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

LED LCD TV

Model No.	Brand
40H5B	Hisense
40H5B1	

FCC ID : W9HLCDD0047

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-F15138A3
Date of Test : Feb 14-Mar 02, 2016
Date of Report : Mar 11, 2016

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TEST REPORT FOR FCC CERTIFICATE

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

Model No.	Brand	Power Supply
Refer to Sec2.1	Hisense	120V/60Hz

Test Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2015 AND ANSI C63.4-2003

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 Feb 14-Mar 02, 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.F15140A3, a Verification report.

Date of Test : Feb 14-Mar 02, 2016 Date of Report : Mar 11, 2016

Producer : Huimin Yan
HUIMIN YAN / Assistant

Review : Byron Wu
BYRON WU / Deputy Assistant Manager

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

Signatory :
Authorized Signature EMC SAMMY CHEN / 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 C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2015 AND ANSI C63.4-2003	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. : 40H5B, 40H5B1

Note#1 : The above models are all the same except for model name.
40H5B model was tested and recorded in the report.

Note #2 : The modified histories of report are as follows:

Report No.	Model No.	Rev. Summary	Edition No.	Data of Rev.
ACI-F15138	40H5B, 40H5B1	Original Report	0	Jul 27, 2015
ACI-F15138A1	40H5B, 40H5B1, RLDED4079A-SM	To add one model number and brand name.	Rev. A1	Jan 21, 2016
ACI-F15138A2	40H5B, 40H5B1 RLDED4079A-SM PLDED4079-SM	To add one model number and brand name.	Rev. A2	Mar 09, 2016
ACI-F15138A3	40H5B, 40H5B1	To change the transformer, DDR and flash on mainboard	Rev. A3	Mar 11, 2016

Brand Name : Hisense

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 : HD400DF-E32
Tuner	:	Manufacturer : MaxLinear M/N : MxL661
Max Resolution	:	1920*1080@60Hz
HDMI Cable*2 (Lab provide)	:	Shielded, Detachable, 1.50m
Power Cord	:	Unshielded, Detachable, 1.80m, 2C
USB Cable (Lab provide)	:	Shielded, Detachable, 1.00m, without core
LAN Cable (Lab provide)	:	Unshielded, Detachable, 1.50m

Remark:

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

Side Port:

(1) One ANT/CABLE IN Port
: Connected with Antenna or ATSC SG / TV SG

(2) One HDMI2/ARC Port
: Connected with DVD PLAYER

(3) One HDMI1/DVI Port
: Connected with PC

(4) One DVI AUDIO IN Port
: Connected with PC

(5) One LAN Port
: Connected with PC

(6) One Digital Audio Out Port
: Connected with Audio Converter to Earphone#1

Back Port:

(1) One USB Port
: Connected with Hard-DISK

(2) One Audio out Port
: Connected with Earphone#2

(3) One COMPONENT IN/AV IN Port
: Connected with DVD PLAYER

2.2 Peripherals

2.2.1 PC

Manufacturer	:	HP
Model Number	:	dx7400MT
Serial Number	:	CNG8130K89
Power Cord	:	Unshielded, Detachable, 1.8m
Certificate	:	FCC DoC; CE/EMC; VCCI; C-Tick

2.2.2 Keyboard

Manufacturer	:	Microsoft
Model Number	:	RT2300
Serial Number	:	7668200662248
Data Cable	:	Shielded, undetachable, 1.8m
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, Undetachable, 1.8m.
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#1

Manufacturer	:	Edifier
Model Number	:	H210

2.2.6 Earphone#2

Manufacturer	:	Edifier
Model Number	:	H210

2.2.7 TV Signal Generator

Manufacturer	:	FLUKE
Model Number	:	54200m01
Serial Number	:	814008
Data Cable	:	Shielded, detachable, 2.0m
Power Cord	:	Unshielded, detachable, 2.0m
Certificate	:	CE/EMC, FCC DoC, CCC

2.2.8 ATSC Signal Generator

Manufacturer	:	SENCORE
Model Number	:	ATSC997
Serial Number	:	6790071

2.2.9 DVD PLAYER

Manufacturer	:	PHILIPS
Model Number	:	DVP3986K/93
Serial Number	:	KX1A0902120108
Certificate	:	FCC DoC, CE/EMC, CCC

2.2.10 Hard-Disk

Manufacturer	:	Tetasys
Model Number	:	F12
Serial Number	:	A010022-4860010X
Data Cable	:	Shielded, Detachable, 1.5m
Certificate	:	CE, FCC DoC

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 = 4.3dB (Horizontal)
U = 4.6dB (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

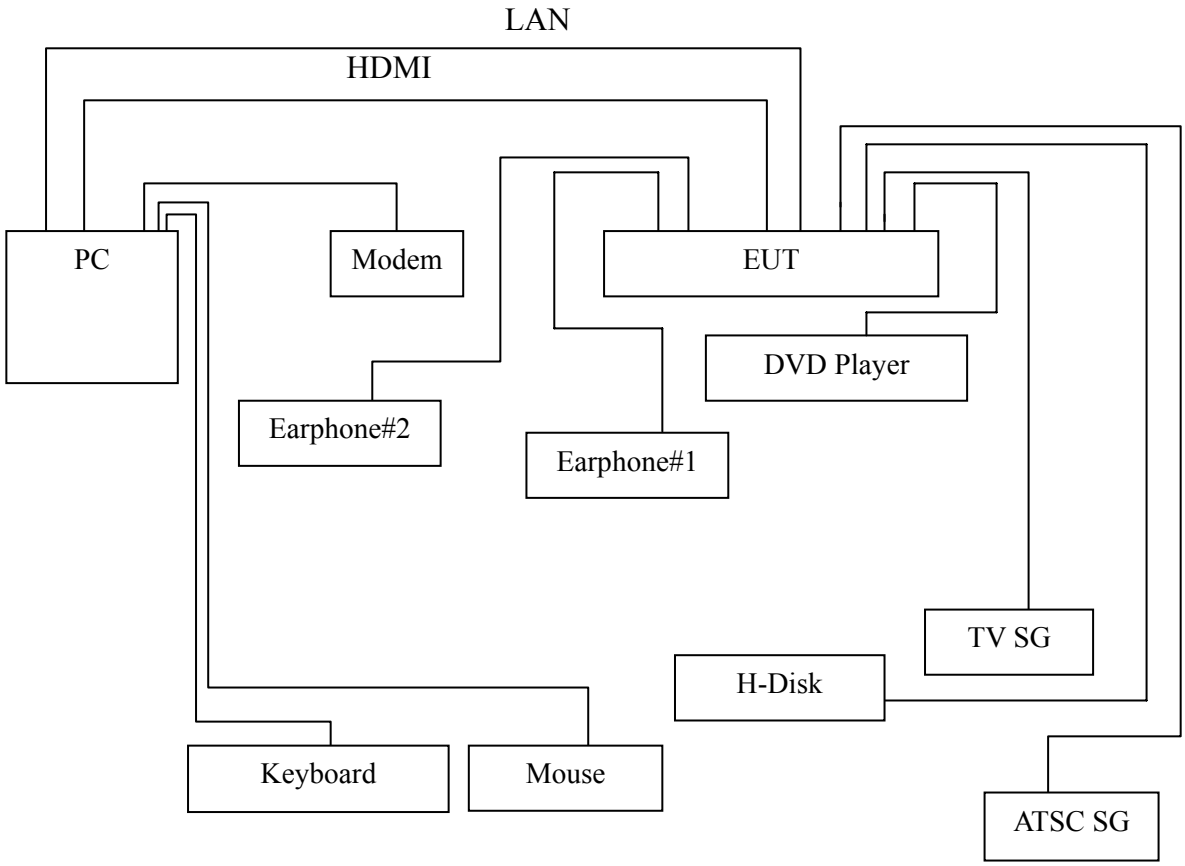
3.1 Test Equipment

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

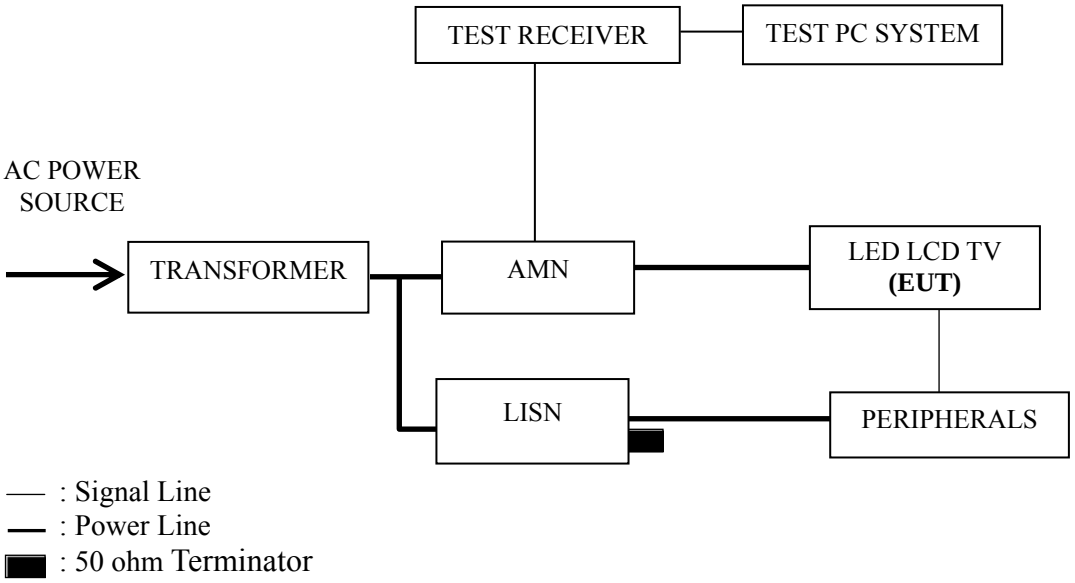
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Jul 03, 2015	Jul 02, 2016
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2015	Jun 26, 2016
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-5	Mar 20, 2015	Mar 19, 2016
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 (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 Hard-Disk.

3.5.7 In LAN Play mode, set the EUT play digital media through LAN port.

3.5.8 The other peripherals devices were driven and operated during the test.

3.5.9 The test modes are as follows:

Test Mode
HDMI 1920*1080@60Hz & 1kHz playing
HDMI 1280*1024@60Hz & 1kHz playing
HDMI 640*480@60Hz & 1kHz playing
HDMI 1080P
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 C63.4:2003 during conducted emission test.

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

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

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

3.7 Test Results

< PASS >

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

Test Mode	Data Page
HDMI 1920*1080@60Hz & 1kHz playing	P13
HDMI 1280*1024@60Hz & 1kHz playing	P14
HDMI 640*480@60Hz & 1kHz playing	P15
HDMI 1080P	P16
USB Play	P17
LAN Play	P18

NOTE 1 – Factor = Cable Loss + AMN Factor.
NOTE 2 – Emission Level = Meter Reading + Factor.
NOTE 3 – "QP" means "Quasi-Peak" values, "AV" means "Average" values.
NOTE 4 – The worst case is for HDMI 1280*1024@60Hz & 1kHz Playing test mode. The worst emission is detected at 0.306 MHz (QP Value) with corrected signal level of 47.35 dB (μV) (limit is 50.09 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	40H5B	Humidity :	48%RH	
Test Mode	:	HDMI 1920*1080@60Hz & 1kHz Playing	Date of Test :	Feb 14, 2016	

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.186	45.60	10.54	56.14	64.21	8.07	QP
	0.304	39.00	10.46	49.46	60.12	10.66	
	0.916	26.90	10.38	37.28	56.00	18.72	
	3.327	28.60	10.42	39.02	56.00	16.98	
	5.639	30.29	10.45	40.74	60.00	19.26	
	17.420	22.00	10.57	32.57	60.00	27.43	
	0.186	32.90	10.54	43.44	54.21	10.77	AV
	0.304	36.30	10.46	46.76	50.12	3.36	
	0.916	26.20	10.38	36.58	46.00	9.42	
	3.327	20.50	10.42	30.92	46.00	15.08	
	5.639	23.29	10.45	33.74	50.00	16.26	
	17.420	18.90	10.57	29.47	50.00	20.53	
Neutral	0.184	44.90	10.53	55.43	64.31	8.88	QP
	0.305	38.50	10.45	48.95	60.11	11.16	
	0.916	29.90	10.39	40.29	56.00	15.71	
	3.300	31.29	10.47	41.76	56.00	14.24	
	5.607	28.31	10.51	38.82	60.00	21.18	
	16.900	23.00	10.68	33.68	60.00	26.32	
	0.184	31.30	10.53	41.83	54.31	12.48	AV
	0.305	**36.80**	**10.45**	**47.25**	**50.11**	**2.86**	
	0.916	27.20	10.39	37.59	46.00	8.41	
	3.300	23.29	10.47	33.76	46.00	12.24	
	5.607	23.50	10.51	34.01	50.00	15.99	
	16.900	22.20	10.68	32.88	50.00	17.12	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	40H5B	Humidity	:	48%RH
Test Mode	:	HDMI 1280*1024@60Hz & 1kHz Playing	Date of Test	:	Feb 14, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.186	45.00	10.54	55.54	64.20	8.66	QP
	0.306	38.90	10.46	49.36	60.08	10.72	
	0.917	26.90	10.38	37.28	56.00	18.72	
	2.955	28.35	10.42	38.77	56.00	17.23	
	5.599	29.90	10.45	40.35	60.00	19.65	
	26.550	22.90	10.85	33.75	60.00	26.25	
	0.186	32.20	10.54	42.74	54.20	11.46	AV
	0.306	36.70	10.46	47.16	50.08	2.92	
	0.917	26.50	10.38	36.88	46.00	9.12	
	2.955	19.00	10.42	29.42	46.00	16.58	
	5.599	23.29	10.45	33.74	50.00	16.26	
	26.550	20.50	10.85	31.35	50.00	18.65	
Neutral	0.189	43.70	10.52	54.22	64.07	9.85	QP
	0.306	38.80	10.45	49.25	60.09	10.84	
	0.916	29.90	10.39	40.29	56.00	15.71	
	3.403	31.50	10.47	41.97	56.00	14.03	
	5.361	29.81	10.50	40.31	60.00	19.69	
	16.900	24.30	10.68	34.98	60.00	25.02	
	0.189	31.00	10.52	41.52	54.07	12.55	AV
	0.306	**36.90**	**10.45**	**47.35**	**50.09**	**2.74**	
	0.916	26.90	10.39	37.29	46.00	8.71	
	3.403	23.90	10.47	34.37	46.00	11.63	
	5.361	22.91	10.50	33.41	50.00	16.59	
	16.900	23.40	10.68	34.08	50.00	15.92	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	40H5B	Humidity :	48%RH	
Test Mode	:	HDMI 640*480@60Hz & 1kHz Playing	Date of Test :	Feb 14, 2016	

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.184	44.90	10.54	55.44	64.31	8.87	QP
	0.305	39.00	10.46	49.46	60.09	10.63	
	0.917	26.90	10.38	37.28	56.00	18.72	
	3.080	29.90	10.42	40.32	56.00	15.68	
	5.500	29.49	10.45	39.94	60.00	20.06	
	16.610	23.90	10.56	34.46	60.00	25.54	
	0.184	31.30	10.54	41.84	54.31	12.47	AV
	0.305	36.80	10.46	47.26	50.09	2.83	
	0.917	26.30	10.38	36.68	46.00	9.32	
	3.080	20.00	10.42	30.42	46.00	15.58	
	5.500	22.89	10.45	33.34	50.00	16.66	
	16.610	20.70	10.56	31.26	50.00	18.74	
Neutral	0.183	43.80	10.53	54.33	64.34	10.01	QP
	0.306	38.31	10.44	48.75	60.07	11.32	
	0.917	29.90	10.39	40.29	56.00	15.71	
	3.231	30.89	10.47	41.36	56.00	14.64	
	5.364	28.91	10.50	39.41	60.00	20.59	
	16.000	25.91	10.66	36.57	60.00	23.43	
	0.183	29.50	10.53	40.03	54.34	14.31	AV
	0.306	**36.81**	**10.44**	**47.25**	**50.07**	**2.82**	
	0.917	27.30	10.39	37.69	46.00	8.31	
	3.231	22.79	10.47	33.26	46.00	12.74	
	5.364	22.61	10.50	33.11	50.00	16.89	
	16.000	24.61	10.66	35.27	50.00	14.73	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	40H5B	Humidity :	48%RH
Test Mode	:	HDMI 1080P	Date of Test :	Feb 14, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.186	44.30	10.54	54.84	64.24	9.40	QP
	0.305	38.80	10.46	49.26	60.10	10.84	
	0.918	26.90	10.38	37.28	56.00	18.72	
	3.004	29.80	10.42	40.22	56.00	15.78	
	5.377	28.90	10.44	39.34	60.00	20.66	
	26.490	23.50	10.85	34.35	60.00	25.65	
	0.186	30.90	10.54	41.44	54.24	12.80	AV
	0.305	36.50	10.46	46.96	50.10	3.14	
	0.918	26.50	10.38	36.88	46.00	9.12	
	3.004	18.50	10.42	28.92	46.00	17.08	
	5.377	22.30	10.44	32.74	50.00	17.26	
	26.490	20.50	10.85	31.35	50.00	18.65	
Neutral	0.188	43.20	10.53	53.73	64.13	10.40	QP
	0.306	38.40	10.45	48.85	60.09	11.24	
	0.918	29.90	10.39	40.29	56.00	15.71	
	2.908	29.70	10.45	40.15	56.00	15.85	
	5.327	29.33	10.50	39.83	60.00	20.17	
	16.890	25.50	10.68	36.18	60.00	23.82	
	0.188	29.90	10.53	40.43	54.13	13.70	AV
	0.306	**36.90**	**10.45**	**47.35**	**50.09**	**2.74**	
	0.918	26.90	10.39	37.29	46.00	8.71	
	2.908	20.50	10.45	30.95	46.00	15.05	
	5.327	22.51	10.50	33.01	50.00	16.99	
	16.890	24.20	10.68	34.88	50.00	15.12	

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	40H5B	Humidity	:	48%RH
Test Mode	:	USB Play	Date of Test	:	Feb 14, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.185	44.00	10.54	54.54	64.24	9.70	QP
	0.306	38.91	10.45	49.36	60.08	10.72	
	0.918	26.90	10.38	37.28	56.00	18.72	
	3.021	28.60	10.42	39.02	56.00	16.98	
	5.617	29.59	10.45	40.04	60.00	19.96	
	16.750	24.90	10.56	35.46	60.00	24.54	
	0.185	30.90	10.54	41.44	54.24	12.80	AV
	0.306	36.71	10.45	47.16	50.08	2.92	
	0.918	26.30	10.38	36.68	46.00	9.32	
	3.021	19.90	10.42	30.32	46.00	15.68	
	5.617	22.89	10.45	33.34	50.00	16.66	
	16.750	22.60	10.56	33.16	50.00	16.84	
Neutral	0.186	43.30	10.53	53.83	64.22	10.39	QP
	0.307	38.21	10.44	48.65	60.06	11.41	
	0.918	29.90	10.39	40.29	56.00	15.71	
	3.008	32.51	10.45	42.96	56.00	13.04	
	5.584	29.90	10.51	40.41	60.00	19.59	
	16.550	25.60	10.68	36.28	60.00	23.72	
	0.186	29.60	10.53	40.13	54.22	14.09	AV
	0.307	**36.71**	**10.44**	**47.15**	**50.06**	**2.91**	
	0.918	27.20	10.39	37.59	46.00	8.41	
	3.008	20.61	10.45	31.06	46.00	14.94	
	5.584	22.80	10.51	33.31	50.00	16.69	
	16.550	24.30	10.68	34.98	50.00	15.02	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	40H5B	Humidity	:	48%RH
Test Mode	:	LAN Play	Date of Test	:	Feb 14, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.188	43.89	10.54	54.43	64.13	9.70	QP
	0.306	38.71	10.45	49.16	60.08	10.92	
	0.918	26.90	10.38	37.28	56.00	18.72	
	3.044	28.50	10.42	38.92	56.00	17.08	
	5.805	29.90	10.45	40.35	60.00	19.65	
	16.900	26.00	10.56	36.56	60.00	23.44	
	0.188	31.19	10.54	41.73	54.13	12.40	AV
	0.306	**36.81**	**10.45**	**47.26**	**50.08**	**2.82**	
	0.918	26.50	10.38	36.88	46.00	9.12	
	3.044	18.80	10.42	29.22	46.00	16.78	
	5.805	23.50	10.45	33.95	50.00	16.05	
	16.900	25.30	10.56	35.86	50.00	14.14	
Neutral	0.189	42.90	10.52	53.42	64.06	10.64	QP
	0.307	38.01	10.44	48.45	60.05	11.60	
	0.917	30.00	10.39	40.39	56.00	15.61	
	3.050	30.61	10.45	41.06	56.00	14.94	
	5.491	28.80	10.51	39.31	60.00	20.69	
	15.780	26.21	10.66	36.87	60.00	23.13	
	0.189	29.50	10.52	40.02	54.06	14.04	AV
	0.307	36.61	10.44	47.05	50.05	3.00	
	0.917	27.30	10.39	37.69	46.00	8.31	
	3.050	21.81	10.45	32.26	46.00	13.74	
	5.491	21.80	10.51	32.31	50.00	17.69	
	15.780	24.81	10.66	35.47	50.00	14.53	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

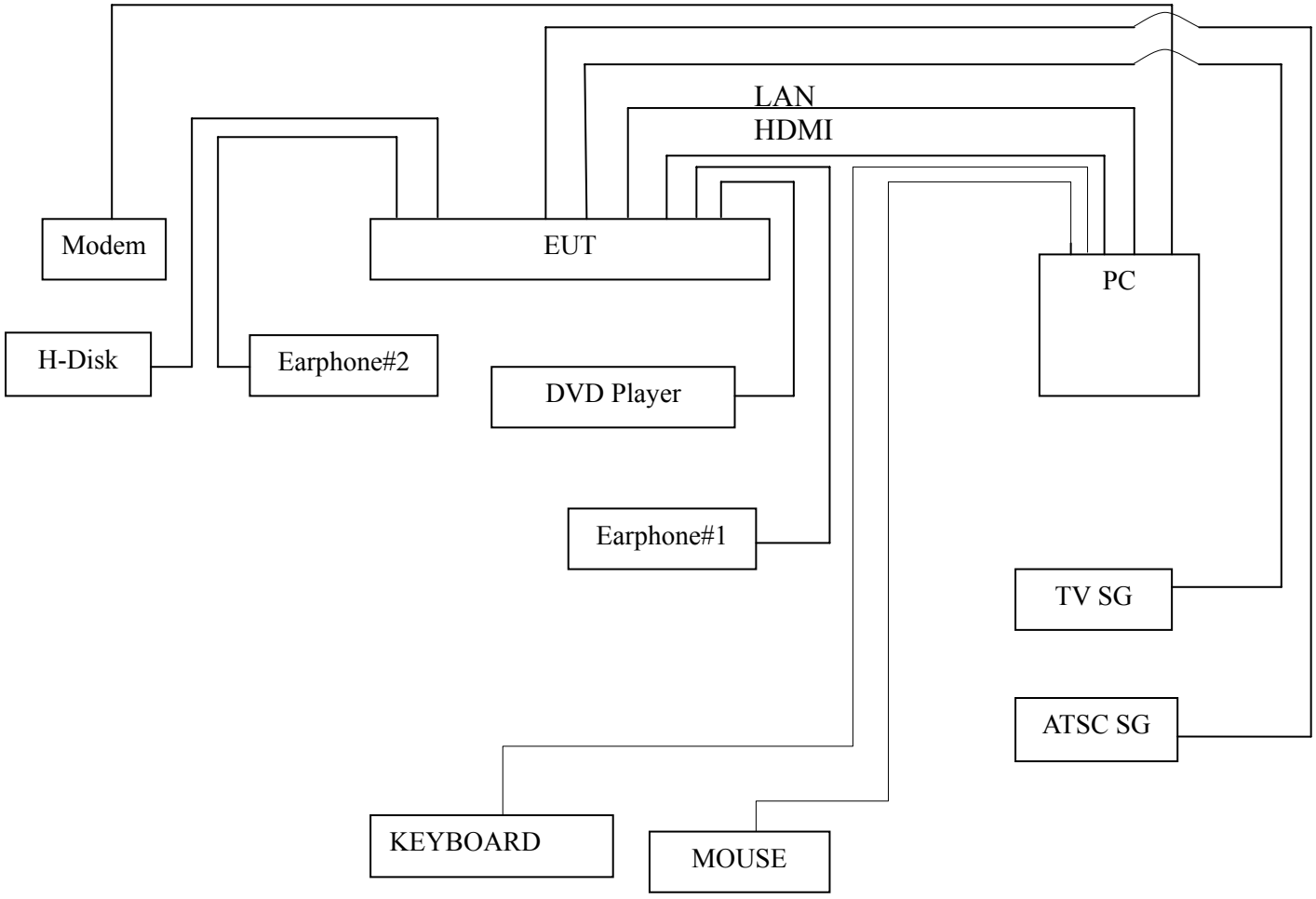
4.1 Test Equipment

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, 2015	May 06, 2016
2.	Preamplifier	Agilent	8447D	2944A06664	Apr 27, 2015	Apr 26, 2016
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2015	Sep 19, 2016
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 15, 2015	May 14, 2016
5.	Horn Antenna	EMCO	3115	9607-4878	Jun 03, 2015	Jun 02, 2016
6.	Spectrum	Agilent	N9010A	MY52221182	Jun 12, 2015	Jun 11, 2016
7.	Spectrum	HP	8591EM	3628A00908	May 07, 2015	May 06, 2016
8.	Software	Audix	e3	6.2007-9-10	--	--

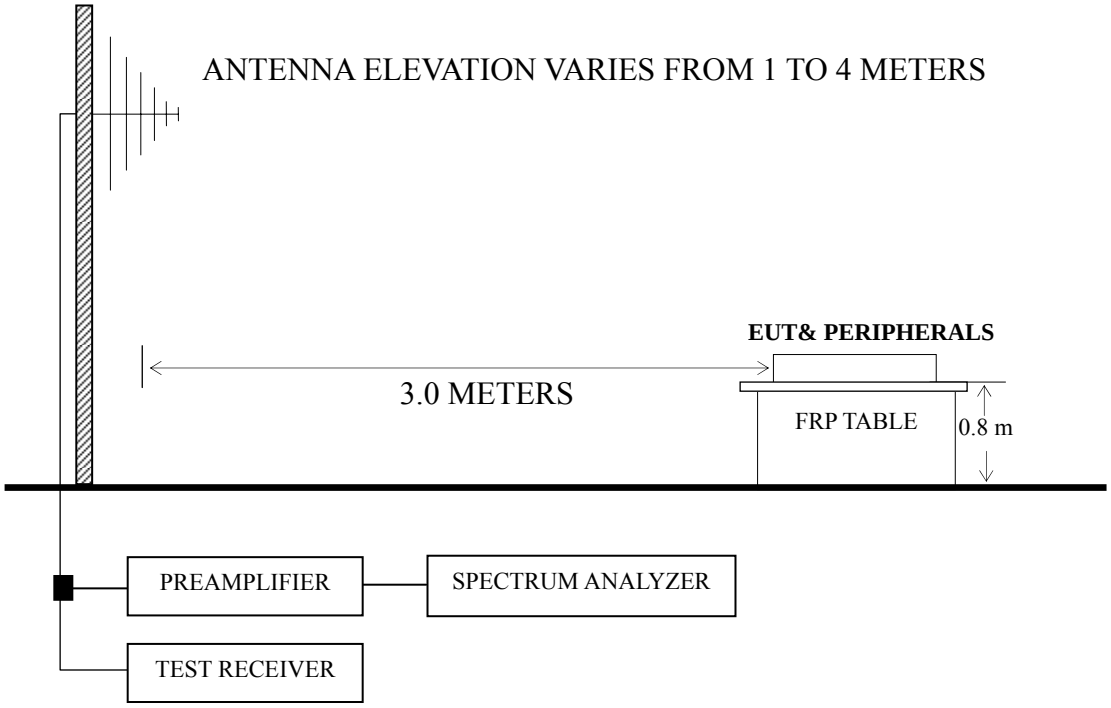
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



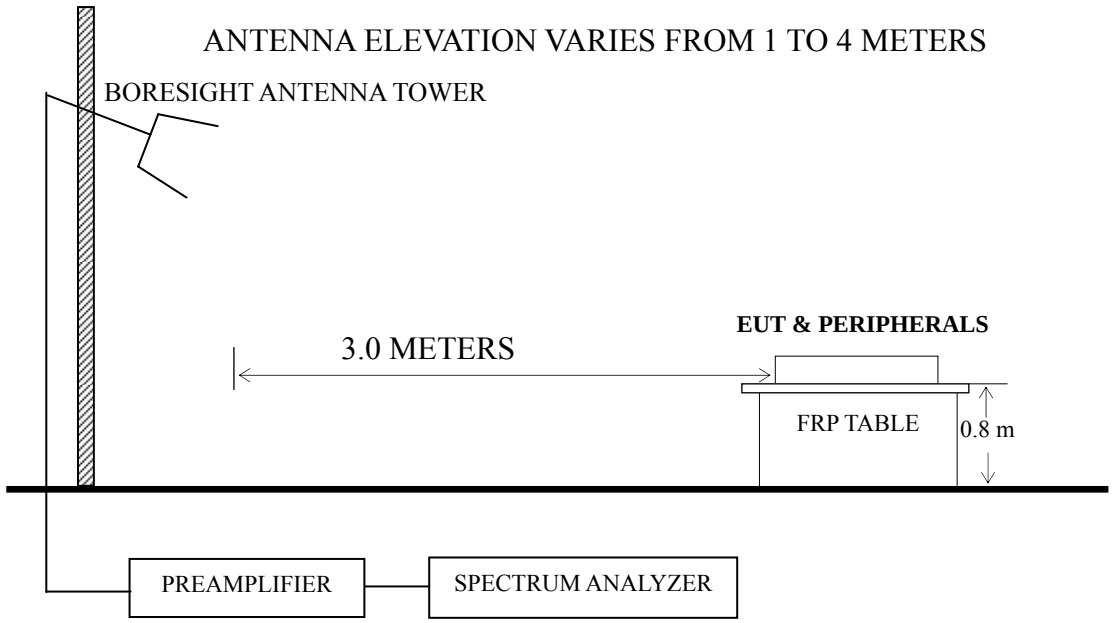
4.2.2 Radiated emission test setup

4.2.2.1 Below 1GHz



■ : 50 ohm Coaxial Switch

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	
		(μV/m)	dB (μV/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 (μV/m) = 20 log Emission Level (μV/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 C63.4:2003 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 2 GHz was checked for the maximum resolution test mode.

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

4.7 Test Results

<PASS>

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

Test Mode	Data Page
HDMI 1920*1080@60Hz & 1kHz playing	P23-P24
HDMI 1280*1024@60Hz & 1kHz playing	P25
HDMI 640*480@60Hz & 1kHz playing	P26
HDMI1080P	P27
USB Play	P28
LAN Play	P29

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

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

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

NOTE 4 – The worst case is for HDMI 1920*1080@60Hz & 1kHz playing test mode. The worst emission at horizontal polarization was detected at 704.000 MHz with corrected signal level of 44.76 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.9 m height and the turntable was at 75°. The worst emission at vertical polarization was detected at 891.000 MHz with corrected signal level of 44.16 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.2m height and the turntable was at 345°.

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	40H5B	Humidity :	60%RH
Test Mode	:	HDMI 1920*1080@60Hz & 1kHz Playing	Date of Test :	Mar 02, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	110.182	12.61	21.08	1.40	--	35.09	43.50	8.41	QP
	159.784	11.11	23.37	1.70	--	36.18	43.50	7.32	
	254.728	12.66	23.99	2.22	--	38.87	46.00	7.13	
	704.000	**19.80**	**21.40**	**3.56**	**--**	**44.76**	**46.00**	**1.24**	
	742.480	19.97	20.50	3.60	--	44.07	46.00	1.93	
	890.728	21.30	14.90	4.46	--	40.66	46.00	5.34	
	1226.618	59.94	24.57	3.56	36.09	51.98	74.00	22.02	PK
	1696.503	60.62	26.42	4.07	35.44	55.67	74.00	18.33	
	1764.712	59.33	26.68	4.13	35.36	54.78	74.00	19.22	
	2529.778	65.88	28.53	4.96	35.16	64.21	74.00	9.79	
	2961.827	65.15	30.37	5.76	35.20	66.08	74.00	7.92	
	3792.666	53.92	32.27	5.94	34.46	57.67	74.00	16.33	
	1226.618	42.13	24.57	3.56	36.09	34.17	54.00	19.83	AV
	1696.503	40.44	26.42	4.07	35.44	35.49	54.00	18.51	
	1764.712	38.30	26.68	4.13	35.36	33.75	54.00	20.25	
	2529.778	44.57	28.53	4.96	35.16	42.90	54.00	11.10	
	2961.827	45.39	30.37	5.76	35.20	46.32	54.00	7.68	
	3792.666	35.83	32.27	5.94	34.46	39.58	54.00	14.42	

TEST ENGINEER: MARK LI

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	40H5B	Humidity :	60%RH
Test Mode	:	HDMI 1920*1080@60Hz & 1kHz Playing	Date of Test :	Mar 02, 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	30.853	18.25	14.85	0.64	--	33.74	40.00	6.26	QP
	74.135	8.27	24.77	0.99	--	34.03	40.00	5.97	
	159.784	11.11	24.26	1.70	--	37.07	43.50	6.43	
	593.050	18.85	20.46	2.31	--	41.62	46.00	4.38	
	704.226	19.80	17.77	3.56	--	41.13	46.00	4.87	
	891.000	**21.30**	**18.40**	**4.46**	--	**44.16**	**46.00**	**1.84**	
	1217.858	57.54	24.52	3.54	36.10	49.50	74.00	24.50	PK
	1488.503	65.27	25.57	3.86	35.70	59.00	74.00	15.00	
	2547.974	60.63	28.63	4.96	35.16	59.06	74.00	14.94	
	2972.460	67.73	30.40	5.76	35.20	68.69	74.00	5.31	
	3399.987	59.30	31.31	6.10	34.81	61.90	74.00	12.10	
	4652.151	51.82	33.76	6.51	34.03	58.06	74.00	15.94	
	1217.858	37.39	24.52	3.54	36.10	29.35	54.00	24.65	AV
	1488.503	44.84	25.57	3.86	35.70	38.57	54.00	15.43	
	2547.974	40.70	28.63	4.96	35.16	39.13	54.00	14.87	
	2972.460	46.63	30.40	5.76	35.20	47.59	54.00	6.41	
	3399.987	39.84	31.31	6.10	34.81	42.44	54.00	11.56	
	4652.151	31.73	33.76	6.51	34.03	37.97	54.00	16.03	

TEST ENGINEER: MARK LI

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	40H5B	Humidity :	60%RH
Test Mode	:	HDMI 1280*1024@60Hz & 1kHz Playing	Date of Test :	Mar 02, 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	74.135	8.27	24.76	0.99	34.02	40.00	5.98
	109.796	12.60	19.73	1.40	33.73	43.50	9.77
	159.784	11.11	23.00	1.70	35.81	43.50	7.69
	245.951	12.34	25.19	2.14	39.67	46.00	6.33
	704.226	**19.80**	**20.80**	**3.56**	**44.16**	**46.00**	**1.84**
	815.968	20.67	17.06	3.88	41.61	46.00	4.39
Vertical	31.180	18.06	16.09	0.65	34.80	40.00	5.20
	96.099	11.84	24.84	1.27	37.95	43.50	5.55
	159.784	11.11	24.93	1.70	37.74	43.50	5.76
	350.477	15.60	23.00	2.66	41.26	46.00	4.74
	815.968	20.67	15.69	3.88	40.24	46.00	5.76
	890.728	21.30	14.39	4.46	40.15	46.00	5.85

TEST ENGINEER: MARK LI

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	40H5B	Humidity :	60%RH
Test Mode	:	HDMI 640*480@60Hz & 1kHz Playing	Date of Test :	Mar 02, 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	54.071	6.70	25.52	0.84	33.06	40.00	6.94
	74.919	8.50	24.80	1.01	34.31	40.00	5.69
	257.422	12.90	23.85	2.22	38.97	46.00	7.03
	373.311	16.36	20.21	2.69	39.26	46.00	6.74
	704.000	**19.80**	**20.50**	**3.56**	**43.86**	**46.00**	**2.14**
	821.710	20.70	17.10	3.88	41.68	46.00	4.32
Vertical	31.071	18.15	14.97	0.65	33.77	40.00	6.23
	54.071	6.70	28.38	0.84	35.92	40.00	4.08
	110.182	12.61	23.23	1.40	37.24	43.50	6.26
	159.784	11.11	24.87	1.70	37.68	43.50	5.82
	447.982	16.82	23.26	2.82	42.90	46.00	3.10
	896.997	21.30	18.07	4.46	43.83	46.00	2.17

TEST ENGINEER: MARK LI

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	40H5B	Humidity	:	60%RH
Test Mode	:	HDMI 1080P	Date of Test	:	Mar 02, 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	114.390	12.69	21.67	1.42	35.78	43.50	7.72
	242.430	12.10	23.94	2.13	38.17	46.00	7.83
	376.290	16.41	18.37	2.69	37.47	46.00	8.53
	697.360	19.77	20.29	3.54	43.60	46.00	2.40
	820.550	20.70	17.79	3.88	42.37	46.00	3.63
	955.380	22.05	13.71	4.75	40.51	46.00	5.49
Vertical	33.680	16.55	15.32	0.67	32.54	40.00	7.46
	88.342	10.25	21.14	1.20	32.59	43.50	10.91
	157.007	11.16	24.98	1.68	37.82	43.50	5.68
	234.168	11.36	24.54	2.10	38.00	46.00	8.00
	724.261	19.97	19.87	3.59	43.43	46.00	2.57
	875.247	**20.97**	**18.54**	**4.36**	**43.87**	**46.00**	**2.13**

TEST ENGINEER: MARK LI

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	40H5B	Humidity :	60%RH	
Test Mode	:	USB Play	Date of Test :	Mar 02, 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	112.450	12.65	20.44	1.41	34.50	43.50	9.00
	238.550	11.72	24.99	2.11	38.82	46.00	7.18
	594.540	18.85	18.89	2.31	40.05	46.00	5.95
	704.150	19.80	16.86	3.56	40.22	46.00	5.78
	742.480	19.97	17.60	3.60	41.17	46.00	4.83
	888.450	21.30	14.85	4.46	40.61	46.00	5.39
Vertical	30.970	18.15	14.53	0.64	33.32	40.00	6.68
	112.450	12.65	23.14	1.41	37.20	43.50	6.30
	447.100	16.83	19.78	2.82	39.43	46.00	6.57
	594.540	18.85	19.31	2.31	40.47	46.00	5.53
	742.950	19.97	17.52	3.60	41.09	46.00	4.91
	888.450	**21.30**	**15.68**	**4.46**	**41.44**	**46.00**	**4.56**

TEST ENGINEER: MARK LI

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	40H5B	Humidity :	60%RH
Test Mode	:	LAN Play	Date of Test :	Mar 02, 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	110.182	12.61	22.08	1.40	36.09	43.50	7.41
	216.783	10.32	22.59	2.03	34.94	46.00	11.06
	258.326	13.00	24.15	2.22	39.37	46.00	6.63
	349.250	15.53	19.46	2.65	37.64	46.00	8.36
	724.261	**19.97**	**18.20**	**3.59**	**41.76**	**46.00**	**4.24**
	878.322	21.03	13.84	4.36	39.23	46.00	6.77
Vertical	31.731	17.69	15.43	0.65	33.77	40.00	6.23
	53.693	6.74	25.10	0.84	32.68	40.00	7.32
	98.487	12.12	20.96	1.30	34.38	43.50	9.12
	160.346	11.10	21.59	1.72	34.41	43.50	9.09
	232.532	11.32	24.30	2.09	37.71	46.00	8.29
	714.173	19.85	18.29	3.57	41.71	46.00	4.29

TEST ENGINEER: MARK LI

5 DEVIATION TO TEST SPECIFICATIONS

None.

6 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Suppressor	LGK-1020	JIANGSU RUIFENG ELECTRONICS Co., LTD.	See Appendix Figure 16

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)