

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

LED LCD TV

Model No.	Brand
55K2203W	Hisense
55H5C	
55H5C+	

FCC ID: W9HLCDF0076

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

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Report No. : ACI-F16035
Date of Test : Jan 14- 20, 2016
Date of Report : Jan 29, 2016

TABLE OF CONTENTS

	Page
1 SUMMARY OF STANDARDS AND RESULTS	4
1.1 Description of Standards and Results.....	4
2 GENERAL INFORMATION	5
2.1 Description of Equipment Under Test.....	5
2.2 Peripherals.....	6
2.3 Description of Test Facility.....	8
2.4 Measurement Uncertainty.....	8
3 CONDUCTED EMISSION TEST	9
3.1 Test Equipment.....	9
3.2 Block Diagram of Test Setup.....	9
3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)].....	10
3.4 Test Configuration.....	10
3.5 Operating Condition of EUT.....	11
3.6 Test Procedures.....	11
3.7 Test Results.....	12
4 RADIATED EMISSION TEST	19
4.1 Test Equipment.....	19
4.2 Block Diagram of Test Setup.....	19
4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)].....	21
4.4 Test Configuration.....	21
4.5 Operating Condition of EUT.....	22
4.6 Test Procedures.....	22
4.7 Test Results.....	23
5 DEBUG DESCRIPTION	31
6 DEVIATION TO TEST SPECIFICATIONS	32

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 2014
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 Jan 14- 20, 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.F16034, a Verification report.

Date of Test : Jan 14- 20, 2016 Date of Report : Jan 29, 2016

Producer : Huimin Yan
HUIMIN YAN / Assistant

Review : Sammy Chen
SAMMY CHEN / Manager

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

Signatory : Byron Kwo
Authorized Signature EMC BYRON KWO / Assistant General Manager

1 SUMMARY OF STANDARDS AND RESULTS

1.1 Description of Standards and Results

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

Description of Test Item	Standard	Limits	Results
EMISSION			
Conducted Disturbance at the Mains Terminal	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2014 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2014 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	:	<input checked="" type="checkbox"/> Production <input type="checkbox"/> Pre-product <input type="checkbox"/> Pro-type
Model No	:	55K2203W, 55H5C, 55H5C+
Note#1	:	The above models are all the same except for model number.55K2203W model is tested and recorded in the report.
Note#2	:	“+ ” represents any numerals, for different sales area
Brand	:	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 : HD550DF-B52 (020)
Tuner	:	Manufacturer : XuGuang Tech. Co., Ltd. M/N : HFT-96S3/W11FJ4H\ROH
Max Resolution	:	1920*1080@60Hz
HDMI Cable*3 (Lab provide)	:	Shielded, Detachable, 1.50m
Power Cord	:	Unshielded, Detachable, 1.80m, 2C
LAN Cable	:	Shielded, Detachable, 1.50m
USB Cable*2 (Lab provide)	:	Shielded, Detachable, 1.00m

Remark:

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

Side Port:

- (1) One Audio out Port : Connected with Earphone
- (2) One USB 2 Port : Connected with Hard-Disk #2
- (3) One DEBUG Port : This port does not open to user
- (4) One USB 1 Port : Connected with Hard-Disk #1
- (5) One HDMI 2 Port : Connected with PC
- (6) One HDMI 1 Port : Connected with DVD PLAYER #1
- (7) One ANT/CABLE IN Port : Connected with Antenna or ATSC SG / TV SG

Back Port:

- (8) One LAN Port : Connected with PC
- (9) One HDMI3 Port : Connected with DVD PLAYER #2
- (10) One Digital Audio Out Port : Connected with DVD PLAYER #2
- (11) One COMPONENT IN/AV IN Port : Connected with DVD PLAYER #2

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

Manufacturer : audio-technica
Model Number : ATH-CKL200

2.2.6 TV Signal Generator

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

2.2.7 ATSC Signal Generator

Manufacturer : SENCORE
Model Number : ATSC997
Serial Number : 6790071

2.2.8 DVD PLAYER #1

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

2.2.9 DVD PLAYER #2

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

2.2.10 Hard Disk #1

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

2.2.11 Hard Disk #2

Manufacturer : Tetasys
Model Number : F12
Serial Number : A010022-4A60007
Data Cable : Shielded, Undetachable, 1.8m.
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

NVLAP Lab Code : 200371-0

2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty : U = 3.4dB
Radiated Emission Expanded Uncertainty (30-200MHz):
U = 4.6dB (Horizontal)
U = 4.3dB (Vertical)
Radiated Emission Expanded Uncertainty (200M-1GHz):
U = 4.5dB (Horizontal)
U = 5.4dB (Vertical)
Radiated Emission Expanded Uncertainty (1GHz-6GHz):
U = 5.1dB

3 CONDUCTED EMISSION TEST

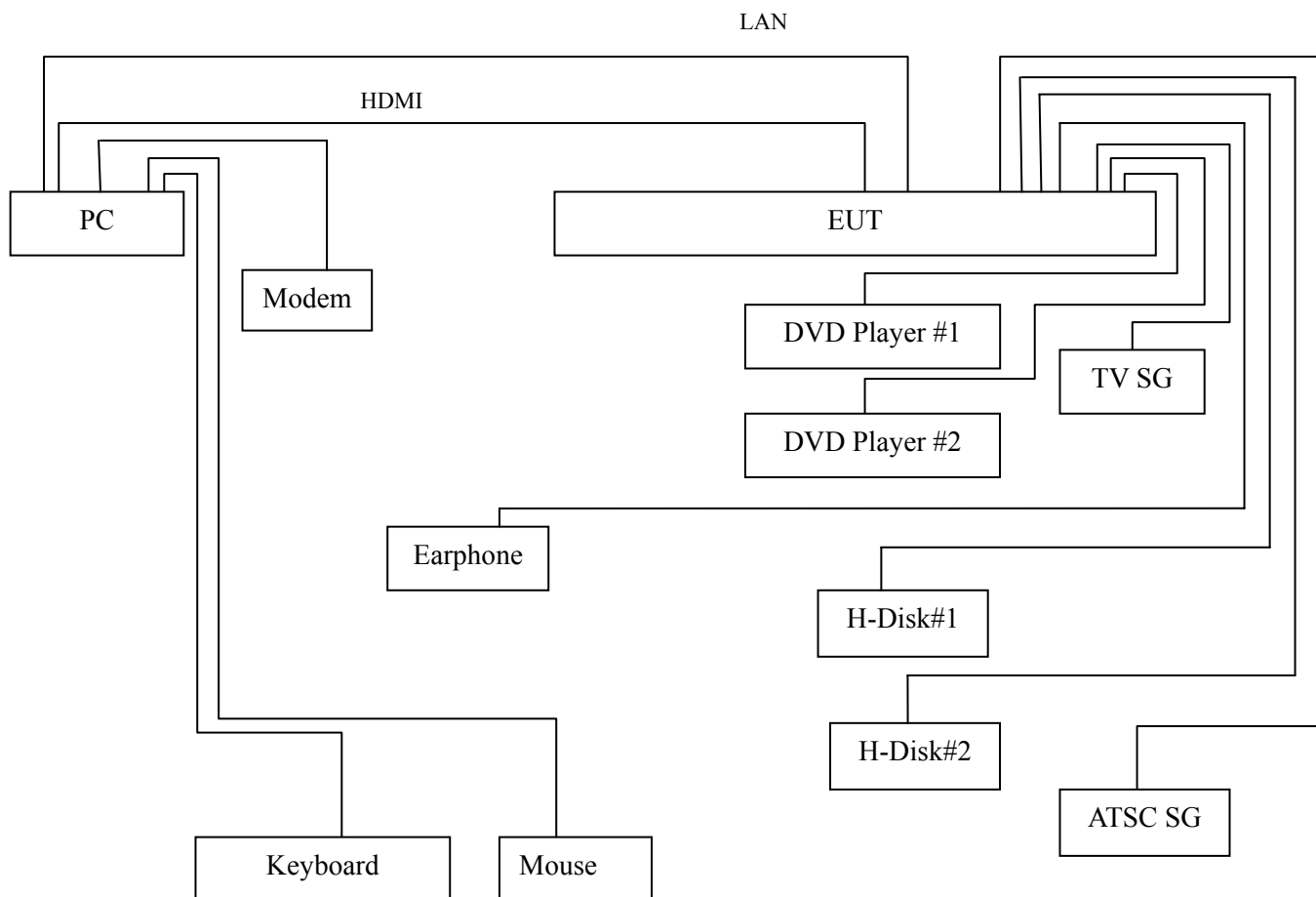
3.1 Test Equipment

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

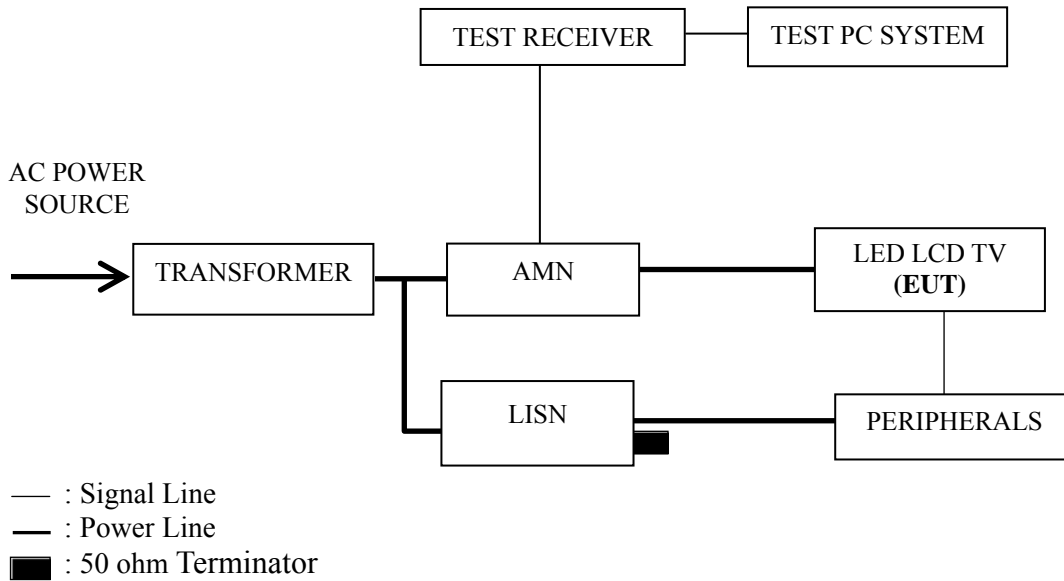
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Jul 03, 2015	Jul 02, 2016
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2015	Jun 26, 2016
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-5	Mar 20, 2015	Mar 19, 2016
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 (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 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
HDMI1080P
USB Play
LAN Play

3.6 Test Procedures

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

Both sides of AC line (Line & Neutral) were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to ANSI C63.4:2003 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
HDMI1080P	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 640*480@60Hz & 1kHz playing test mode. The worst emission is detected at 0.423MHz (Average Value) with corrected signal level of 44.49 dB (μ V) (limit is 57.39 dB (μ V)), when the Neutral of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : 55K2203W Humidity : 48%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Jan 14, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.183	36.60	10.54	47.14	64.37	17.23	QP
	0.423	31.09	10.42	41.51	57.39	15.88	
	0.634	30.60	10.38	40.98	56.00	15.02	
	1.249	27.60	10.39	37.99	56.00	18.01	
	4.571	21.90	10.47	32.37	56.00	23.63	
	16.450	26.30	10.56	36.86	60.00	23.14	
	AV	0.183	25.30	10.54	35.84	54.37	18.53
		0.423	18.79	10.42	29.21	47.39	18.18
		0.634	17.10	10.38	27.48	46.00	18.52
		1.249	11.50	10.39	21.89	46.00	24.11
		4.571	10.60	10.47	21.07	46.00	24.93
		16.450	20.40	10.56	30.96	50.00	19.04
Neutral	0.187	38.40	10.52	48.92	64.18	15.26	QP
	0.419	33.89	10.40	44.29	57.46	13.17	
	0.633	32.50	10.36	42.86	56.00	13.14	
	1.275	28.59	10.39	38.98	56.00	17.02	
	4.015	23.70	10.46	34.16	56.00	21.84	
	15.240	26.80	10.66	37.46	60.00	22.54	
	AV	0.187	27.20	10.52	37.72	54.18	16.46
		0.419	21.09	10.40	31.49	47.46	15.97
		0.633	18.60	10.36	28.96	46.00	17.04
		1.275	12.89	10.39	23.28	46.00	22.72
		4.015	11.80	10.46	22.26	46.00	23.74
		15.240	21.00	10.66	31.66	50.00	18.34

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 55K2203W Humidity : 48%RH

Test Mode : HDMI 1280*1024@60Hz & 1kHz Playing Date of Test : Jan 14, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.185	36.40	10.54	46.94	64.27	17.33	QP
	0.420	30.99	10.42	41.41	57.46	16.05	
	0.633	30.30	10.38	40.68	56.00	15.32	
	1.254	27.60	10.39	37.99	56.00	18.01	
	3.290	22.40	10.45	32.85	56.00	23.15	
	14.250	26.20	10.54	36.74	60.00	23.26	
	AV	0.185	26.30	10.54	36.84	54.27	17.43
		0.420	18.59	10.42	29.01	47.46	18.45
		0.633	16.90	10.38	27.28	46.00	18.72
		1.254	10.80	10.39	21.19	46.00	24.81
		3.290	9.20	10.45	19.65	46.00	26.35
		14.250	20.50	10.54	31.04	50.00	18.96
Neutral	0.182	38.80	10.53	49.33	64.38	15.05	QP
	0.421	33.99	10.40	44.39	57.44	13.05	
	0.627	30.80	10.36	41.16	56.00	14.84	
	1.095	29.11	10.37	39.48	56.00	16.52	
	4.201	23.50	10.46	33.96	56.00	22.04	
	20.790	25.30	10.73	36.03	60.00	23.97	
	AV	0.182	26.90	10.53	37.43	54.38	16.95
		0.421	21.49	10.40	31.89	47.44	15.55
		0.627	16.10	10.36	26.46	46.00	19.54
		1.095	13.61	10.37	23.98	46.00	22.02
		4.201	10.90	10.46	21.36	46.00	24.64
		20.790	19.40	10.73	30.13	50.00	19.87

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 55K2203W Humidity : 48%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Jan 14, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.185	36.20	10.54	46.74	64.24	17.50	QP
	0.418	30.70	10.42	41.12	57.49	16.37	
	0.635	30.90	10.38	41.28	56.00	14.72	
	1.104	27.20	10.38	37.58	56.00	18.42	
	4.532	22.50	10.47	32.97	56.00	23.03	
	14.720	26.70	10.54	37.24	60.00	22.76	
	AV	0.185	26.30	10.54	36.84	54.24	17.40
		0.418	17.90	10.42	28.32	47.49	19.17
		0.635	17.00	10.38	27.38	46.00	18.62
		1.104	13.00	10.38	23.38	46.00	22.62
		4.532	10.90	10.47	21.37	46.00	24.63
		14.720	21.20	10.54	31.74	50.00	18.26
Neutral	0.193	37.70	10.51	48.21	63.89	15.68	QP
	0.423	34.09	10.40	44.49	57.39	12.90	
	0.634	32.30	10.36	42.66	56.00	13.34	
	0.840	28.89	10.37	39.26	56.00	16.74	
	1.702	28.09	10.41	38.50	56.00	17.50	
	21.630	25.51	10.75	36.26	60.00	23.74	
	AV	0.193	25.30	10.51	35.81	53.89	18.08
		0.423	21.49	10.40	31.89	47.39	15.50
		0.634	18.40	10.36	28.76	46.00	17.24
		0.840	10.09	10.37	20.46	46.00	25.54
		1.702	12.59	10.41	23.00	46.00	23.00
		21.630	19.47	10.75	30.22	50.00	19.78

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C
 Model No. : 55K2203W Humidity : 48%RH
 Test Mode : HDMI1080P Date of Test : Jan 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	36.40	10.54	46.94	64.28	17.34	QP
	0.414	30.40	10.42	40.82	57.57	16.75	
	0.635	30.60	10.38	40.98	56.00	15.02	
	1.266	27.60	10.39	37.99	56.00	18.01	
	2.558	23.60	10.43	34.03	56.00	21.97	
	6.008	26.30	10.47	36.77	60.00	23.23	
	0.185	26.10	10.54	36.64	54.28	17.64	AV
	0.414	17.50	10.42	27.92	47.57	19.65	
	0.635	16.90	10.38	27.28	46.00	18.72	
	1.266	10.70	10.39	21.09	46.00	24.91	
	2.558	9.50	10.43	19.93	46.00	26.07	
	6.008	17.10	10.47	27.57	50.00	22.43	
Neutral	0.188	38.30	10.52	48.82	64.15	15.33	QP
	0.423	33.99	10.40	44.39	57.40	13.01	
	0.633	32.10	10.36	42.46	56.00	13.54	
	1.099	28.91	10.37	39.28	56.00	16.72	
	2.749	24.20	10.43	34.63	56.00	21.37	
	14.770	26.30	10.65	36.95	60.00	23.05	
	0.188	27.20	10.52	37.72	54.15	16.43	AV
	0.423	21.49	10.40	31.89	47.40	15.51	
	0.633	18.30	10.36	28.66	46.00	17.34	
	1.099	14.51	10.37	24.88	46.00	21.12	
	2.749	9.30	10.43	19.73	46.00	26.27	
	14.770	20.80	10.65	31.45	50.00	18.55	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 55K2203W Humidity : 48%RH

Test Mode : USB Play Date of Test : Jan 14, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.187	36.29	10.54	46.83	64.17	17.34	QP
	0.423	30.99	10.42	41.41	57.39	15.98	
	0.633	30.20	10.38	40.58	56.00	15.42	
	1.033	27.30	10.38	37.68	56.00	18.32	
	2.228	21.60	10.42	32.02	56.00	23.98	
	21.720	25.41	10.65	36.06	60.00	23.94	
	AV	0.187	26.09	10.54	36.63	54.17	17.54
		0.423	18.59	10.42	29.01	47.39	18.38
		0.633	16.60	10.38	26.98	46.00	19.02
		1.033	12.50	10.38	22.88	46.00	23.12
		2.228	7.40	10.42	17.82	46.00	28.18
		21.720	19.61	10.65	30.26	50.00	19.74
Neutral	0.185	38.70	10.52	49.22	64.25	15.03	QP
	0.418	33.79	10.40	44.19	57.48	13.29	
	0.628	31.10	10.36	41.46	56.00	14.54	
	1.099	29.01	10.37	39.38	56.00	16.62	
	2.750	24.20	10.43	34.63	56.00	21.37	
	21.550	25.51	10.75	36.26	60.00	23.74	
	AV	0.185	27.60	10.52	38.12	54.25	16.13
		0.418	20.99	10.40	31.39	47.48	16.09
		0.628	16.30	10.36	26.66	46.00	19.34
		1.099	14.11	10.37	24.48	46.00	21.52
		2.750	9.30	10.43	19.73	46.00	26.27
		21.550	19.61	10.75	30.36	50.00	19.64

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C
 Model No. : 55K2203W Humidity : 48%RH
 Test Mode : LAN Play Date of Test : Jan 14, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.183	36.70	10.54	47.24	64.36	17.12	QP
	0.423	31.09	10.42	41.51	57.39	15.88	
	0.632	30.10	10.38	40.48	56.00	15.52	
	1.011	27.10	10.38	37.48	56.00	18.52	
	2.025	23.80	10.41	34.21	56.00	21.79	
	5.524	30.10	10.48	40.58	60.00	19.42	
	AV	0.183	25.80	10.54	36.34	54.36	18.02
		0.423	18.59	10.42	29.01	47.39	18.38
		0.632	16.40	10.38	26.78	46.00	19.22
		1.011	10.30	10.38	20.68	46.00	25.32
		2.025	10.10	10.41	20.51	46.00	25.49
		5.524	19.80	10.48	30.28	50.00	19.72
Neutral	0.186	38.70	10.52	49.22	64.24	15.02	QP
	0.422	33.99	10.40	44.39	57.41	13.02	
	0.635	32.50	10.36	42.86	56.00	13.14	
	1.274	28.59	10.39	38.98	56.00	17.02	
	5.795	27.90	10.49	38.39	60.00	21.61	
	15.110	26.70	10.66	37.36	60.00	22.64	
	AV	0.186	27.60	10.52	38.12	54.24	16.12
		0.422	21.49	10.40	31.89	47.41	15.52
		0.635	18.60	10.36	28.96	46.00	17.04
		1.274	13.29	10.39	23.68	46.00	22.32
		5.795	19.20	10.49	29.69	50.00	20.31
		15.110	21.00	10.66	31.66	50.00	18.34

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

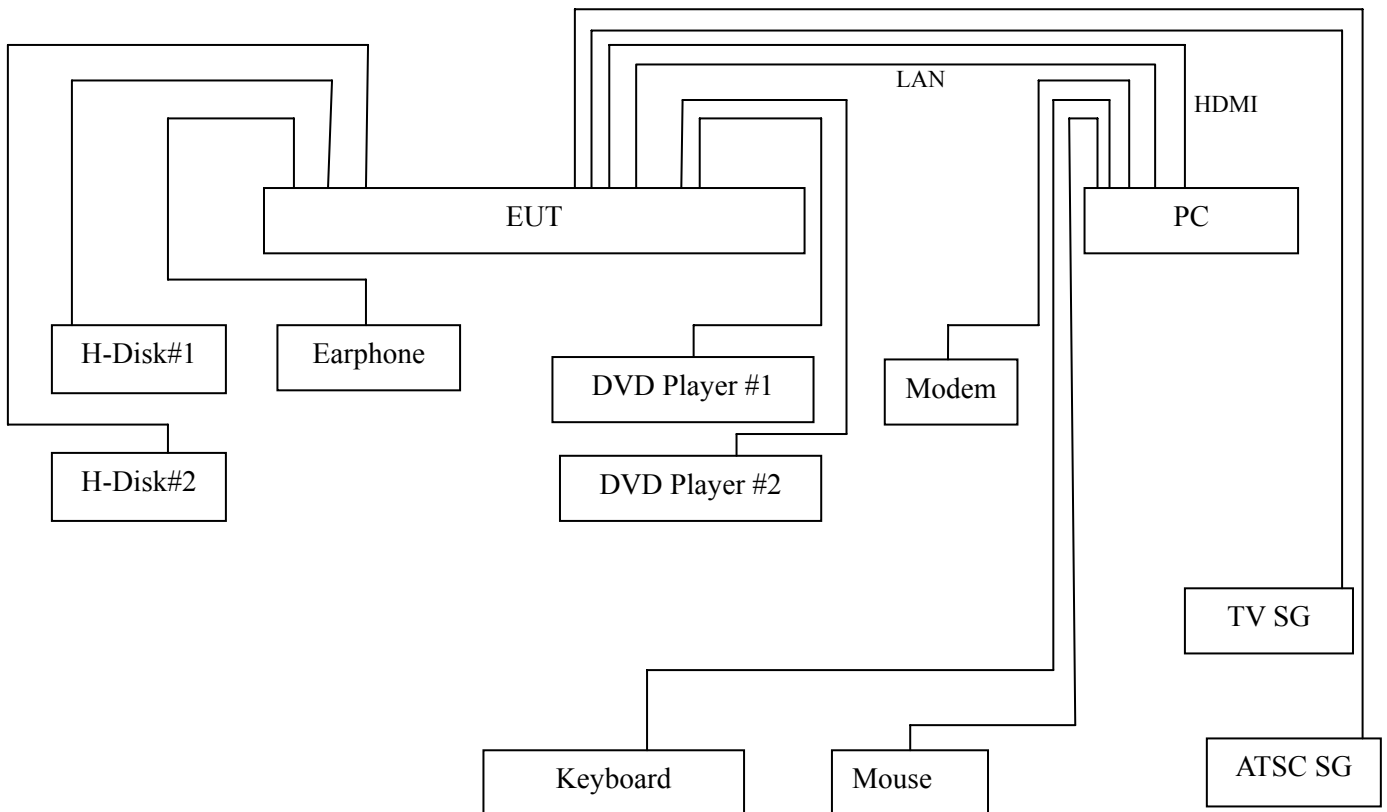
4.1 Test Equipment

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.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426390	Sep 18, 2015	Mar 17, 2016
9.	Software	Audix	E3	6.2007-9-10	--	--

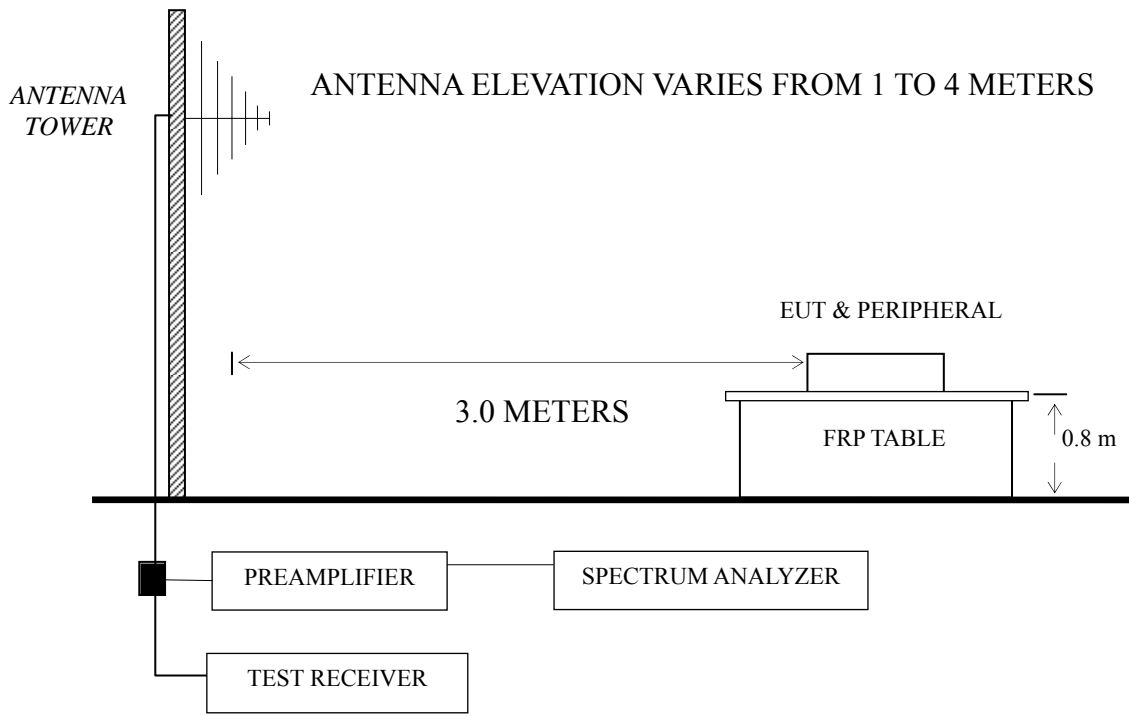
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



4.2.2 Test Setup

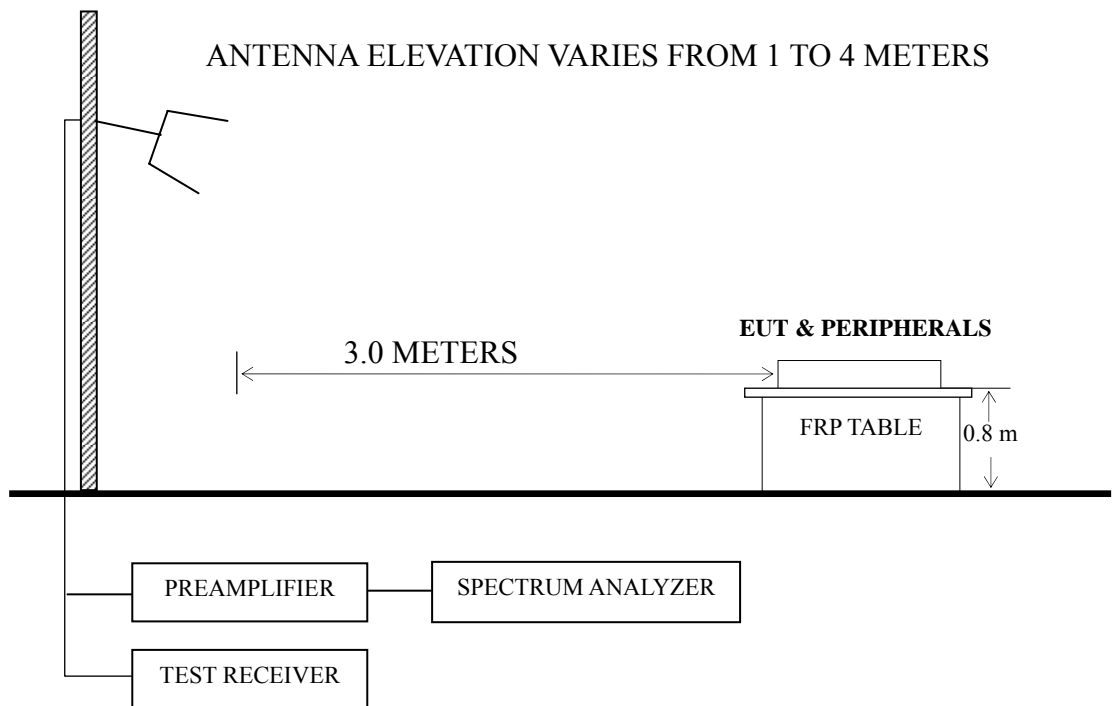
4.2.2.1 Below 1GHz



■ : 50 ohm Coaxial Switch

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 C63.4:2003 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 6 GHz was checked for the maximum resolution test mode.

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

4.7 Test Results

<PASS>

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

Test Mode	Data Page
HDMI 1920*1080@60Hz & 1kHz playing	P24 - P25
HDMI 1280*1024@60Hz & 1kHz playing	P26
HDMI 640*480@60Hz & 1kHz playing	P27
HDMI1080P	P28
USB Play	P29
LAN Play	P30

NOTE 1 – Emission Level = Antenna Factor + Cable Loss + Meter Reading.
($< 1\text{GHz}$);

Emission Level = Antenna Factor + Cable Loss – Preamp Factor
+ Meter Reading. ($> 1\text{GHz}$)

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 790.84 MHz with corrected signal level of 44.28 dB ($\mu\text{V/m}$) (limit is 46.00 dB ($\mu\text{V/m}$)), when the antenna was 1.9 m height and the turntable was at 310° . The worst emission at vertical polarization was detected at 797.60 MHz with corrected signal level of 44.25dB ($\mu\text{V/m}$) (limit is 46.00 dB ($\mu\text{V/m}$)), when the antenna was 1.3m height and the turntable was at 245° .

EUT : LED LCD TV Temperature : 22°C

Model No. : 55K2203W Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Jan 20, 2016
& 1kHz Playing

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	75.590	24.04	8.61	1.02	--	33.67	40.00	6.33	QP
	151.250	24.73	11.43	1.65	--	37.81	43.50	5.69	
	339.430	26.22	15.10	2.64	--	43.96	46.00	2.04	
	478.140	19.18	17.46	2.90	--	39.54	46.00	6.46	
	790.840	20.10	20.50	3.68	--	44.28	46.00	1.72	
	885.540	17.31	21.20	4.36	--	42.87	46.00	3.13	
	1584.838	68.99	25.96	4.01	35.57	63.39	74.00	10.61	PK
	1986.241	71.09	27.44	4.43	35.12	67.84	74.00	6.16	
	2380.264	69.55	28.20	4.81	35.14	67.42	74.00	6.58	
	3568.514	62.26	31.69	6.13	34.66	65.42	74.00	8.58	
	3950.600	65.87	32.66	5.87	34.34	70.06	74.00	3.94	
	5545.141	56.46	34.92	7.77	34.01	65.14	74.00	8.86	
	1584.838	42.39	25.96	4.01	35.57	36.79	54.00	17.21	AV
	1986.241	47.22	27.44	4.43	35.12	43.97	54.00	10.03	
	2380.264	42.22	28.20	4.81	35.14	40.09	54.00	13.91	
	3568.514	39.11	31.69	6.13	34.66	42.27	54.00	11.73	
3950.600	40.48	32.66	5.87	34.34	44.67	54.00	9.33		
5545.141	32.10	34.92	7.77	34.01	40.78	54.00	13.22		

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55K2203W Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Jan 20, 2016
& 1kHz Playing

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	76.560	24.40	8.78	1.04	--	34.22	40.00	5.78	QP
	242.430	24.26	12.10	2.13	--	38.49	46.00	7.51	
	398.720	24.41	16.58	2.71	--	43.70	46.00	2.30	
	446.130	20.10	16.83	2.82	--	39.75	46.00	6.25	
	797.600	20.00	20.57	3.68	--	44.25	46.00	1.75	
	891.360	16.96	21.30	4.46	--	42.72	46.00	3.28	PK
	1189.818	71.31	24.40	3.52	36.15	63.08	74.00	10.92	
	1582.001	71.34	25.96	3.98	35.58	65.70	74.00	8.30	
	1979.136	70.65	27.42	4.43	35.13	67.37	74.00	6.63	
	3555.749	65.18	31.67	6.13	34.67	68.31	74.00	5.69	
	3957.700	67.10	32.69	5.83	34.33	71.29	74.00	2.71	AV
	5535.214	57.76	34.91	7.77	34.01	66.43	74.00	7.57	
	1189.818	45.39	24.40	3.52	36.15	37.16	54.00	16.84	
	1582.001	45.83	25.96	3.98	35.58	40.19	54.00	13.81	
	1979.136	46.95	27.42	4.43	35.13	43.67	54.00	10.33	
3555.749	42.94	31.67	6.13	34.67	46.07	54.00	7.93	AV	
3957.700	43.06	32.69	5.83	34.33	47.25	54.00	6.75		
5535.214	35.77	34.91	7.77	34.01	44.44	54.00	9.56		

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55K2203W Humidity : 60%RH

Test Mode : HDMI 1280*1024@60Hz & 1kHz Playing Date of Test : Jan 20, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	76.560	24.26	8.78	1.04	34.08	40.00	5.92
	246.310	25.63	12.34	2.14	40.11	46.00	5.89
	282.200	27.24	13.35	2.45	43.04	46.00	2.96
	340.400	25.53	15.10	2.65	43.28	46.00	2.72
	791.080	19.30	20.50	3.68	43.48	46.00	2.52
	885.540	15.91	21.20	4.36	41.47	46.00	4.53
Vertical	30.970	14.59	18.15	0.64	33.38	40.00	6.62
	76.560	24.98	8.78	1.04	34.80	40.00	5.20
	148.340	21.73	11.65	1.62	35.00	43.50	8.50
	240.490	23.76	11.90	2.13	37.79	46.00	8.21
	398.700	23.81	16.58	2.71	43.10	46.00	2.90
	795.520	18.10	20.53	3.68	42.31	46.00	3.69

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55K2203W Humidity : 60%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Jan 20, 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	82.380	22.53	9.60	1.12	33.25	40.00	6.75
	119.240	21.23	12.79	1.45	35.47	43.50	8.03
	244.370	24.35	12.20	2.14	38.69	46.00	7.31
	478.140	19.72	17.46	2.90	40.08	46.00	5.92
	794.360	19.57	20.53	3.68	43.78	46.00	2.22
	888.450	13.27	21.30	4.46	39.03	46.00	6.97
Vertical	30.970	14.35	18.15	0.64	33.14	40.00	6.86
	79.470	24.55	9.29	1.07	34.91	40.00	5.09
	239.520	24.27	11.80	2.11	38.18	46.00	7.82
	396.080	23.00	16.55	2.71	42.26	46.00	3.74
	791.100	19.30	20.50	3.68	43.48	46.00	2.52
	882.630	12.39	21.10	4.36	37.85	46.00	8.15

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55K2203W Humidity : 60%RH

Test Mode : HDMI1080P Date of Test : Jan 20, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	67.830	24.14	6.94	0.92	32.00	40.00	8.00
	90.140	23.39	10.50	1.21	35.10	43.50	8.40
	227.880	28.56	11.04	2.08	41.68	46.00	4.32
	352.040	23.88	15.64	2.66	42.18	46.00	3.82
	540.220	17.16	18.50	2.68	38.34	46.00	7.66
	800.180	19.00	20.60	3.68	43.28	46.00	2.72
Vertical	71.710	25.51	7.68	0.96	34.15	40.00	5.85
	143.490	21.85	12.20	1.60	35.65	43.50	7.85
	245.340	28.22	12.30	2.14	42.66	46.00	3.34
	457.770	22.96	17.04	2.85	42.85	46.00	3.15
	738.100	14.90	19.90	3.60	38.40	46.00	7.60
	941.800	11.36	21.83	4.70	37.89	46.00	8.11

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55K2203W Humidity : 60%RH

Test Mode : USB Play Date of Test : Jan 20, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	75.590	24.10	8.61	1.02	33.73	40.00	6.27
	111.480	19.94	12.64	1.41	33.99	43.50	9.51
	205.570	21.73	9.80	1.99	33.52	43.50	9.98
	289.960	22.10	13.60	2.49	38.19	46.00	7.81
	449.040	20.13	16.82	2.84	39.79	46.00	6.21
	743.920	13.98	20.03	3.60	37.61	46.00	8.39
Vertical	72.680	25.17	7.97	0.98	34.12	40.00	5.88
	116.330	20.53	12.73	1.44	34.70	43.50	8.80
	249.220	25.65	12.46	2.15	40.26	46.00	5.74
	373.380	16.74	16.36	2.69	35.79	46.00	10.21
	556.710	14.51	18.85	2.57	35.93	46.00	10.07
	785.630	15.32	20.50	3.66	39.48	46.00	6.52

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 55K2203W Humidity : 60%RH

Test Mode : LAN Play Date of Test : Jan 20, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	79.470	22.39	9.29	1.07	32.75	40.00	7.25
	133.790	21.54	12.64	1.54	35.72	43.50	7.78
	208.480	22.94	9.96	2.01	34.91	43.50	8.59
	334.580	20.03	14.93	2.64	37.60	46.00	8.40
	442.250	20.67	16.87	2.82	40.36	46.00	5.64
	689.600	15.02	19.75	3.41	38.18	46.00	7.82
Vertical	32.910	15.50	16.99	0.66	33.15	40.00	6.85
	82.380	21.51	9.60	1.12	32.23	40.00	7.77
	131.850	19.87	12.71	1.53	34.11	43.50	9.39
	208.480	23.55	9.96	2.01	35.52	43.50	7.98
	436.430	20.19	16.88	2.81	39.88	46.00	6.12
	669.230	14.30	19.60	3.16	37.06	46.00	8.94

TEST ENGINEER: BILL WU

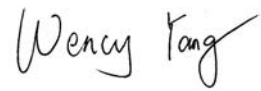
5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Conductive foam	SMR-TSL-4-3.5-5R\ROH	Qingdao Joinset Co., Ltd	See Appendix Figure 27
Conductive cloth	DCF40\ROH	Qingdao Joinset Co., Ltd	See Appendix Figure 28

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:



(WENCY YANG)

6 DEVIATION TO TEST SPECIFICATIONS

None.