

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

LED LCD TV

Model No.	Brand
LTDN55K2205BWUS	Hisense
55F1600	
LC-55F	Sharp

FCC ID : W9HLCDF0087

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

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Report No. : ACI-F16203
Date of Test : Aug 03 - 15, 2016
Date of Report : Aug 24, 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.....	8
3 CONDUCTED EMISSION TEST	9
3.1 Test Equipment.....	9
3.2 Block Diagram of Test Setup.....	9
3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)].....	10
3.4 Test Configuration.....	10
3.5 Operating Condition of EUT.....	11
3.6 Test Procedures.....	11
3.7 Test Results.....	12
4 RADIATED EMISSION TEST	20
4.1 Test Equipment.....	20
4.2 Block Diagram of Test Setup.....	20
4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)].....	22
4.4 Test Configuration.....	22
4.5 Operating Condition of EUT.....	22
4.6 Test Procedures.....	22
4.7 Test Results.....	23
5 DEVIATION TO TEST SPECIFICATIONS	32
6 DEBUG DESCRIPTION	33

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 Sec2.1) which was tested in 3m anechoic chamber Aug 03 - 15, 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.F16202, a Verification report.

Date of Test : Aug 03 - 15, 2016 Date of Report : Aug 24, 2016

Producer : HuiMinYan
 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
LTDN55K2205BWUS	Hisense
55F1600	
LC-55F	Sharp

Note : The above models are all the same except for the model number and brand. The LC-55F 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 : HD550DF-B52(020)

Tuner : Manufacturer : MAXLINEAR
M/N : MXL661

Max Resolution : 1920*1080@60Hz

HDMI Cable*3 : Shielded, Detachable, 1.50m
(Lab provide)

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

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

LAN Cable : Shielded, 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 #2
- (6) One Audio out Port : Connected with Earphone#1
- (7) One USB1 Port : Connected with Hard-Disk #2
- (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 #1
- (11) One Digital Audio Out Port : Connected with Audio Converter to Earphone#2
- (12) One Component of YPbPr +Audio Port : Connected with DVD PLAYER #1

2.2 Peripherals

2.2.1 PC#1

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#2

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 Hard Disk #1

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

2.2.9 Hard Disk #2

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

2.2.10 ATSC Signal Generator

Manufacturer : SENCORE
Model Number : ATSC997
Serial Number : 6790071

2.2.11 TV Signal Generator

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

2.3 Description of Test Facility

Site Description (No.3 3m Chamber) : Sept. 17, 1998 file on
Jan.15, 2015 Renewed
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3F 34Bldg 680 Guiping Rd,
Caohejing Hi-Tech Park,
Shanghai 200233, China

FCC registration Number : 91789

NVLAP Lab Code : 200371-0

2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty : U = 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

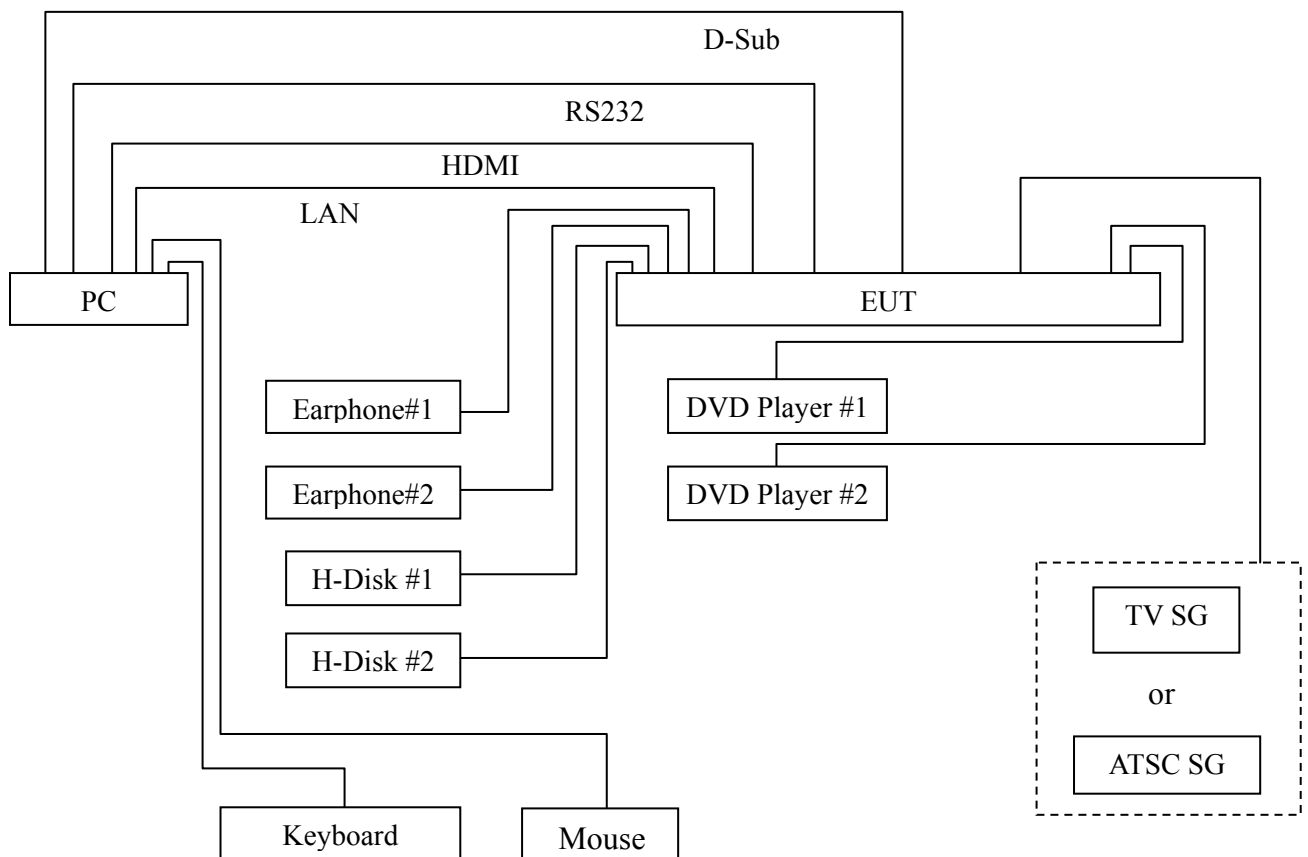
3.1 Test Equipment

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

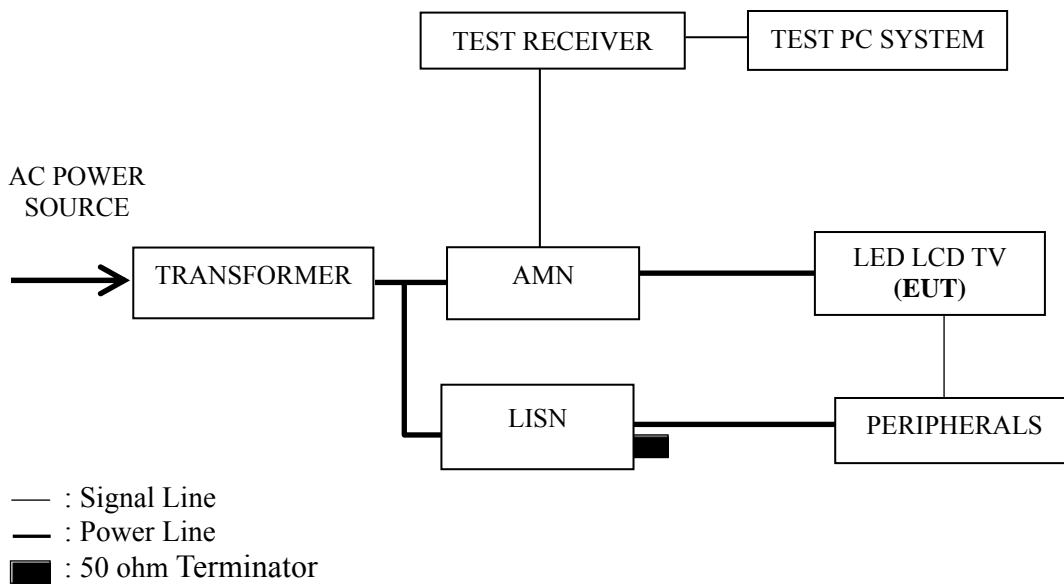
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Jul 03, 2016	Jul 02, 2017
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2016	Jun 26, 2017
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2016	Mar 19, 2017
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



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 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 1920*1080@60Hz & 1kHz playing	P13
HDMI 1280*1024@60Hz & 1kHz playing	P14
HDMI 640*480@60Hz & 1kHz playing	P15
D-Sub 1920*1080@60Hz & 1kHz playing	P16
HDMI1080P	P17
USB Play	P18
LAN Play	P19

NOTE 1 – Factor = Cable Loss + AMN Factor.

NOTE 2 – Emission Level = Meter Reading + Factor.

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

NOTE 4 –The worst case is for HDMI 1280*1024@60Hz & 1kHz playing test mode.

The worst emission is detected at 0.550MHz (Quasi-Peak Value) with corrected signal level of 44.99dB (μ V) (limit is 56.00 dB (μ V)), when the Neutral of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

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

Test Mode : HDMI 1920*1080@60Hz Date of Test : Aug 03, 2016
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.167	33.51	10.56	44.07	65.11	21.04	QP
	0.378	29.70	10.44	40.14	58.33	18.19	
	0.554	34.20	10.40	44.60	56.00	11.40	
	1.447	28.21	10.40	38.61	56.00	17.39	
	3.994	24.70	10.44	35.14	56.00	20.86	
	17.360	25.70	10.58	36.28	60.00	23.72	
	AV	0.167	22.61	10.56	33.17	55.11	21.94
		0.378	19.20	10.44	29.64	48.33	18.69
		0.554	22.60	10.40	33.00	46.00	13.00
		1.447	16.81	10.40	27.21	46.00	18.79
		3.994	15.30	10.44	25.74	46.00	20.26
		17.360	21.00	10.58	31.58	50.00	18.42
Neutral	0.174	36.20	10.55	46.75	64.76	18.01	QP
	0.379	33.70	10.43	44.13	58.30	14.17	
	0.548	34.40	10.39	44.79	56.00	11.21	
	1.426	29.20	10.42	39.62	56.00	16.38	
	2.953	27.10	10.46	37.56	56.00	18.44	
	5.876	24.30	10.51	34.81	60.00	25.19	
	AV	0.174	21.70	10.55	32.25	54.76	22.51
		0.379	21.80	10.43	32.23	48.30	16.07
		0.548	24.20	10.39	34.59	46.00	11.41
		1.426	18.30	10.42	28.72	46.00	17.28
		2.953	15.90	10.46	26.36	46.00	19.64
		5.876	15.50	10.51	26.01	50.00	23.99

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

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

Test Mode : HDMI 1280*1024@60Hz & 1kHz Playing Date of Test : Aug 03, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.164	33.60	10.57	44.17	65.24	21.07	QP
	0.386	29.00	10.44	39.44	58.15	18.71	
	0.548	34.40	10.40	44.80	56.00	11.20	
	1.443	28.51	10.40	38.91	56.00	17.09	
	3.984	26.20	10.44	36.64	56.00	19.36	
	17.530	25.50	10.58	36.08	60.00	23.92	
	0.164	22.30	10.57	32.87	55.24	22.37	AV
	0.386	19.90	10.44	30.34	48.15	17.81	
	0.548	23.70	10.40	34.10	46.00	11.90	
	1.443	16.91	10.40	27.31	46.00	18.69	
	3.984	16.70	10.44	27.14	46.00	18.86	
	17.530	20.40	10.58	30.98	50.00	19.02	
Neutral	0.178	36.09	10.55	46.64	64.57	17.93	QP
	0.371	32.79	10.44	43.23	58.48	15.25	
	0.550	34.60	10.39	44.99	56.00	11.01	
	1.165	28.51	10.40	38.91	56.00	17.09	
	2.974	27.20	10.46	37.66	56.00	18.34	
	6.625	23.20	10.53	33.73	60.00	26.27	
	0.178	22.79	10.55	33.34	54.57	21.23	AV
	0.371	20.69	10.44	31.13	48.48	17.35	
	0.550	24.10	10.39	34.49	46.00	11.51	
	1.165	19.11	10.40	29.51	46.00	16.49	
	2.974	15.90	10.46	26.36	46.00	19.64	
	6.625	14.20	10.53	24.73	50.00	25.27	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

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

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Aug 03, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.165	33.70	10.57	44.27	65.22	20.95	QP
	0.379	30.00	10.44	40.44	58.31	17.87	
	0.549	34.40	10.40	44.80	56.00	11.20	
	1.440	28.71	10.40	39.11	56.00	16.89	
	3.718	26.61	10.43	37.04	56.00	18.96	
	5.786	23.20	10.46	33.66	60.00	26.34	
	AV	0.165	22.40	10.57	32.97	55.22	22.25
		0.379	19.10	10.44	29.54	48.31	18.77
		0.549	23.90	10.40	34.30	46.00	11.70
		1.440	17.81	10.40	28.21	46.00	17.79
		3.718	16.21	10.43	26.64	46.00	19.36
		5.786	16.00	10.46	26.46	50.00	23.54
Neutral	0.173	36.10	10.55	46.65	64.84	18.19	QP
	0.379	33.70	10.43	44.13	58.29	14.16	
	0.553	34.30	10.39	44.69	56.00	11.31	
	0.913	29.00	10.40	39.40	56.00	16.60	
	2.210	28.70	10.44	39.14	56.00	16.86	
	25.150	24.70	10.85	35.55	60.00	24.45	
	AV	0.173	21.70	10.55	32.25	54.84	22.59
		0.379	21.90	10.43	32.33	48.29	15.96
		0.553	23.00	10.39	33.39	46.00	12.61
		0.913	17.30	10.40	27.70	46.00	18.30
		2.210	18.50	10.44	28.94	46.00	17.06
		25.150	14.30	10.85	25.15	50.00	24.85

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

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

Test Mode : D-Sub 1920*1080@60Hz & 1kHz playing Date of Test : Aug 03, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.166	33.40	10.57	43.97	65.15	21.18	QP
	0.378	29.80	10.44	40.24	58.32	18.08	
	0.560	28.70	10.40	39.10	56.00	16.90	
	1.418	28.61	10.40	39.01	56.00	16.99	
	2.981	28.00	10.43	38.43	56.00	17.57	
	6.561	23.50	10.47	33.97	60.00	26.03	
	0.166	22.70	10.57	33.27	55.15	21.88	AV
	0.378	18.80	10.44	29.24	48.32	19.08	
	0.560	17.00	10.40	27.40	46.00	18.60	
	1.418	17.51	10.40	27.91	46.00	18.09	
	2.981	16.20	10.43	26.63	46.00	19.37	
	6.561	14.70	10.47	25.17	50.00	24.83	
Neutral	0.168	36.31	10.55	46.86	65.05	18.19	QP
	0.373	33.10	10.43	43.53	58.44	14.91	
	0.547	34.20	10.39	44.59	56.00	11.41	
	1.440	28.70	10.42	39.12	56.00	16.88	
	2.998	25.50	10.46	35.96	56.00	20.04	
	17.160	24.61	10.67	35.28	60.00	24.72	
	0.168	23.51	10.55	34.06	55.05	20.99	AV
	0.373	21.10	10.43	31.53	48.44	16.91	
	0.547	24.00	10.39	34.39	46.00	11.61	
	1.440	18.10	10.42	28.52	46.00	17.48	
	2.998	15.40	10.46	25.86	46.00	20.14	
	17.160	19.71	10.67	30.38	50.00	19.62	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

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

Test Mode : HDMI 1080P Date of Test : Aug 03, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.178	32.89	10.56	43.45	64.57	21.12	QP
	0.379	29.80	10.44	40.24	58.31	18.07	
	0.551	34.20	10.40	44.60	56.00	11.40	
	0.912	29.20	10.40	39.60	56.00	16.40	
	2.200	28.49	10.42	38.91	56.00	17.09	
	24.980	26.00	10.75	36.75	60.00	23.25	
	0.178	21.59	10.56	32.15	54.57	22.42	AV
	0.379	19.00	10.44	29.44	48.31	18.87	
	0.551	23.00	10.40	33.40	46.00	12.60	
	0.912	17.00	10.40	27.40	46.00	18.60	
	2.200	18.49	10.42	28.91	46.00	17.09	
	24.980	15.40	10.75	26.15	50.00	23.85	
Neutral	0.175	36.10	10.55	46.65	64.70	18.05	QP
	0.379	33.60	10.43	44.03	58.31	14.28	
	0.550	34.40	10.39	44.79	56.00	11.21	
	1.937	28.70	10.43	39.13	56.00	16.87	
	4.831	24.60	10.50	35.10	56.00	20.90	
	25.000	26.50	10.84	37.34	60.00	22.66	
	0.175	21.80	10.55	32.35	54.70	22.35	AV
	0.379	21.90	10.43	32.33	48.31	15.98	
	0.550	24.10	10.39	34.49	46.00	11.51	
	1.937	16.70	10.43	27.13	46.00	18.87	
	4.831	14.80	10.50	25.30	46.00	20.70	
	25.000	17.50	10.84	28.34	50.00	21.66	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C
 Model No. : LC-55F Humidity : 48%RH
 Test Mode : USB Play Date of Test : Aug 03, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.165	33.50	10.57	44.07	65.22	21.15	QP
	0.381	28.90	10.44	39.34	58.26	18.92	
	0.543	34.10	10.40	44.50	56.00	11.50	
	0.914	28.80	10.40	39.20	56.00	16.80	
	2.208	27.89	10.42	38.31	56.00	17.69	
	23.820	22.60	10.72	33.32	60.00	26.68	
	0.165	22.40	10.57	32.97	55.22	22.25	AV
	0.381	0.00	10.44	10.44	48.26	37.82	
	0.543	22.80	10.40	33.20	46.00	12.80	
	0.914	16.40	10.40	26.80	46.00	19.20	
	2.208	17.99	10.42	28.41	46.00	17.59	
	23.820	17.30	10.72	28.02	50.00	21.98	
Neutral	0.165	35.80	10.56	46.36	65.21	18.85	QP
	0.379	33.60	10.43	44.03	58.31	14.28	
	0.550	34.40	10.39	44.79	56.00	11.21	
	0.915	29.20	10.40	39.60	56.00	16.40	
	2.465	27.51	10.44	37.95	56.00	18.05	
	24.010	22.50	10.82	33.32	60.00	26.68	
	0.165	23.30	10.56	33.86	55.21	21.35	AV
	0.379	21.90	10.43	32.33	48.31	15.98	
	0.550	24.00	10.39	34.39	46.00	11.61	
	0.915	16.20	10.40	26.60	46.00	19.40	
	2.465	14.81	10.44	25.25	46.00	20.75	
	24.010	16.20	10.82	27.02	50.00	22.98	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C
 Model No. : LC-55F Humidity : 48%RH
 Test Mode : LAN Play Date of Test : Aug 03, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.165	33.90	10.57	44.47	65.23	20.76	QP
	0.388	29.30	10.44	39.74	58.10	18.36	
	0.552	34.00	10.40	44.40	56.00	11.60	
	1.437	28.61	10.40	39.01	56.00	16.99	
	2.473	27.60	10.42	38.02	56.00	17.98	
	6.616	25.80	10.47	36.27	60.00	23.73	
	0.165	22.30	10.57	32.87	55.23	22.36	AV
	0.388	19.90	10.44	30.34	48.10	17.76	
	0.552	22.50	10.40	32.90	46.00	13.10	
	1.437	17.91	10.40	28.31	46.00	17.69	
	2.473	14.50	10.42	24.92	46.00	21.08	
	6.616	15.30	10.47	25.77	50.00	24.23	
Neutral	0.164	36.40	10.56	46.96	65.25	18.29	QP
	0.378	33.50	10.43	43.93	58.32	14.39	
	0.550	34.20	10.39	44.59	56.00	11.41	
	1.430	28.80	10.42	39.22	56.00	16.78	
	3.777	24.61	10.47	35.08	56.00	20.92	
	24.640	20.80	10.83	31.63	60.00	28.37	
	0.164	23.00	10.56	33.56	55.25	21.69	AV
	0.378	21.90	10.43	32.33	48.32	15.99	
	0.550	24.00	10.39	34.39	46.00	11.61	
	1.430	18.10	10.42	28.52	46.00	17.48	
	3.777	16.41	10.47	26.88	46.00	19.12	
	24.640	14.00	10.83	24.83	50.00	25.17	

TEST ENGINEER: BYRON WU

4 RADIATED EMISSION TEST

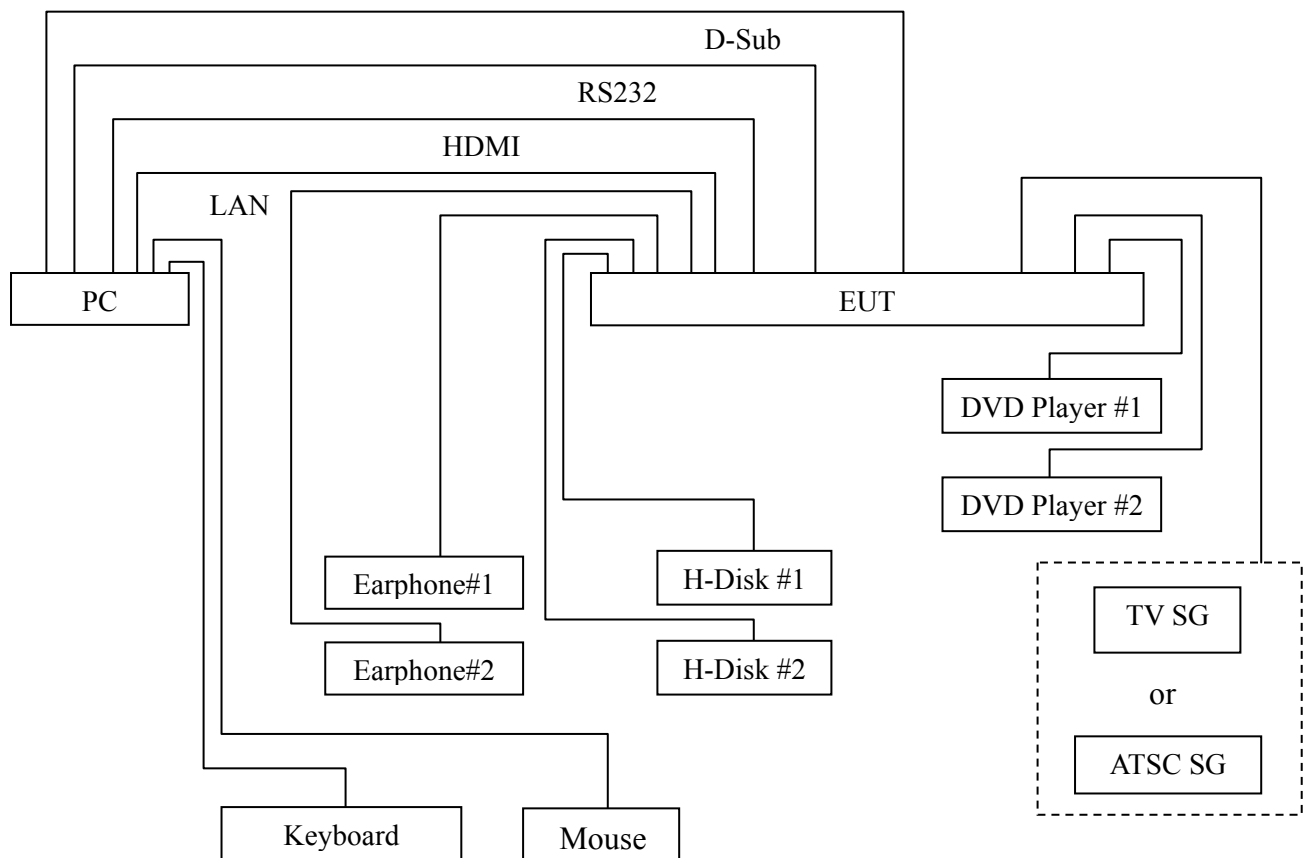
4.1 Test Equipment

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	--	--

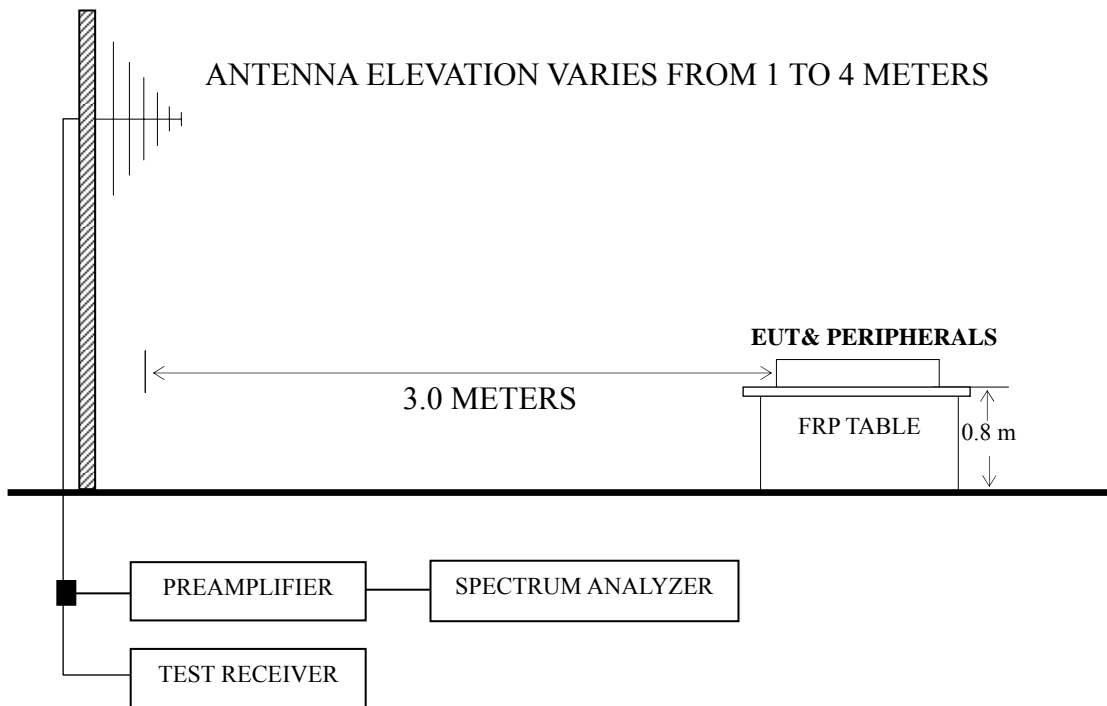
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals

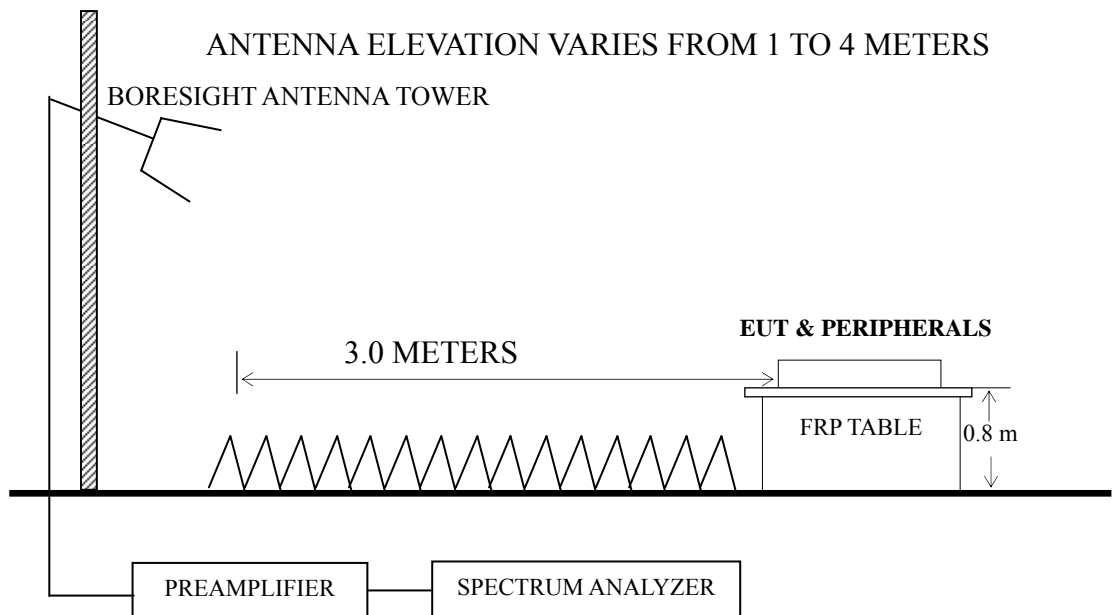


4.2.2 Radiated emission test setup

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	
		($\mu\text{V}/\text{m}$)	dB ($\mu\text{V}/\text{m}$)
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 ($\mu\text{V}/\text{m}$) = 20 log Emission Level ($\mu\text{V}/\text{m}$)
 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 1920*1080@60Hz & 1kHz playing	P24-P25
HDMI 1280*1024@60Hz & 1kHz playing	P26
HDMI 640*480@60Hz & 1kHz playing	P27
D-Sub 1920*1080@60Hz & 1kHz playing	P28
HDMI1080P	P29
USB Play	P30
LAN Play	P31

NOTE 1 – Emission Level = Antenna Factor + Cable Loss + Meter Reading. (< 1GHz);

Emission Level = Antenna Factor + Cable Loss – Preamp Factor + Meter Reading. (> 1GHz)

NOTE 2 – All readings are Quasi-Peak values below or equal to 1GHz, Peak and Average values above 1GHz.

NOTE 3 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

NOTE 4 –The worst case is for HDMI 1920*1080@60Hz & 1kHz playing test mode. The worst emission at horizontal polarization was detected at 73.10 MHz with corrected signal level of 35.73 dB ($\mu\text{V}/\text{m}$) (limit is 40.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 2.00 m height and the turntable was at 245°. The worst emission at vertical polarization was detected at 78.41 MHz with corrected signal level of 36.85 dB ($\mu\text{V}/\text{m}$) (limit is 40.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.00 m height and the turntable was at 300°.

EUT : LED LCD TV Temperature : 22°C

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

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Aug 15, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)	Remark
Horizontal	73.103	26.92	7.96	0.85	0.00	35.73	40.00	4.27	QP
	101.644	22.75	12.36	1.01	0.00	36.12	43.50	7.38	
	299.316	20.84	13.60	1.76	0.00	36.20	46.00	9.80	
	520.888	16.79	17.56	2.32	0.00	36.67	46.00	9.33	
	793.396	17.58	20.33	2.89	0.00	40.80	46.00	5.20	
	810.265	18.18	20.30	2.91	0.00	41.39	46.00	4.61	PK
	1266.823	56.82	24.73	3.61	36.02	49.14	74.00	24.86	
	1483.178	57.20	25.54	3.86	35.71	50.89	74.00	23.11	
	1702.593	62.52	26.44	4.07	35.43	57.60	74.00	16.40	AV
	1266.823	35.66	24.73	3.61	36.02	27.98	54.00	26.02	
	1483.178	36.26	25.54	3.86	35.71	29.95	54.00	24.05	
1702.593	41.26	26.44	4.07	35.43	36.34	54.00	17.66		

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

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

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Aug 15, 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	31.399	16.33	17.45	0.57	0.00	34.35	40.00	5.65	QP
	50.057	26.84	8.60	0.70	0.00	36.14	40.00	3.86	
	78.413	27.26	8.71	0.88	0.00	36.85	40.00	3.15	
	216.783	21.74	10.94	1.53	0.00	34.21	46.00	11.79	
	370.702	15.68	15.63	1.96	0.00	33.27	46.00	12.73	
	399.030	16.60	16.27	2.03	0.00	34.90	46.00	11.10	
	1206.996	62.97	24.48	3.54	36.12	54.87	74.00	19.13	PK
	1477.873	58.60	25.52	3.86	35.71	52.27	74.00	21.73	
	1816.036	59.18	26.85	4.19	35.30	54.92	74.00	19.08	AV
	1206.996	42.37	24.48	3.54	36.12	34.27	54.00	19.73	
	1477.873	37.53	25.52	3.86	35.71	31.20	54.00	22.80	
1816.036	38.67	26.85	4.19	35.30	34.41	54.00	19.59		

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

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

Test Mode : HDMI 1280*1024@60Hz Date of Test : Aug 15, 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	77.593	23.60	8.60	0.88	33.08	40.00	6.92
	101.644	22.25	12.36	1.01	35.62	43.50	7.88
	145.861	18.76	12.48	1.26	32.50	43.50	11.00
	297.224	21.43	13.60	1.75	36.78	46.00	9.22
	526.397	15.32	17.68	2.34	35.34	46.00	10.66
	796.183	17.64	20.37	2.89	40.90	46.00	5.10
Vertical	32.067	16.38	17.05	0.58	34.01	40.00	5.99
	50.057	26.86	8.60	0.70	36.16	40.00	3.84
	78.139	27.28	8.68	0.88	36.84	40.00	3.16
	145.351	17.95	12.54	1.26	31.75	43.50	11.75
	215.268	23.22	10.90	1.53	35.65	43.50	7.85
	399.030	16.93	16.27	2.03	35.23	46.00	10.77

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

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

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Aug 15, 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	76.244	24.88	8.45	0.87	34.20	40.00	5.80
	102.360	22.28	12.35	1.02	35.65	43.50	7.85
	146.888	19.97	12.41	1.27	33.65	43.50	9.85
	299.316	22.03	13.60	1.76	37.39	46.00	8.61
	796.183	17.63	20.37	2.89	40.89	46.00	5.11
	824.597	18.11	20.33	2.94	41.38	46.00	4.62
Vertical	31.399	15.82	17.45	0.57	33.84	40.00	6.16
	52.391	27.68	8.03	0.72	36.43	40.00	3.57
	80.081	26.49	8.90	0.89	36.28	40.00	3.72
	146.374	21.07	12.48	1.26	34.81	43.50	8.69
	217.544	23.82	10.96	1.54	36.32	46.00	9.68
	790.619	14.58	20.30	2.89	37.77	46.00	8.23

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

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

Test Mode : D-Sub 1920*1080@60Hz & 1kHz Playing Date of Test : Aug 15, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	70.832	26.39	7.57	0.84	34.80	40.00	5.20
	130.379	23.37	12.89	1.18	37.44	43.50	6.06
	211.527	25.16	10.70	1.52	37.38	43.50	6.12
	360.448	18.83	15.40	1.93	36.16	46.00	9.84
	640.611	15.76	19.20	2.59	37.55	46.00	8.45
	719.200	16.76	19.27	2.75	38.78	46.00	7.22
Vertical	52.391	24.49	8.03	0.72	33.24	40.00	6.76
	67.438	26.38	7.15	0.82	34.35	40.00	5.65
	123.699	22.86	12.24	1.15	36.25	43.50	7.25
	227.691	24.03	11.42	1.57	37.02	46.00	8.98
	457.507	16.84	16.88	2.17	35.89	46.00	10.11
	696.857	13.53	19.17	2.71	35.41	46.00	10.59

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

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

Test Mode : HDMI1080P Date of Test : Aug 15, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	78.139	25.18	8.68	0.88	34.74	40.00	5.26
	151.067	20.61	11.95	1.29	33.85	43.50	9.65
	192.419	22.44	9.95	1.45	33.84	43.50	9.66
	246.815	22.93	12.48	1.62	37.03	46.00	8.97
	385.281	16.16	15.95	2.00	34.11	46.00	11.89
	830.400	12.93	20.40	2.96	36.29	46.00	9.71
Vertical	55.805	27.60	7.44	0.75	35.79	40.00	4.21
	77.865	26.49	8.64	0.88	36.01	40.00	3.99
	195.822	23.23	9.93	1.46	34.62	43.50	8.88
	278.067	18.09	13.35	1.71	33.15	46.00	12.85
	465.599	15.23	17.02	2.19	34.44	46.00	11.56
	906.482	11.07	21.30	3.09	35.46	46.00	10.54

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

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

Test Mode : USB Play Date of Test : Aug 15, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	80.362	24.93	8.99	0.89	34.81	40.00	5.19
	143.326	19.58	12.82	1.25	33.65	43.50	9.85
	251.180	21.72	12.70	1.64	36.06	46.00	9.94
	416.179	16.62	16.26	2.07	34.95	46.00	11.05
	670.489	11.53	19.40	2.65	33.58	46.00	12.42
	848.056	12.90	20.50	2.98	36.38	46.00	9.62
Vertical	54.835	26.52	7.62	0.74	34.88	40.00	5.12
	65.573	27.02	6.96	0.81	34.79	40.00	5.21
	139.851	19.75	13.20	1.23	34.18	43.50	9.32
	197.893	22.87	10.00	1.47	34.34	43.50	9.16
	360.448	17.15	15.40	1.93	34.48	46.00	11.52
	578.670	13.18	18.30	2.46	33.94	46.00	12.06

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

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

Test Mode : LAN Play Date of Test : Aug 15, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	76.244	26.24	8.45	0.87	35.56	40.00	4.44
	89.276	23.02	10.70	0.94	34.66	43.50	8.84
	146.374	20.37	12.48	1.26	34.11	43.50	9.39
	263.819	20.90	13.16	1.67	35.73	46.00	10.27
	362.985	18.87	15.47	1.95	36.29	46.00	9.71
	824.597	17.44	20.33	2.94	40.71	46.00	5.29
Vertical	50.942	26.08	8.38	0.71	35.17	40.00	4.83
	66.034	27.35	7.01	0.81	35.17	40.00	4.83
	150.011	20.07	12.10	1.28	33.45	43.50	10.05
	226.099	23.41	11.34	1.56	36.31	46.00	9.69
	387.992	16.43	16.05	2.02	34.50	46.00	11.50
	721.726	15.46	19.30	2.75	37.51	46.00	8.49

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
SMcontact	SMR-TSL-4-3.5-5R	Qingdao Joinset Co., Ltd	See Appendix Figure 21

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)

