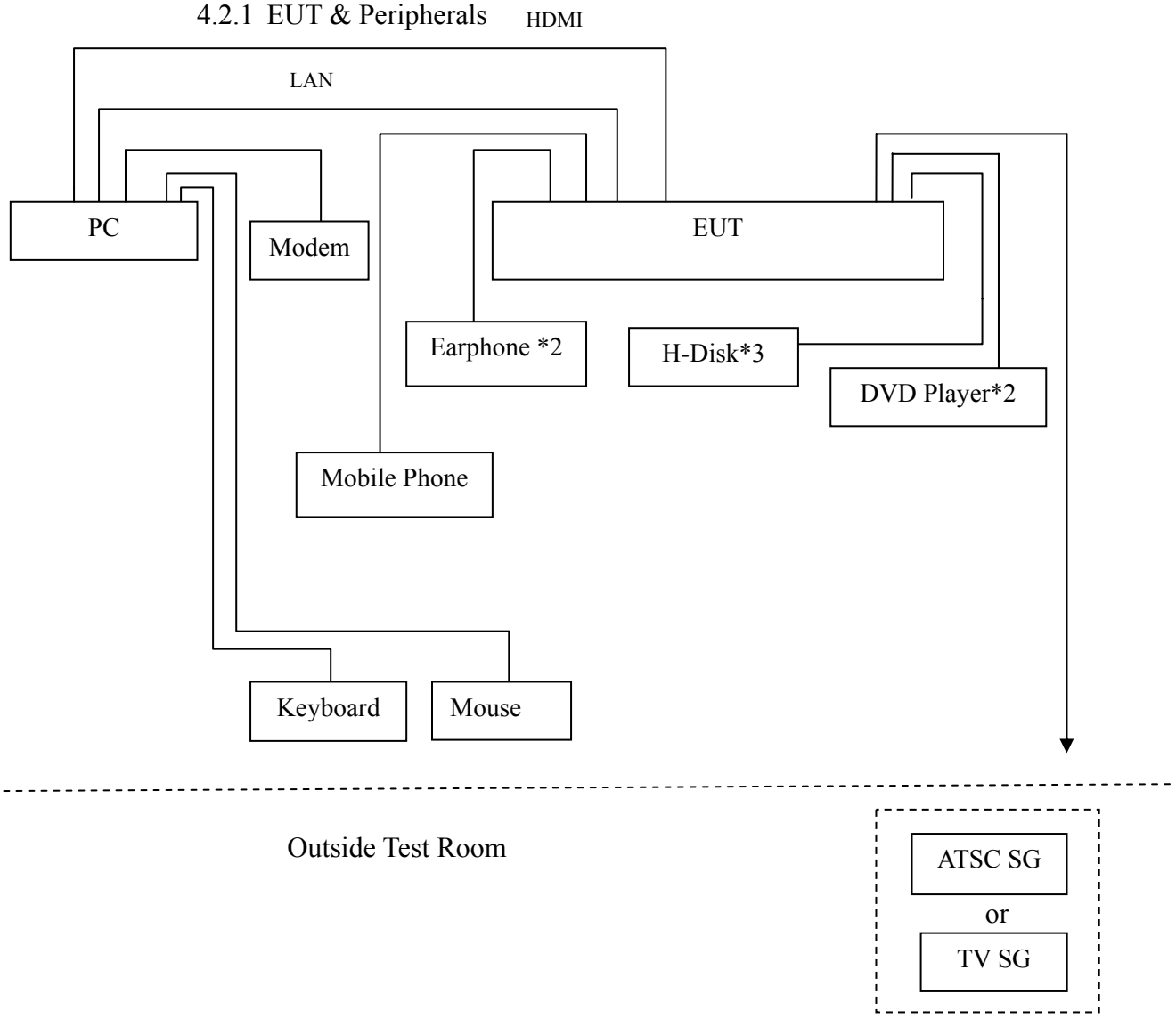
4.1 Test Equipment

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, 2016	May 14, 2017
5.	Horn Antenna	EMCO	3115	9607-4878	Jun 03, 2016	Jun 02, 2017
6.	Spectrum	Agilent	E7405A	MY45106600	Apr 26, 2016	Apr 25, 2017
7.	Software	Audix	e3	6.2007-9-10	--	--

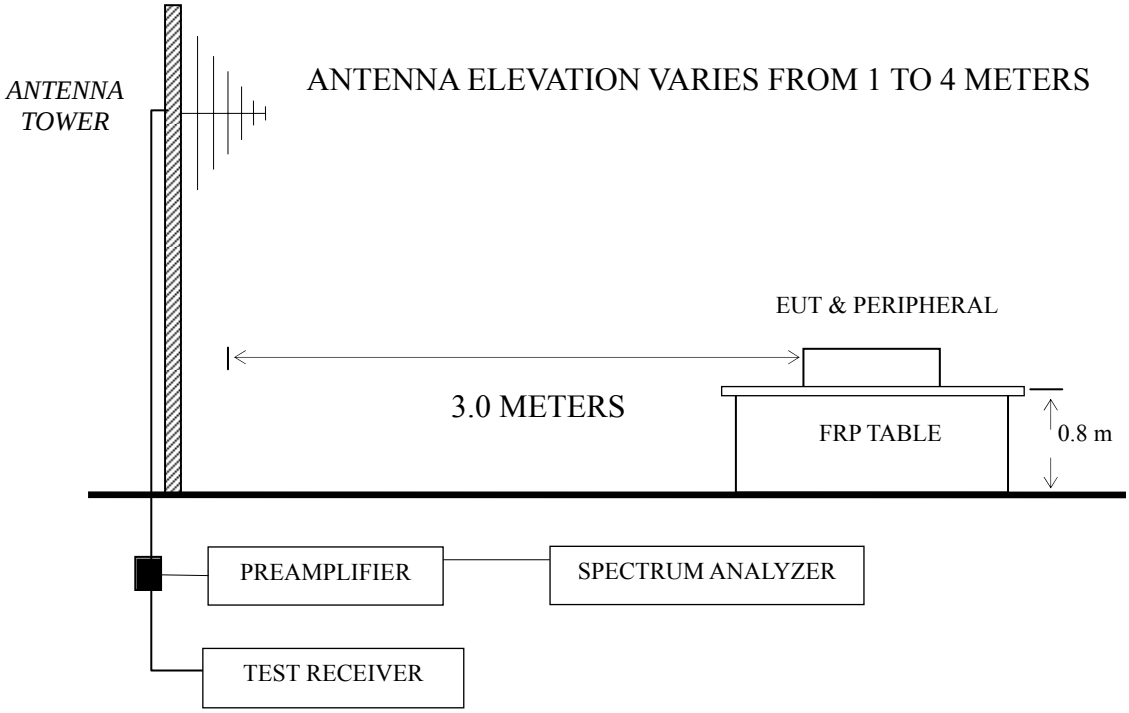
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



4.2.2 Test Setup

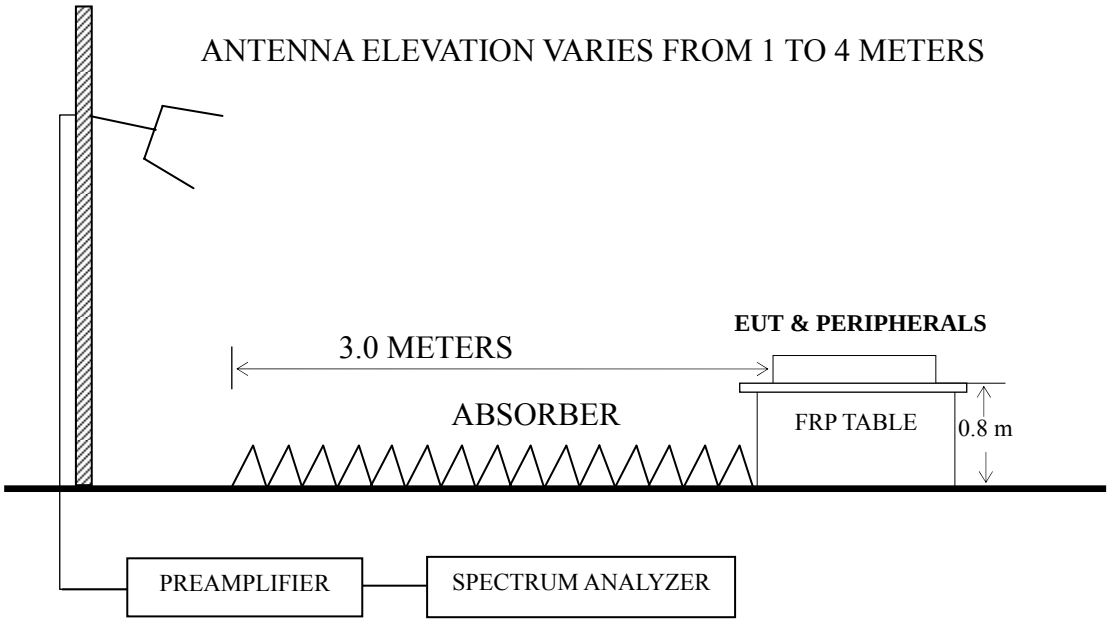
4.2.2.1 Below 1GHz



■ : 50 ohm Coaxial Switch

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	
		(μV/m)	dB (μV/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 (μV/m) = 20 log Emission Level (μV/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. (< 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 900.147 MHz with corrected signal level of 42.94 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.9 m height and the turntable was at 225°. The worst emission at vertical polarization was detected at 890.728 MHz with corrected signal level of 42.69dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.0m height and the turntable was at 60°.

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	HU50N3000UW	Humidity :	60%RH
Test Mode	:	HDMI 3840*2160@60Hz & 1kHz Playing	Date of Test :	Dec 23, 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	89.905	18.54	10.75	0.95	--	30.24	43.50	13.26	QP
	164.908	28.06	11.10	1.35	--	40.51	43.50	2.99	
	297.224	20.94	13.60	1.75	--	36.29	46.00	9.71	
	366.823	20.58	15.53	1.96	--	38.07	46.00	7.93	
	593.050	14.61	18.25	2.50	--	35.36	46.00	10.64	
	900.147	**18.65**	**21.20**	**3.09**	--	**42.94**	**46.00**	**3.06**	
	1684.388	64.66	26.36	4.07	35.45	59.64	74.00	14.36	PK
	2122.382	59.91	27.73	4.58	35.11	57.11	74.00	16.89	
	4261.126	51.22	33.24	6.43	34.19	56.70	74.00	17.30	
	1684.388	47.39	26.36	4.07	35.45	42.37	54.00	11.63	AV
	2122.382	44.28	27.73	4.58	35.11	41.48	54.00	12.52	
	4261.126	36.77	33.24	6.43	34.19	42.25	54.00	11.75	

TEST ENGINEER: LEON YUN

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	HU50N3000UW	Humidity :	60%RH
Test Mode	:	HDMI 3840*2160@60Hz & 1kHz Playing	Date of Test :	Dec 23, 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
Vertical	39.994	18.77	13.65	0.64	--	33.06	40.00	6.94	QP
	80.081	22.12	8.90	0.89	--	31.91	40.00	8.09	
	164.908	26.52	11.10	1.35	--	38.97	43.50	4.53	
	297.224	24.70	13.60	1.75	--	40.05	46.00	5.95	
	593.050	16.92	18.25	2.50	--	37.67	46.00	8.33	
	890.728	**18.52**	**21.10**	**3.07**	--	**42.69**	**46.00**	**3.31**	
	1262.292	56.05	24.72	3.61	36.03	48.35	74.00	25.65	PK
	1816.036	59.18	26.85	4.19	35.30	54.92	74.00	19.08	
	2683.869	56.75	29.23	5.25	35.17	56.06	74.00	17.94	
	1262.292	40.83	24.72	3.61	36.03	33.13	54.00	20.87	AV
	1816.036	44.38	26.85	4.19	35.30	40.12	54.00	13.88	
	2683.869	40.04	29.23	5.25	35.17	39.35	54.00	14.65	

TEST ENGINEER: LEON YUN

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	HU50N3000UW	Humidity :	60%RH
Test Mode	:	HDMI 1920*1080@60Hz & 1kHz Playing	Date of Test :	Dec 23, 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	89.905	20.05	10.75	0.95	31.75	43.50	11.75
	164.908	24.69	11.10	1.35	37.14	43.50	6.36
	330.195	20.21	14.50	1.85	36.56	46.00	9.44
	365.539	19.06	15.50	1.95	36.51	46.00	9.49
	449.556	16.59	16.80	2.16	35.55	46.00	10.45
	900.147	15.96	21.20	3.09	40.25	46.00	5.75
Vertical	39.994	17.58	13.65	0.64	31.87	40.00	8.13
	77.865	20.64	8.64	0.88	30.16	40.00	9.84
	164.908	25.54	11.10	1.35	37.99	43.50	5.51
	297.224	22.23	13.60	1.75	37.58	46.00	8.42
	449.556	18.82	16.80	2.16	37.78	46.00	8.22
	890.728	**16.71**	**21.10**	**3.07**	**40.88**	**46.00**	**5.12**

TEST ENGINEER: LEON YUN

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	HU50N3000UW	Humidity :	60%RH
Test Mode	:	HDMI 1280*1024@60Hz & 1kHz Playing	Date of Test :	Dec 23, 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	90.855	18.69	10.93	0.95	30.57	43.50	12.93
	127.218	16.39	12.57	1.17	30.13	43.50	13.37
	216.024	18.74	10.92	1.53	31.19	46.00	14.81
	324.456	24.16	14.27	1.83	40.26	46.00	5.74
	539.478	21.22	17.60	2.36	41.18	46.00	4.82
	900.147	17.09	21.20	3.09	41.38	46.00	4.62
Vertical	39.994	17.01	13.65	0.64	31.30	40.00	8.70
	73.876	21.82	8.13	0.86	30.81	40.00	9.19
	324.456	23.83	14.27	1.83	39.93	46.00	6.07
	539.478	**21.44**	**17.60**	**2.36**	**41.40**	**46.00**	**4.60**
	755.387	14.84	19.60	2.81	37.25	46.00	8.75
	900.147	13.45	21.20	3.09	37.74	46.00	8.26

TEST ENGINEER: LEON YUN

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	HU50N3000UW	Humidity :	60%RH
Test Mode	:	HDMI 640*480@60Hz & 1kHz Playing	Date of Test :	Dec 23, 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	71.080	22.04	7.57	0.84	30.45	40.00	9.55
	90.855	19.04	10.93	0.95	30.92	43.50	12.58
	127.218	15.48	12.57	1.17	29.22	43.50	14.28
	216.024	17.50	10.92	1.53	29.95	46.00	16.05
	362.985	19.17	15.47	1.95	36.59	46.00	9.41
	900.147	**16.59**	**21.20**	**3.09**	**40.88**	**46.00**	**5.12**
Vertical	34.037	14.71	16.30	0.60	31.61	40.00	8.39
	39.994	16.42	13.65	0.64	30.71	40.00	9.29
	77.865	21.59	8.64	0.88	31.11	40.00	8.89
	246.815	15.89	12.48	1.62	29.99	46.00	16.01
	416.179	15.16	16.26	2.07	33.49	46.00	12.51
	900.147	13.44	21.20	3.09	37.73	46.00	8.27

TEST ENGINEER: LEON YUN

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	HU50N3000UW	Humidity :	60%RH	
Test Mode	:	HDMI1080P	Date of Test :	Dec 23, 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	89.905	21.17	10.75	0.95	32.87	43.50	10.63
	129.923	16.52	12.90	1.18	30.60	43.50	12.90
	369.405	19.15	15.60	1.96	36.71	46.00	9.29
	593.050	14.52	18.25	2.50	35.27	46.00	10.73
	742.259	18.08	19.57	2.79	40.44	46.00	5.56
	900.147	16.97	21.20	3.09	41.26	46.00	4.74
Vertical	30.962	14.82	17.71	0.57	33.10	40.00	6.90
	37.945	16.34	14.30	0.62	31.26	40.00	8.74
	78.965	21.54	8.75	0.88	31.17	40.00	8.83
	446.414	21.20	16.73	2.15	40.08	46.00	5.92
	742.259	**18.94**	**19.57**	**2.79**	**41.30**	**46.00**	**4.70**
	890.728	15.23	21.10	3.07	39.40	46.00	6.60

TEST ENGINEER: LEON YUN

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	HU50N3000UW	Humidity	:	60%RH
Test Mode	:	MHL	Date of Test	:	Dec 23, 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	82.071	21.31	9.41	0.90	31.62	40.00	8.38
	123.699	19.80	12.24	1.15	33.19	43.50	10.31
	180.649	21.15	10.30	1.41	32.86	43.50	10.64
	370.702	**21.25**	**15.63**	**1.96**	**38.84**	**46.00**	**7.16**
	699.305	10.89	19.10	2.71	32.70	46.00	13.30
	945.440	10.19	21.67	3.16	35.02	46.00	10.98
Vertical	36.127	15.67	15.04	0.61	31.32	40.00	8.68
	54.835	22.65	7.62	0.74	31.01	40.00	8.99
	126.329	17.55	12.43	1.16	31.14	43.50	12.36
	236.645	18.60	11.92	1.59	32.11	46.00	13.89
	404.667	14.30	16.25	2.05	32.60	46.00	13.40
	554.825	11.73	18.00	2.40	32.13	46.00	13.87

TEST ENGINEER: LEON YUN

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	HU50N3000UW	Humidity :	60%RH
Test Mode	:	USB Play	Date of Test :	Dec 23, 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	**59.232**	**25.58**	**6.79**	**0.77**	**33.14**	**40.00**	**6.86**
	68.872	23.06	7.29	0.83	31.18	40.00	8.82
	109.029	17.22	12.14	1.06	30.42	43.50	13.08
	200.688	21.77	10.13	1.48	33.38	43.50	10.12
	440.196	14.97	16.63	2.13	33.73	46.00	12.27
	568.613	11.74	18.20	2.44	32.38	46.00	13.62
Vertical	33.917	15.33	16.35	0.60	32.28	40.00	7.72
	59.232	23.74	6.79	0.77	31.30	40.00	8.70
	96.099	19.04	11.78	0.98	31.80	43.50	11.70
	218.309	21.02	10.98	1.54	33.54	46.00	12.46
	499.425	11.52	17.50	2.26	31.28	46.00	14.72
	687.151	10.66	19.38	2.69	32.73	46.00	13.27

TEST ENGINEER: LEON YUN

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	HU50N3000UW	Humidity :	60%RH
Test Mode	:	LAN Play	Date of Test :	Dec 23, 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	**78.689**	**23.03**	**8.75**	**0.88**	**32.66**	**40.00**	**7.34**
	131.758	17.11	12.87	1.19	31.17	43.50	12.33
	193.773	19.81	9.93	1.46	31.20	43.50	12.30
	249.425	16.56	12.56	1.63	30.75	46.00	15.25
	365.539	19.16	15.50	1.95	36.61	46.00	9.39
	616.372	10.09	18.75	2.54	31.38	46.00	14.62
Vertical	39.576	17.36	13.76	0.64	31.76	40.00	8.24
	57.594	23.11	7.18	0.76	31.05	40.00	8.95
	94.760	18.08	11.60	0.97	30.65	43.50	12.85
	193.773	21.89	9.93	1.46	33.28	43.50	10.22
	339.589	15.67	14.80	1.87	32.34	46.00	13.66
	689.565	11.33	19.38	2.69	33.40	46.00	12.60

TEST ENGINEER: LEON YUN

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Conductive foam	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.