

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

LED LCD TV

Model No.	Brand
43K3110W	Hisense
43H5C	
43H5C+	

FCC ID: W9HLCDD0055

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-F16068
Date of Test : Jan 21- Mar 18, 2016
Date of Report : Mar 23, 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 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 21- Mar 18, 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.

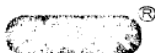
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

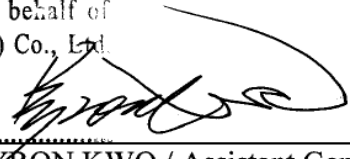
The test results for EUT's TV functions are contained in No.F16067, a Verification report.

Date of Test : Jan 21- Mar 18, 2016 Date of Report : Mar 23, 2016

Producer : Hui Min 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	:	43K3110W, 43H5C, 43H5C+
Note#1	:	The above models are all the same except for model number.43K3110W model is tested and recorded in the report.
Note#2	:	“+”represents any of the Arabic numeral.
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 : HD426DF-B52
Tuner	:	Manufacturer : XuGuang Tech. Co., Ltd. M/N : HFT-96S3/W11FJ4H\ROH
Max Resolution	:	1920*1080@60Hz
HDMI Cable*2 (Lab provide)	:	Shielded, Detachable, 1.50m
Power Cord	:	Unshielded, Detachable, 1.80m, 2C
LAN Cable	:	Shielded, Detachable, 1.50m
USB Cable (Lab provide)	:	Shielded, Detachable, 1.00m

Remark:

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

Side Port:

- (1) One COMPONENT IN Port : Connected with DVD PLAYER
- (2) One AV IN Port : Connected with DVD PLAYER
- (3) One HDMI1 Port : Connected with PC
- (4) One HDMI 2 Port : Connected with DVD PLAYER
- (5) One Audio out Port : Connected with Earphone#1
- (6) One ANT/CABLE IN Port : Connected with Antenna or ATSC SG / TV SG

Side Port:

- (7) One DEBUG Port : This port does not open to user
- (8) One LAN Port : Connected with PC
- (9) One USB Port : Connected with Hard-Disk
- (10) One Digital Audio Out Port : Connected with Audio Converter to Earphone#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*2

Manufacturer : EDIFIER
Model Number : H210

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

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

2.2.9 Hard Disk

Manufacturer : Tetasys
Model Number : F12
Serial Number : A010022-4860010X
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

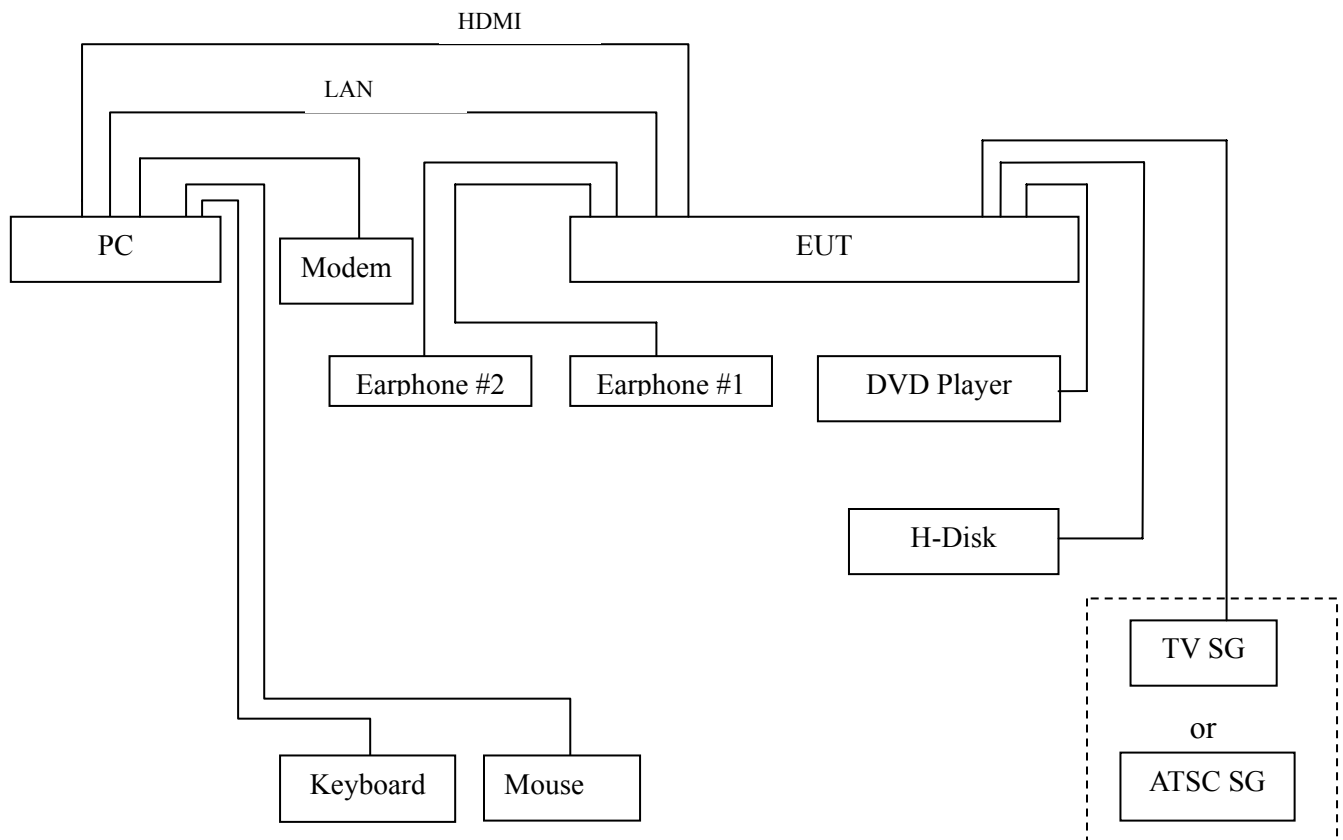
3.1 Test Equipment

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

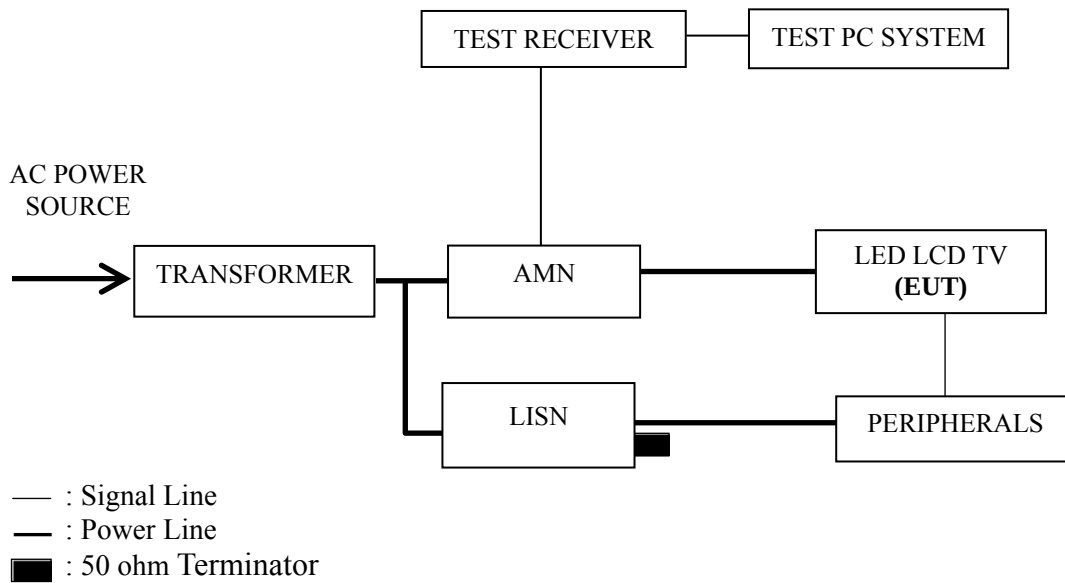
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Jul 03, 2015	Jul 02, 2016
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2015	Jun 26, 2016
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-5	Mar 20, 2015	Mar 19, 2016
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 1920*1080@60Hz & 1kHz playing test mode. The worst emission is detected at 0.517MHz (Average Value) with corrected signal level of 45.67 dB (μV) (limit is 56.00 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : 43K3110W Humidity : 48%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Jan 21, 2016
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.192	33.60	10.53	44.13	63.95	19.82	QP
	0.548	33.41	10.38	43.79	56.00	12.21	
	1.436	27.60	10.40	38.00	56.00	18.00	
	2.898	26.60	10.44	37.04	56.00	18.96	
	4.746	28.60	10.48	39.08	56.00	16.92	
	6.553	34.30	10.47	44.77	60.00	15.23	
	0.192	20.30	10.53	30.83	53.95	23.12	AV
	0.548	22.91	10.38	33.29	46.00	12.71	
	1.436	15.70	10.40	26.10	46.00	19.90	
	2.898	19.10	10.44	29.54	46.00	16.46	
	4.746	22.50	10.48	32.98	46.00	13.02	
	6.553	25.10	10.47	35.57	50.00	14.43	
Neutral	0.152	32.09	10.59	42.68	65.87	23.19	QP
	0.361	33.90	10.42	44.32	58.71	14.39	
	0.517	35.30	10.37	45.67	56.00	10.33	
	1.238	31.09	10.39	41.48	56.00	14.52	
	4.741	29.70	10.47	40.17	56.00	15.83	
	9.211	32.50	10.55	43.05	60.00	16.95	
	0.152	12.69	10.59	23.28	55.87	32.59	AV
	0.361	18.80	10.42	29.22	48.71	19.49	
	0.517	22.80	10.37	33.17	46.00	12.83	
	1.238	19.79	10.39	30.18	46.00	15.82	
	4.741	22.80	10.47	33.27	46.00	12.73	
	9.211	24.90	10.55	35.45	50.00	14.55	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 43K3110W Humidity : 48%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : Jan 21, 2016
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.207	31.50	10.51	42.01	63.32	21.31	QP
	0.559	34.60	10.38	44.98	56.00	11.02	
	1.438	26.60	10.40	37.00	56.00	19.00	
	4.133	27.50	10.47	37.97	56.00	18.03	
	6.296	30.90	10.47	41.37	60.00	18.63	
	9.755	31.50	10.49	41.99	60.00	18.01	
	0.207	19.00	10.51	29.51	53.32	23.81	AV
	0.559	24.50	10.38	34.88	46.00	11.12	
	1.438	15.50	10.40	25.90	46.00	20.10	
	4.133	21.20	10.47	31.67	46.00	14.33	
	6.296	23.00	10.47	33.47	50.00	16.53	
	9.755	23.80	10.49	34.29	50.00	15.71	
Neutral	0.158	31.80	10.57	42.37	65.58	23.21	QP
	0.355	34.30	10.42	44.72	58.85	14.13	
	0.528	34.50	10.37	44.87	56.00	11.13	
	1.432	29.30	10.39	39.69	56.00	16.31	
	4.123	28.50	10.46	38.96	56.00	17.04	
	6.131	35.10	10.50	45.60	60.00	14.40	
	0.158	11.30	10.57	21.87	55.58	33.71	AV
	0.355	19.50	10.42	29.92	48.85	18.93	
	0.528	21.90	10.37	32.27	46.00	13.73	
	1.432	20.40	10.39	30.79	46.00	15.21	
	4.123	22.10	10.46	32.56	46.00	13.44	
	6.131	27.90	10.50	38.40	50.00	11.60	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 43K3110W Humidity : 48%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Jan 21, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.196	32.89	10.53	43.42	63.79	20.37	QP
	0.548	33.51	10.38	43.89	56.00	12.11	
	1.210	25.10	10.39	35.49	56.00	20.51	
	2.690	25.49	10.44	35.93	56.00	20.07	
	4.388	27.90	10.47	38.37	56.00	17.63	
	9.556	31.80	10.49	42.29	60.00	17.71	
	0.196	19.69	10.53	30.22	53.79	23.57	AV
	0.548	22.91	10.38	33.29	46.00	12.71	
	1.210	14.30	10.39	24.69	46.00	21.31	
	2.690	18.19	10.44	28.63	46.00	17.37	
	4.388	21.80	10.47	32.27	46.00	13.73	
	9.556	23.90	10.49	34.39	50.00	15.61	
Neutral	0.152	31.39	10.59	41.98	65.88	23.90	QP
	0.351	33.70	10.42	44.12	58.94	14.82	
	0.520	35.20	10.37	45.57	56.00	10.43	
	1.152	28.81	10.37	39.18	56.00	16.82	
	4.072	29.50	10.46	39.96	56.00	16.04	
	9.305	33.60	10.55	44.15	60.00	15.85	
	0.152	13.49	10.59	24.08	55.88	31.80	AV
	0.351	18.80	10.42	29.22	48.94	19.72	
	0.520	22.30	10.37	32.67	46.00	13.33	
	1.152	19.91	10.37	30.28	46.00	15.72	
	4.072	22.80	10.46	33.26	46.00	12.74	
	9.305	25.90	10.55	36.45	50.00	13.55	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 43K3110W Humidity : 48%RH

Test Mode : HDMI1080P Date of Test : Jan 21, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.190	32.50	10.53	43.03	64.06	21.03	QP
	0.331	29.40	10.45	39.85	59.42	19.57	
	0.536	33.30	10.39	43.69	56.00	12.31	
	1.249	26.60	10.39	36.99	56.00	19.01	
	4.161	27.30	10.47	37.77	56.00	18.23	
	9.367	30.89	10.49	41.38	60.00	18.62	
	0.190	18.60	10.53	29.13	54.06	24.93	AV
	0.331	12.90	10.45	23.35	49.42	26.07	
	0.536	23.10	10.39	33.49	46.00	12.51	
	1.249	14.70	10.39	25.09	46.00	20.91	
	4.161	20.70	10.47	31.17	46.00	14.83	
	9.367	23.09	10.49	33.58	50.00	16.42	
Neutral	0.151	31.69	10.59	42.28	65.97	23.69	QP
	0.362	34.20	10.42	44.62	58.68	14.06	
	0.517	34.70	10.37	45.07	56.00	10.93	
	1.621	29.51	10.39	39.90	56.00	16.10	
	4.422	29.30	10.46	39.76	56.00	16.24	
	6.355	33.70	10.50	44.20	60.00	15.80	
	0.151	14.29	10.59	24.88	55.97	31.09	AV
	0.362	17.70	10.42	28.12	48.68	20.56	
	0.517	22.20	10.37	32.57	46.00	13.43	
	1.621	19.91	10.39	30.30	46.00	15.70	
	4.422	22.90	10.46	33.36	46.00	12.64	
	6.355	27.10	10.50	37.60	50.00	12.40	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 43K3110W Humidity : 48%RH

Test Mode : USB Play Date of Test : Jan 21, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.194	32.30	10.53	42.83	63.84	21.01	QP
	0.358	31.10	10.44	41.54	58.79	17.25	
	0.525	33.30	10.39	43.69	56.00	12.31	
	1.450	25.60	10.40	36.00	56.00	20.00	
	4.219	27.70	10.47	38.17	56.00	17.83	
	6.658	34.10	10.47	44.57	60.00	15.43	
	0.194	19.80	10.53	30.33	53.84	23.51	AV
	0.358	15.00	10.44	25.44	48.79	23.35	
	0.525	22.00	10.39	32.39	46.00	13.61	
	1.450	15.50	10.40	25.90	46.00	20.10	
	4.219	21.20	10.47	31.67	46.00	14.33	
	6.658	26.20	10.47	36.67	50.00	13.33	
Neutral	0.158	30.89	10.58	41.47	65.58	24.11	QP
	0.364	34.20	10.42	44.62	58.64	14.02	
	0.522	35.30	10.37	45.67	56.00	10.33	
	1.199	29.79	10.39	40.18	56.00	15.82	
	3.064	28.51	10.43	38.94	56.00	17.06	
	9.663	33.70	10.56	44.26	60.00	15.74	
	0.158	12.79	10.58	23.37	55.58	32.21	AV
	0.364	17.30	10.42	27.72	48.64	20.92	
	0.522	22.10	10.37	32.47	46.00	13.53	
	1.199	19.89	10.39	30.28	46.00	15.72	
	3.064	21.61	10.43	32.04	46.00	13.96	
	9.663	26.20	10.56	36.76	50.00	13.24	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 43K3110W Humidity : 48%RH

Test Mode : LAN Play Date of Test : Jan 21, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	32.49	10.59	43.08	65.96	22.88	QP
	0.353	30.90	10.44	41.34	58.89	17.55	
	0.516	33.80	10.39	44.19	56.00	11.81	
	1.250	27.10	10.39	37.49	56.00	18.51	
	4.063	27.49	10.47	37.96	56.00	18.04	
	9.567	30.50	10.49	40.99	60.00	19.01	
	0.151	13.59	10.59	24.18	55.96	31.78	AV
	0.353	14.20	10.44	24.64	48.89	24.25	
	0.516	22.00	10.39	32.39	46.00	13.61	
	1.250	14.60	10.39	24.99	46.00	21.01	
	4.063	20.79	10.47	31.26	46.00	14.74	
	9.567	23.60	10.49	34.09	50.00	15.91	
Neutral	0.156	29.89	10.58	40.47	65.67	25.20	QP
	0.365	34.39	10.42	44.81	58.62	13.81	
	0.536	32.30	10.37	42.67	56.00	13.33	
	1.151	28.61	10.37	38.98	56.00	17.02	
	4.374	30.50	10.46	40.96	56.00	15.04	
	9.876	32.90	10.56	43.46	60.00	16.54	
	0.156	10.29	10.58	20.87	55.67	34.80	AV
	0.365	17.69	10.42	28.11	48.62	20.51	
	0.536	20.80	10.37	31.17	46.00	14.83	
	1.151	19.71	10.37	30.08	46.00	15.92	
	4.374	23.40	10.46	33.86	46.00	12.14	
	9.876	25.10	10.56	35.66	50.00	14.34	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

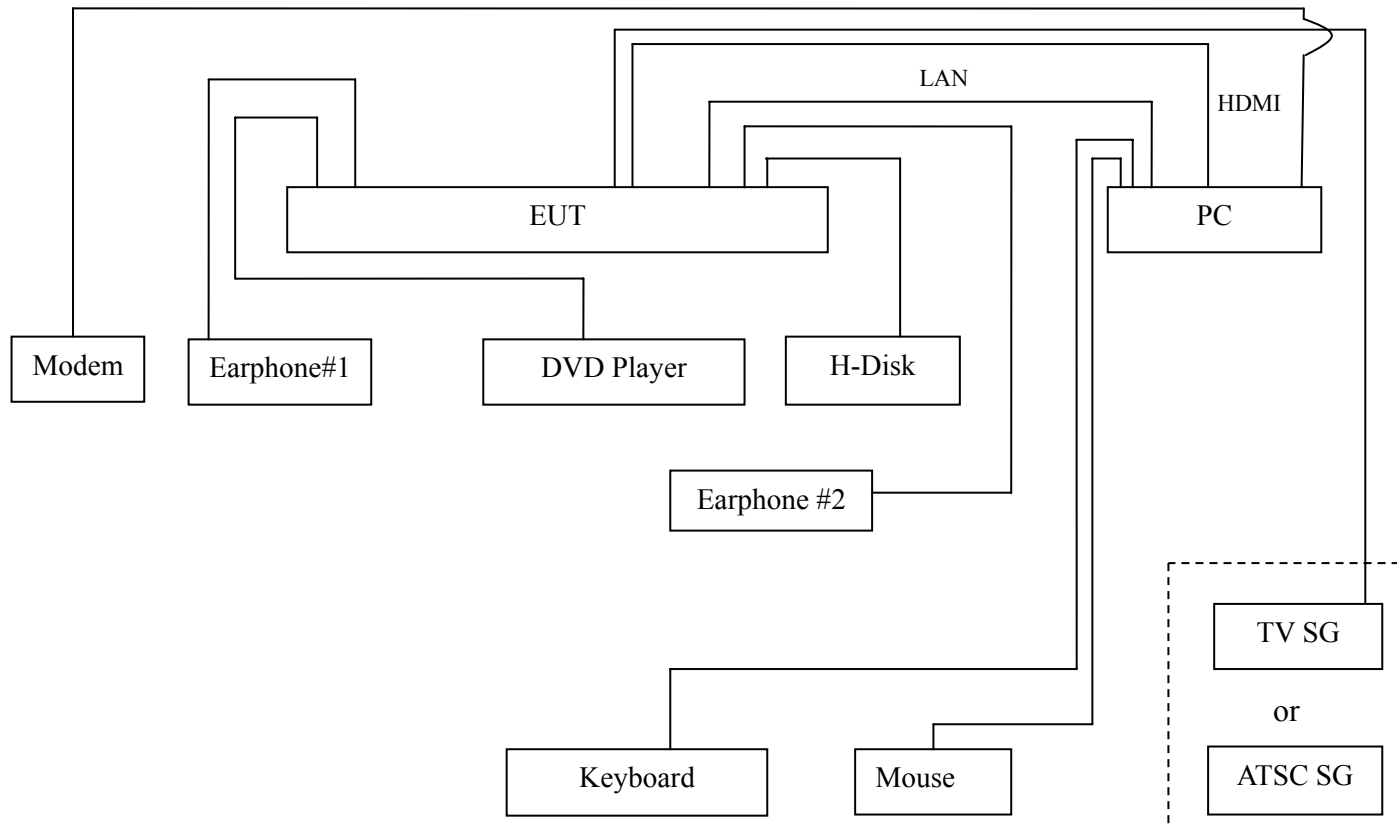
4.1 Test Equipment

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, 2016	Mar 17, 2017
9.	Software	Audix	e3	6.2007-9-10	--	--

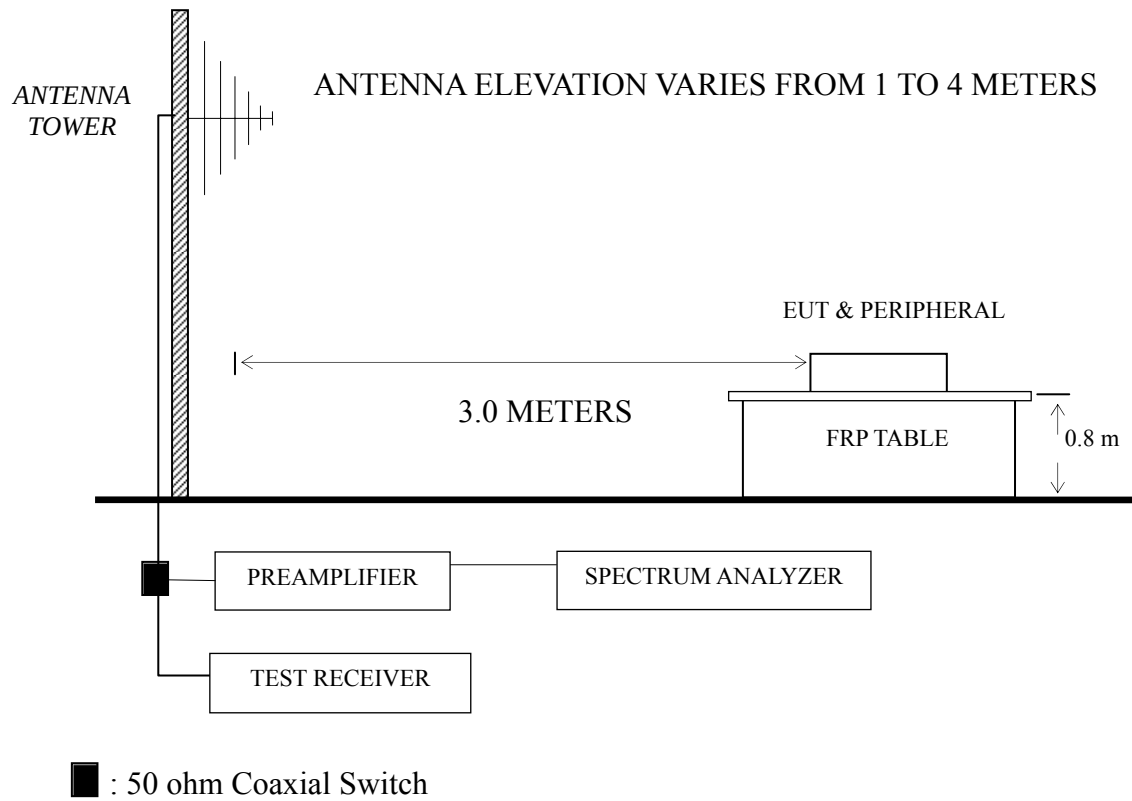
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



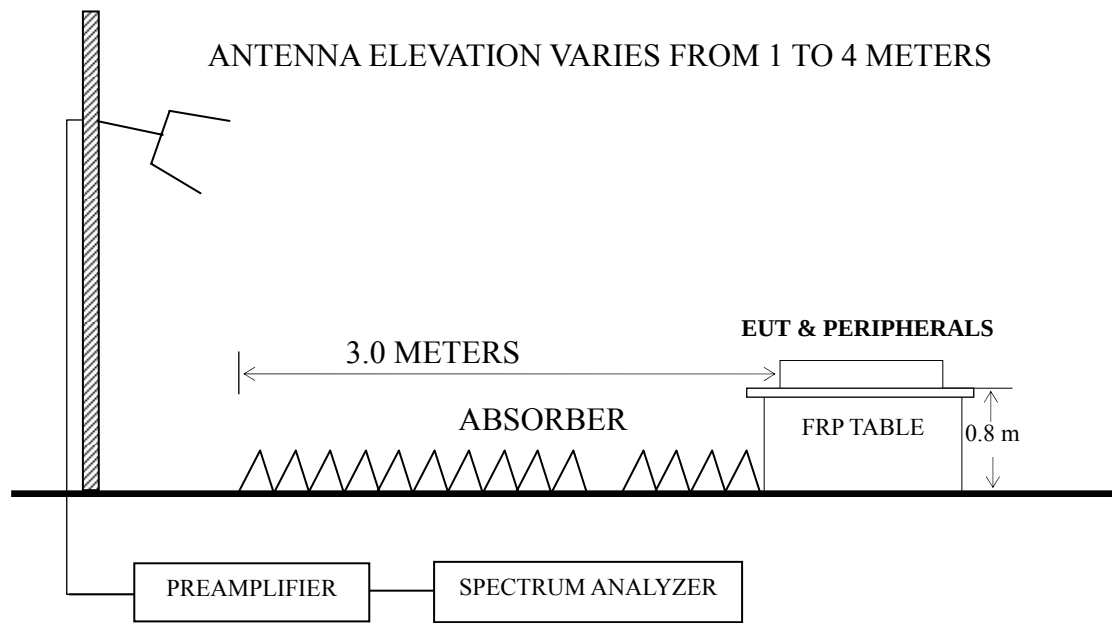
4.2.2 Test Setup

4.2.2.1 Below 1GHz



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 C63.4:2014 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.
($< 1\text{GHz}$);

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 830.400 MHz with corrected signal level of 44.86 dB ($\mu\text{V/m}$)
(limit is 46.00 dB ($\mu\text{V/m}$)), when the antenna was 1.8 m height
and the turntable was at 240° . The worst emission at vertical
polarization was detected at 742.259 MHz with corrected signal
level of 44.43dB ($\mu\text{V/m}$) (limit is 46.00 dB ($\mu\text{V/m}$)), when the
antenna was 1.1m height and the turntable was at 300° .

EUT : LED LCD TV Temperature : 22°C

Model No. : 43K3110W Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Mar 18, 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	31.620	13.70	17.69	0.65	--	32.04	40.00	7.96	QP
	130.837	21.42	12.76	1.53	--	35.71	43.50	7.79	
	237.476	24.36	11.64	2.11	--	38.11	46.00	7.89	
	375.939	19.71	16.41	2.69	--	38.81	46.00	7.19	
	599.321	17.06	19.10	2.31	--	38.47	46.00	7.53	
	830.400	20.19	20.70	3.97	--	44.86	46.00	1.14	
	1057.116	51.11	23.78	4.43	36.39	42.93	74.00	31.07	PK
	1222.230	52.79	24.53	3.56	36.10	44.78	74.00	29.22	
	1275.935	53.02	24.76	3.63	36.01	45.40	74.00	28.60	
	1475.227	56.17	25.52	3.86	35.71	49.84	74.00	24.16	
	1693.466	56.89	26.40	4.07	35.44	51.92	74.00	22.08	
	1899.233	52.75	27.16	4.31	35.21	49.01	74.00	24.99	
	1057.116	36.49	23.78	4.43	36.39	28.31	54.00	25.69	AV
	1222.230	38.78	24.53	3.56	36.10	30.77	54.00	23.23	
	1275.935	37.36	24.76	3.63	36.01	29.74	54.00	24.26	
	1475.227	41.63	25.52	3.86	35.71	35.30	54.00	18.70	
	1693.466	42.67	26.40	4.07	35.44	37.70	54.00	16.30	
	1899.233	38.66	27.16	4.31	35.21	34.92	54.00	19.08	

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 43K3110W Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Mar 18, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	35.375	19.03	15.50	0.69	--	35.22	40.00	4.78	QP
	88.964	22.93	10.35	1.20	--	34.48	43.50	9.02	
	139.851	25.36	12.50	1.57	--	39.43	43.50	4.07	
	397.633	19.18	16.57	2.71	--	38.46	46.00	7.54	
	593.400	22.80	18.85	2.31	--	43.96	46.00	2.04	
	742.259	20.86	19.97	3.60	--	44.43	46.00	1.57	
	1034.630	56.36	23.68	4.66	36.43	48.27	74.00	25.73	PK
	1209.161	67.44	24.49	3.54	36.12	59.35	74.00	14.65	
	1273.651	56.44	24.76	3.61	36.01	48.80	74.00	25.20	
	1499.209	55.80	25.60	3.89	35.68	49.61	74.00	24.39	
	1702.593	55.82	26.44	4.07	35.43	50.90	74.00	23.10	
	1783.786	53.73	26.74	4.15	35.33	49.29	74.00	24.71	
	1034.630	43.84	23.68	4.66	36.43	35.75	54.00	18.25	AV
	1209.161	50.53	24.49	3.54	36.12	42.44	54.00	11.56	
	1273.651	41.25	24.76	3.61	36.01	33.61	54.00	20.39	
	1499.209	40.39	25.60	3.89	35.68	34.20	54.00	19.80	
	1702.593	40.25	26.44	4.07	35.43	35.33	54.00	18.67	
	1783.786	38.10	26.74	4.15	35.33	33.66	54.00	20.34	

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 43K3110W Humidity : 60%RH

Test Mode : HDMI 1280*1024@60Hz & 1kHz Playing Date of Test : Mar 18, 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	107.510	21.57	12.55	1.38	35.50	43.50	8.00
	140.342	22.29	12.50	1.57	36.36	43.50	7.14
	240.830	21.04	11.90	2.13	35.07	46.00	10.93
	334.859	23.42	14.93	2.64	40.99	46.00	5.01
	601.427	14.24	19.10	2.26	35.60	46.00	10.40
	785.093	16.81	20.50	3.66	40.97	46.00	5.03
Vertical	35.320	18.20	15.50	0.69	34.39	40.00	5.61
	62.871	28.37	6.37	0.89	35.63	40.00	4.37
	109.029	20.98	12.58	1.39	34.95	43.50	8.55
	142.324	24.64	12.30	1.59	38.53	43.50	4.97
	238.310	21.45	11.64	2.11	35.20	46.00	10.80
	599.321	18.19	19.10	2.31	39.60	46.00	6.40

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 43K3110W Humidity : 60%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Mar 18, 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	106.759	21.63	12.54	1.38	35.55	43.50	7.95
	141.330	21.33	12.40	1.59	35.32	43.50	8.18
	243.377	21.00	12.10	2.13	35.23	46.00	10.77
	341.979	22.33	15.17	2.65	40.15	46.00	5.85
	605.659	16.89	19.10	2.26	38.25	46.00	7.75
	798.980	19.46	20.60	3.68	43.74	46.00	2.26
Vertical	35.375	17.60	15.50	0.69	33.79	40.00	6.21
	63.092	26.98	6.39	0.89	34.26	40.00	5.74
	107.510	20.68	12.55	1.38	34.61	43.50	8.89
	137.903	23.30	12.54	1.56	37.40	43.50	6.10
	588.905	16.51	18.60	2.36	37.47	46.00	8.53
	796.183	17.39	20.57	3.68	41.64	46.00	4.36

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 43K3110W Humidity : 60%RH

Test Mode : HDMI1080P Date of Test : Mar 18, 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	30.970	15.66	18.15	0.64	34.45	40.00	5.55
	91.110	24.25	10.80	1.23	36.28	43.50	7.22
	145.430	26.74	12.03	1.61	40.38	43.50	3.12
	300.630	26.95	13.84	2.59	43.38	46.00	2.62
	587.750	18.33	18.58	2.36	39.27	46.00	6.73
	742.440	20.00	19.97	3.60	43.57	46.00	2.43
Vertical	84.320	21.99	9.74	1.13	32.86	40.00	7.14
	144.460	27.39	12.15	1.60	41.14	43.50	2.36
	339.430	21.64	15.10	2.64	39.38	46.00	6.62
	605.210	18.60	19.10	2.26	39.96	46.00	6.04
	742.440	20.10	19.97	3.60	43.67	46.00	2.33
	791.450	19.99	20.50	3.68	44.17	46.00	1.83

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 43K3110W Humidity : 60%RH

Test Mode : USB Play Date of Test : Mar 18, 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	35.005	15.10	15.70	0.69	31.49	40.00	8.51
	114.917	19.32	12.70	1.43	33.45	43.50	10.05
	150.011	21.76	11.50	1.63	34.89	43.50	8.61
	270.375	22.57	13.28	2.35	38.20	46.00	7.80
	428.019	15.28	16.80	2.78	34.86	46.00	11.14
	755.387	13.25	20.20	3.62	37.07	46.00	8.93
Vertical	33.095	14.18	16.91	0.67	31.76	40.00	8.24
	66.499	25.79	6.77	0.91	33.47	40.00	6.53
	117.773	19.51	12.76	1.44	33.71	43.50	9.79
	152.130	22.92	11.35	1.65	35.92	43.50	7.58
	305.680	18.77	13.99	2.60	35.36	46.00	10.64
	627.274	15.59	19.45	2.64	37.68	46.00	8.32

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : 43K3110W Humidity : 60%RH

Test Mode : LAN Play Date of Test : Mar 18, 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	105.642	23.53	12.52	1.36	37.41	43.50	6.09
	139.361	23.59	12.51	1.57	37.67	43.50	5.83
	240.830	20.89	11.90	2.13	34.92	46.00	11.08
	383.932	17.75	16.50	2.70	36.95	46.00	9.05
	593.050	17.74	18.85	2.31	38.90	46.00	7.10
	797.520	15.20	20.57	3.68	39.45	46.00	6.55
Vertical	36.509	18.44	14.52	0.70	33.66	40.00	6.34
	62.213	26.73	6.34	0.89	33.96	40.00	6.04
	109.796	20.47	12.60	1.40	34.47	43.50	9.03
	139.851	23.58	12.50	1.57	37.65	43.50	5.85
	397.633	17.41	16.57	2.71	36.69	46.00	9.31
	609.922	17.34	19.10	2.39	38.83	46.00	7.17

TEST ENGINEER: BILL WU

5 DEVIATION TO TEST SPECIFICATIONS

None.

