

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

LED LCD TV

Model No.	Brand
65H9D	Hisense
65H9D+	
65H9D Plus	
65H9050	
65H9907	

FCC ID : W9HLCDF0096

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-F17045
Date of Test : Jan 09, 2017
Date of Report : Jan 18, 2017

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TEST REPORT FOR FCC CERTIFICATE

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

Model No.	Brand	Power Supply
Refer to Sec.2.1	Hisense	120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2015
AND ANSI C63.4-2014*

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. To determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B (Class B) limits both radiated and conducted emissions.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report shows that the EUT (M/N: Refer to Sec2.1) which was tested in 3m anechoic chamber Jan 09, 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.

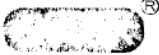
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

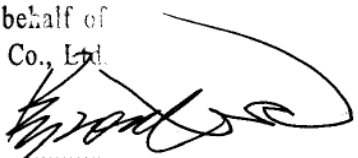
The test results for EUT's TV functions are contained in No.F17044, a Verification report.

Date of Test : Jan 09, 2017 Date of Report : Jan 18, 2017

Producer : Huimin Yan
HUI MIN YAN / Assistant

Review : Byron Wu
BYRON WU / Deputy Assistant Manager

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

Signatory : 
Authorized Signature EMC BYRON KWO / Assistant General Manager

1 SUMMARY OF STANDARDS AND RESULTS

1.1 Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Description of Test Item	Standard	Limits	Results
EMISSION			
Conducted Disturbance at the Mains Terminal	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2015 AND ANSI C63.4-2014	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2015 AND ANSI C63.4-2014	15.109(a) Class B	Pass

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description	:	LED LCD TV
Type of EUT	:	☒ Production ☐ Pre-product ☐ Pro-type
Model No	:	65H9D, 65H9D+, 65H9D Plus, 65H9050, 65H9907
Brand	:	Hisense
Note#1	:	The above models are all the same except for the model number. The 65H9D was tested and reported in the report.
Note#2	:	“+” represents any of the Arabic numeral.
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 : HE650IU-B32
Tuner	:	Manufacturer : SILICON LABS M/N : Si2151-A10
HDMI Cable*4 (Lab provide)	:	Shielded, Detachable, 1.80m
Power Cord	:	Unshielded, Detachable, 1.80m, 2C
USB Cable*3 (Lab provide)	:	Shielded, Detachable, 1.00m
LAN Cable	:	Unshielded, Detachable, 1.50m
MHL to HDMI Adaptor: with RCP (Lab provide)	:	Manufacture: CE-Link M/N: 3002

Remark:

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

Side Port:

- (1) One USB3 Port : Connected with Hard-Disk
- (2) One HDMI2 Port : Connected with PC
- (3) One HDMI1/MHL Port : Connected with Smart Mobile Phone
- (4) One Audio out Port : Connected with Earphone
- (5) One Service Port : This port does not open to customer
- (6) One USB1 Port : Connected with Hard-Disk
- (7) One USB2 Port : Connected with Hard-Disk
- (8) One ANT/CABLE IN Port : Connected with ATSC SG / TV SG

Back Port:

- (9) One COMPONENT IN/AV IN Port : Connected with DVD Player
- (10) One LAN Port : Connected with PC
- (11) One DIGITAL AUDIO OUT Port : Connected with Audio Converter to Earphone
- (12) One HDMI3 Port : Connected with DVD Player
- (13) One HDMI4 Port : Connected with PC

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, 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 Modem

Manufacturer : TP-LINK
Model Number : TM-EC5658V
Serial Number : 07123301053
Data Cable : Shielded, Detachable, 1.8m
Certificate : CCC

2.2.5 Earphone *2

Manufacturer : EDIFIER
Model Number : H210

2.2.6 DVD PLAYER

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

2.2.7 Hard Disk #1

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

2.2.8 Hard Disk #2

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

2.2.9 Hard Disk #3

Manufacturer : Tetasys
Model Number : F12
Serial Number : A010022-4A60007
Data Cable : Shielded, Detachable, 1.5m.
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

2.2.12 Smart Mobile Phone

Manufacturer : SAMSUNG
Model Number : GT-I9100G
Serial Number : 6935152011519
Certificate : CE/EMC

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

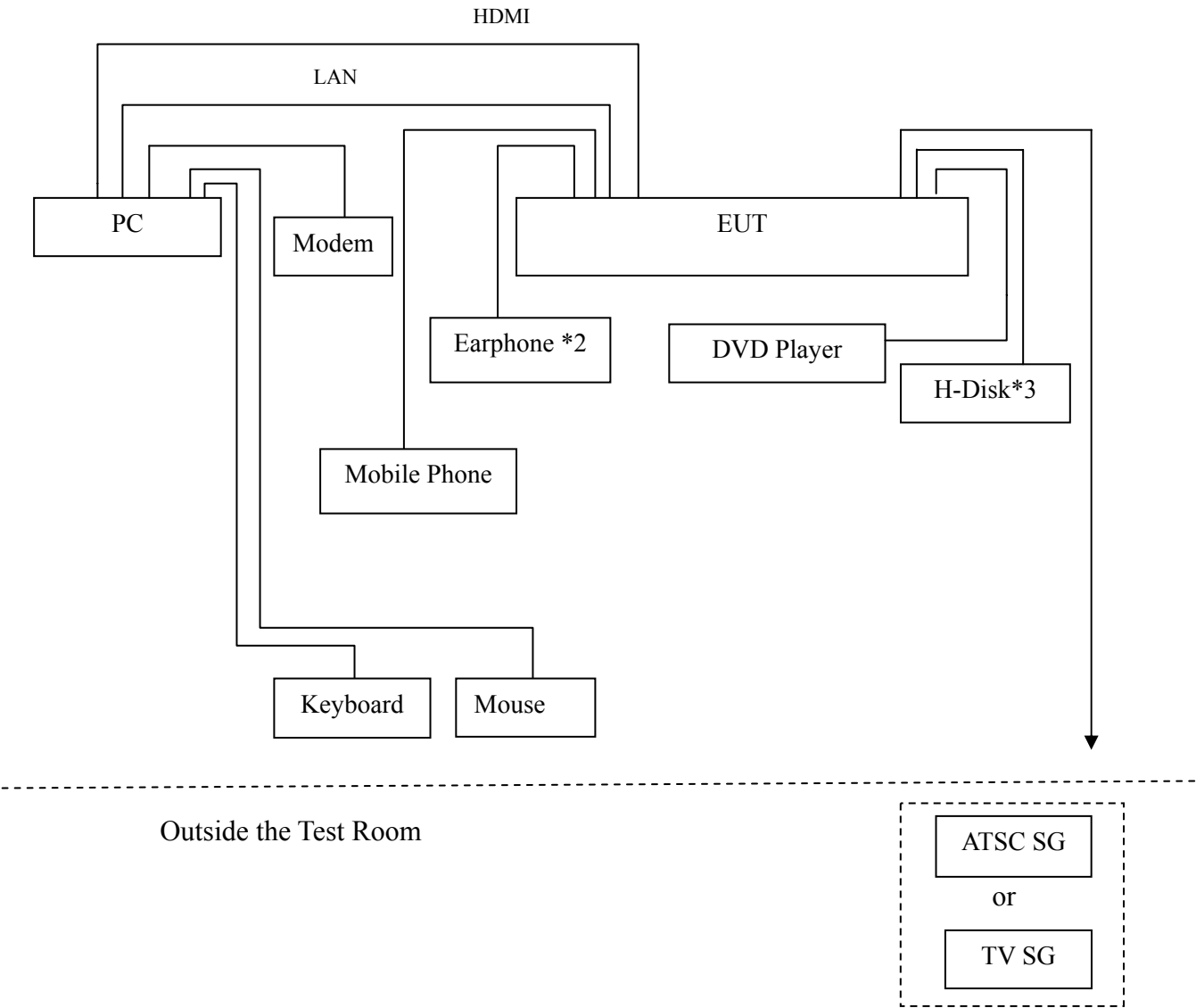
3.1 Test Equipment

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

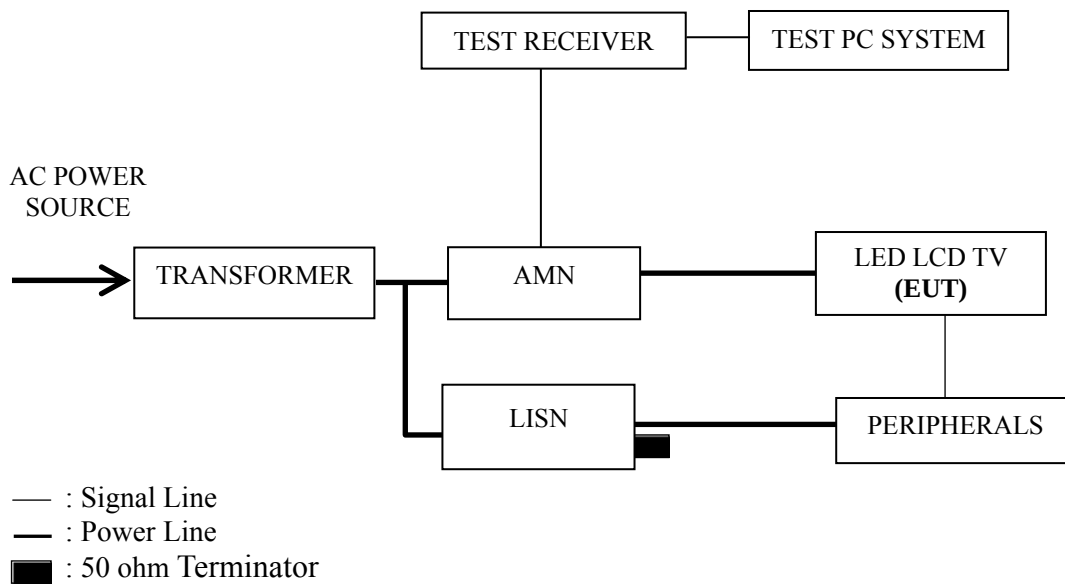
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Apr 27, 2016	Apr 26, 2017
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 25, 2016	Jun 24, 2017
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2016	Mar 19, 2017
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 (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 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 In MHL mode, set the EUT play digital media from mobile phone.
- 3.5.9 The other peripherals devices were driven and operated during the test.
- 3.5.10 The test modes are as follows:

Test Mode
HDMI 3840*2160@60Hz & 1kHz Playing
HDMI 1920*1080@60Hz & 1kHz Playing
HDMI 1280*1024@60Hz & 1kHz playing
HDMI 640*480@60Hz & 1kHz playing
HDMI1080P
USB Play
LAN Play
MHL

3.6 Test Procedures

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

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

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

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

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

3.7 Test Results

< PASS >

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

Test Mode	Data Page
HDMI 3840*2160@60Hz & 1kHz Playing	P13
HDMI 1920*1080@60Hz & 1kHz Playing	P14
HDMI 1280*1024@60Hz & 1kHz playing	P15
HDMI 640*480@60Hz & 1kHz playing	P16
HDMI1080P	P17
USB Play	P18
LAN Play	P19
MHL	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 0.150MHz (Quasi-Peak Value) with corrected signal level of 64.19 dB (μV) (limit is 66.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 48%RH

Test Mode : HDMI 3840*2160@60Hz & 1kHz Playing Date of Test : Jan 09, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	53.60	10.59	64.19	66.00	1.81	QP
	0.421	23.09	10.43	33.52	57.42	23.90	
	0.759	28.70	10.40	39.10	56.00	16.90	
	1.403	23.79	10.41	34.20	56.00	21.80	
	2.500	22.50	10.42	32.92	56.00	23.08	
	5.005	22.40	10.45	32.85	60.00	27.15	
	0.150	40.40	10.59	50.99	56.00	5.01	AV
	0.421	10.19	10.43	20.62	47.42	26.80	
	0.759	15.80	10.40	26.20	46.00	19.80	
	1.403	12.39	10.41	22.80	46.00	23.20	
	2.500	12.70	10.42	23.12	46.00	22.88	
	5.005	14.90	10.45	25.35	50.00	24.65	
Neutral	0.150	53.40	10.58	63.98	66.00	2.02	QP
	0.329	28.20	10.45	38.65	59.49	20.84	
	0.767	29.50	10.39	39.89	56.00	16.11	
	1.519	22.80	10.42	33.22	56.00	22.78	
	2.622	21.60	10.45	32.05	56.00	23.95	
	5.277	22.00	10.50	32.50	60.00	27.50	
	0.150	40.20	10.58	50.78	56.00	5.22	AV
	0.329	21.20	10.45	31.65	49.49	17.84	
	0.767	20.60	10.39	30.99	46.00	15.01	
	1.519	10.10	10.42	20.52	46.00	25.48	
	2.622	11.10	10.45	21.55	46.00	24.45	
	5.277	14.70	10.50	25.20	50.00	24.80	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 48%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Jan 09, 2017
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	53.60	10.59	64.19	66.00	1.81	QP
	0.426	21.40	10.42	31.82	57.33	25.51	
	0.767	28.70	10.40	39.10	56.00	16.90	
	1.433	25.61	10.40	36.01	56.00	19.99	
	3.074	22.30	10.43	32.73	56.00	23.27	
	5.333	22.60	10.45	33.05	60.00	26.95	
	0.150	40.40	10.59	50.99	56.00	5.01	AV
	0.426	9.60	10.42	20.02	47.33	27.31	
	0.767	19.50	10.40	29.90	46.00	16.10	
	1.433	17.01	10.40	27.41	46.00	18.59	
	3.074	12.50	10.43	22.93	46.00	23.07	
	5.333	14.70	10.45	25.15	50.00	24.85	
Neutral	0.150	53.40	10.58	63.98	66.00	2.02	QP
	0.329	27.80	10.45	38.25	59.49	21.24	
	0.767	29.10	10.39	39.49	56.00	16.51	
	1.433	25.50	10.42	35.92	56.00	20.08	
	2.554	22.60	10.45	33.05	56.00	22.95	
	5.362	21.11	10.50	31.61	60.00	28.39	
	0.150	40.20	10.58	50.78	56.00	5.22	AV
	0.329	22.30	10.45	32.75	49.49	16.74	
	0.767	20.50	10.39	30.89	46.00	15.11	
	1.433	16.70	10.42	27.12	46.00	18.88	
	2.554	13.50	10.45	23.95	46.00	22.05	
	5.362	13.71	10.50	24.21	50.00	25.79	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 48%RH

Test Mode : HDMI 1280*1024@60Hz & 1kHz playing Date of Test : Jan 09, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	53.60	10.59	64.19	66.00	1.81	QP
	0.440	21.40	10.42	31.82	57.07	25.25	
	0.767	28.70	10.40	39.10	56.00	16.90	
	1.433	25.71	10.40	36.11	56.00	19.89	
	2.527	24.10	10.42	34.52	56.00	21.48	
	7.252	19.20	10.47	29.67	60.00	30.33	
	0.150	40.40	10.59	50.99	56.00	5.01	AV
	0.440	12.30	10.42	22.72	47.07	24.35	
	0.767	19.50	10.40	29.90	46.00	16.10	
	1.433	17.11	10.40	27.51	46.00	18.49	
	2.527	14.70	10.42	25.12	46.00	20.88	
	7.252	13.70	10.47	24.17	50.00	25.83	
Neutral	0.150	53.40	10.58	63.98	66.00	2.02	QP
	0.329	27.90	10.45	38.35	59.49	21.14	
	0.743	29.30	10.39	39.69	56.00	16.31	
	1.970	24.50	10.43	34.93	56.00	21.07	
	4.772	22.30	10.50	32.80	56.00	23.20	
	7.252	19.10	10.53	29.63	60.00	30.37	
	0.150	40.12	10.58	50.70	56.00	5.30	AV
	0.329	20.90	10.45	31.35	49.49	18.14	
	0.743	16.10	10.39	26.49	46.00	19.51	
	1.970	14.30	10.43	24.73	46.00	21.27	
	4.772	14.50	10.50	25.00	46.00	21.00	
	7.252	13.70	10.53	24.23	50.00	25.77	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 48%RH

Test Mode : HDMI 640*480@60Hz & 1kHz playing Date of Test : Jan 09, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	53.60	10.59	64.19	66.00	1.81	QP
	0.348	23.09	10.46	33.55	59.00	25.45	
	0.767	28.60	10.40	39.00	56.00	17.00	
	1.433	25.71	10.40	36.11	56.00	19.89	
	2.527	24.20	10.42	34.62	56.00	21.38	
	5.333	22.70	10.45	33.15	60.00	26.85	
	0.150	40.40	10.59	50.99	56.00	5.01	AV
	0.348	11.39	10.46	21.85	49.00	27.15	
	0.767	19.20	10.40	29.60	46.00	16.40	
	1.433	17.21	10.40	27.61	46.00	18.39	
	2.527	14.90	10.42	25.32	46.00	20.68	
	5.333	14.70	10.45	25.15	50.00	24.85	
Neutral	0.150	53.40	10.58	63.98	66.00	2.02	QP
	0.329	28.10	10.45	38.55	59.49	20.94	
	0.743	29.40	10.39	39.79	56.00	16.21	
	1.449	24.30	10.42	34.72	56.00	21.28	
	4.772	22.40	10.50	32.90	56.00	23.10	
	0.150	40.20	10.58	50.78	56.00	5.22	AV
	0.329	20.70	10.45	31.15	49.49	18.34	
	0.743	16.32	10.39	26.71	46.00	19.29	
	1.449	14.50	10.42	24.92	46.00	21.08	
	4.772	15.10	10.50	25.60	46.00	20.40	
	0.150	53.40	10.58	63.98	66.00	2.02	
	0.329	28.10	10.45	38.55	59.49	20.94	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 48%RH

Test Mode : HDMI1080P Date of Test : Jan 09, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	53.60	10.59	64.19	66.00	1.81	QP
	0.343	22.79	10.46	33.25	59.13	25.88	
	0.767	28.60	10.40	39.00	56.00	17.00	
	1.433	25.61	10.40	36.01	56.00	19.99	
	4.926	23.50	10.45	33.95	56.00	22.05	
	14.517	20.20	10.55	30.75	60.00	29.25	
	0.150	40.40	10.59	50.99	56.00	5.01	AV
	0.343	10.29	10.46	20.75	49.13	28.38	
	0.767	19.10	10.40	29.50	46.00	16.50	
	1.433	17.11	10.40	27.51	46.00	18.49	
	4.926	15.70	10.45	26.15	46.00	19.85	
	14.517	14.60	10.55	25.15	50.00	24.85	
Neutral	0.150	53.40	10.58	63.98	66.00	2.02	QP
	0.332	27.90	10.45	38.35	59.40	21.05	
	0.767	28.90	10.39	39.29	56.00	16.71	
	1.433	25.50	10.42	35.92	56.00	20.08	
	2.527	24.40	10.45	34.85	56.00	21.15	
	5.333	22.61	10.50	33.11	60.00	26.89	
	0.150	40.20	10.58	50.78	56.00	5.22	AV
	0.332	22.50	10.45	32.95	49.40	16.45	
	0.767	19.60	10.39	29.99	46.00	16.01	
	1.433	16.90	10.42	27.32	46.00	18.68	
	2.527	15.30	10.45	25.75	46.00	20.25	
	5.333	14.81	10.50	25.31	50.00	24.69	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 48%RH

Test Mode : USB Play Date of Test : Jan 09, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	53.60	10.59	64.19	66.00	1.81	QP
	0.339	22.79	10.46	33.25	59.22	25.97	
	0.716	28.50	10.40	38.90	56.00	17.10	
	1.433	25.61	10.40	36.01	56.00	19.99	
	2.527	24.20	10.42	34.62	56.00	21.38	
	5.333	22.80	10.45	33.25	60.00	26.75	
	0.150	40.40	10.59	50.99	56.00	5.01	AV
	0.339	11.99	10.46	22.45	49.22	26.77	
	0.716	12.60	10.40	23.00	46.00	23.00	
	1.433	17.31	10.40	27.71	46.00	18.29	
	2.527	14.80	10.42	25.22	46.00	20.78	
	5.333	14.70	10.45	25.15	50.00	24.85	
Neutral	0.150	53.40	10.58	63.98	66.00	2.02	QP
	0.336	27.50	10.45	37.95	59.31	21.36	
	0.767	29.00	10.39	39.39	56.00	16.61	
	1.433	25.60	10.42	36.02	56.00	19.98	
	2.527	24.30	10.45	34.75	56.00	21.25	
	5.333	22.61	10.50	33.11	60.00	26.89	
	0.150	40.20	10.58	50.78	56.00	5.22	AV
	0.336	19.60	10.45	30.05	49.31	19.26	
	0.767	19.90	10.39	30.29	46.00	15.71	
	1.433	17.00	10.42	27.42	46.00	18.58	
	2.527	15.30	10.45	25.75	46.00	20.25	
	5.333	14.71	10.50	25.21	50.00	24.79	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 48%RH

Test Mode : LAN Play Date of Test : Jan 09, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	53.60	10.59	64.19	66.00	1.81	QP
	0.332	23.70	10.46	34.16	59.40	25.24	
	0.727	29.00	10.40	39.40	56.00	16.60	
	1.433	25.71	10.40	36.11	56.00	19.89	
	2.527	24.20	10.42	34.62	56.00	21.38	
	5.333	22.80	10.45	33.25	60.00	26.75	
	0.150	40.40	10.59	50.99	56.00	5.01	AV
	0.332	18.10	10.46	28.56	49.40	20.84	
	0.727	13.00	10.40	23.40	46.00	22.60	
	1.433	17.21	10.40	27.61	46.00	18.39	
	2.527	14.90	10.42	25.32	46.00	20.68	
	5.333	14.80	10.45	25.25	50.00	24.75	
Neutral	0.150	53.40	10.58	63.98	66.00	2.02	QP
	0.332	27.70	10.45	38.15	59.40	21.25	
	0.767	29.00	10.39	39.39	56.00	16.61	
	1.433	25.50	10.42	35.92	56.00	20.08	
	2.527	24.20	10.45	34.65	56.00	21.35	
	5.333	22.61	10.50	33.11	60.00	26.89	
	0.150	40.20	10.58	50.78	56.00	5.22	AV
	0.332	22.60	10.45	33.05	49.40	16.35	
	0.767	19.60	10.39	29.99	46.00	16.01	
	1.433	17.00	10.42	27.42	46.00	18.58	
	2.527	15.30	10.45	25.75	46.00	20.25	
	5.333	14.81	10.50	25.31	50.00	24.69	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 48%RH

Test Mode : MHL Date of Test : Jan 09, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	53.20	10.59	63.79	65.91	2.12	QP
	0.226	24.30	10.51	34.81	62.61	27.80	
	0.720	28.70	10.40	39.10	56.00	16.90	
	1.433	25.61	10.40	36.01	56.00	19.99	
	2.527	24.20	10.42	34.62	56.00	21.38	
	5.333	22.60	10.45	33.05	60.00	26.95	
	0.152	39.40	10.59	49.99	55.91	5.92	AV
	0.226	12.80	10.51	23.31	52.61	29.30	
	0.720	12.50	10.40	22.90	46.00	23.10	
	1.433	17.11	10.40	27.51	46.00	18.49	
	2.527	14.90	10.42	25.32	46.00	20.68	
	5.333	14.70	10.45	25.15	50.00	24.85	
Neutral	0.150	53.40	10.58	63.98	66.00	2.02	QP
	0.336	27.50	10.45	37.95	59.31	21.36	
	0.716	28.70	10.39	39.09	56.00	16.91	
	1.433	25.60	10.42	36.02	56.00	19.98	
	2.527	24.30	10.45	34.75	56.00	21.25	
	5.333	22.41	10.50	32.91	60.00	27.09	
	0.150	40.20	10.58	50.78	56.00	5.22	AV
	0.336	19.70	10.45	30.15	49.31	19.16	
	0.716	13.20	10.39	23.59	46.00	22.41	
	1.433	16.90	10.42	27.32	46.00	18.68	
	2.527	15.30	10.45	25.75	46.00	20.25	
	5.333	14.51	10.50	25.01	50.00	24.99	

TEST ENGINEER: BYRON WU

4 RADIATED EMISSION TEST

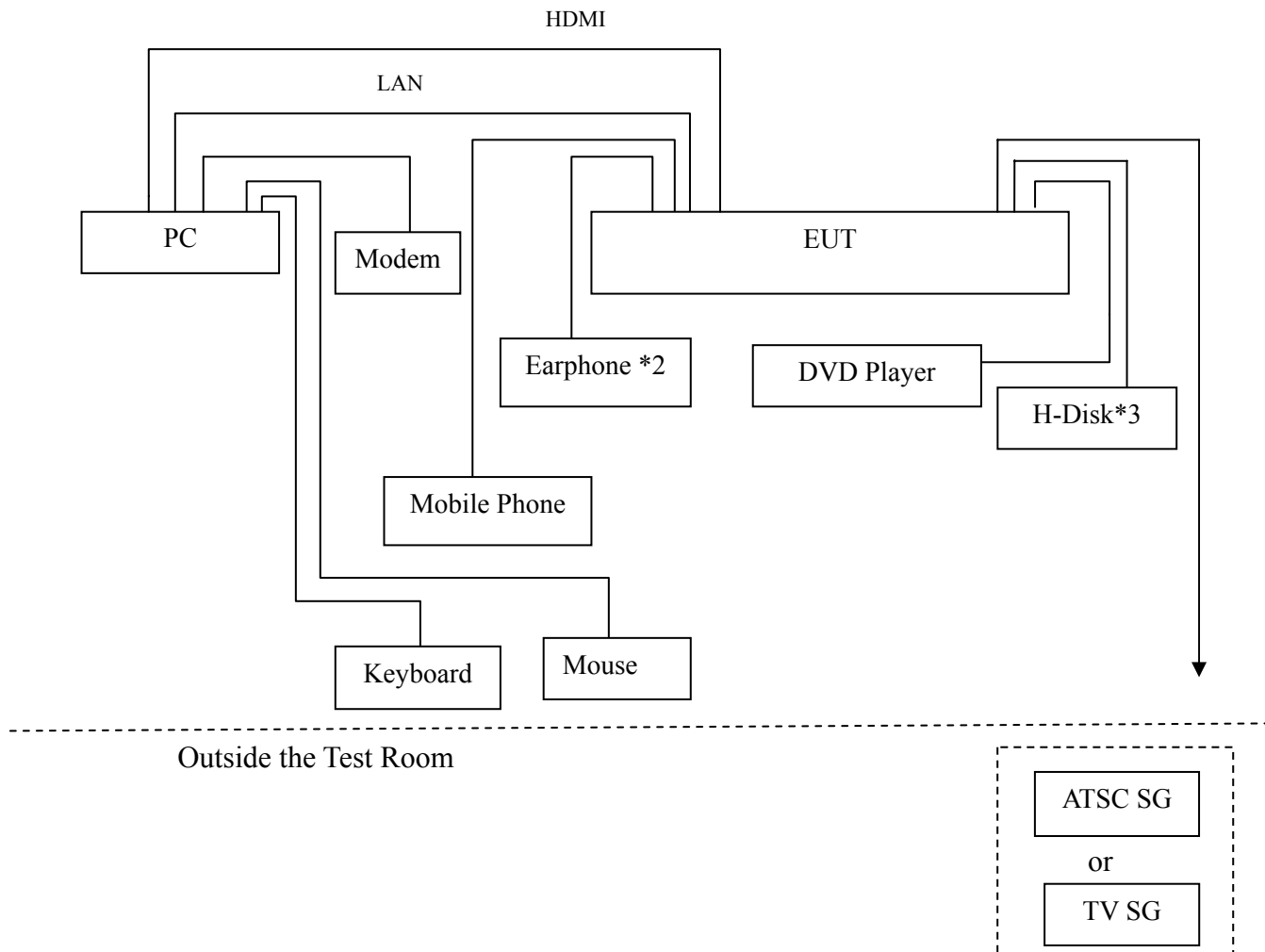
4.1 Test Equipment

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	--	--

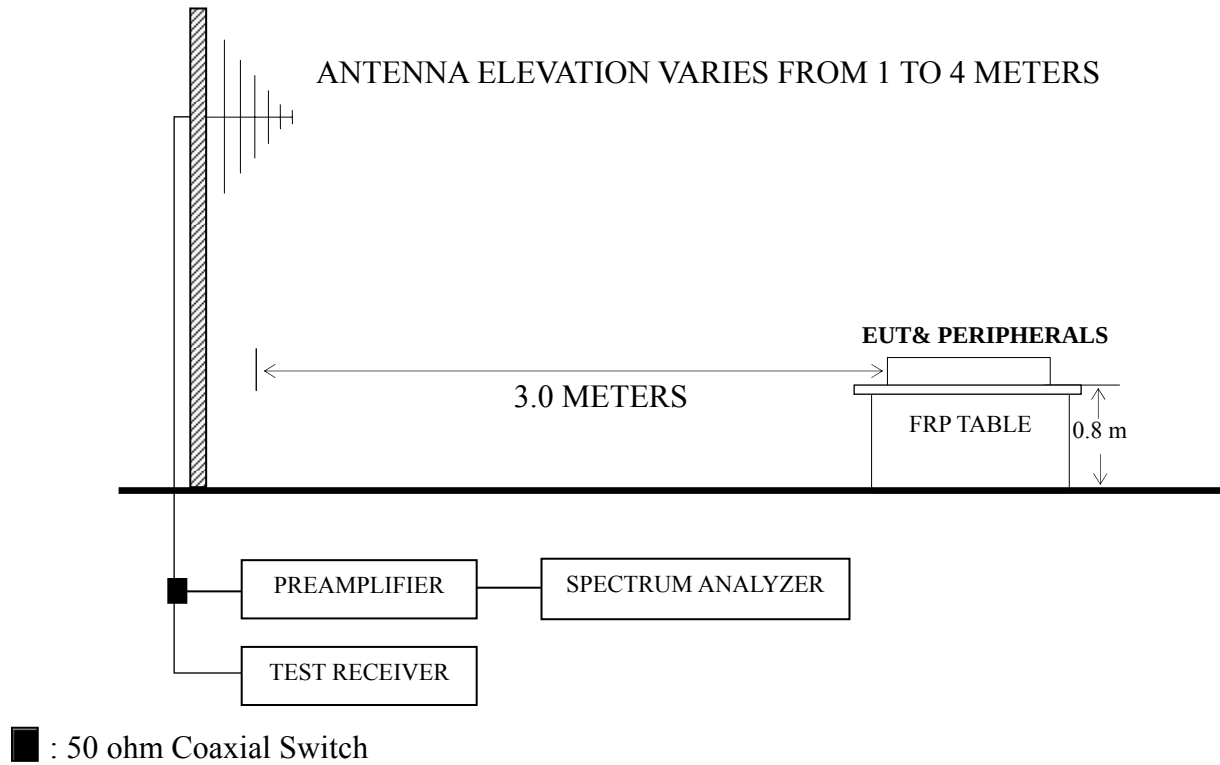
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



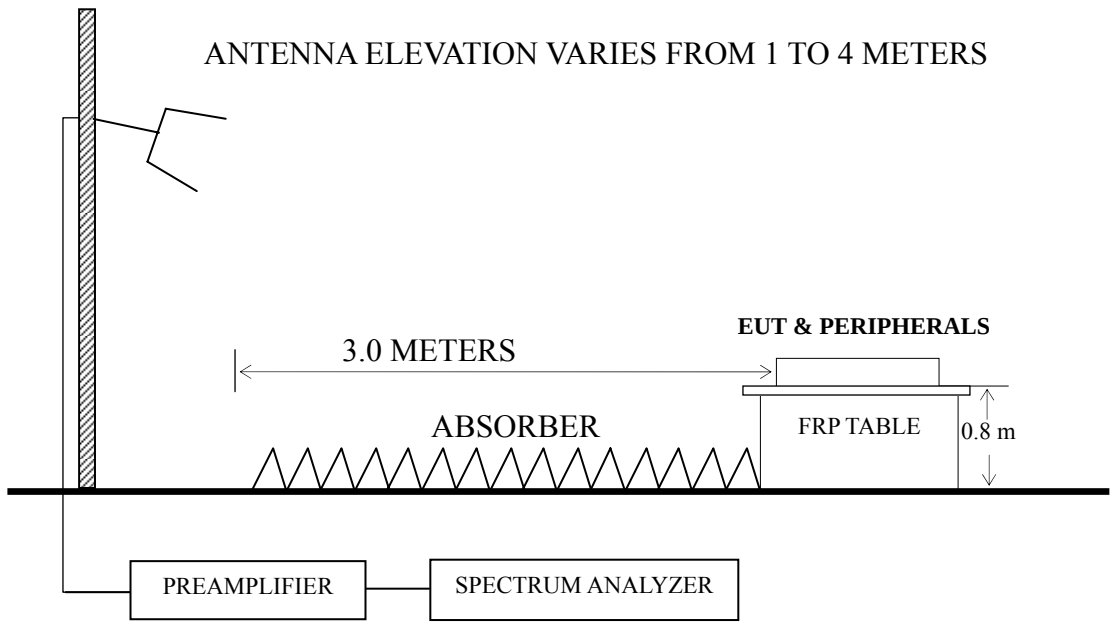
4.2.2 Radiated emission test setup

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 and The Spectrum AgilentE7405A 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.

Frequency	Test Mode	Data Page
Below 1GHz	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
	HDMI1080P	P30
	USB Play	P31
	LAN Play	P32
	MHL	P33
Above 1GHz	HDMI 3840*2160@60Hz & 1kHz Playing	P25-P26

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 HDMI 3840*2160@60Hz & 1kHz Playing test mode. The worst emission at horizontal polarization was detected at 74.120 MHz with corrected signal level of 36.39dB (μV/m) (limit is 40.00 dB (μV/m)), when the antenna was 2.0 m height and the turntable was at 245°. The worst emission at vertical polarization was detected at 43.050 MHz with corrected signal level of 34.17dB (μV/m) (limit is 40.00 dB (μV/m)), when the antenna was 1.2 m height and the turntable was at 75°.

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 60%RH

Test Mode : HDMI 3840*2160@60Hz & 1kHz Playing Date of Test : Jan 09, 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
Horizontal	74.120	27.40	8.13	0.86	0.00	36.39	40.00	3.61	QP
	154.821	21.63	11.50	1.30	0.00	34.43	43.50	9.07	
	297.224	20.22	13.60	1.75	0.00	35.57	46.00	10.43	
	554.825	19.46	18.00	2.40	0.00	39.86	46.00	6.14	
	796.183	18.59	20.37	2.89	0.00	41.85	46.00	4.15	
	900.147	15.57	21.20	3.09	0.00	39.86	46.00	6.14	
	1764.712	54.66	26.68	4.41	35.44	50.31	74.00	23.69	PK
	2664.703	57.25	29.13	5.48	35.20	56.66	74.00	17.34	
	3091.970	48.52	30.71	5.97	35.10	50.10	74.00	23.90	
	1764.712	35.40	26.68	4.41	35.44	31.05	54.00	22.95	AV
	2664.703	40.11	29.13	5.48	35.20	39.52	54.00	14.48	
	3091.970	30.38	30.71	5.97	35.10	31.96	54.00	22.04	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 60%RH

Test Mode : HDMI 3840*2160@60Hz & 1kHz Playing Date of Test : Jan 09, 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
Vertical	43.050	22.17	11.34	0.66	0.00	34.17	40.00	5.83	QP
	54.030	25.50	7.80	0.73	0.00	34.03	40.00	5.97	
	73.103	24.90	7.96	0.85	0.00	33.71	40.00	6.29	
	297.224	21.55	13.60	1.75	0.00	36.90	46.00	9.10	
	478.846	19.88	17.20	2.22	0.00	39.30	46.00	6.70	
	550.948	19.07	17.90	2.40	0.00	39.37	46.00	6.63	PK
	1287.417	68.61	24.81	3.76	36.03	61.15	74.00	12.85	
	1761.553	61.57	26.66	4.41	35.44	57.20	74.00	16.80	
	4787.449	49.84	33.90	7.69	33.96	57.47	74.00	16.53	AV
	1287.417	50.39	24.81	3.76	36.03	42.93	54.00	11.07	
	1761.553	43.22	26.66	4.41	35.44	38.85	54.00	15.15	
	4787.449	32.10	33.90	7.69	33.96	39.73	54.00	14.27	

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Jan 09, 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	73.120	23.40	7.96	0.86	32.22	40.00	7.78
	153.739	21.74	11.65	1.30	34.69	43.50	8.81
	222.170	22.57	11.15	1.55	35.27	46.00	10.73
	554.825	19.63	18.00	2.40	40.03	46.00	5.97
	804.603	16.90	20.37	2.91	40.18	46.00	5.82
	881.407	16.01	21.00	3.05	40.06	46.00	5.94
Vertical	31.955	16.61	17.10	0.58	34.29	40.00	5.71
	54.130	22.30	7.76	0.73	30.79	40.00	9.21
	77.051	25.46	8.56	0.87	34.89	40.00	5.11
	446.414	18.17	16.73	2.15	37.05	46.00	8.95
	742.259	17.81	19.57	2.79	40.17	46.00	5.83
	878.322	14.08	20.97	3.05	38.10	46.00	7.90

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 60%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : Jan 09, 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	75.977	25.07	8.41	0.87	34.35	40.00	5.65
	153.200	20.04	11.73	1.29	33.06	43.50	10.44
	549.020	21.37	17.84	2.38	41.59	46.00	4.41
	663.473	19.23	19.25	2.65	41.13	46.00	4.87
	804.560	12.50	20.37	2.91	35.78	46.00	10.22
	887.610	17.26	21.10	3.07	41.43	46.00	4.57
Vertical	31.955	16.26	17.10	0.58	33.94	40.00	6.06
	56.001	26.61	7.40	0.75	34.76	40.00	5.24
	73.876	26.01	8.13	0.86	35.00	40.00	5.00
	432.546	20.00	16.44	2.12	38.56	46.00	7.44
	661.151	17.26	19.20	2.63	39.09	46.00	6.91
	766.057	16.38	19.77	2.83	38.98	46.00	7.02

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 60%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Jan 09, 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	63.092	25.16	6.79	0.79	32.74	40.00	7.26
	75.977	23.37	8.41	0.87	32.65	40.00	7.35
	153.200	21.03	11.73	1.29	34.05	43.50	9.45
	552.883	19.15	17.95	2.40	39.50	46.00	6.50
	804.603	17.64	20.37	2.91	40.92	46.00	5.08
	881.407	16.49	21.00	3.05	40.54	46.00	5.46
Vertical	31.955	16.58	17.10	0.58	34.26	40.00	5.74
	56.001	26.23	7.40	0.75	34.38	40.00	5.62
	73.876	26.08	8.13	0.86	35.07	40.00	4.93
	480.528	17.47	17.20	2.22	36.89	46.00	9.11
	552.883	19.02	17.95	2.40	39.37	46.00	6.63
	665.804	16.79	19.30	2.65	38.74	46.00	7.26

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 60%RH

Test Mode : HDMI1080P Date of Test : Jan 09, 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	73.103	26.27	7.96	0.85	35.08	40.00	4.92
	164.908	25.98	11.10	1.35	38.43	43.50	5.07
	296.980	21.00	13.60	1.75	36.35	46.00	9.65
	661.151	18.56	19.20	2.63	40.39	46.00	5.61
	796.183	17.40	20.37	2.89	40.66	46.00	5.34
	887.610	16.18	21.10	3.07	40.35	46.00	5.65
Vertical	31.955	16.96	17.10	0.58	34.64	40.00	5.36
	66.034	27.75	7.01	0.81	35.57	40.00	4.43
	73.080	26.90	7.96	0.85	35.71	40.00	4.29
	112.920	22.28	12.29	1.08	35.65	43.50	7.85
	297.224	21.14	13.60	1.75	36.49	46.00	9.51
	554.825	20.49	18.00	2.40	40.89	46.00	5.11

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 60%RH

Test Mode : USB Play Date of Test : Jan 09, 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	61.778	26.52	6.71	0.79	34.02	40.00	5.98
	110.182	20.42	12.13	1.07	33.62	43.50	9.88
	202.810	22.20	10.20	1.49	33.89	43.50	9.61
	313.276	21.38	13.98	1.80	37.16	46.00	8.84
	560.693	15.96	18.10	2.42	36.48	46.00	9.52
	779.607	13.21	20.10	2.87	36.18	46.00	9.82
Vertical	34.396	17.59	16.02	0.60	34.21	40.00	5.79
	52.025	23.10	8.10	0.72	31.92	40.00	8.08
	79.521	23.49	8.82	0.88	33.19	40.00	6.81
	215.268	22.61	10.90	1.53	35.04	43.50	8.46
	422.058	15.80	16.33	2.09	34.22	46.00	11.78
	638.369	14.66	19.18	2.59	36.43	46.00	9.57

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 60%RH

Test Mode : LAN Play Date of Test : Jan 09, 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	72.338	25.49	7.85	0.85	34.19	40.00	5.81
	103.442	20.82	12.33	1.02	34.17	43.50	9.33
	189.074	21.43	10.06	1.44	32.93	43.50	10.57
	302.481	17.34	13.68	1.76	32.78	46.00	13.22
	422.058	14.85	16.33	2.09	33.27	46.00	12.73
	672.845	13.39	19.47	2.65	35.51	46.00	10.49
Vertical	33.680	17.44	16.41	0.59	34.44	40.00	5.56
	62.651	26.51	6.76	0.79	34.06	40.00	5.94
	93.440	20.80	11.40	0.96	33.16	43.50	10.34
	166.068	21.21	11.07	1.35	33.63	43.50	9.87
	422.058	15.06	16.33	2.09	33.48	46.00	12.52
	636.134	14.41	19.15	2.59	36.15	46.00	9.85

TEST ENGINEER: BYRON WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 65H9D Humidity : 60%RH

Test Mode : MHL Date of Test : Jan 09, 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	66.266	26.60	7.04	0.82	34.46	40.00	5.54
	89.590	21.80	10.75	0.95	33.50	43.50	10.00
	131.758	19.72	12.87	1.19	33.78	43.50	9.72
	176.269	21.41	10.51	1.39	33.31	43.50	10.19
	297.224	18.68	13.60	1.75	34.03	46.00	11.97
	566.622	15.31	18.18	2.44	35.93	46.00	10.07
Vertical	33.799	17.54	16.41	0.59	34.54	40.00	5.46
	57.392	25.72	7.21	0.76	33.69	40.00	6.31
	77.865	24.84	8.64	0.88	34.36	40.00	5.64
	111.738	20.72	12.21	1.08	34.01	43.50	9.49
	378.584	16.47	15.77	1.99	34.23	46.00	11.77
	675.208	13.80	19.47	2.67	35.94	46.00	10.06

TEST ENGINEER: BYRON WU

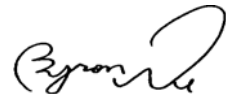
5 DEBUG DESCRIPTION

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 24,23

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

TEST ENGINEER:



(BYRON WU)

6 DEVIATION TO TEST SPECIFICATIONS

None