

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

LED LCD TV

Brand	Model No.
Sharp	LC-65U
Hisense	65U1600
	LTDN65K550GUBWUS

FCC ID : W9HLCDF0086

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

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Report No. : ACI-F16163
Date of Test : Jun 17 - Jul 04, 2016
Date of Report : Jul 13, 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	21
4.1 Test Equipment.....	21
4.2 Block Diagram of Test Setup.....	21
4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)].....	23
4.4 Test Configuration.....	23
4.5 Operating Condition of EUT.....	23
4.6 Test Procedures.....	23
4.7 Test Results.....	24
5 DEVIATION TO TEST SPECIFICATIONS	34
6 DEBUG DESCRIPTION	35

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 Jun 17 - Jul 04, 2016 is technically compliance with the FCC official limits also.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

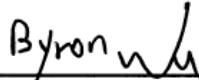
This report contains data that are not covered by the NVLAP accreditation.


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

The test results for EUT's TV functions are contained in No.F16162, a Verification report.

Date of Test : Jun 17 - Jul 04, 2016 Date of Report : Jul 13, 2016

Producer : 
 ALAN HE / Assistant

Review : 
 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

Brand	Model No.
Sharp	LC-65U
Hisense	65U1600
	LTDN65K550GUBWUS

Note : The above models are all the same except for the model number and brand. The 65U1600 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 : HE650HU-B51

Tuner : Manufacturer : XUGUANG
M/N : HFT-96S3/W11FJ2H

Max Resolution : 3840*2160@60Hz

HDMI Cable*4 : 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 DVD PLAYER #2
- (5) One HDMI1 Port : Connected with DVD PLAYER #3
- (6) One Audio out Port : Connected with Earphone
- (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 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 PC
- (13) One Digital Audio Out Port : Connected with Audio Converter to Earphone
- (14) One component of YPbPr +Video Port : Connected with DVD PLAYER #2
- (15) One AV 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 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

2.2.3 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

2.2.4 Earphone *2

Manufacturer : EDIFIER
Model Number : H210

2.2.5 DVD PLAYER #1

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

2.2.6 DVD PLAYER #2

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

2.2.7 DVD PLAYER #3

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

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

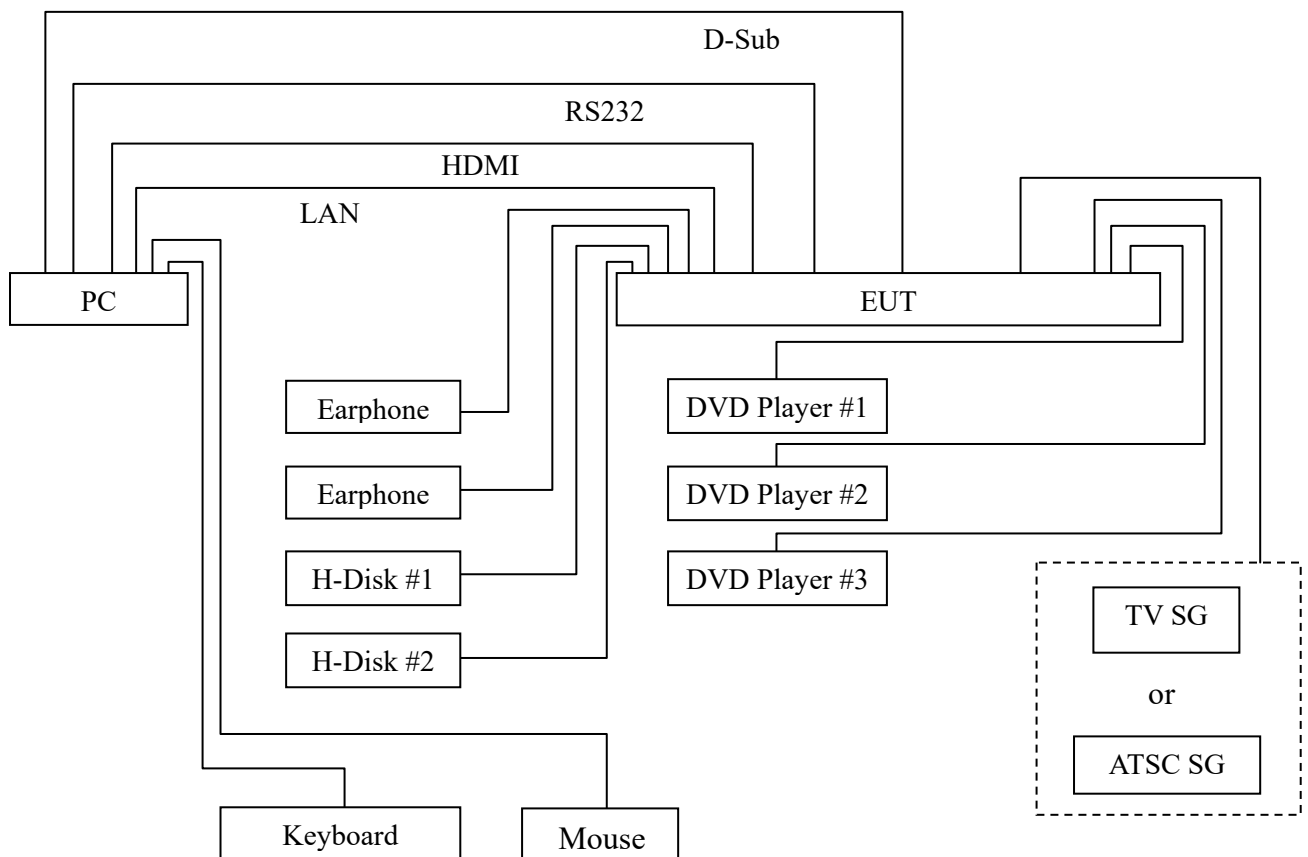
3.1 Test Equipment

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

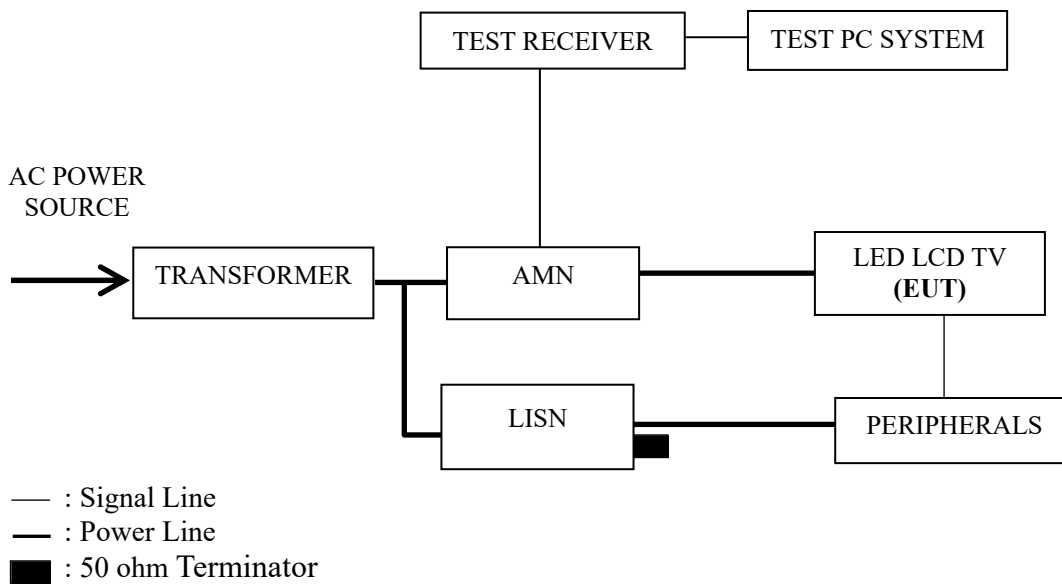
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Jul 03, 2015	Jul 02, 2016
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2015	Jun 26, 2016
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2016	Mar 19, 2017
4.	50Ω Terminator	Anritsu	BNC	001	Mar 18, 2015	Sep 17, 2016
5.	Software	Audix	E3	6.111206	--	--

3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



3.2.2 Conducted Disturbance Test Setup



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

Frequency Range (MHz)	Limits Db (μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56	56~46
0.5 ~ 5	56	46
5 ~ 30	60	50

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

3.4 Test Configuration

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

3.5 Operating Condition of EUT

- 3.5.1 Setup the EUT and peripherals as shown in Sec. 3.2.
- 3.5.2 Turn on the power of all equipments and the EUT.
- 3.5.3 Set the contrast & brightness of EUT to maximum.
- 3.5.4 PC system ran the self-test program “EMC Test” by windows XP and sent “H” characters to EUT through graphic card, the EUT’s screen displayed and filled with “H” pattern by its resolution (Via HDMI & 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 3840*2160@60Hz & 1kHz playing test mode.
The worst emission is detected at 0.157MHz (Quasi-Peak Value) with corrected signal level of 60.58dB (μV) (limit is 55.62 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 48%RH

Test Mode : HDMI 3840*2160@60Hz & 1kHz Playing Date of Test : Jun 17, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.159	49.50	10.58	60.08	65.52	5.44	QP
	0.410	29.70	10.43	40.13	57.66	17.53	
	0.685	27.40	10.39	37.79	56.00	18.21	
	0.932	22.70	10.39	33.09	56.00	22.91	
	1.774	20.69	10.42	31.11	56.00	24.89	
	7.332	20.30	10.47	30.77	60.00	29.23	
	0.159	38.60	10.58	49.18	55.52	6.34	AV
	0.410	19.80	10.43	30.23	47.66	17.43	
	0.685	14.80	10.39	25.19	46.00	20.81	
	0.932	9.60	10.39	19.99	46.00	26.01	
	1.774	6.79	10.42	17.21	46.00	28.79	
	7.332	8.70	10.47	19.17	50.00	30.83	
Neutral	0.157	50.00	10.58	60.58	65.62	5.04	QP
	0.399	27.60	10.41	38.01	57.88	19.87	
	0.685	27.40	10.37	37.77	56.00	18.23	
	0.953	24.10	10.38	34.48	56.00	21.52	
	1.762	19.89	10.42	30.31	56.00	25.69	
	7.022	19.10	10.52	29.62	60.00	30.38	
	0.157	38.50	10.58	49.08	55.62	6.54	AV
	0.399	16.70	10.41	27.11	47.88	20.77	
	0.685	14.70	10.37	25.07	46.00	20.93	
	0.953	12.80	10.38	23.18	46.00	22.82	
	1.762	7.79	10.42	18.21	46.00	27.79	
	7.022	14.30	10.52	24.82	50.00	25.18	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 48%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Jun 17, 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	0.159	49.20	10.58	59.78	65.54	5.76	QP
	0.405	29.10	10.43	39.53	57.75	18.22	
	0.665	27.50	10.39	37.89	56.00	18.11	
	0.924	23.10	10.39	33.49	56.00	22.51	
	2.301	21.00	10.43	31.43	56.00	24.57	
	6.646	18.49	10.48	28.97	60.00	31.03	
	0.159	38.30	10.58	48.88	55.54	6.66	AV
	0.405	19.20	10.43	29.63	47.75	18.12	
	0.665	13.60	10.39	23.99	46.00	22.01	
	0.924	10.00	10.39	20.39	46.00	25.61	
	2.301	6.60	10.43	17.03	46.00	28.97	
	6.646	11.19	10.48	21.67	50.00	28.33	
Neutral	0.159	48.80	10.57	59.37	65.50	6.13	QP
	0.406	28.60	10.41	39.01	57.73	18.72	
	0.671	27.80	10.37	38.17	56.00	17.83	
	0.953	22.80	10.38	33.18	56.00	22.82	
	2.298	19.50	10.43	29.93	56.00	26.07	
	7.463	19.80	10.53	30.33	60.00	29.67	
	0.159	38.20	10.57	48.77	55.50	6.73	AV
	0.406	18.50	10.41	28.91	47.73	18.82	
	0.671	14.90	10.37	25.27	46.00	20.73	
	0.953	11.00	10.38	21.38	46.00	24.62	
	2.298	6.00	10.43	16.43	46.00	29.57	
	7.463	8.20	10.53	18.73	50.00	31.27	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 48%RH

Test Mode : HDMI 1280*1024@60Hz & 1kHz Playing Date of Test : Jun 17, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.158	49.50	10.58	60.08	65.55	5.47	QP
	0.410	28.50	10.43	38.93	57.65	18.72	
	0.666	27.30	10.39	37.69	56.00	18.31	
	0.951	24.20	10.39	34.59	56.00	21.41	
	1.991	21.50	10.42	31.92	56.00	24.08	
	6.613	18.49	10.48	28.97	60.00	31.03	
	0.158	38.30	10.58	48.88	55.55	6.67	AV
	0.410	18.60	10.43	29.03	47.65	18.62	
	0.666	13.40	10.39	23.79	46.00	22.21	
	0.951	12.00	10.39	22.39	46.00	23.61	
	1.991	4.20	10.42	14.62	46.00	31.38	
	6.613	10.59	10.48	21.07	50.00	28.93	
Neutral	0.155	49.50	10.58	60.08	65.74	5.66	QP
	0.407	29.10	10.41	39.51	57.72	18.21	
	0.667	27.60	10.37	37.97	56.00	18.03	
	0.942	24.50	10.38	34.88	56.00	21.12	
	2.004	19.50	10.42	29.92	56.00	26.08	
	7.392	17.51	10.52	28.03	60.00	31.97	
	0.155	37.80	10.58	48.38	55.74	7.36	AV
	0.407	19.30	10.41	29.71	47.72	18.01	
	0.667	12.80	10.37	23.17	46.00	22.83	
	0.942	12.20	10.38	22.58	46.00	23.42	
	2.004	2.80	10.42	13.22	46.00	32.78	
	7.392	11.21	10.52	21.73	50.00	28.27	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 48%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Jun 17, 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	0.155	49.70	10.58	60.28	65.72	5.44	QP
	0.399	28.20	10.43	38.63	57.88	19.25	
	0.665	26.70	10.39	37.09	56.00	18.91	
	0.945	23.00	10.39	33.39	56.00	22.61	
	2.023	20.60	10.42	31.02	56.00	24.98	
	7.333	20.10	10.47	30.57	60.00	29.43	
	0.155	37.20	10.58	47.78	55.72	7.94	AV
	0.399	17.50	10.43	27.93	47.88	19.95	
	0.665	12.10	10.39	22.49	46.00	23.51	
	0.945	11.60	10.39	21.99	46.00	24.01	
	2.023	5.10	10.42	15.52	46.00	30.48	
	7.333	10.20	10.47	20.67	50.00	29.33	
Neutral	0.157	49.20	10.58	59.78	65.63	5.85	QP
	0.403	28.40	10.41	38.81	57.79	18.98	
	0.666	27.30	10.37	37.67	56.00	18.33	
	0.942	24.70	10.38	35.08	56.00	20.92	
	2.042	21.10	10.42	31.52	56.00	24.48	
	7.539	19.40	10.53	29.93	60.00	30.07	
	0.157	38.20	10.58	48.78	55.63	6.85	AV
	0.403	18.80	10.41	29.21	47.79	18.58	
	0.666	12.90	10.37	23.27	46.00	22.73	
	0.942	12.50	10.38	22.88	46.00	23.12	
	2.042	5.00	10.42	15.42	46.00	30.58	
	7.539	8.20	10.53	18.73	50.00	31.27	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 48%RH

Test Mode : D-Sub 1920*1080@60Hz & 1kHz playing Date of Test : Jun 17, 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	0.157	47.70	10.58	58.28	65.62	7.34	QP
	0.402	29.30	10.43	39.73	57.81	18.08	
	0.671	27.30	10.39	37.69	56.00	18.31	
	0.922	24.30	10.39	34.69	56.00	21.31	
	2.008	21.80	10.42	32.22	56.00	23.78	
	7.366	17.40	10.47	27.87	60.00	32.13	
	0.157	34.80	10.58	45.38	55.62	10.24	AV
	0.402	18.70	10.43	29.13	47.81	18.68	
	0.671	14.40	10.39	24.79	46.00	21.21	
	0.922	11.50	10.39	21.89	46.00	24.11	
	2.008	5.10	10.42	15.52	46.00	30.48	
	7.366	10.60	10.47	21.07	50.00	28.93	
Neutral	0.158	47.21	10.57	57.78	65.55	7.77	QP
	0.404	28.00	10.41	38.41	57.77	19.36	
	0.671	26.40	10.37	36.77	56.00	19.23	
	0.945	23.00	10.38	33.38	56.00	22.62	
	1.751	19.89	10.42	30.31	56.00	25.69	
	7.392	25.01	10.52	35.53	60.00	24.47	
	0.158	36.11	10.57	46.68	55.55	8.87	AV
	0.404	18.30	10.41	28.71	47.77	19.06	
	0.671	13.30	10.37	23.67	46.00	22.33	
	0.945	11.40	10.38	21.78	46.00	24.22	
	1.751	6.99	10.42	17.41	46.00	28.59	
	7.392	13.01	10.52	23.53	50.00	26.47	

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 48%RH

Test Mode : HDMI 1080P Date of Test : Jun 17, 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	0.159	49.80	10.58	60.38	65.52	5.14	QP
	0.407	29.80	10.43	40.23	57.71	17.48	
	0.675	27.90	10.39	38.29	56.00	17.71	
	0.953	24.90	10.39	35.29	56.00	20.71	
	1.759	21.59	10.42	32.01	56.00	23.99	
	7.303	17.70	10.47	28.17	60.00	31.83	
	0.159	38.50	10.58	49.08	55.52	6.44	AV
	0.407	20.20	10.43	30.63	47.71	17.08	
	0.675	16.30	10.39	26.69	46.00	19.31	
	0.953	13.20	10.39	23.59	46.00	22.41	
1.759	7.49	10.42	17.91	46.00	28.09		
7.303	8.00	10.47	18.47	50.00	31.53		
Neutral	0.156	49.30	10.58	59.88	65.67	5.79	QP
	0.386	28.80	10.42	39.22	58.16	18.94	
	0.676	26.90	10.37	37.27	56.00	18.73	
	0.955	24.50	10.38	34.88	56.00	21.12	
	1.790	20.29	10.42	30.71	56.00	25.29	
	7.192	24.10	10.52	34.62	60.00	25.38	
	0.156	37.40	10.58	47.98	55.67	7.69	AV
	0.386	25.20	10.42	35.62	48.16	12.54	
	0.676	15.30	10.37	25.67	46.00	20.33	
	0.955	12.70	10.38	23.08	46.00	22.92	
1.790	5.69	10.42	16.11	46.00	29.89		
7.192	11.30	10.52	21.82	50.00	28.18		

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 48%RH

Test Mode : USB Play Date of Test : Jun 17, 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	0.160	49.41	10.57	59.98	65.46	5.48	QP	
	0.403	28.70	10.43	39.13	57.80	18.67		
	0.667	26.50	10.39	36.89	56.00	19.11		
	0.951	24.90	10.39	35.29	56.00	20.71		
	1.753	22.39	10.42	32.81	56.00	23.19		
	6.423	20.30	10.48	30.78	60.00	29.22		
	0.160	38.31	10.57	48.88	55.46	6.58	AV	
	0.403	18.90	10.43	29.33	47.80	18.47		
	0.667	12.30	10.39	22.69	46.00	23.31		
	0.951	13.10	10.39	23.49	46.00	22.51		
	1.753	7.89	10.42	18.31	46.00	27.69		
	6.423	9.70	10.48	20.18	50.00	29.82		
	Neutral	0.162	49.20	10.57	59.77	65.37	5.60	QP
		0.385	29.40	10.42	39.82	58.18	18.36	
0.691		26.00	10.37	36.37	56.00	19.63		
0.954		22.70	10.38	33.08	56.00	22.92		
1.749		20.59	10.42	31.01	56.00	24.99		
6.721		21.60	10.52	32.12	60.00	27.88		
0.162		38.10	10.57	48.67	55.37	6.70	AV	
0.385		26.00	10.42	36.42	48.18	11.76		
0.691		11.30	10.37	21.67	46.00	24.33		
0.954		11.40	10.38	21.78	46.00	24.22		
1.749		7.19	10.42	17.61	46.00	28.39		
6.721		10.90	10.52	21.42	50.00	28.58		

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C
 Model No. : 65U1600 Humidity : 48%RH
 Test Mode : LAN Play Date of Test : Jun 17, 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	0.159	49.80	10.58	60.38	65.53	5.15	QP
	0.409	30.10	10.43	40.53	57.66	17.13	
	0.673	27.20	10.39	37.59	56.00	18.41	
	0.955	23.90	10.39	34.29	56.00	21.71	
	2.042	20.70	10.42	31.12	56.00	24.88	
	7.328	17.80	10.47	28.27	60.00	31.73	
	AV	0.159	38.60	10.58	49.18	55.53	6.35
		0.409	20.20	10.43	30.63	47.66	17.03
		0.673	14.80	10.39	25.19	46.00	20.81
		0.955	12.50	10.39	22.89	46.00	23.11
		2.042	5.40	10.42	15.82	46.00	30.18
		7.328	8.30	10.47	18.77	50.00	31.23
Neutral	0.155	49.70	10.58	60.28	65.71	5.43	QP
	0.384	29.40	10.42	39.82	58.20	18.38	
	0.668	27.40	10.37	37.77	56.00	18.23	
	0.944	22.30	10.38	32.68	56.00	23.32	
	2.021	21.00	10.42	31.42	56.00	24.58	
	6.421	19.00	10.51	29.51	60.00	30.49	
	AV	0.155	38.00	10.58	48.58	55.71	7.13
		0.384	26.00	10.42	36.42	48.20	11.78
		0.668	12.90	10.37	23.27	46.00	22.73
		0.944	11.10	10.38	21.48	46.00	24.52
		2.021	5.90	10.42	16.32	46.00	29.68
		6.421	9.60	10.51	20.11	50.00	29.89

TEST ENGINEER: SEVEN LU

4 RADIATED EMISSION TEST

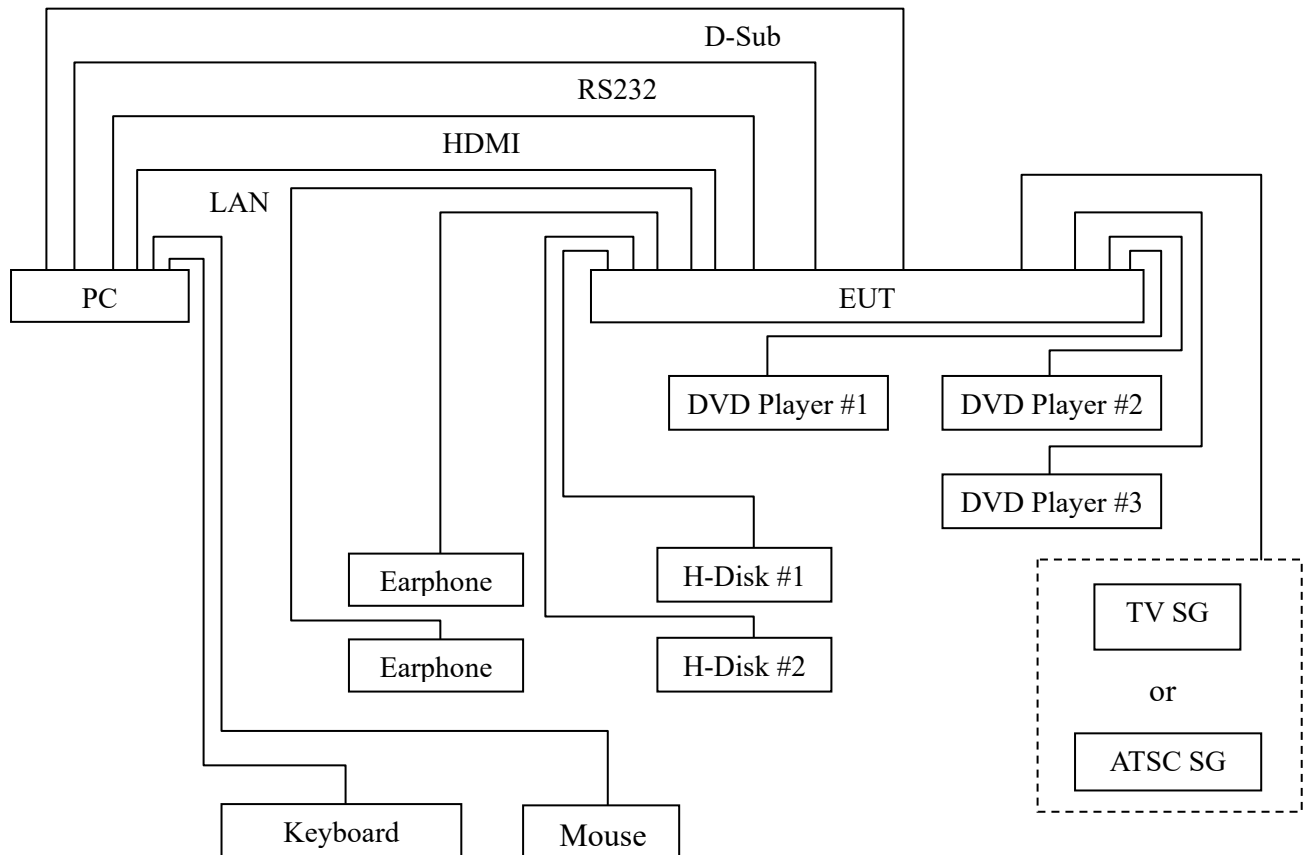
4.1 Test Equipment

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

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101303	May 07, 2016	May 06, 2017
2.	Preamplifier	Agilent	8447D	2944A06664	Apr 27, 2016	Apr 26, 2017
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2016	Mar 19, 2017
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 15, 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	--	--

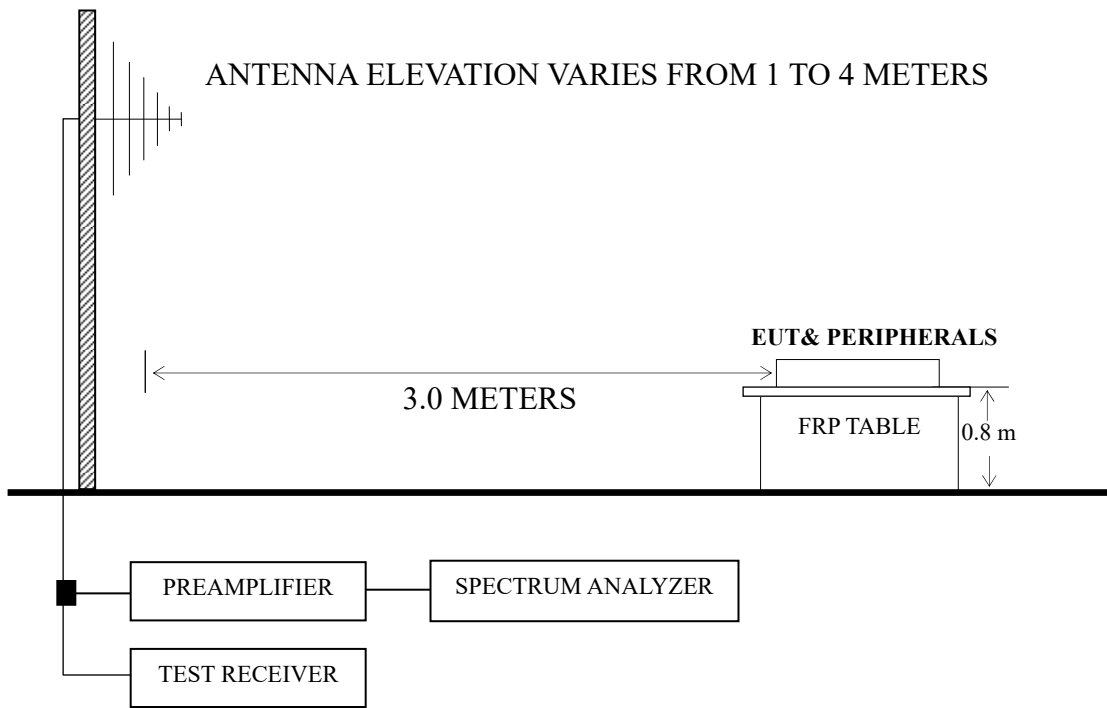
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals

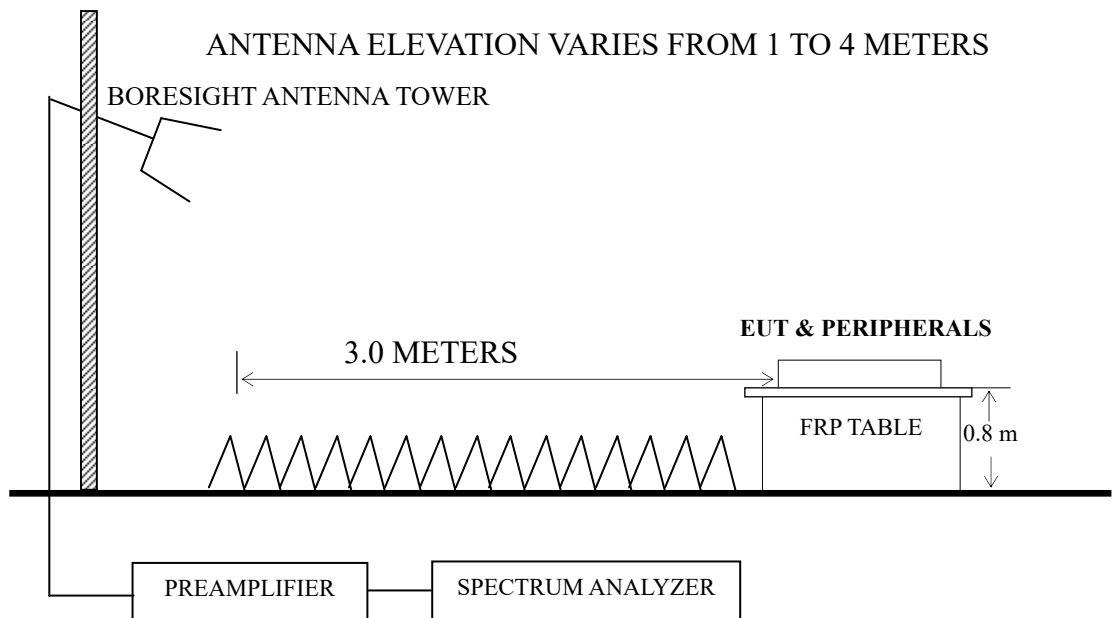


4.2.2 Radiated emission test setup

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 44.61 dB ($\mu\text{V}/\text{m}$) (limit is 46.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.90 m height and the turntable was at 150°. The worst emission at vertical polarization was detected at 590.974 MHz with corrected signal level of 44.03 dB ($\mu\text{V}/\text{m}$) (limit is 46.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.60 m height and the turntable was at 330°.

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 60%RH

Test Mode : HDMI 3840*2160@60Hz Date of Test : Jul 04, 2016
& 1kHz Playing

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	165.487	26.74	11.07	1.35	--	39.16	43.50	4.34	QP	
	297.224	27.22	13.60	1.75	--	42.57	46.00	3.43		
	590.974	20.94	18.17	2.50	--	41.61	46.00	4.39		
	739.661	20.77	19.60	2.79	--	43.16	46.00	2.84		
	848.056	16.75	20.50	2.98	--	40.23	46.00	5.77		
	890.728	20.44	21.10	3.07	--	44.61	46.00	1.39	PK	
	1702.593	62.52	26.44	4.07	35.43	57.60	74.00	16.40		
	2525.249	57.59	28.50	4.96	35.16	55.89	74.00	18.11		
	3399.987	57.88	31.31	6.10	34.81	60.48	74.00	13.52		
	1702.593	41.49	26.44	4.07	35.43	36.57	54.00	17.43		AV
	2525.249	37.55	28.50	4.96	35.16	35.85	54.00	18.15		
	3399.987	37.03	31.31	6.10	34.81	39.63	54.00	14.37		

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 60%RH

Test Mode : HDMI 3840*2160@60Hz & 1kHz Playing Date of Test : Jul 04, 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	148.441	27.01	12.23	1.27	--	40.51	43.50	2.99	QP	
	425.028	19.94	16.35	2.10	--	38.39	46.00	7.61		
	590.974	23.36	18.17	2.50	--	44.03	46.00	1.97		
	665.804	17.33	19.30	2.65	--	39.28	46.00	6.72		
	739.661	19.75	19.60	2.79	--	42.14	46.00	3.86		
	890.728	19.95	21.10	3.07	--	44.12	46.00	1.88	PK	
	1690.434	63.08	26.40	4.07	35.44	58.11	74.00	15.89		
	2118.583	59.04	27.73	4.58	35.11	56.24	74.00	17.76		
	2683.869	56.75	29.23	5.25	35.17	56.06	74.00	17.94		
	1690.434	43.29	26.40	4.07	35.44	38.32	54.00	15.68		AV
	2118.583	40.47	27.73	4.58	35.11	37.67	54.00	16.33		
	2683.869	36.45	29.23	5.25	35.17	35.76	54.00	18.24		

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Jul 04, 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	87.112	21.91	10.40	0.93	33.24	40.00	6.76
	154.821	25.52	11.50	1.30	38.32	43.50	5.18
	296.184	24.13	13.60	1.75	39.48	46.00	6.52
	590.974	19.62	18.17	2.50	40.29	46.00	5.71
	739.661	21.21	19.60	2.79	43.60	46.00	2.40
	851.035	19.60	20.57	3.00	43.17	46.00	2.83
Vertical	66.967	23.93	7.09	0.82	31.84	40.00	8.16
	137.420	22.62	12.98	1.22	36.82	43.50	6.68
	397.633	20.96	16.23	2.03	39.22	46.00	6.78
	607.787	20.46	18.55	2.52	41.53	46.00	4.47
	739.661	18.67	19.60	2.79	41.06	46.00	4.94
	836.244	19.31	20.30	2.96	42.57	46.00	3.43

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 60%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : Jul 04, 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	73.617	24.20	8.20	0.99	33.39	40.00	6.61
	149.486	24.49	11.57	1.63	37.69	43.50	5.81
	200.688	26.87	9.72	1.97	38.56	43.50	4.94
	312.179	21.19	14.20	2.61	38.00	46.00	8.00
	638.369	15.38	19.50	2.77	37.65	46.00	8.35
	851.035	16.77	20.73	4.17	41.67	46.00	4.33
Vertical	35.251	16.71	15.60	0.69	33.00	40.00	7.00
	85.898	21.33	9.90	1.16	32.39	40.00	7.61
	153.200	23.70	11.31	1.65	36.66	43.50	6.84
	206.398	25.61	9.84	1.99	37.44	43.50	6.06
	318.817	25.82	14.45	2.62	42.89	46.00	3.11
	506.479	20.58	17.90	2.89	41.37	46.00	4.63

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 60%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Jul 04, 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	80.927	22.34	9.46	1.09	32.89	40.00	7.11
	133.619	23.37	12.64	1.54	37.55	43.50	5.95
	191.074	25.08	10.27	1.92	37.27	43.50	6.23
	304.610	23.91	13.95	2.60	40.46	46.00	5.54
	564.639	17.43	18.60	2.52	38.55	46.00	7.45
	842.130	16.49	20.77	4.07	41.33	46.00	4.67
Vertical	51.301	24.14	7.27	0.82	32.23	40.00	7.77
	75.446	23.87	8.61	1.02	33.50	40.00	6.50
	112.524	20.31	12.65	1.41	34.37	43.50	9.13
	185.138	25.12	10.50	1.88	37.50	43.50	6.00
	227.691	28.48	11.04	2.08	41.60	46.00	4.40
	459.114	21.94	17.10	2.85	41.89	46.00	4.11

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 60%RH

Test Mode : D-Sub 1920*1080@60Hz & 1kHz Playing Date of Test : Jul 04, 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	80.644	22.12	9.43	1.09	32.64	40.00	7.36
	117.773	20.58	12.76	1.44	34.78	43.50	8.72
	191.074	24.33	10.27	1.92	36.52	43.50	6.98
	303.544	22.25	13.91	2.60	38.76	46.00	7.24
	535.707	14.04	18.40	2.68	35.12	46.00	10.88
	830.400	13.10	20.70	3.97	37.77	46.00	8.23
Vertical	72.084	24.90	7.83	0.98	33.71	40.00	6.29
	101.289	20.52	12.35	1.33	34.20	43.50	9.30
	184.490	23.38	10.50	1.87	35.75	43.50	7.75
	285.978	19.93	13.52	2.49	35.94	46.00	10.06
	501.179	17.07	17.90	2.94	37.91	46.00	8.09
	804.603	12.54	20.60	3.78	36.92	46.00	9.08

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 60%RH

Test Mode : HDMI1080P Date of Test : Jul 04, 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	83.522	22.20	9.76	0.91	32.87	40.00	7.13
	148.963	25.07	12.16	1.28	38.51	43.50	4.99
	239.147	25.65	12.04	1.60	39.29	46.00	6.71
	419.108	23.92	16.30	2.09	42.31	46.00	3.69
	593.050	21.92	18.25	2.50	42.67	46.00	3.33
	729.358	17.71	19.40	2.77	39.88	46.00	6.12
Vertical	72.592	24.46	7.85	0.85	33.16	40.00	6.84
	148.441	23.84	12.23	1.27	37.34	43.50	6.16
	425.028	19.29	16.35	2.10	37.74	46.00	8.26
	612.064	17.76	18.65	2.54	38.95	46.00	7.05
	739.661	19.67	19.60	2.79	42.06	46.00	3.94
	890.728	18.82	21.10	3.07	42.99	46.00	3.01

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 60%RH

Test Mode : USB Play Date of Test : Jul 04, 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	75.977	22.76	8.41	0.87	32.04	40.00	7.96
	137.903	20.85	13.02	1.22	35.09	43.50	8.41
	207.123	22.34	10.42	1.50	34.26	43.50	9.24
	319.937	19.30	14.10	1.82	35.22	46.00	10.78
	501.179	16.37	17.50	2.26	36.13	46.00	9.87
	709.182	13.51	19.20	2.73	35.44	46.00	10.56
Vertical	48.843	23.00	9.02	0.70	32.72	40.00	7.28
	82.071	22.49	9.41	0.90	32.80	40.00	7.20
	163.755	22.04	11.16	1.34	34.54	43.50	8.96
	292.058	22.94	13.55	1.74	38.23	46.00	7.77
	499.425	16.40	17.50	2.26	36.16	46.00	9.84
	679.960	15.81	19.60	2.67	38.08	46.00	7.92

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65U1600 Humidity : 60%RH

Test Mode : LAN Play Date of Test : Jul 04, 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	60.704	26.01	6.25	0.88	33.14	40.00	6.86
	102.719	22.26	12.41	1.34	36.01	43.50	7.49
	162.041	22.77	11.19	1.72	35.68	43.50	7.82
	281.008	22.87	13.27	2.42	38.56	46.00	7.44
	497.677	15.88	17.84	2.94	36.66	46.00	9.34
	821.710	11.07	20.70	3.88	35.65	46.00	10.35
Vertical	83.816	22.23	9.71	1.13	33.07	40.00	6.93
	162.611	24.01	11.19	1.73	36.93	43.50	6.57
	297.224	21.44	13.70	2.56	37.70	46.00	8.30
	482.216	15.34	17.52	2.91	35.77	46.00	10.23
	651.942	14.42	19.75	2.90	37.07	46.00	8.93
	863.056	13.39	20.83	4.27	38.49	46.00	7.51

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 Internal Photo Figure 22

Note: We had required the applicant and manufacturer that all electrical and mechanical devices employed for spurious radiation suppression, including any modifications made during certification testing, must be incorporated in each unit marked

TEST ENGINEER:

Byron Wu
(BYRON WU)