

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

LED LCD TV

Model No.	Brand
HU55K324UBWG	Hisense
55U1600	
LC-55U	Sharp

FCC ID : W9HLCDF0088

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

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Report No. : ACI-F16196
Date of Test : Jul 26 – Aug 08, 2016
Date of Report : Aug 15, 2016

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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.
Factory #3 : HISENSE ELECTRONICA MEXICO, S.A. DE C.V.
EUT Description : LED LCD TV
Model No. : Refer to Sec.2.1
Brand : Refer to Sec.2.1
Power Supply : 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 Sec.2.1) which was tested in 3m anechoic chamber Jul 26 – Aug 08, 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.

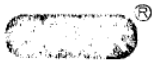
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

The test results for EUT's TV functions are contained in No.F16195, a Verification report.

Date of Test : Jul 26 – Aug 08, 2016 Date of Report : Aug 15, 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.	Brand
HU55K324UBWG	Hisense
55U1600	
LC-55U	Sharp

Note : The above models are all the same except for the model number and brand. The LC-55U was tested.

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 : HD550DU-B51(010)

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

Max Resolution : 3840*2160@60Hz

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

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

USB Cable*2 : Shielded, Detachable, 1.00m
(Lab provide)

LAN Cable : Unshielded, Detachable, 1.50m

D-Sub Cable : Shielded, Detachable, 1.50m

Remark:

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

Side Port:

- (1) One USB2 Port : Connected with Hard-Disk #1
- (2) One RS232 Port : Connected with PC
- (3) One VGA Port : Connected with PC
- (4) One HDMI2 Port : Connected with PC
- (5) One HDMI1 Port : Connected with DVD PLAYER #3
- (6) One Audio out Port : Connected with Earphone#1
- (7) One Service Port : Do not open to customer
- (8) One USB1 Port : Connected with Hard-Disk #2
- (9) One ANT/CABLE IN Port : Connected with Antenna or ATSC SG / TV SG

Back Port:

- (10) One LAN Port : Connected with PC
- (11) One HDMI3 Port : Connected with DVD PLAYER #1
- (12) One HDMI4 Port : Connected with DVD PLAYER #2
- (13) One Digital Audio Out Port : Connected with Audio Converter to Earphone#2
- (14) One component of YPbPr +Audio Port : Connected with DVD PLAYER #1

2.2 Peripherals

2.2.1 PC

Manufacturer : HP
 Model Number : DX7400MT
 Serial Number : CNG8130K89
 Power Cord : Unshielded, Detachable, 1.2m
 Certificate : CE/EMC, FCC DoC, VCCI, UL, CCC

2.2.2 PC

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

2.2.3 Keyboard

Manufacturer : Microsoft
Model Number : RT2300
Serial Number : 7668200662248
Data Cable : Shielded, Detachable, 1.5m
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, Detachable, 1.5m.
Certificate : CE/EMC, FCC DoC, VCCI, MIC,
C-Tick, BSMI

2.2.5 Earphone *2

Manufacturer : EDIFIER
Model Number : H210

2.2.6 DVD PLAYER #1

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

2.2.7 DVD PLAYER #2

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

2.2.8 DVD PLAYER #3

Manufacturer : LG
Model Number : DF9921N
Serial Number : 507DT00304F
Certificate : BSMI

2.2.9 Hard Disk #1

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

2.2.10 Hard Disk #2

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

2.2.11 ATSC Signal Generator

Manufacturer : SENCORE
Model Number : ATSC997
Serial Number : 6790071

2.2.12 TV Signal Generator

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

2.3 Description of Test Facility

Site Description : Sept. 17, 1998 file on
(No.3 3m Chamber) 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 = 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

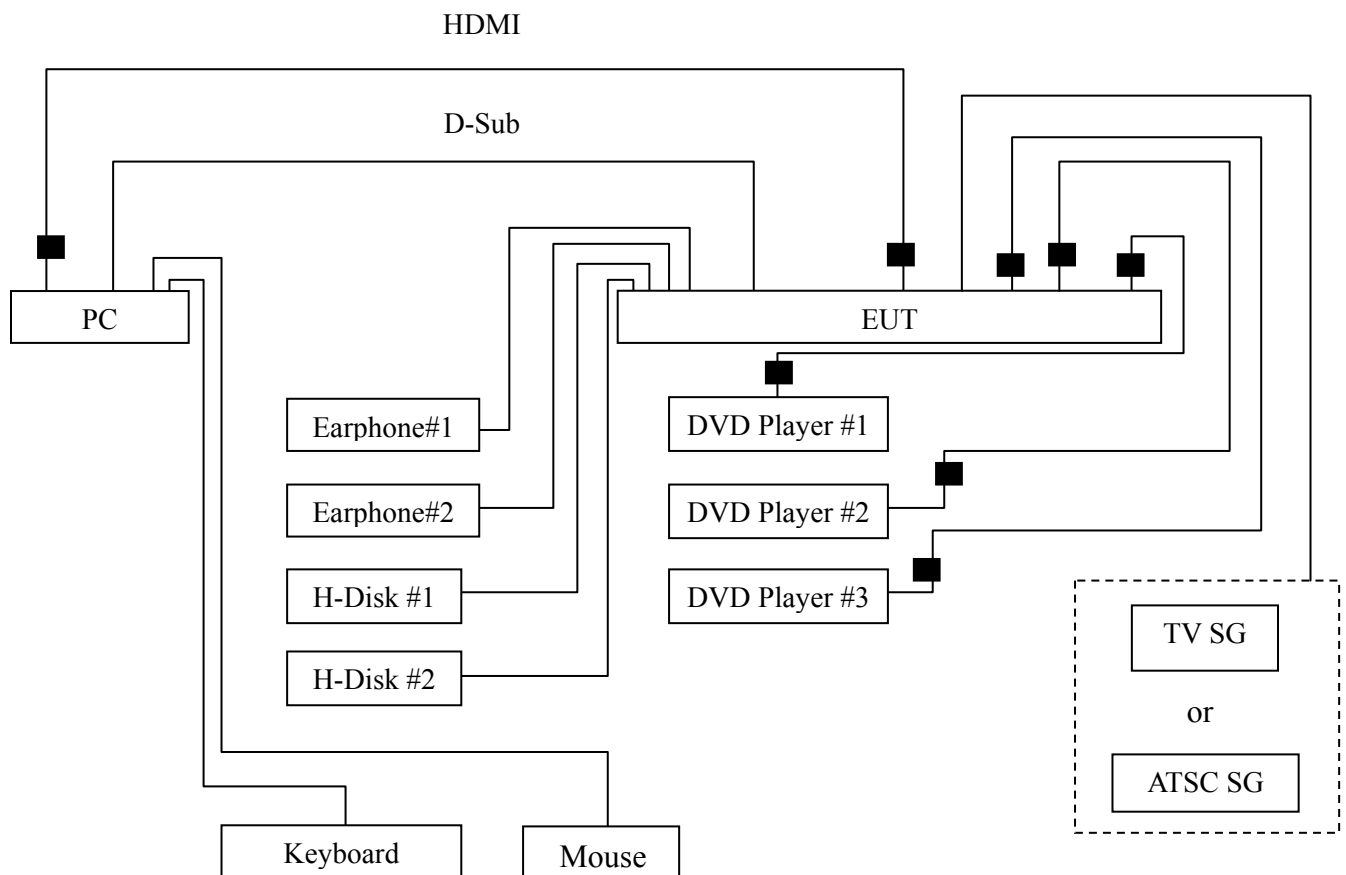
3.1 Test Equipment

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	Jul 03, 2016	Jul 02, 2017
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2016	Jun 26, 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	--	--

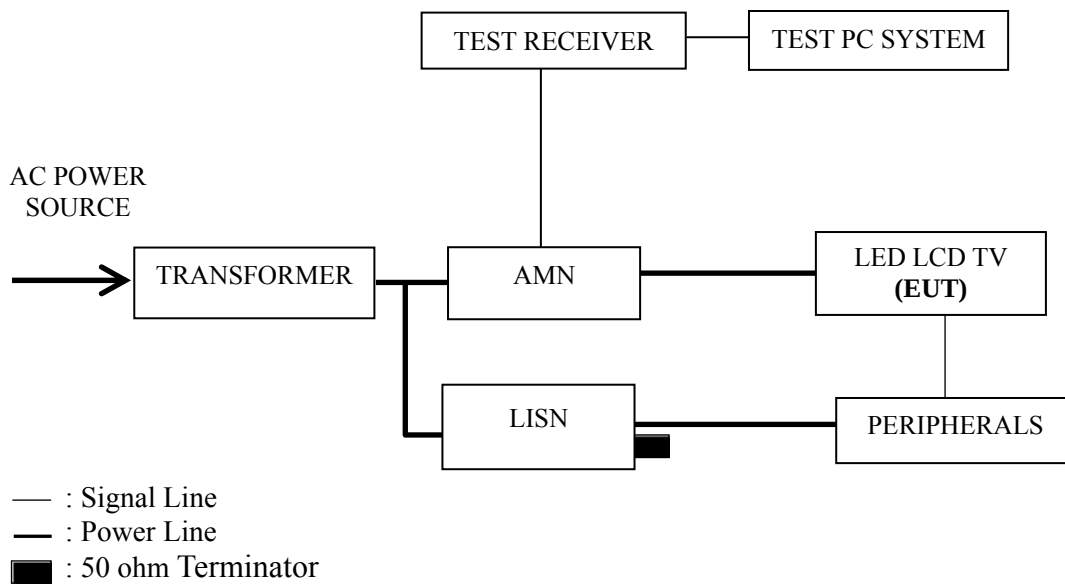
3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



■ : 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 & D-Sub 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 H-Disk.
- 3.5.7 In LAN Play mode, set the EUT play digital media through LAN port.
- 3.5.8 The other peripherals devices were driven and operated during the test.
- 3.5.9 The test modes are as follows:

Test Mode
HDMI 3840*2160@60Hz & 1kHz playing
HDMI 1920*1080@60Hz & 1kHz playing
HDMI 1280*1024@60Hz & 1kHz playing
HDMI 640*480@60Hz & 1kHz playing
D-Sub 1920*1080@60Hz & 1kHz playing
HDMI1080P
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 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	P13
HDMI 1920*1080@60Hz & 1kHz playing	P14
HDMI 1280*1024@60Hz & 1kHz playing	P15
HDMI 640*480@60Hz & 1kHz playing	P16
D-Sub 1920*1080@60Hz & 1kHz playing	P17
HDMI1080P	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 1920*1080@60Hz & 1kHz playing test mode.

The worst emission is detected at 0.152MHz (Quasi-Peak Value) with corrected signal level of 64.58dB (μV) (limit is 65.91 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 48%RH

Test Mode : HDMI 3840*2160@60Hz Date of Test : Jul 26, 2016
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	53.60	10.59	64.19	65.94	1.75	QP
	0.337	34.20	10.46	44.66	59.28	14.62	
	0.506	31.30	10.40	41.70	56.00	14.30	
	0.998	29.40	10.40	39.80	56.00	16.20	
	1.739	26.70	10.41	37.11	56.00	18.89	
	16.150	22.59	10.57	33.16	60.00	26.84	
	0.151	43.10	10.59	53.69	55.94	2.25	AV
	0.337	23.20	10.46	33.66	49.28	15.62	
	0.506	17.70	10.40	28.10	46.00	17.90	
	0.998	16.90	10.40	27.30	46.00	18.70	
	1.739	13.00	10.41	23.41	46.00	22.59	
	16.150	18.09	10.57	28.66	50.00	21.34	
Neutral	0.150	53.90	10.58	64.48	65.99	1.51	QP
	0.339	27.69	10.45	38.14	59.22	21.08	
	0.793	22.80	10.39	33.19	56.00	22.81	
	1.755	25.99	10.43	36.42	56.00	19.58	
	3.072	18.50	10.46	28.96	56.00	27.04	
	16.250	24.10	10.67	34.77	60.00	25.23	
	0.150	42.90	10.58	53.48	55.99	2.51	AV
	0.339	17.89	10.45	28.34	49.22	20.88	
	0.793	11.40	10.39	21.79	46.00	24.21	
	1.755	15.09	10.43	25.52	46.00	20.48	
	3.072	10.50	10.46	20.96	46.00	25.04	
	16.250	19.00	10.67	29.67	50.00	20.33	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 48%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Jul 26, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.153	53.50	10.59	64.09	65.86	1.77	QP
	0.338	32.80	10.46	43.26	59.26	16.00	
	0.591	28.40	10.40	38.80	56.00	17.20	
	0.999	29.40	10.40	39.80	56.00	16.20	
	1.739	27.30	10.41	37.71	56.00	18.29	
	15.160	22.00	10.55	32.55	60.00	27.45	
	0.153	43.10	10.59	53.69	55.86	2.17	AV
	0.338	22.30	10.46	32.76	49.26	16.50	
	0.591	14.80	10.40	25.20	46.00	20.80	
	0.999	16.20	10.40	26.60	46.00	19.40	
	1.739	13.40	10.41	23.81	46.00	22.19	
	15.160	17.50	10.55	28.05	50.00	21.95	
Neutral	0.152	54.00	10.58	64.58	65.91	1.33	QP
	0.341	27.19	10.45	37.64	59.19	21.55	
	0.583	25.90	10.39	36.29	56.00	19.71	
	0.818	25.30	10.39	35.69	56.00	20.31	
	1.754	24.49	10.43	34.92	56.00	21.08	
	15.910	22.79	10.67	33.46	60.00	26.54	
	0.152	42.80	10.58	53.38	55.91	2.53	AV
	0.341	17.59	10.45	28.04	49.19	21.15	
	0.583	15.40	10.39	25.79	46.00	20.21	
	0.818	13.50	10.39	23.89	46.00	22.11	
	1.754	14.19	10.43	24.62	46.00	21.38	
	15.910	17.99	10.67	28.66	50.00	21.34	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 48%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : Jul 26, 2016
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	53.50	10.59	64.09	65.97	1.88	QP
	0.337	32.70	10.46	43.16	59.28	16.12	
	0.792	27.30	10.40	37.70	56.00	18.30	
	1.732	26.90	10.41	37.31	56.00	18.69	
	3.624	21.01	10.43	31.44	56.00	24.56	
	15.770	25.70	10.56	36.26	60.00	23.74	
	0.151	43.10	10.59	53.69	55.97	2.28	AV
	0.337	22.30	10.46	32.76	49.28	16.52	
	0.792	12.40	10.40	22.80	46.00	23.20	
	1.732	12.50	10.41	22.91	46.00	23.09	
	3.624	12.11	10.43	22.54	46.00	23.46	
	15.770	12.30	10.56	22.86	50.00	27.14	
Neutral	0.151	54.00	10.58	64.58	65.96	1.38	QP
	0.473	24.50	10.40	34.90	56.46	21.56	
	0.812	26.20	10.39	36.59	56.00	19.41	
	1.745	25.59	10.43	36.02	56.00	19.98	
	3.863	21.90	10.48	32.38	56.00	23.62	
	16.140	23.20	10.67	33.87	60.00	26.13	
	0.151	42.90	10.58	53.48	55.96	2.48	AV
	0.473	14.40	10.40	24.80	46.46	21.66	
	0.812	15.10	10.39	25.49	46.00	20.51	
	1.745	14.89	10.43	25.32	46.00	20.68	
	3.863	14.60	10.48	25.08	46.00	20.92	
	16.140	18.30	10.67	28.97	50.00	21.03	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 48%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Jul 26, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	52.80	10.59	63.39	65.99	2.60	QP
	0.340	33.39	10.46	43.85	59.21	15.36	
	0.803	28.10	10.40	38.50	56.00	17.50	
	1.738	26.20	10.41	36.61	56.00	19.39	
	3.773	23.51	10.43	33.94	56.00	22.06	
	15.250	22.20	10.55	32.75	60.00	27.25	
	0.150	42.40	10.59	52.99	55.99	3.00	AV
	0.340	22.49	10.46	32.95	49.21	16.26	
	0.803	13.80	10.40	24.20	46.00	21.80	
	1.738	13.10	10.41	23.51	46.00	22.49	
	3.773	12.81	10.43	23.24	46.00	22.76	
	15.250	18.10	10.55	28.65	50.00	21.35	
Neutral	0.151	53.10	10.58	63.68	65.97	2.29	QP
	0.339	26.19	10.45	36.64	59.22	22.58	
	0.816	25.20	10.39	35.59	56.00	20.41	
	1.753	23.79	10.43	34.22	56.00	21.78	
	2.912	18.10	10.46	28.56	56.00	27.44	
	16.320	23.20	10.67	33.87	60.00	26.13	
	0.151	42.00	10.58	52.58	55.97	3.39	AV
	0.339	16.79	10.45	27.24	49.22	21.98	
	0.816	13.20	10.39	23.59	46.00	22.41	
	1.753	13.49	10.43	23.92	46.00	22.08	
	2.912	9.50	10.46	19.96	46.00	26.04	
	16.320	18.20	10.67	28.87	50.00	21.13	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 48%RH

Test Mode : D-Sub 1920*1080@60Hz Date of Test : Jul 26, 2016
& 1kHz playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	53.60	10.59	64.19	65.93	1.74	QP
	0.337	33.30	10.46	43.76	59.28	15.52	
	0.815	29.30	10.40	39.70	56.00	16.30	
	1.394	23.99	10.41	34.40	56.00	21.60	
	2.893	26.10	10.43	36.53	56.00	19.47	
	16.020	22.50	10.56	33.06	60.00	26.94	
	0.151	43.40	10.59	53.99	55.93	1.94	AV
	0.337	22.70	10.46	33.16	49.28	16.12	
	0.815	13.40	10.40	23.80	46.00	22.20	
	1.394	6.49	10.41	16.90	46.00	29.10	
	2.893	11.30	10.43	21.73	46.00	24.27	
	16.020	17.80	10.56	28.36	50.00	21.64	
Neutral	0.150	53.00	10.58	63.58	65.99	2.41	QP
	0.508	26.80	10.39	37.19	56.00	18.81	
	0.807	25.40	10.39	35.79	56.00	20.21	
	1.746	24.89	10.43	35.32	56.00	20.68	
	3.041	16.40	10.46	26.86	56.00	29.14	
	16.180	23.10	10.67	33.77	60.00	26.23	
	0.150	43.00	10.58	53.58	55.99	2.41	AV
	0.508	14.40	10.39	24.79	46.00	21.21	
	0.807	14.60	10.39	24.99	46.00	21.01	
	1.746	13.79	10.43	24.22	46.00	21.78	
	3.041	10.50	10.46	20.96	46.00	25.04	
	16.180	15.00	10.67	25.67	50.00	24.33	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 48%RH

Test Mode : HDMI 1080P Date of Test : Jul 26, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	53.60	10.59	64.19	65.96	1.77	QP
	0.339	33.09	10.46	43.55	59.24	15.69	
	0.507	31.10	10.40	41.50	56.00	14.50	
	1.003	29.60	10.40	40.00	56.00	16.00	
	3.197	25.20	10.43	35.63	56.00	20.37	
	15.050	22.20	10.55	32.75	60.00	27.25	
	0.151	43.40	10.59	53.99	55.96	1.97	AV
	0.339	22.19	10.46	32.65	49.24	16.59	
	0.507	17.90	10.40	28.30	46.00	17.70	
	1.003	15.90	10.40	26.30	46.00	19.70	
	3.197	12.00	10.43	22.43	46.00	23.57	
	15.050	17.90	10.55	28.45	50.00	21.55	
Neutral	0.151	54.00	10.58	64.58	65.96	1.38	QP
	0.462	25.70	10.40	36.10	56.66	20.56	
	0.816	25.70	10.39	36.09	56.00	19.91	
	1.759	25.59	10.43	36.02	56.00	19.98	
	3.795	22.31	10.47	32.78	56.00	23.22	
	16.300	24.20	10.67	34.87	60.00	25.13	
	0.151	42.90	10.58	53.48	55.96	2.48	AV
	0.462	16.00	10.40	26.40	46.66	20.26	
	0.816	13.50	10.39	23.89	46.00	22.11	
	1.759	14.19	10.43	24.62	46.00	21.38	
	3.795	14.91	10.47	25.38	46.00	20.62	
	16.300	19.20	10.67	29.87	50.00	20.13	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 48%RH

Test Mode : USB Play Date of Test : Jul 26, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	53.60	10.59	64.19	65.97	1.78	QP
	0.337	33.50	10.46	43.96	59.28	15.32	
	0.594	28.51	10.39	38.90	56.00	17.10	
	0.999	29.00	10.40	39.40	56.00	16.60	
	3.192	25.30	10.43	35.73	56.00	20.27	
	14.980	22.10	10.55	32.65	60.00	27.35	
	0.151	43.20	10.59	53.79	55.97	2.18	AV
	0.337	22.40	10.46	32.86	49.28	16.42	
	0.594	11.61	10.39	22.00	46.00	24.00	
	0.999	11.90	10.40	22.30	46.00	23.70	
	3.192	12.40	10.43	22.83	46.00	23.17	
	14.980	17.50	10.55	28.05	50.00	21.95	
Neutral	0.151	54.00	10.58	64.58	65.94	1.36	QP
	0.339	27.39	10.45	37.84	59.22	21.38	
	0.583	25.30	10.39	35.69	56.00	20.31	
	1.051	24.60	10.40	35.00	56.00	21.00	
	2.375	22.10	10.44	32.54	56.00	23.46	
	16.380	24.00	10.67	34.67	60.00	25.33	
	0.151	42.90	10.58	53.48	55.94	2.46	AV
	0.339	17.79	10.45	28.24	49.22	20.98	
	0.583	15.00	10.39	25.39	46.00	20.61	
	1.051	12.30	10.40	22.70	46.00	23.30	
	2.375	13.20	10.44	23.64	46.00	22.36	
	16.380	18.90	10.67	29.57	50.00	20.43	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 48%RH

Test Mode : LAN Play Date of Test : Jul 26, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	53.70	10.59	64.29	65.98	1.69	QP
	0.338	33.20	10.46	43.66	59.25	15.59	
	0.808	31.80	10.40	42.20	56.00	13.80	
	1.725	26.70	10.41	37.11	56.00	18.89	
	3.902	24.70	10.44	35.14	56.00	20.86	
	15.770	23.20	10.56	33.76	60.00	26.24	
	0.150	43.30	10.59	53.89	55.98	2.09	AV
	0.338	22.40	10.46	32.86	49.25	16.39	
	0.808	14.70	10.40	25.10	46.00	20.90	
	1.725	13.00	10.41	23.41	46.00	22.59	
	3.902	11.50	10.44	21.94	46.00	24.06	
	15.770	19.30	10.56	29.86	50.00	20.14	
Neutral	0.151	54.00	10.58	64.58	65.97	1.39	QP
	0.339	27.59	10.45	38.04	59.22	21.18	
	0.584	24.70	10.39	35.09	56.00	20.91	
	1.032	24.40	10.40	34.80	56.00	21.20	
	2.164	21.31	10.43	31.74	56.00	24.26	
	16.290	24.00	10.67	34.67	60.00	25.33	
	0.151	42.90	10.58	53.48	55.97	2.49	AV
	0.339	17.99	10.45	28.44	49.22	20.78	
	0.584	12.80	10.39	23.19	46.00	22.81	
	1.032	14.10	10.40	24.50	46.00	21.50	
	2.164	11.91	10.43	22.34	46.00	23.66	
	16.290	19.10	10.67	29.77	50.00	20.23	

TEST ENGINEER: BYRON WU

4 RADIATED EMISSION TEST

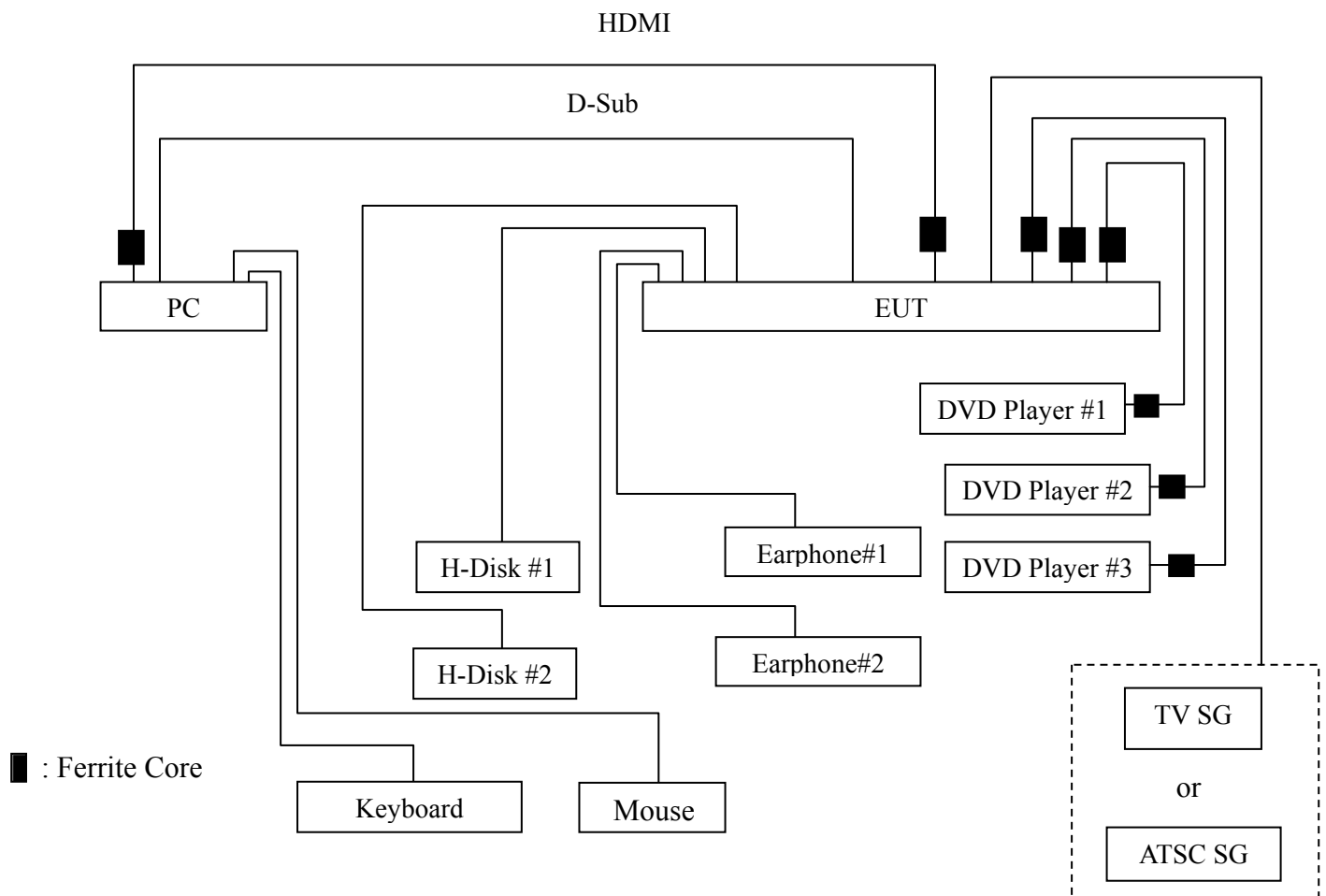
4.1 Test Equipment

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.	Spectrum	HP	8591EM	3628A00908	May 07, 2016	May 06, 2017
8.	Software	Audix	e3	6.2007-9-10	--	--

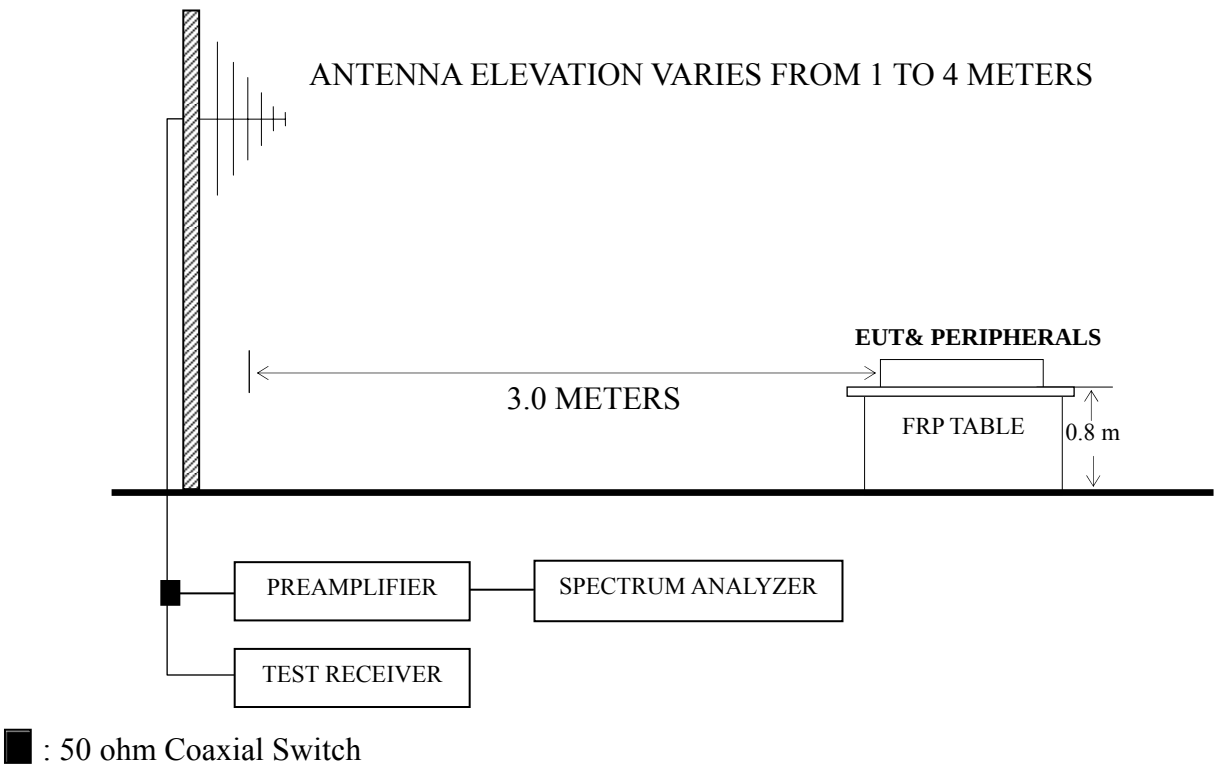
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals

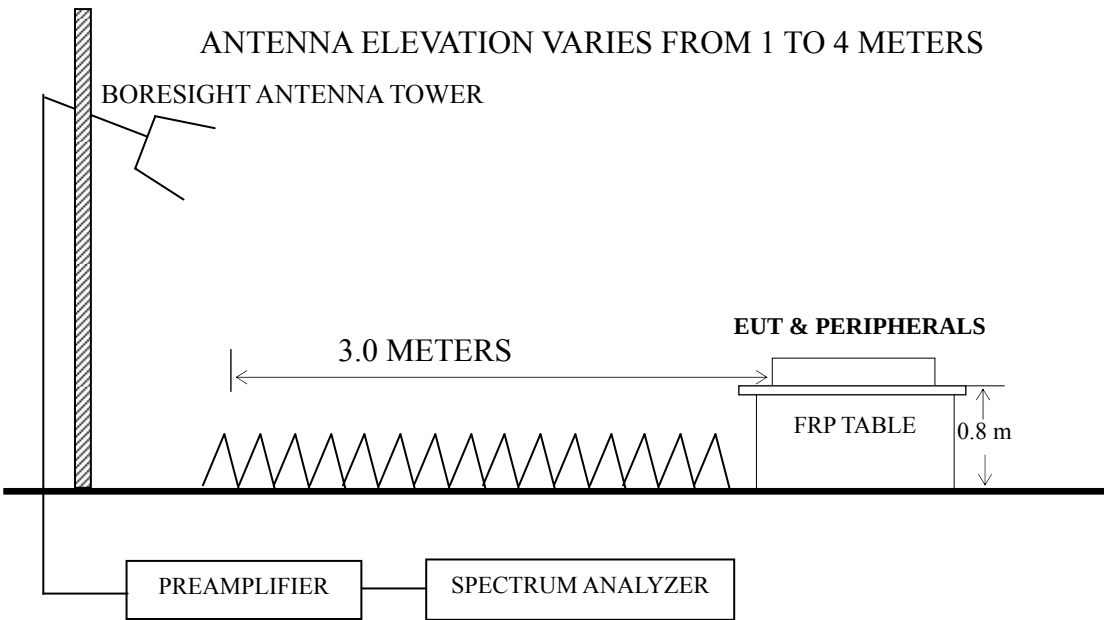


4.2.2 Radiated emission test setup

4.2.2.1 Below 1GHz



4.2.2.2 Above 1GHz



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 requirements during radiated emission test.

The I.F. bandwidth of Test Receiver R&S ESCI was set at 120 kHz and The Spectrum Agilent E7405A was set at 1MHz above 1GHz.

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	P25-P26
HDMI 1920*1080@60Hz & 1kHz playing	P27
HDMI 1280*1024@60Hz & 1kHz playing	P28
HDMI 640*480@60Hz & 1kHz playing	P29
D-Sub 1920*1080@60Hz & 1kHz playing	P30
HDMI1080P	P31
USB Play	P32
LAN Play	P33

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 890.728 MHz with corrected signal level of 45.41 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 2.00 m height and the turntable was at 175°. The worst emission at vertical polarization was detected at 891.010 MHz with corrected signal level of 43.47 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.10 m height and the turntable was at 90°.

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 60%RH

Test Mode : HDMI 3840*2160@60Hz & 1kHz Playing Date of Test : Aug 08, 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	94.760	19.48	11.60	0.97	0.00	32.05	43.50	11.45	QP
	131.758	18.81	12.87	1.19	0.00	32.87	43.50	10.63	
	297.224	24.73	13.60	1.75	0.00	40.08	46.00	5.92	
	454.310	22.32	16.84	2.16	0.00	41.32	46.00	4.68	
	682.348	21.07	19.52	2.67	0.00	43.26	46.00	2.74	
	890.728	21.24	21.10	3.07	0.00	45.41	46.00	0.59	PK
	2107.225	69.47	27.71	4.55	35.11	66.62	74.00	7.38	
	3147.870	65.00	30.82	5.93	35.05	66.70	74.00	7.30	
	3505.144	60.70	31.53	6.17	34.71	63.69	74.00	10.31	
	2107.225	45.37	27.71	4.55	35.11	42.52	54.00	11.48	AV
	3147.870	40.04	30.82	5.93	35.05	41.74	54.00	12.26	
	3505.144	37.28	31.53	6.17	34.71	40.27	54.00	13.73	

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 60%RH

Test Mode : HDMI 3840*2160@60Hz & 1kHz Playing Date of Test : Aug 08, 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	45.535	23.67	9.90	0.68	0.00	34.25	40.00	5.75	QP
	75.977	21.96	8.41	0.87	0.00	31.24	40.00	8.76	
	130.837	24.87	12.88	1.19	0.00	38.94	43.50	4.56	
	425.028	21.11	16.35	2.10	0.00	39.56	46.00	6.44	
	654.232	19.44	19.25	2.63	0.00	41.32	46.00	4.68	
	891.010	19.30	21.10	3.07	0.00	43.47	46.00	2.53	PK
	1752.110	70.13	26.63	4.11	35.37	65.50	74.00	8.50	
	3164.836	64.67	30.86	5.93	35.03	66.43	74.00	7.57	
	3517.727	60.56	31.56	6.17	34.70	63.59	74.00	10.41	
	1752.110	46.22	26.63	4.11	35.37	41.59	54.00	12.41	AV
	3164.836	42.93	30.86	5.93	35.03	44.69	54.00	9.31	
	3517.727	38.22	31.56	6.17	34.70	41.25	54.00	12.75	

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Aug 08, 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	85.898	23.21	10.20	0.93	34.34	40.00	5.66
	148.963	21.98	12.16	1.28	35.42	43.50	8.08
	242.525	21.54	12.28	1.61	35.43	46.00	10.57
	297.224	22.52	13.60	1.75	37.87	46.00	8.13
	742.259	16.94	19.57	2.79	39.30	46.00	6.70
	903.309	15.16	21.25	3.09	39.50	46.00	6.50
Vertical	72.700	26.00	7.91	0.85	34.76	40.00	5.24
	145.600	24.00	12.54	1.26	37.80	43.50	5.70
	225.308	19.70	11.30	1.56	32.56	46.00	13.44
	425.028	18.50	16.35	2.10	36.95	46.00	9.05
	675.208	12.67	19.47	2.67	34.81	46.00	11.19
	903.309	14.66	21.25	3.09	39.00	46.00	7.00

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 60%RH

Test Mode : HDMI 1280*1024@60Hz & 1kHz Playing Date of Test : Aug 08, 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	75.446	25.52	8.38	0.87	34.77	40.00	5.23
	146.374	20.76	12.48	1.26	34.50	43.50	9.00
	241.676	20.35	12.22	1.61	34.18	46.00	11.82
	393.472	21.18	16.17	2.02	39.37	46.00	6.63
	432.546	20.88	16.44	2.12	39.44	46.00	6.56
	851.035	16.05	20.57	3.00	39.62	46.00	6.38
Vertical	73.359	26.16	8.02	0.86	35.04	40.00	4.96
	145.600	24.50	12.54	1.26	38.30	43.50	5.20
	220.617	20.67	11.05	1.55	33.27	46.00	12.73
	278.067	17.78	13.35	1.71	32.84	46.00	13.16
	682.348	15.12	19.52	2.67	37.31	46.00	8.69
	848.056	13.35	20.50	2.98	36.83	46.00	9.17

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 60%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Aug 08, 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	76.512	24.84	8.49	0.87	34.20	40.00	5.80
	146.374	22.35	12.48	1.26	36.09	43.50	7.41
	242.525	22.64	12.28	1.61	36.53	46.00	9.47
	580.703	15.37	18.25	2.46	36.08	46.00	9.92
	658.836	14.12	19.20	2.63	35.95	46.00	10.05
	848.056	13.78	20.50	2.98	37.26	46.00	8.74
Vertical	74.135	25.93	8.13	0.86	34.92	40.00	5.08
	145.200	24.80	12.60	1.26	38.66	43.50	4.84
	226.894	19.84	11.38	1.57	32.79	46.00	13.21
	277.094	18.06	13.27	1.70	33.03	46.00	12.97
	679.960	13.71	19.60	2.67	35.98	46.00	10.02
	851.035	13.90	20.57	3.00	37.47	46.00	8.53

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 60%RH

Test Mode : D-Sub 1920*1080@60Hz & 1kHz Playing Date of Test : Aug 08, 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	75.977	25.29	8.41	0.87	34.57	40.00	5.43
	148.441	23.62	12.23	1.27	37.12	43.50	6.38
	245.090	23.85	12.40	1.62	37.87	46.00	8.13
	297.224	25.03	13.60	1.75	40.38	46.00	5.62
	845.088	16.40	20.40	2.98	39.78	46.00	6.22
	890.960	15.30	21.10	3.07	39.47	46.00	6.53
Vertical	32.730	17.40	16.78	0.58	34.76	40.00	5.24
	46.666	23.52	9.51	0.68	33.71	40.00	6.29
	75.182	25.78	8.34	0.86	34.98	40.00	5.02
	150.011	24.68	12.10	1.28	38.06	43.50	5.44
	423.540	21.29	16.33	2.10	39.72	46.00	6.28
	658.836	16.39	19.20	2.63	38.22	46.00	7.78

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 60%RH

Test Mode : HDMI1080P Date of Test : Aug 08, 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	75.446	25.11	8.38	0.87	34.36	40.00	5.64
	147.404	23.15	12.35	1.27	36.77	43.50	6.73
	329.039	19.00	14.44	1.85	35.29	46.00	10.71
	425.880	20.30	16.37	2.10	38.77	46.00	7.23
	684.745	20.56	19.45	2.69	42.70	46.00	3.30
	742.480	20.10	19.57	2.79	42.46	46.00	3.54
Vertical	30.962	16.25	17.71	0.57	34.53	40.00	5.47
	74.396	25.22	8.19	0.86	34.27	40.00	5.73
	144.842	24.04	12.60	1.26	37.90	43.50	5.60
	420.580	18.78	16.32	2.09	37.19	46.00	8.81
	658.836	17.09	19.20	2.63	38.92	46.00	7.08
	906.500	18.40	21.30	3.09	42.79	46.00	3.21

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 60%RH

Test Mode : USB Play Date of Test : Aug 08, 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	75.446	23.37	8.38	0.87	32.62	40.00	7.38
	145.861	18.00	12.48	1.26	31.74	43.50	11.76
	327.887	23.96	14.39	1.85	40.20	46.00	5.80
	683.800	18.01	19.52	2.69	40.22	46.00	5.78
	845.088	15.75	20.40	2.98	39.13	46.00	6.87
	890.728	14.92	21.10	3.07	39.09	46.00	6.91
Vertical	33.328	14.35	16.57	0.59	31.51	40.00	8.49
	67.202	25.74	7.12	0.82	33.68	40.00	6.32
	145.351	23.96	12.54	1.26	37.76	43.50	5.74
	329.039	21.30	14.44	1.85	37.59	46.00	8.41
	683.800	17.61	19.52	2.69	39.82	46.00	6.18
	884.503	15.77	21.05	3.05	39.87	46.00	6.13

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55U Humidity : 60%RH

Test Mode : LAN Play Date of Test : Aug 08, 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	73.876	24.19	8.13	0.86	33.18	40.00	6.82
	148.963	24.16	12.16	1.28	37.60	43.50	5.90
	164.908	25.06	11.10	1.35	37.51	43.50	5.99
	297.224	24.45	13.60	1.75	39.80	46.00	6.20
	683.800	17.51	19.52	2.69	39.72	46.00	6.28
	851.035	15.39	20.57	3.00	38.96	46.00	7.04
Vertical	57.796	25.38	7.14	0.76	33.28	40.00	6.72
	74.135	24.25	8.13	0.86	33.24	40.00	6.76
	145.861	23.33	12.48	1.26	37.07	43.50	6.43
	297.000	24.20	13.60	1.75	39.55	46.00	6.45
	679.960	17.50	19.60	2.67	39.77	46.00	6.23
	887.610	16.13	21.10	3.07	40.30	46.00	5.70

TEST ENGINEER: CAESAR WU

5 DEVIATION TO TEST SPECIFICATIONS

None.

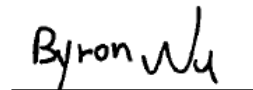
6 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Conductive cloth	1152498	Qingdao Joinset Co., Ltd	See Appendix Figure 23
Ferrite Core	1029955	Jiangsu Ruifeng Electronics Co., Ltd	See Appendix Figure 24
SMcontact	1146214	Qingdao Joinset Co., Ltd	See Appendix Figure 25

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)

