

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

LED LCD TV

Model No.	Brand
55H4D, 55H4D+, 55H4+0D 55H4+0D1, 55H4+0D2 55H40+0D, 55H40+0D1 55H40+0D2, 55H4DM, 55H4307	Hisense

FCC ID : W9HLCDF0104

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

Prepared By : Audix Technology (Shanghai) Co., Ltd.
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Report No. : ACI-F17124
Date of Test : Mar 15-18, 2017
Date of Report : Mar 30, 2017

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	12
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

TEST REPORT FOR FCC CERTIFICATE

Applicant : Hisense Electric Co., Ltd.
 Manufacturer : Hisense Electric Co., Ltd.
 Factory #1 : Hisense Electric Co., Ltd.
 Factory #2 : Tatung Mexico S.A. de C.V.
 Factory #3 : HISENSE ELECTRONICA MEXICO, S.A. DE C.V.
 EUT Description : LED LCD TV

Model No.	Brand	Power Supply
55H4D, 55H4D+, 55H4+0D 55H4+0D1, 55H4+0D2 55H40+0D, 55H40+0D1 55H40+0D2, 55H4DM, 55H4307	Hisense	120V/60Hz

Test Procedure Used:

**FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B
 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 Mar 15-18, 2017 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.F17125, a Verification report.

Date of Test : Mar 15-18, 2017 Date of Report : Mar 30, 2017

Producer :

Tina Liang
TINA LIANG / Assistant

Review :

Byron Wu
BYRON WU / Deputy Assistant Manager



For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

Signatory :

Authorized Signature(s) 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 AND ANSI C63.4-2014	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B 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
55H4D, 55H4D+, 55H4+0D 55H4+0D1, 55H4+0D2 55H40+0D, 55H40+0D1 55H40+0D2, 55H4DM, 55H4307	Hisense

Note#1 : The above models are all the same except for model number. 55H4D model was tested and recorded in the report.

Note#2 : “+” represents any of the Arabic numeral.

Note #3 : The tuner port comply with the 15.111 requirement.

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.

WIFI Modular : FCC ID:TC2-N1002

LCD Panel : Manufacturer : Hisense
M/N :HD550K3F81-TX

Tuner : Manufacturer : XUGUANG
M/N : HFT-96S3/W11FJ4H

Max Resolution : 1920*1080@60Hz

HDMI Cable*3 : Shielded, Detachable, 1.80m
(Lab provide)

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

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

Remark:

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

Side Port:

(1) One USB Port

: Connected with Hard-Disk

(2) One ANT Port

: Connected with ATSC SG/TV SG

(3) One AUDIO OUT Port

: Connected with Earphone#1

(4) One HDMI1 Port

: Connected with PC

(5) One HDMI2 Port

: Connected with PC

Back Port:

(6) One AV IN Port

: Connected with DVD PLAYER

(7) One DIGITAL AUDIO OUT Port

: Connected with Audio Converter to Earphone#2

(8) One HDMI3 Port

: Connected with DVD Player

2.2 Peripherals

2.2.1 PC

Manufacturer : HP

Model Number : Pro3340

Serial Number : 6CR2512VFD

Power Cord : Unshielded, Detachable, 1.8m

Certificate : CE/EMC, FCC DoC, VCCI, C-Tick

2.2.2 Modem

Manufacturer : TP-LINK

Model Number : TM-EC5658V

Serial Number : 07123301053

Data Cable : Unshielded, Detachable, 1.5m

Certificate : CE/EMC, FCC DoC, VCCI, UL, CCC

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

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

2.2.7 Hard Disk

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

2.2.8 ATSC Signal Generator

Manufacturer : SENCORE
Model Number : ATSC997
Serial Number : 6790071

2.2.9 TV Signal Generator

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

2.2.10 Router

Manufacturer : TP-LINK
Model Number : TL-WR800N
Serial Number : 13806805316

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

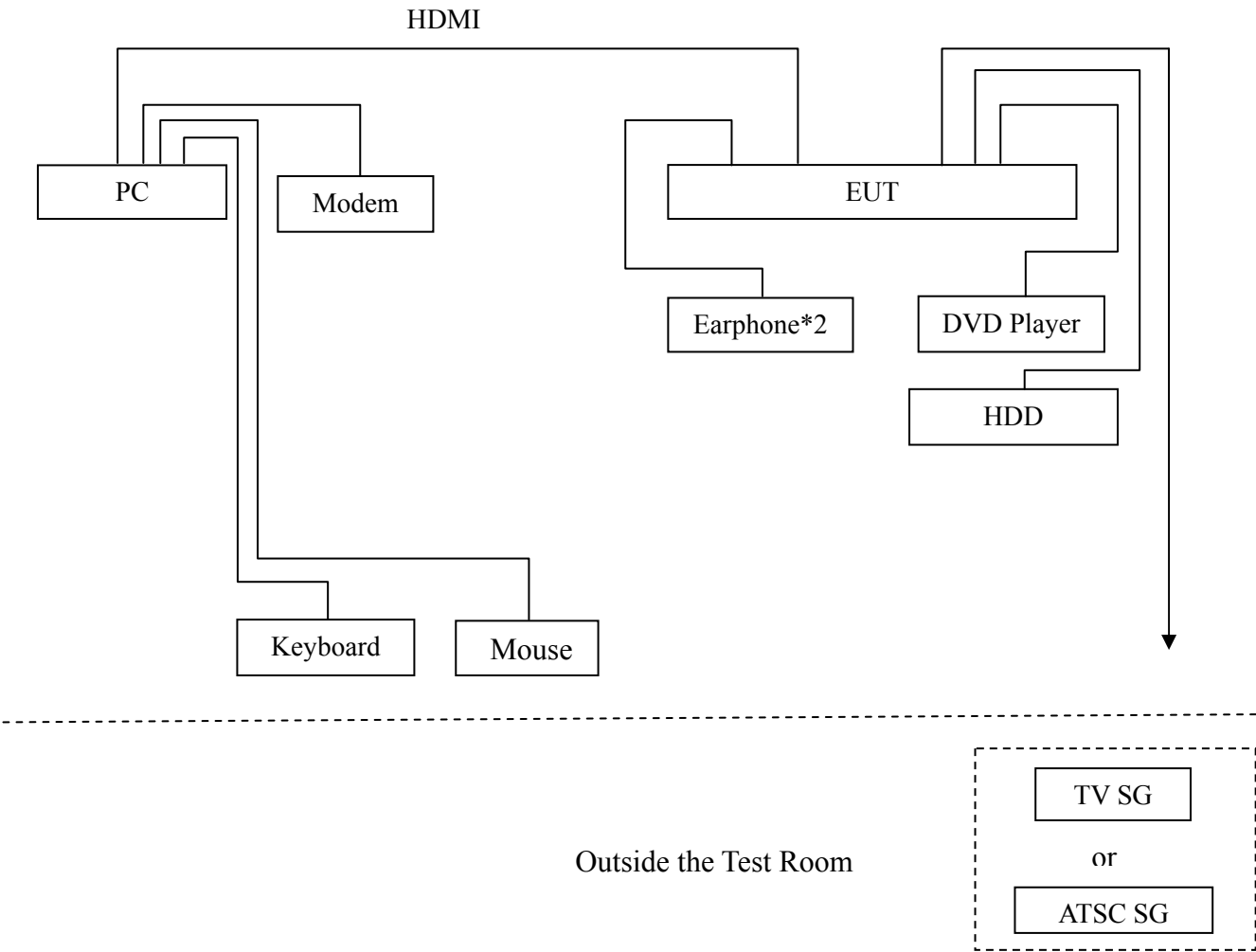
3.1 Test Equipment

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

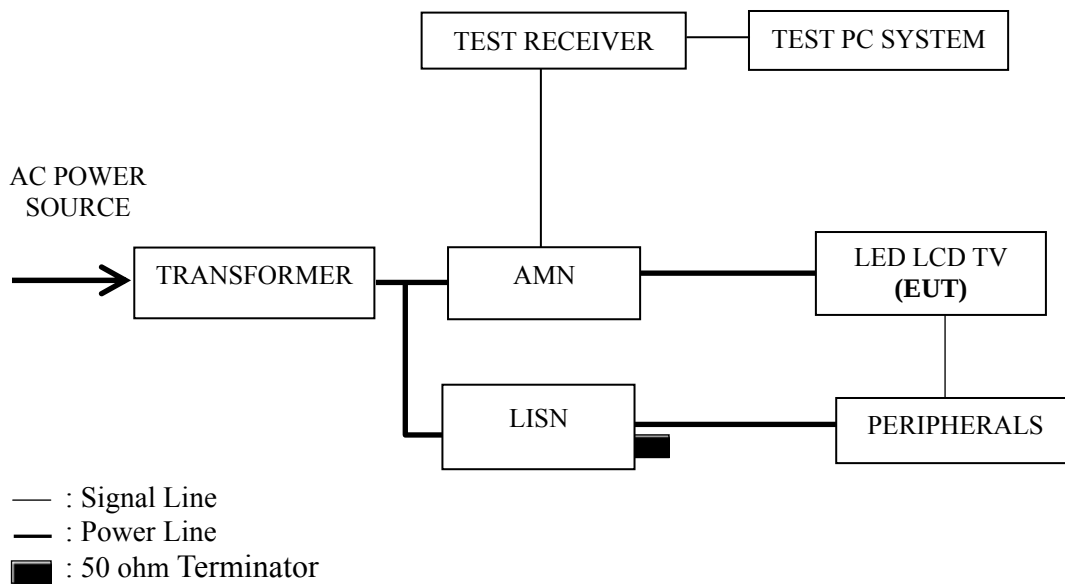
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Apr 27, 2016	Apr 26, 2017
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 25, 2016	Jun 24, 2017
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2016	Mar 19, 2017
4.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2016	Mar 19, 2017
5.	Software	Audix	e3	6.111206	--	--

3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



3.2.2 Conducted Disturbance Test Setup



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

Frequency Range (MHz)	Limits dB (μV)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56	56~46
0.5 ~ 5	56	46
5 ~ 30	60	50
NOTE 1 – The lower limit shall apply at the transition frequencies. NOTE 2 – The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz		

3.4 Test Configuration

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

3.5 Operating Condition of EUT

- 3.5.1 Setup the EUT and peripherals as shown in Sec. 3.2.
- 3.5.2 Turn on the power of all equipments and the EUT.
- 3.5.3 Set the contrast & brightness of EUT to maximum.
- 3.5.4 PC system ran the self-test program “EMC Test” by windows XP and sent “H” characters to EUT through graphic card, the EUT’s screen displayed and filled with “H” pattern by its resolution (Via HDMI Input).
- 3.5.5 PC system sent the 1kHz audio signal to EUT through audio port, the EUT speak out 1kHz audio signal.
- 3.5.6 In USB Play mode, set the EUT play digital media from H-Disk.
- 3.5.7 In WIFI mode, set the EUT play digital media through WIFI.
- 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
HDMI1 1920*1080@60Hz & 1kHz Playing
HDMI2 1920*1080@60Hz & 1kHz Playing
HDMI3 1920*1080@60Hz & 1kHz Playing
HDMI1 1280*1024@60Hz & 1kHz playing
HDMI1 640*480@60Hz & 1kHz playing
HDMI1080P
USB Play
Wifi

3.6 Test Procedures

The EUT and peripherals were connected to the power mains through an Artificial Mains Network (AMN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line (Line & Neutral) were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to ANSI C63.4:2014 during conducted emission test.

The bandwidth of R&S Test Receiver ESCI was set at 9 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7.

3.7 Test Results

< PASS >

The frequency and amplitude of the highest conducted emission relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

Test Mode	Data Page
HDMI1 1920*1080@60Hz & 1kHz Playing	P13
HDMI2 1920*1080@60Hz & 1kHz Playing	P14
HDMI3 1920*1080@60Hz & 1kHz Playing	P15
HDMI1 1280*1024@60Hz & 1kHz playing	P16
HDMI1 640*480@60Hz & 1kHz playing	P17
HDMI1080P	P18
USB Play	P19
Wifi	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 HDMI1 1920*1080@60Hz & 1kHz Playing test mode. The worst emission is detected at 0.157MHz (Quasi-Peak Value) with corrected signal level of 51.40 dB (μV) (limit is 55.60 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 48%RH

Test Mode : HDMI1 Date of Test : Mar 15, 2017
1920*1080@60Hz &
1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.156	40.11	10.58	50.69	65.65	14.96	QP
	0.466	32.66	10.41	43.07	56.58	13.51	
	0.788	31.14	10.40	41.54	56.00	14.46	
	2.384	29.64	10.42	40.06	56.00	15.94	
	3.293	28.35	10.43	38.78	56.00	17.22	
	19.021	23.30	10.59	33.89	60.00	26.11	
	0.156	39.11	10.58	49.69	55.65	5.96	AV
	0.466	23.66	10.41	34.07	46.58	12.51	
	0.788	23.14	10.40	33.54	46.00	12.46	
	2.384	14.64	10.42	25.06	46.00	20.94	
	3.293	15.35	10.43	25.78	46.00	20.22	
	19.021	18.30	10.59	28.89	50.00	21.11	
Neutral	0.157	41.83	10.57	52.40	65.60	13.20	QP
	0.476	32.07	10.40	42.47	56.41	13.94	
	0.796	31.76	10.39	42.15	56.00	13.85	
	1.106	28.05	10.40	38.45	56.00	17.55	
	1.698	20.63	10.43	31.06	56.00	24.94	
	3.565	21.55	10.47	32.02	56.00	23.98	
	0.157	40.83	10.57	51.40	55.60	4.20	AV
	0.476	26.07	10.40	36.47	46.41	9.94	
	0.796	23.76	10.39	34.15	46.00	11.85	
	1.106	19.05	10.40	29.45	46.00	16.55	
	1.698	11.63	10.43	22.06	46.00	23.94	
	3.565	12.55	10.47	23.02	46.00	22.98	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 48%RH

Test Mode : HDMI2 Date of Test : Mar 15, 2017
1920*1080@60Hz &
1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.157	39.68	10.58	50.26	65.60	15.34	QP
	0.476	31.06	10.41	41.47	56.41	14.94	
	0.788	29.43	10.40	39.83	56.00	16.17	
	1.094	26.67	10.40	37.07	56.00	18.93	
	2.384	29.71	10.42	40.13	56.00	15.87	
	3.276	24.94	10.43	35.37	56.00	20.63	
	0.157	37.68	10.58	48.26	55.60	7.34	AV
	0.476	28.06	10.41	38.47	46.41	7.94	
	0.788	21.43	10.40	31.83	46.00	14.17	
	1.094	17.67	10.40	28.07	46.00	17.93	
	2.384	17.71	10.42	28.13	46.00	17.87	
	3.276	15.94	10.43	26.37	46.00	19.63	
Neutral	0.157	42.90	10.57	53.47	65.60	12.13	QP
	0.476	33.12	10.40	43.52	56.41	12.89	
	0.796	31.35	10.39	41.74	56.00	14.26	
	1.106	30.02	10.40	40.42	56.00	15.58	
	1.433	26.24	10.42	36.66	56.00	19.34	
	1.744	24.67	10.43	35.10	56.00	20.90	
	0.157	39.90	10.57	50.47	55.60	5.13	AV
	0.476	29.12	10.40	39.52	46.41	6.89	
	0.796	22.35	10.39	32.74	46.00	13.26	
	1.106	21.02	10.40	31.42	46.00	14.58	
	1.433	18.24	10.42	28.66	46.00	17.34	
	1.744	16.67	10.43	27.10	46.00	18.90	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 48%RH

Test Mode : HDMI3 Date of Test : Mar 15, 2017
 1920*1080@30Hz &
 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.156	40.85	10.58	51.43	65.65	14.22	QP
	0.481	35.33	10.41	45.74	56.32	10.58	
	0.788	31.87	10.40	42.27	56.00	13.73	
	1.106	26.51	10.40	36.91	56.00	19.09	
	2.384	29.48	10.42	39.90	56.00	16.10	
	3.276	21.83	10.43	32.26	56.00	23.74	
	0.156	38.85	10.58	49.43	55.65	6.22	AV
	0.481	29.33	10.41	39.74	46.32	6.58	
	0.788	22.87	10.40	33.27	46.00	12.73	
	1.106	17.51	10.40	27.91	46.00	18.09	
	2.384	15.48	10.42	25.90	46.00	20.10	
	3.276	15.83	10.43	26.26	46.00	19.74	
Neutral	0.157	42.30	10.57	52.87	65.60	12.73	QP
	0.481	31.03	10.40	41.43	56.32	14.89	
	0.796	28.85	10.39	39.24	56.00	16.76	
	1.117	26.76	10.40	37.16	56.00	18.84	
	1.403	22.98	10.41	33.39	56.00	22.61	
	2.993	20.67	10.46	31.13	56.00	24.87	
	0.157	40.30	10.57	50.87	55.60	4.73	AV
	0.481	30.03	10.40	40.43	46.32	5.89	
	0.796	21.85	10.39	32.24	46.00	13.76	
	1.117	19.76	10.40	30.16	46.00	15.84	
	1.403	13.98	10.41	24.39	46.00	21.61	
	2.993	12.67	10.46	23.13	46.00	22.87	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 48%RH

Test Mode : HDMI1 Date of Test : Mar 15, 2017
1280*1024@60Hz &
1kHz playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.156	40.05	10.58	50.63	65.65	15.02	QP
	0.481	35.49	10.41	45.90	56.32	10.42	
	0.779	29.99	10.40	40.39	56.00	15.61	
	1.094	26.25	10.40	36.65	56.00	19.35	
	2.650	21.42	10.43	31.85	56.00	24.15	
	4.224	27.04	10.44	37.48	56.00	18.52	AV
	0.156	38.05	10.58	48.63	55.65	7.02	
	0.481	29.49	10.41	39.90	46.32	6.42	
	0.779	17.99	10.40	28.39	46.00	17.61	
	1.094	17.25	10.40	27.65	46.00	18.35	
Neutral	2.650	12.42	10.43	22.85	46.00	23.15	QP
	4.224	16.04	10.44	26.48	46.00	19.52	
	0.157	40.31	10.57	50.88	65.60	14.72	
	0.481	31.53	10.40	41.93	56.32	14.39	
	0.796	29.36	10.39	39.75	56.00	16.25	
	1.117	28.56	10.40	38.96	56.00	17.04	AV
	1.403	23.79	10.41	34.20	56.00	21.80	
	2.993	21.96	10.46	32.42	56.00	23.58	
	0.157	40.31	10.57	50.88	55.60	4.72	
	0.481	30.53	10.40	40.93	46.32	5.39	
	0.796	21.36	10.39	31.75	46.00	14.25	AV
	1.117	17.56	10.40	27.96	46.00	18.04	
	1.403	12.79	10.41	23.20	46.00	22.80	
	2.993	12.96	10.46	23.42	46.00	22.58	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 48%RH

Test Mode : HDMI1640*480@60Hz Date of Test : Mar 15, 2017
& 1kHz playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.156	40.78	10.58	51.36	65.65	14.29	QP
	0.481	35.54	10.41	45.95	56.32	10.37	
	0.788	31.54	10.40	41.94	56.00	14.06	
	1.117	26.98	10.40	37.38	56.00	18.62	
	2.384	29.20	10.42	39.62	56.00	16.38	
	3.276	21.42	10.43	31.85	56.00	24.15	
	0.156	38.78	10.58	49.36	55.65	6.29	AV
	0.481	29.54	10.41	39.95	46.32	6.37	
	0.788	23.54	10.40	33.94	46.00	12.06	
	1.117	17.98	10.40	28.38	46.00	17.62	
	2.384	15.20	10.42	25.62	46.00	20.38	
	3.276	12.42	10.43	22.85	46.00	23.15	
Neutral	0.157	41.29	10.57	51.86	65.60	13.74	QP
	0.471	32.66	10.40	43.06	56.49	13.43	
	0.796	29.68	10.39	40.07	56.00	15.93	
	1.117	27.11	10.40	37.51	56.00	18.49	
	1.734	24.32	10.43	34.75	56.00	21.25	
	4.549	23.22	10.49	33.71	56.00	22.29	
	0.157	39.29	10.57	49.86	55.60	5.74	AV
	0.471	26.66	10.40	37.06	46.49	9.43	
	0.796	21.68	10.39	32.07	46.00	13.93	
	1.117	16.11	10.40	26.51	46.00	19.49	
	1.734	15.32	10.43	25.75	46.00	20.25	
	4.549	12.22	10.49	22.71	46.00	23.29	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 48%RH

Test Mode : HDMI1080P Date of Test : Mar 15, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.157	39.84	10.58	50.42	65.60	15.18	QP
	0.481	32.37	10.41	42.78	56.32	13.54	
	0.788	29.80	10.40	40.20	56.00	15.80	
	1.094	27.89	10.40	38.29	56.00	17.71	
	2.334	21.77	10.42	32.19	56.00	23.81	
	3.328	22.41	10.43	32.84	56.00	23.16	
	0.157	36.84	10.58	47.42	55.60	8.18	AV
	0.481	29.37	10.41	39.78	46.32	6.54	
	0.788	20.80	10.40	31.20	46.00	14.80	
	1.094	18.89	10.40	29.29	46.00	16.71	
	2.334	12.77	10.42	23.19	46.00	22.81	
	3.328	10.41	10.43	20.84	46.00	25.16	
Neutral	0.157	45.28	10.57	55.85	65.60	9.75	QP
	0.481	33.83	10.40	44.23	56.32	12.09	
	0.804	30.91	10.39	41.30	56.00	14.70	
	1.117	27.92	10.40	38.32	56.00	17.68	
	1.744	23.71	10.43	34.14	56.00	21.86	
	4.622	23.60	10.50	34.10	56.00	21.90	
	0.157	40.28	10.57	50.85	55.60	4.75	AV
	0.481	27.83	10.40	38.23	46.32	8.09	
	0.804	22.91	10.39	33.30	46.00	12.70	
	1.117	16.92	10.40	27.32	46.00	18.68	
	1.744	14.71	10.43	25.14	46.00	20.86	
	4.622	12.60	10.50	23.10	46.00	22.90	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 48%RH

Test Mode : USB Play Date of Test : Mar 15, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.156	39.95	10.58	50.53	65.65	15.12	QP
	0.481	32.45	10.41	42.86	56.32	13.46	
	0.788	29.73	10.40	40.13	56.00	15.87	
	2.384	24.85	10.42	35.27	56.00	20.73	
	3.276	26.58	10.43	37.01	56.00	18.99	
	4.315	23.41	10.44	33.85	56.00	22.15	
	0.156	38.95	10.58	49.53	55.65	6.12	AV
	0.481	26.45	10.41	36.86	46.32	9.46	
	0.788	22.73	10.40	33.13	46.00	12.87	
	2.384	19.85	10.42	30.27	46.00	15.73	
	3.276	14.58	10.43	25.01	46.00	20.99	
	4.315	13.41	10.44	23.85	46.00	22.15	
Neutral	0.157	41.42	10.57	51.99	65.60	13.61	QP
	0.481	32.32	10.40	42.72	56.32	13.60	
	0.804	30.76	10.39	41.15	56.00	14.85	
	1.094	27.93	10.40	38.33	56.00	17.67	
	1.734	24.62	10.43	35.05	56.00	20.95	
	4.269	24.55	10.49	35.04	56.00	20.96	
	0.157	39.42	10.57	49.99	55.60	5.61	AV
	0.481	27.32	10.40	37.72	46.32	8.60	
	0.804	24.76	10.39	35.15	46.00	10.85	
	1.094	16.93	10.40	27.33	46.00	18.67	
	1.734	15.62	10.43	26.05	46.00	19.95	
	4.269	15.55	10.49	26.04	46.00	19.96	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 48%RH

Test Mode : Wifi Date of Test : Mar 15, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.157	37.99	10.58	48.57	65.60	17.03	QP
	0.466	32.50	10.41	42.91	56.58	13.67	
	0.788	29.61	10.40	40.01	56.00	15.99	
	1.106	28.99	10.40	39.39	56.00	16.61	
	2.396	23.17	10.42	33.59	56.00	22.41	
	3.276	21.04	10.43	31.47	56.00	24.53	
	0.157	35.99	10.58	46.57	55.60	9.03	AV
	0.466	27.50	10.41	37.91	46.58	8.67	
	0.788	16.61	10.40	27.01	46.00	18.99	
	1.106	19.99	10.40	30.39	46.00	15.61	
	2.396	14.17	10.42	24.59	46.00	21.41	
	3.276	12.04	10.43	22.47	46.00	23.53	
Neutral	0.159	41.32	10.57	51.89	65.52	13.63	QP
	0.481	33.34	10.40	43.74	56.32	12.58	
	0.804	30.51	10.39	40.90	56.00	15.10	
	1.094	27.03	10.40	37.43	56.00	18.57	
	1.734	24.83	10.43	35.26	56.00	20.74	
	4.269	24.55	10.49	35.04	56.00	20.96	
	0.159	37.32	10.57	47.89	55.52	7.63	AV
	0.481	27.34	10.40	37.74	46.32	8.58	
	0.804	22.51	10.39	32.90	46.00	13.10	
	1.094	19.03	10.40	29.43	46.00	16.57	
	1.734	13.83	10.43	24.26	46.00	21.74	
	4.269	16.55	10.49	27.04	46.00	18.96	

TEST ENGINEER: BYRON WU

4 RADIATED EMISSION TEST

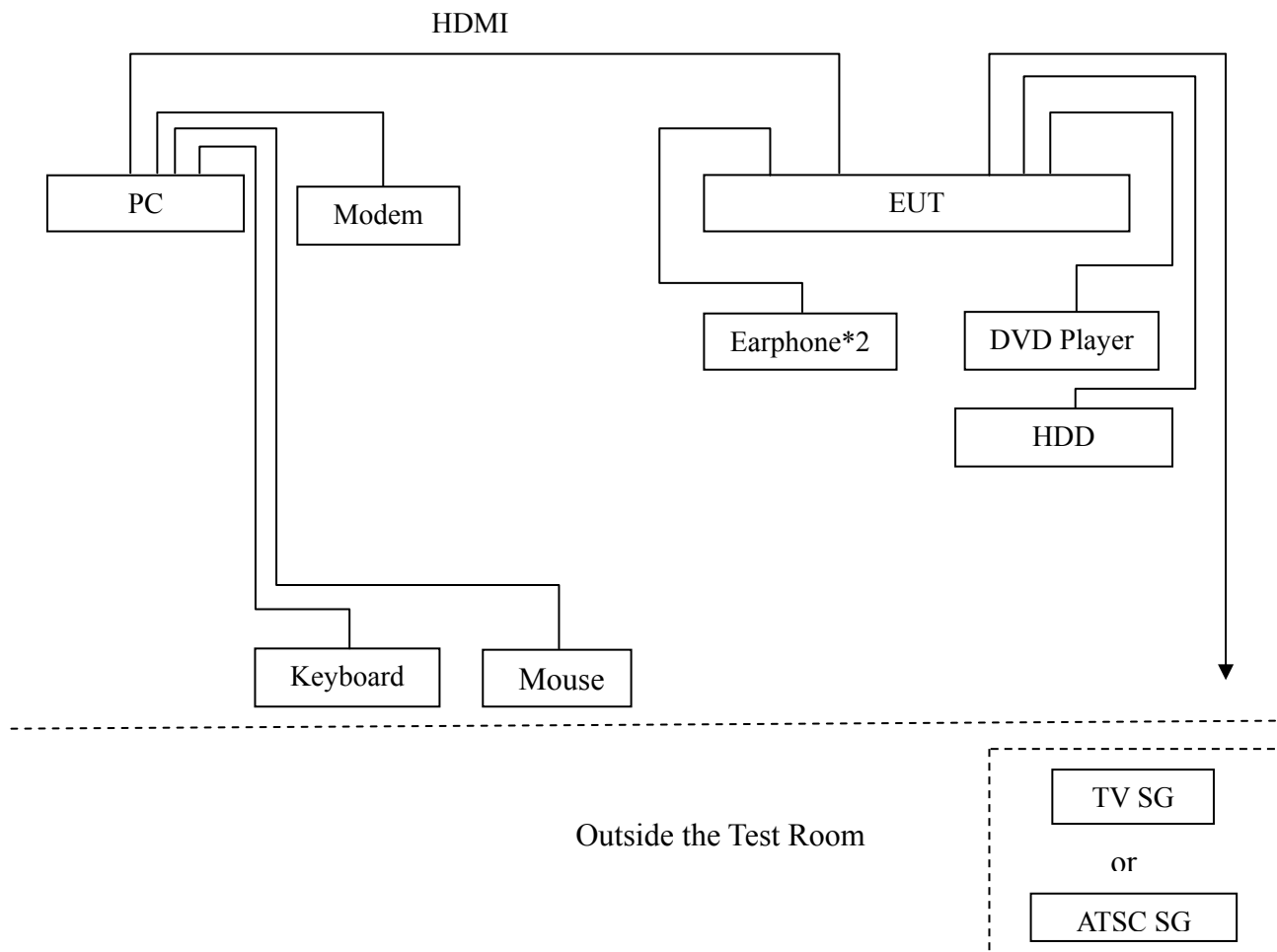
4.1 Test Equipment

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

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101303	May 07, 2016	May 06, 2017
2.	Preamplifier	Agilent	8447D	2944A06664	Apr 27, 2016	Apr 26, 2017
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2016	Mar 19, 2017
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 15, 2016	May 14, 2017
5.	Horn Antenna	EMCO	3115	9607-4878	Jun 03, 2016	Jun 02, 2017
6.	Spectrum	Agilent	E7405A	MY45106600	Apr 26, 2016	Apr 25, 2017
7.	Software	Audix	e3	6.2007-9-10	--	--

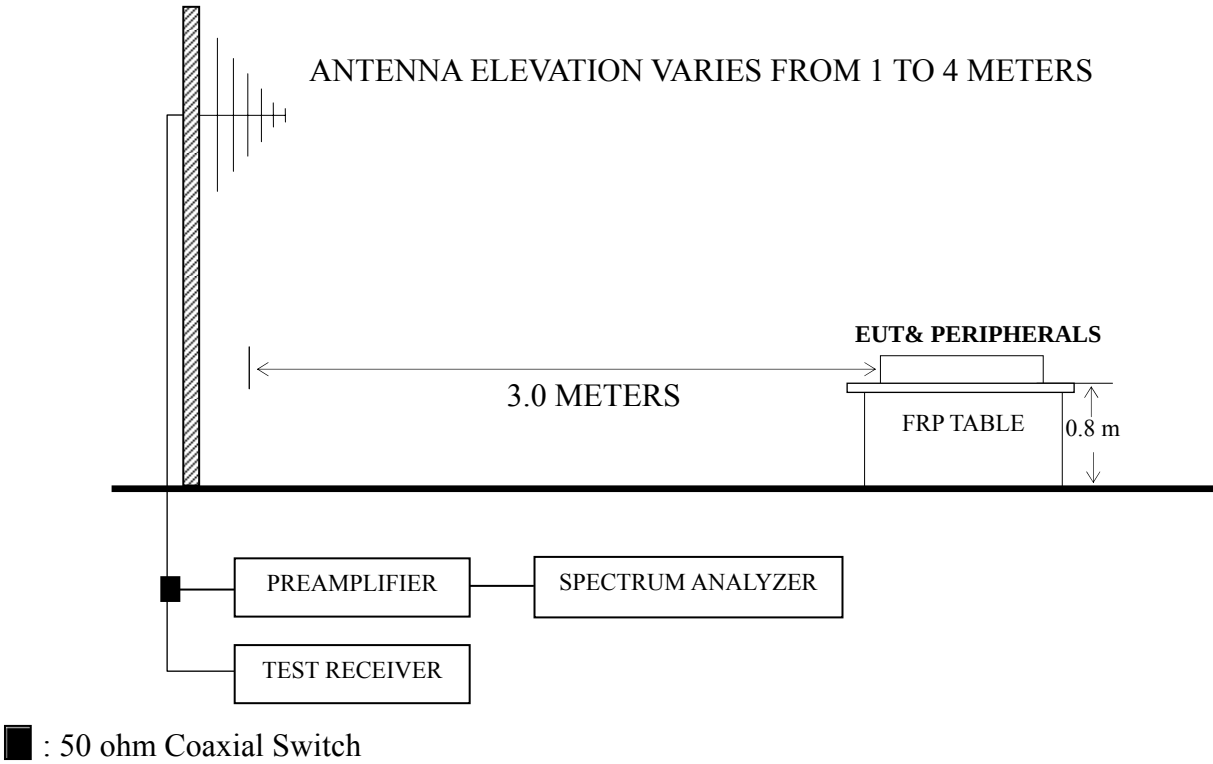
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



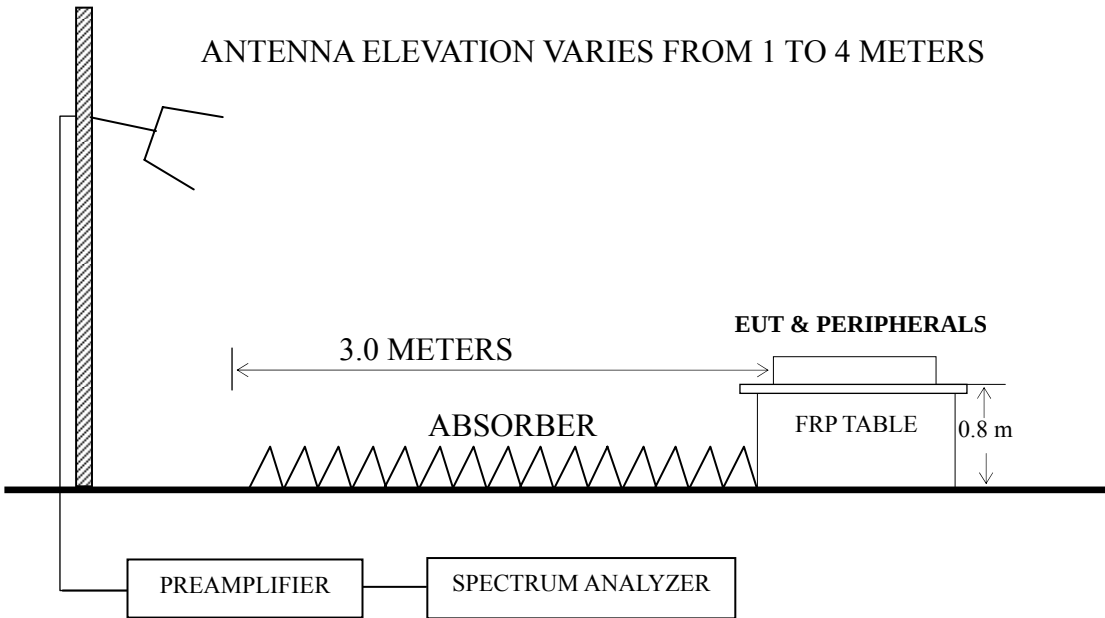
4.2.2 Radiated emission test setup

4.2.2.1 Below 1GHz



4.2.2.2 Above 1GHz

BORE-SIGHT ANTENNA TOWER



4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)]

Frequency (MHz)	Distance (m)	Field strength limits	
		($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0
NOTE 1 - Emission Level dB ($\mu\text{V/m}$) = 20 log Emission Level ($\mu\text{V/m}$) NOTE 2 - The tighter limit applies at the band edges. NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system. NOTE 4 - The limits shown are based on Quasi-peak value detector. NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT.			

4.4 Test Configuration

The configuration of the EUT and peripherals are same as those used in conducted emission test.

Please refer to Sec.3.4.

4.5 Operating Condition of EUT

Same as conducted emission test which is listed in Sec.3.5, except for the test setup replaced by Sec.4.2.

4.6 Test Procedures

The EUT and peripherals were placed on a FRP turntable that is 0.8 meter above ground. The FRP turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. Broadband antenna (Calibrated Bilog Antenna) was used as receiving antenna. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.4 requirements during radiated emission test.

The I.F. bandwidth of Test Receiver R&S ESCI was set at 120 kHz.

The frequency range from 30 MHz to 1000MHz was checked for all test modes.

The frequency range from 1 GHz to 6 GHz was checked for the maximum resolution test mode

The test modes were done on radiated disturbance test and all the test results are listed in Sec.4.7.

4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

Test Mode	Data Page
HDMI1 1920*1080@60Hz & 1kHz Playing	P25-P26
HDMI2 1920*1080@60Hz & 1kHz Playing	P27
HDMI3 1920*1080@60Hz & 1kHz Playing	P28
HDMI1 1280*1024@60Hz & 1kHz playing	P29
HDMI1 640*480@60Hz & 1kHz playing	P30
HDMI1080P	P31
USB Play	P32
Wifi	P33

NOTE 1 – Emission Level = Antenna Factor + Cable Loss + 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 HDMI1 1920*1080@60Hz & 1kHz Playing test mode. The worst emission at horizontal polarization was detected at 197.893MHz with corrected signal level of 39.74dB (μV/m) (limit is 43.50 dB (μV/m)), when the antenna was 2.10 m height and the turntable was at 120°. The worst emission at vertical polarization was detected at 148.963MHz with corrected signal level of 38.42dB (μV/m) (limit is 43.50dB (μV/m)), when the antenna was 1.30 m height and the turntable was at 265°.

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 60%RH

Test Mode : HDMI1 1920*1080@60Hz & 1kHz Playing Date of Test : Mar 18, 2017

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	159.784	25.56	11.32	1.32	--	38.20	43.50	5.30	QP
	197.893	28.27	10.00	1.47	--	39.74	43.50	3.76	
	297.224	24.06	13.60	1.75	--	39.41	46.00	6.59	
	446.414	21.09	16.73	2.15	--	39.97	46.00	6.03	
	742.259	17.65	19.57	2.79	--	40.01	46.00	5.99	
	821.710	16.11	20.30	2.94	--	39.35	46.00	6.65	PK
	1332.000	54.69	24.99	3.85	35.97	47.56	74.00	26.44	
	1332.000	52.43	25.50	4.02	35.78	46.17	74.00	27.83	
	1469.950	55.48	26.68	4.41	35.43	51.14	74.00	22.86	
	1469.950	36.52	24.99	3.85	35.97	29.39	54.00	24.61	AV
	1767.877	32.01	25.50	4.02	35.78	25.75	54.00	28.25	
	1767.877	37.12	26.68	4.41	35.43	32.78	54.00	21.22	

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 60%RH

Test Mode : HDMI1 1920*1080@30Hz & 1kHz Playing Date of Test : Mar 18, 2017

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	34.037	16.91	16.30	0.60	--	33.81	40.00	6.19	QP
	148.963	24.98	12.16	1.28	--	38.42	43.50	5.08	
	297.224	21.90	13.60	1.75	--	37.25	46.00	8.75	
	446.414	17.14	16.73	2.15	--	36.02	46.00	9.98	
	597.223	15.69	18.33	2.50	--	36.52	46.00	9.48	
	742.259	15.12	19.57	2.79	--	37.48	46.00	8.52	
	1187.688	54.28	24.40	3.61	36.18	46.11	74.00	27.89	PK
	1187.688	48.53	25.52	4.05	35.77	42.33	74.00	31.67	
	1477.873	58.70	26.61	4.38	35.45	54.24	74.00	19.76	
	1477.873	36.28	24.40	3.61	36.18	28.11	54.00	25.89	AV
	1748.973	30.39	25.52	4.05	35.77	24.19	54.00	29.81	
	1748.973	41.82	26.61	4.38	35.45	37.36	54.00	16.64	

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 60%RH

Test Mode : HDMI2 1920*1080@60Hz Date of Test : Mar 18, 2017
& 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	88.652	20.33	10.60	0.94	31.87	43.50	11.63
	149.486	21.76	12.16	1.28	35.20	43.50	8.30
	200.688	25.74	10.13	1.48	37.35	43.50	6.15
	294.114	23.99	13.60	1.74	39.33	46.00	6.67
	513.633	17.18	17.58	2.30	37.06	46.00	8.94
	810.265	15.83	20.30	2.91	39.04	46.00	6.96
Vertical	31.399	15.19	17.45	0.57	33.21	40.00	6.79
	147.921	24.87	12.29	1.27	38.43	43.50	5.07
	219.075	22.72	10.98	1.54	35.24	46.00	10.76
	299.316	23.37	13.60	1.76	38.73	46.00	7.27
	590.974	19.59	18.17	2.50	40.26	46.00	5.74
	818.834	12.22	20.30	2.94	35.46	46.00	10.54

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 60%RH

Test Mode : HDMI3 1920*1080@30Hz & 1kHz Playing Date of Test : Mar 18, 2017

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	148.963	22.19	12.16	1.28	35.63	43.50	7.87
	195.822	25.54	9.93	1.46	36.93	43.50	6.57
	296.184	23.62	13.60	1.75	38.97	46.00	7.03
	446.414	19.47	16.73	2.15	38.35	46.00	7.65
	742.259	18.99	19.57	2.79	41.35	46.00	4.65
	890.728	14.57	21.10	3.07	38.74	46.00	7.26
Vertical	31.955	15.80	17.10	0.58	33.48	40.00	6.52
	148.963	25.11	12.16	1.28	38.55	43.50	4.95
	296.184	21.93	13.60	1.75	37.28	46.00	8.72
	446.414	17.60	16.73	2.15	36.48	46.00	9.52
	593.050	15.84	18.25	2.50	36.59	46.00	9.41
	742.259	17.64	19.57	2.79	40.00	46.00	6.00

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 60%RH

Test Mode : HDMI1 1280*1024@60Hz & 1kHz Playing Date of Test : Mar 18, 2017

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	95.093	18.50	11.66	0.98	31.14	43.50	12.36
	197.200	25.74	9.97	1.47	37.18	43.50	6.32
	297.224	23.59	13.60	1.75	38.94	46.00	7.06
	386.634	18.89	16.00	2.00	36.89	46.00	9.11
	539.478	16.06	17.60	2.36	36.02	46.00	9.98
	821.710	13.91	20.30	2.94	37.15	46.00	8.85
Vertical	33.211	16.54	16.62	0.59	33.75	40.00	6.25
	46.995	20.59	9.45	0.68	30.72	40.00	9.28
	222.170	23.25	11.15	1.55	35.95	46.00	10.05
	297.224	20.10	13.60	1.75	35.45	46.00	10.55
	597.223	14.80	18.33	2.50	35.63	46.00	10.37
	821.710	15.27	20.30	2.94	38.51	46.00	7.49

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 60%RH

Test Mode : HDMI1 640*480@60Hz & 1kHz Playing Date of Test : Mar 18, 2017

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	90.855	18.67	10.93	0.95	30.55	43.50	12.95
	159.784	25.55	11.32	1.32	38.19	43.50	5.31
	197.893	27.50	10.00	1.47	38.97	43.50	4.53
	296.184	22.59	13.60	1.75	37.94	46.00	8.06
	386.634	19.45	16.00	2.00	37.45	46.00	8.55
	813.112	16.26	20.30	2.94	39.50	46.00	6.50
Vertical	33.211	17.58	16.62	0.59	34.79	40.00	5.21
	159.784	23.43	11.32	1.32	36.07	43.50	7.43
	222.170	21.64	11.15	1.55	34.34	46.00	11.66
	297.224	20.67	13.60	1.75	36.02	46.00	9.98
	597.223	13.43	18.33	2.50	34.26	46.00	11.74
	821.710	16.54	20.30	2.94	39.78	46.00	6.22

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 60%RH

Test Mode : HDMI1080P Date of Test : Mar 10, 2017

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	91.175	20.05	11.00	0.96	32.01	43.50	11.49
	196.510	26.27	9.97	1.47	37.71	43.50	5.79
	292.058	20.72	13.55	1.74	36.01	46.00	9.99
	508.258	16.56	17.58	2.28	36.42	46.00	9.58
	739.661	13.88	19.60	2.79	36.27	46.00	9.73
	916.069	13.23	21.43	3.12	37.78	46.00	8.22
Vertical	32.520	16.71	16.89	0.58	34.18	40.00	5.82
	147.921	20.86	12.29	1.27	34.42	43.50	9.08
	222.950	22.54	11.20	1.55	35.29	46.00	10.71
	590.974	16.33	18.17	2.50	37.00	46.00	9.00
	818.834	12.53	20.30	2.94	35.77	46.00	10.23
	916.069	12.29	21.43	3.12	36.84	46.00	9.16

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 60%RH

Test Mode : USB Play Date of Test : Mar 10, 2017

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	87.725	21.47	10.45	0.93	32.85	40.00	7.15
	189.739	22.88	10.03	1.44	34.35	43.50	9.15
	217.544	24.20	10.96	1.54	36.70	46.00	9.30
	345.595	17.70	14.97	1.90	34.57	46.00	11.43
	726.805	12.81	19.37	2.77	34.95	46.00	11.05
	942.131	12.73	21.63	3.16	37.52	46.00	8.48
Vertical	31.399	15.36	17.45	0.57	33.38	40.00	6.62
	148.963	19.82	12.16	1.28	33.26	43.50	10.24
	224.519	23.16	11.25	1.56	35.97	46.00	10.03
	293.084	21.76	13.58	1.74	37.08	46.00	8.92
	607.787	13.29	18.55	2.52	34.36	46.00	11.64
	866.088	10.98	20.83	3.03	34.84	46.00	11.16

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55H4D Humidity : 60%RH

Test Mode : Wifi Date of Test : Mar 10, 2017

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	83.522	21.42	9.76	0.91	32.09	40.00	7.91
	150.011	23.40	12.10	1.28	36.78	43.50	6.72
	219.845	24.52	11.00	1.54	37.06	46.00	8.94
	296.184	23.59	13.60	1.75	38.94	46.00	7.06
	533.832	17.47	17.75	2.36	37.58	46.00	8.42
	833.317	13.93	20.30	2.96	37.19	46.00	0.39
Vertical	31.071	15.09	17.71	0.57	33.37	40.00	6.63
	44.431	20.67	10.40	0.67	31.74	40.00	8.26
	139.361	21.90	13.16	1.23	36.29	43.50	7.21
	216.783	24.14	10.94	1.53	36.61	46.00	9.39
	472.176	14.61	17.12	2.20	33.93	46.00	12.07
	696.857	12.08	19.17	2.71	33.96	46.00	12.04

TEST ENGINEER: CAESAR WU

5 DEVIATION TO TEST SPECIFICATIONS

None

