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

LED LCD TV

Model No.	Brand
LC-60N5100U, LC-60N5100C	Sharp

FCC ID : W9HLCDF0073

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-F16040
Date of Test : Jan 11-25, 2016
Date of Report : Feb 04, 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
LC-60N5100U, LC-60N5100C	Sharp	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 11-25, 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.F16028, a Verification report.

Date of Test : Jan 11-25, 2016 Date of Report : Feb 04, 2016

Producer : Alan He
ALAN HE / 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	:	☑ Production ☐ Pre-product ☐ Pro-type
Model No	:	LC-60N5100U, LC-60N5100C
Note	:	The above models are all the same except for model number.LC-60N5100U model is tested and recorded in the report.
Brand	:	Sharp
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 : HE600HF-B21
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, without core.

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

Side Port:
(1) One USB 1 Port
: Connected with Hard-Disk #1
(2) One ANT/CABLE IN Port
: Connected with ATSC SG / TV SG
(3) One Audio out Port
: Connected with Earphone
(4) One HDMI 1 Port
: Connected with DVD PLAYER #1
(5) One HDMI 2/ARC Port
: Connected with PC
(6) One Service Port
: Do not open to customer
(7) One HDMI 2/ARC Port
: Connected with DVD PLAYER #2
(8) One LAN Port
: Connected with PC

Bottom Port:
(9) One Digital Audio Out Port
: Connected with DVD PLAYER #2
(10) One COMPONENT IN/AV IN Port
: Connected with DVD PLAYER #2
(11) One USB 2 Port
: Connected with Hard-Disk #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

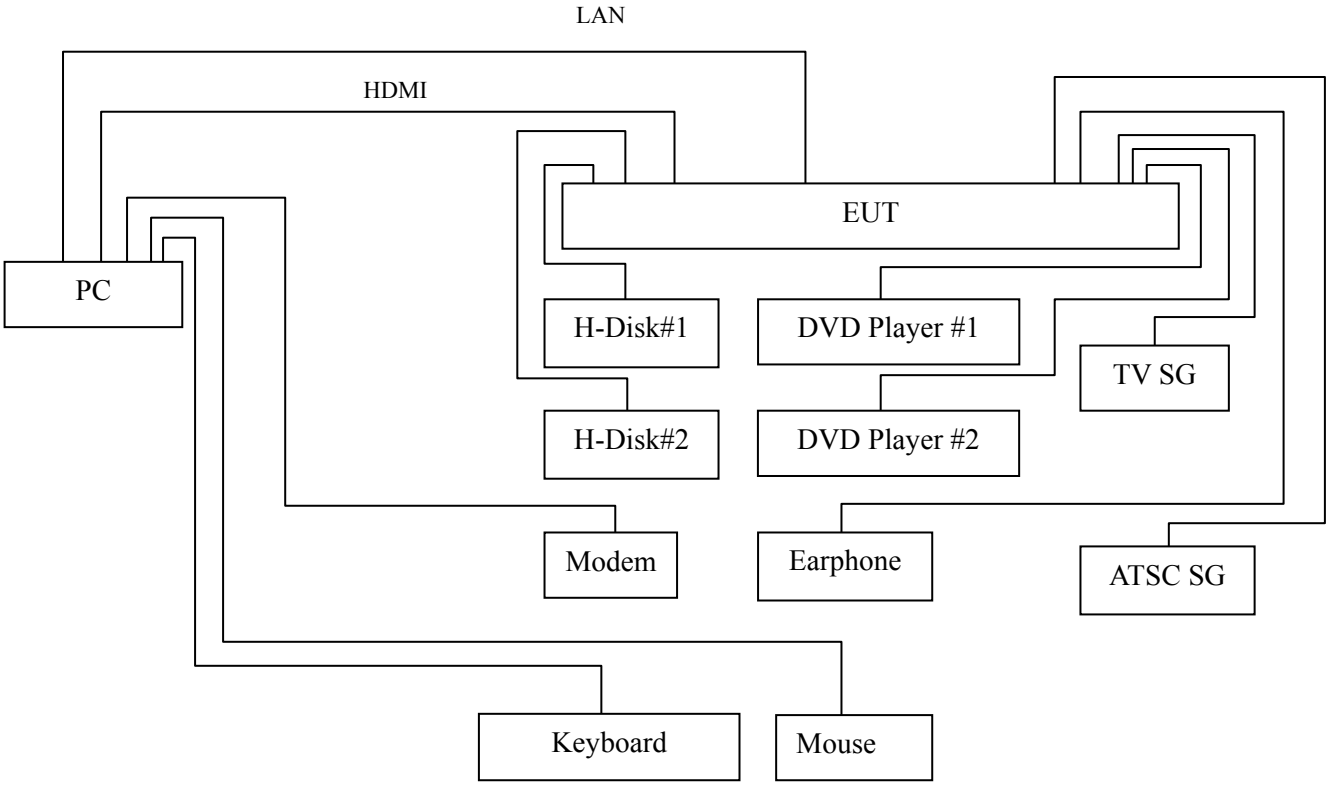
3.1 Test Equipment

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

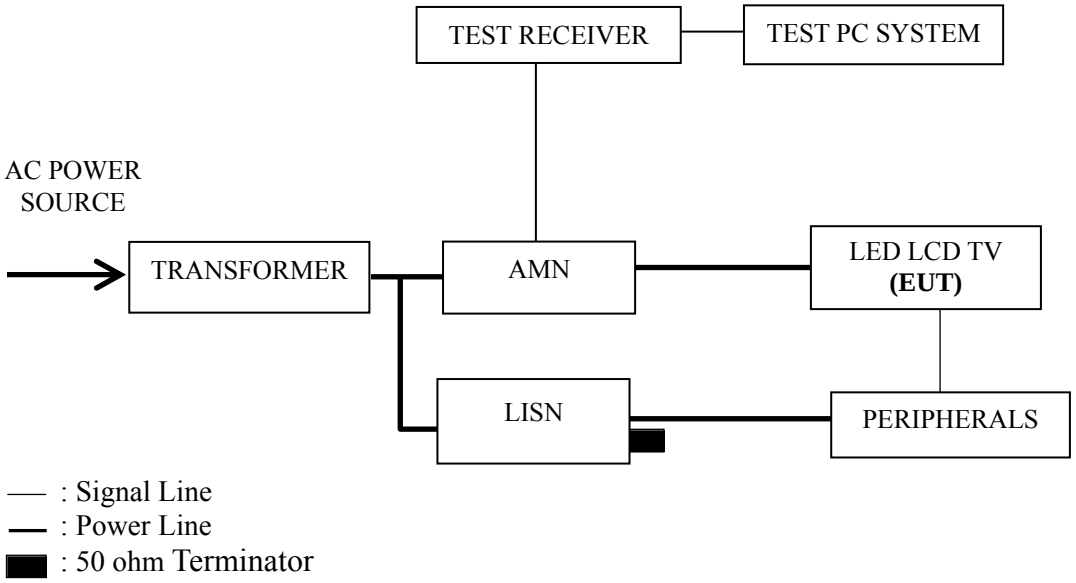
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Jul 03, 2015	Jul 02, 2016
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2015	Jun 26, 2016
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-5	Mar 20, 2015	Mar 19, 2016
4.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2015	Mar 19, 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
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 0.196MHz (Quasi-Peak Value) with corrected signal level of 55.91 dB (μV) (limit is 63.79 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LC-60N5100U	Humidity :	48%RH	
Test Mode	:	HDMI 1920*1080@60Hz & 1kHz Playing	Date of Test :	Jan 11, 2016	

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	**0.197**	**44.70**	**10.52**	**55.22**	**63.76**	**8.54**	QP
	0.446	31.30	10.41	41.71	56.95	15.24	
	0.683	32.31	10.37	42.68	56.00	13.32	
	1.357	29.00	10.39	39.39	56.00	16.61	
	4.882	33.60	10.48	44.08	56.00	11.92	
	19.790	31.50	10.59	42.09	60.00	17.91	
	0.197	31.80	10.52	42.32	53.76	11.44	AV
	0.446	18.90	10.41	29.31	46.95	17.64	
	0.683	18.81	10.37	29.18	46.00	16.82	
	1.357	16.10	10.39	26.49	46.00	19.51	
	4.882	23.30	10.48	33.78	46.00	12.22	
	19.790	26.60	10.59	37.19	50.00	12.81	
Neutral	**0.196**	**45.40**	**10.51**	**55.91**	**63.79**	**7.88**	QP
	0.448	33.39	10.39	43.78	56.90	13.12	
	0.841	29.89	10.37	40.26	56.00	15.74	
	1.367	29.60	10.39	39.99	56.00	16.01	
	4.884	32.00	10.47	42.47	56.00	13.53	
	19.670	31.20	10.70	41.90	60.00	18.10	
	0.196	31.30	10.51	41.81	53.79	11.98	AV
	0.448	21.19	10.39	31.58	46.90	15.32	
	0.841	15.29	10.37	25.66	46.00	20.34	
	1.367	17.50	10.39	27.89	46.00	18.11	
	4.884	22.10	10.47	32.57	46.00	13.43	
	19.670	26.00	10.70	36.70	50.00	13.30	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LC-60N5100U	Humidity :	48%RH	
Test Mode	:	HDMI 1280*1024@60Hz & 1kHz Playing	Date of Test :	Jan 11, 2016	

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	**0.197**	**44.50**	**10.52**	**55.02**	**63.74**	**8.72**	QP
	0.452	31.99	10.41	42.40	56.84	14.44	
	0.593	28.90	10.38	39.28	56.00	16.72	
	1.086	28.00	10.38	38.38	56.00	17.62	
	2.051	26.60	10.41	37.01	56.00	18.99	
	5.355	30.91	10.47	41.38	60.00	18.62	
	0.197	31.60	10.52	42.12	53.74	11.62	AV
	0.452	20.59	10.41	31.00	46.84	15.84	
	0.593	18.70	10.38	29.08	46.00	16.92	
	1.086	17.40	10.38	27.78	46.00	18.22	
	2.051	16.90	10.41	27.31	46.00	18.69	
	5.355	21.81	10.47	32.28	50.00	17.72	
Neutral	**0.195**	**45.40**	**10.51**	**55.91**	**63.82**	**7.91**	QP
	0.453	33.90	10.38	44.28	56.82	12.54	
	0.832	30.50	10.36	40.86	56.00	15.14	
	2.173	26.91	10.41	37.32	56.00	18.68	
	4.870	33.10	10.47	43.57	56.00	12.43	
	19.860	31.30	10.70	42.00	60.00	18.00	
	0.195	30.80	10.51	41.31	53.82	12.51	AV
	0.453	22.10	10.38	32.48	46.82	14.34	
	0.832	17.80	10.36	28.16	46.00	17.84	
	2.173	15.51	10.41	25.92	46.00	20.08	
	4.870	22.40	10.47	32.87	46.00	13.13	
	19.860	26.10	10.70	36.80	50.00	13.20	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LC-60N5100U	Humidity :	48%RH	
Test Mode	:	HDMI 640*480@60Hz & 1kHz Playing	Date of Test :	Jan 11, 2016	

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	**0.195**	**44.69**	**10.53**	**55.22**	**63.80**	**8.58**	QP
	0.455	32.30	10.40	42.70	56.79	14.09	
	0.833	29.90	10.38	40.28	56.00	15.72	
	1.363	34.30	10.39	44.69	56.00	11.31	
	4.693	30.30	10.48	40.78	56.00	15.22	
	19.860	30.90	10.59	41.49	60.00	18.51	
	0.195	31.29	10.53	41.82	53.80	11.98	AV
	0.455	20.50	10.40	30.90	46.79	15.89	
	0.833	17.10	10.38	27.48	46.00	18.52	
	1.363	17.60	10.39	27.99	46.00	18.01	
	4.693	22.50	10.48	32.98	46.00	13.02	
	19.860	25.70	10.59	36.29	50.00	13.71	
Neutral	**0.196**	**45.29**	**10.51**	**55.80**	**63.77**	**7.97**	QP
	0.448	33.39	10.39	43.78	56.90	13.12	
	0.681	32.41	10.35	42.76	56.00	13.24	
	1.367	30.30	10.39	40.69	56.00	15.31	
	4.888	32.20	10.47	42.67	56.00	13.33	
	19.680	30.60	10.70	41.30	60.00	18.70	
	0.196	31.19	10.51	41.70	53.77	12.07	AV
	0.448	21.29	10.39	31.68	46.90	15.22	
	0.681	19.91	10.35	30.26	46.00	15.74	
	1.367	18.10	10.39	28.49	46.00	17.51	
	4.888	22.30	10.47	32.77	46.00	13.23	
	19.680	25.70	10.70	36.40	50.00	13.60	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LC-60N5100U	Humidity	:	48%RH
Test Mode	:	HDMI1080P	Date of Test	:	Jan 11, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	**0.196**	**44.59**	**10.53**	**55.12**	**63.78**	**8.66**	QP
	0.456	32.40	10.40	42.80	56.77	13.97	
	0.685	32.31	10.37	42.68	56.00	13.32	
	1.183	28.51	10.38	38.89	56.00	17.11	
	4.724	30.20	10.48	40.68	56.00	15.32	
	20.030	30.60	10.59	41.19	60.00	18.81	
	0.196	31.29	10.53	41.82	53.78	11.96	AV
	0.456	20.50	10.40	30.90	46.77	15.87	
	0.685	18.91	10.37	29.28	46.00	16.72	
	1.183	16.31	10.38	26.69	46.00	19.31	
	4.724	22.10	10.48	32.58	46.00	13.42	
	20.030	25.50	10.59	36.09	50.00	13.91	
Neutral	**0.195**	**45.20**	**10.51**	**55.71**	**63.80**	**8.09**	QP
	0.456	34.10	10.38	44.48	56.77	12.29	
	0.680	32.31	10.35	42.66	56.00	13.34	
	1.364	30.20	10.39	40.59	56.00	15.41	
	4.573	27.70	10.46	38.16	56.00	17.84	
	19.570	30.60	10.70	41.30	60.00	18.70	
	0.195	30.80	10.51	41.31	53.80	12.49	AV
	0.456	21.90	10.38	32.28	46.77	14.49	
	0.680	19.51	10.35	29.86	46.00	16.14	
	1.364	17.40	10.39	27.79	46.00	18.21	
	4.573	19.90	10.46	30.36	46.00	15.64	
	19.570	25.50	10.70	36.20	50.00	13.80	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LC-60N5100U	Humidity	:	48%RH
Test Mode	:	USB Play	Date of Test	:	Jan 11, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	**0.198**	**44.00**	**10.52**	**54.52**	**63.70**	**9.18**	QP
	0.455	32.30	10.40	42.70	56.78	14.08	
	0.841	29.70	10.38	40.08	56.00	15.92	
	1.361	29.50	10.39	39.89	56.00	16.11	
	4.904	32.10	10.48	42.58	56.00	13.42	
	20.010	30.30	10.59	40.89	60.00	19.11	
	0.198	31.50	10.52	42.02	53.70	11.68	AV
	0.455	20.60	10.40	31.00	46.78	15.78	
	0.841	18.80	10.38	29.18	46.00	16.82	
	1.361	17.60	10.39	27.99	46.00	18.01	
	4.904	23.30	10.48	33.78	46.00	12.22	
	20.010	25.10	10.59	35.69	50.00	14.31	
Neutral	**0.196**	**45.30**	**10.51**	**55.81**	**63.78**	**7.97**	QP
	0.453	33.70	10.38	44.08	56.82	12.74	
	0.846	30.29	10.37	40.66	56.00	15.34	
	1.566	29.91	10.39	40.30	56.00	15.70	
	4.904	30.20	10.47	40.67	56.00	15.33	
	19.300	29.89	10.70	40.59	60.00	19.41	
	0.196	30.80	10.51	41.31	53.78	12.47	AV
	0.453	22.30	10.38	32.68	46.82	14.14	
	0.846	19.19	10.37	29.56	46.00	16.44	
	1.566	17.51	10.39	27.90	46.00	18.10	
	4.904	21.50	10.47	31.97	46.00	14.03	
	19.300	24.79	10.70	35.49	50.00	14.51	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LC-60N5100U	Humidity	:	48%RH
Test Mode	:	LAN Play	Date of Test	:	Jan 11, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	**0.198**	**44.40**	**10.52**	**54.92**	**63.69**	**8.77**	QP
	0.450	31.70	10.41	42.11	56.88	14.77	
	0.846	29.60	10.38	39.98	56.00	16.02	
	1.479	27.50	10.40	37.90	56.00	18.10	
	4.932	29.80	10.48	40.28	56.00	15.72	
	14.720	29.40	10.54	39.94	60.00	20.06	
	0.198	31.50	10.52	42.02	53.69	11.67	AV
	0.450	19.90	10.41	30.31	46.88	16.57	
	0.846	19.20	10.38	29.58	46.00	16.42	
	1.479	15.30	10.40	25.70	46.00	20.30	
	4.932	20.50	10.48	30.98	46.00	15.02	
	14.720	24.10	10.54	34.64	50.00	15.36	
Neutral	**0.197**	**45.19**	**10.51**	**55.70**	**63.74**	**8.04**	QP
	0.455	33.90	10.38	44.28	56.78	12.50	
	0.678	32.31	10.35	42.66	56.00	13.34	
	1.368	30.40	10.39	40.79	56.00	15.21	
	4.501	29.60	10.46	40.06	56.00	15.94	
	19.770	30.60	10.70	41.30	60.00	18.70	
	0.197	31.29	10.51	41.80	53.74	11.94	AV
	0.455	22.10	10.38	32.48	46.78	14.30	
	0.678	18.91	10.35	29.26	46.00	16.74	
	1.368	18.50	10.39	28.89	46.00	17.11	
	4.501	19.20	10.46	29.66	46.00	16.34	
	19.770	25.30	10.70	36.00	50.00	14.00	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

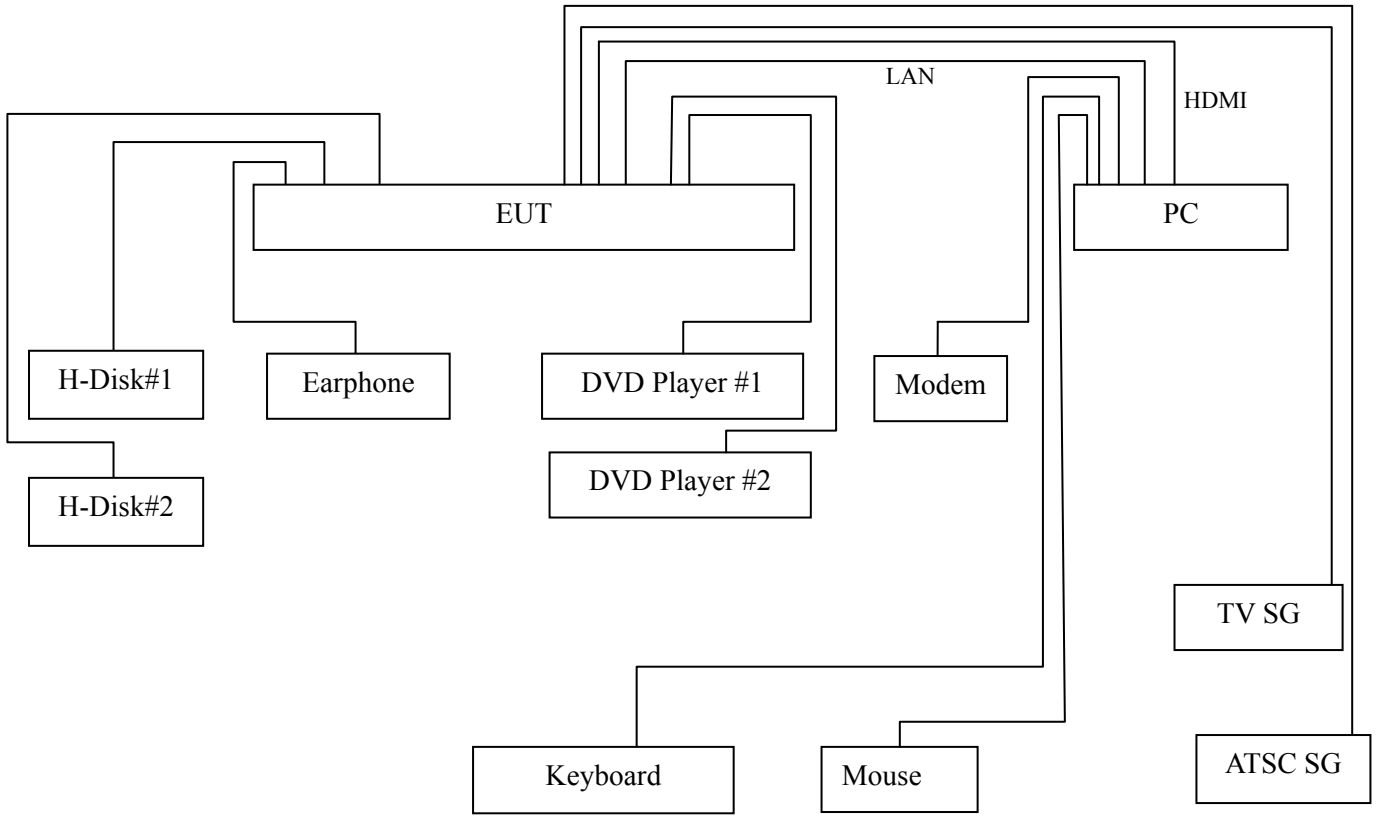
4.1 Test Equipment

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

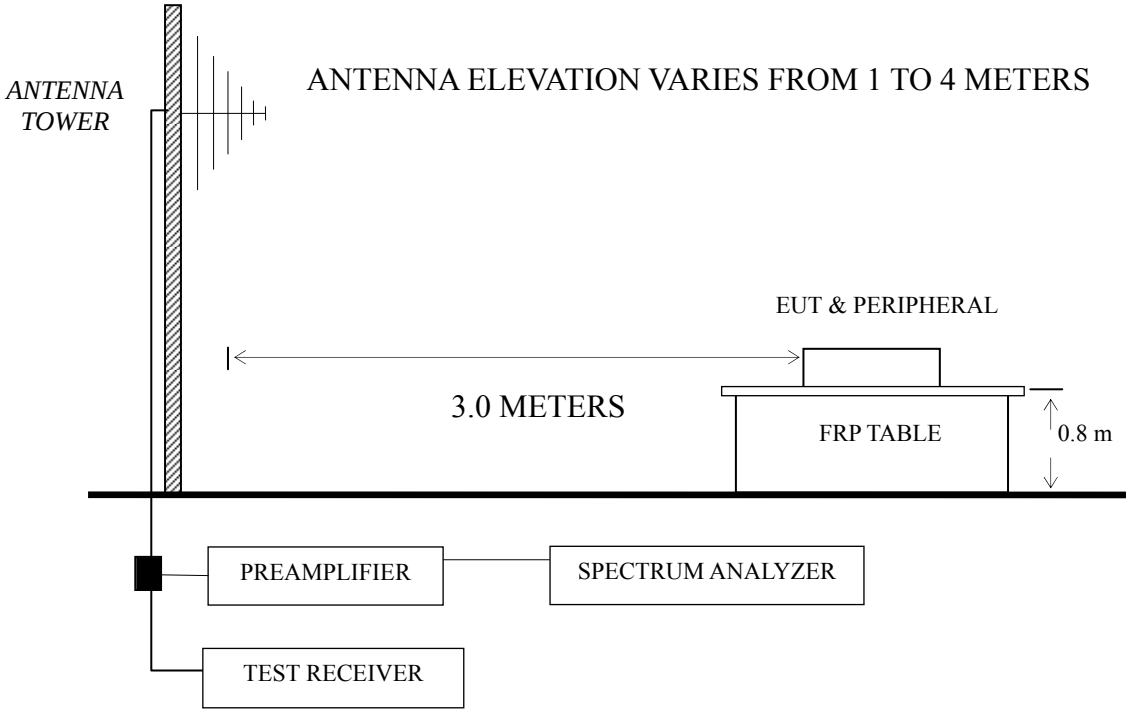
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



4.2.2 Test Setup

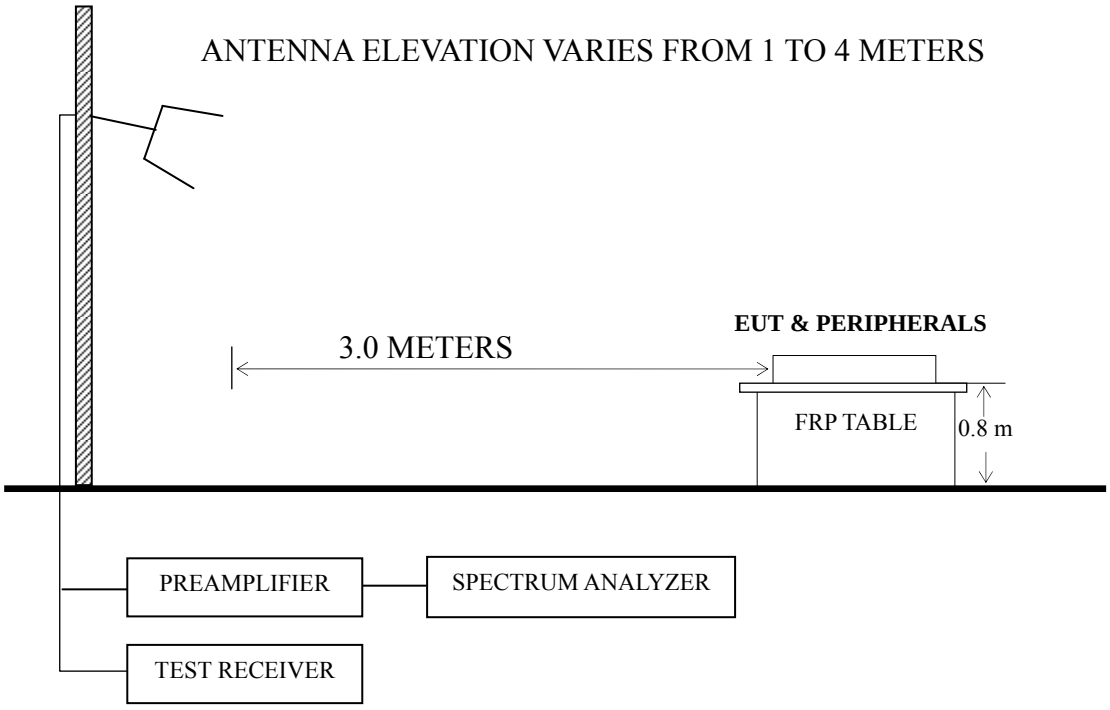
4.2.2.1 Below 1GHz



■ : 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	
		(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 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. (< 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 745.86 MHz with corrected signal level of 44.31 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.9 m height and the turntable was at 60°. The worst emission at vertical polarization was detected at 745.86 MHz with corrected signal level of 44.40 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.7m height and the turntable was at 225°.

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LC-60N5100U	Humidity :	60%RH
Test Mode	:	HDMI 1920*1080@60Hz & 1kHz Playing	Date of Test :	Jan 25, 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	151.250	25.31	11.43	1.65	--	38.39	43.50	5.11	QP
	379.200	22.68	16.47	2.69	--	41.84	46.00	4.16	
	597.450	21.73	18.98	2.31	--	43.02	46.00	2.98	
	636.250	20.76	19.50	2.77	--	43.03	46.00	2.97	
	745.860	**20.66**	**20.03**	**3.62**	**--**	**44.31**	**46.00**	**1.69**	
	790.840	19.60	20.50	3.68	--	43.78	46.00	2.22	
	1989.803	69.22	27.46	4.43	35.11	66.00	74.00	8.00	PK
	2388.809	64.53	28.21	4.81	35.14	62.41	74.00	11.59	
	2786.779	61.40	29.67	5.40	35.18	61.29	74.00	12.71	
	3568.514	65.32	31.69	6.13	34.66	68.48	74.00	5.52	
	3954.700	65.94	32.69	5.83	34.33	70.13	74.00	3.87	
	4361.545	55.00	33.40	6.55	34.15	60.80	74.00	13.20	
	1989.803	48.34	27.46	4.43	35.11	45.12	54.00	8.88	AV
	2388.809	44.44	28.21	4.81	35.14	42.32	54.00	11.68	
	2786.779	40.20	29.67	5.40	35.18	40.09	54.00	13.91	
	3568.514	44.85	31.69	6.13	34.66	48.01	54.00	5.99	
	3954.700	41.96	32.69	5.83	34.33	46.15	54.00	7.85	
	4361.545	36.21	33.40	6.55	34.15	42.01	54.00	11.99	

TEST ENGINEER: BILL WU

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LC-60N5100U	Humidity :	60%RH
Test Mode	:	HDMI 1920*1080@60Hz & 1kHz Playing	Date of Test :	Jan 25, 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	30.970	16.66	18.15	0.64	--	35.45	40.00	4.55	QP
	76.560	26.03	8.78	1.04	--	35.85	40.00	4.15	
	153.190	27.29	11.31	1.65	--	40.25	43.50	3.25	
	398.600	20.37	16.58	2.71	--	39.66	46.00	6.34	
	745.860	**20.75**	**20.03**	**3.62**	**--**	**44.40**	**46.00**	**1.60**	
	790.120	19.50	20.50	3.68	--	43.68	46.00	2.32	
	1187.688	67.22	24.40	3.52	36.16	58.98	74.00	15.02	PK
	1593.380	68.24	26.00	4.01	35.56	62.69	74.00	11.31	
	1989.803	69.76	27.46	4.43	35.11	66.54	74.00	7.46	
	2384.533	62.18	28.21	4.81	35.14	60.06	74.00	13.94	
	3587.747	61.06	31.75	6.09	34.64	64.26	74.00	9.74	
	3966.417	60.80	32.72	5.83	34.33	65.02	74.00	8.98	
	1187.688	47.34	24.40	3.52	36.16	39.10	54.00	14.90	AV
	1593.380	47.78	26.00	4.01	35.56	42.23	54.00	11.77	
	1989.803	49.34	27.46	4.43	35.11	46.12	54.00	7.88	
	2384.533	42.87	28.21	4.81	35.14	40.75	54.00	13.25	
	3587.747	40.94	31.75	6.09	34.64	44.14	54.00	9.86	
	3966.417	39.09	32.72	5.83	34.33	43.31	54.00	10.69	

TEST ENGINEER: BILL WU

EUT	:	LED LCD TV	Temperature	:	22℃
Model No.	:	LC-60N5100U	Humidity	:	60%RH
Test Mode	:	HDMI 1280*1024@60Hz & 1kHz Playing	Date of Test	:	Jan 25, 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	22.40	8.78	1.04	32.22	40.00	7.78
	151.250	21.25	11.43	1.65	34.33	43.50	9.17
	226.910	23.18	10.96	2.08	36.22	46.00	9.78
	450.980	19.43	16.80	2.84	39.07	46.00	6.93
	746.830	16.78	20.03	3.62	40.43	46.00	5.57
	796.080	**18.80**	**20.57**	**3.68**	**43.05**	**46.00**	**2.95**
Vertical	42.610	20.36	12.12	0.75	33.23	40.00	6.77
	78.500	22.19	9.12	1.05	32.36	40.00	7.64
	154.160	22.06	11.24	1.66	34.96	43.50	8.54
	398.600	20.48	16.58	2.71	39.77	46.00	6.23
	742.440	20.20	19.97	3.60	43.77	46.00	2.23
	800.180	**19.57**	**20.60**	**3.68**	**43.85**	**46.00**	**2.15**

TEST ENGINEER: BILL WU

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LC-60N5100U	Humidity :	60%RH	
Test Mode	:	HDMI 640*480@60Hz & 1kHz Playing	Date of Test :	Jan 25, 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	80.440	21.54	9.43	1.09	32.06	40.00	7.94
	157.070	21.85	11.16	1.68	34.69	43.50	8.81
	224.970	24.50	10.80	2.07	37.37	46.00	8.63
	390.840	21.05	16.50	2.71	40.26	46.00	5.74
	749.740	**17.55**	**20.10**	**3.62**	**41.27**	**46.00**	**4.73**
	904.940	12.91	21.40	4.56	38.87	46.00	7.13
Vertical	32.910	14.22	16.99	0.66	31.87	40.00	8.13
	193.930	22.61	10.17	1.94	34.72	43.50	8.78
	399.570	20.78	16.60	2.72	40.10	46.00	5.90
	542.160	18.33	18.56	2.63	39.52	46.00	6.48
	794.360	**18.68**	**20.53**	**3.68**	**42.89**	**46.00**	**3.11**
	898.150	10.59	21.30	4.46	36.35	46.00	9.65

TEST ENGINEER: BILL WU

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LC-60N5100U	Humidity :	60%RH
Test Mode	:	HDMI1080P	Date of Test :	Jan 25, 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	20.63	9.60	1.12	31.35	40.00	8.65
	157.070	20.51	11.16	1.68	33.35	43.50	10.15
	202.660	22.44	9.75	1.98	34.17	43.50	9.33
	348.160	17.47	15.53	2.65	35.65	46.00	10.35
	404.420	**18.91**	**16.60**	**2.72**	**38.23**	**46.00**	**7.77**
	751.680	13.71	20.15	3.62	37.48	46.00	8.52
Vertical	46.490	21.35	9.46	0.78	31.59	40.00	8.41
	88.200	20.94	10.25	1.18	32.37	43.50	11.13
	131.850	18.94	12.71	1.53	33.18	43.50	10.32
	201.690	22.23	9.73	1.97	33.93	43.50	9.57
	402.480	**18.65**	**16.60**	**2.72**	**37.97**	**46.00**	**8.03**
	462.620	16.77	17.14	2.87	36.78	46.00	9.22

TEST ENGINEER: BILL WU

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LC-60N5100U	Humidity :	60%RH
Test Mode	:	USB Play	Date of Test :	Jan 25, 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	81.410	21.02	9.51	1.10	31.63	40.00	8.37
	162.890	20.07	11.21	1.73	33.01	43.50	10.49
	212.360	22.85	10.10	2.02	34.97	43.50	8.53
	384.050	16.08	16.50	2.70	35.28	46.00	10.72
	546.040	13.96	18.68	2.63	35.27	46.00	10.73
	743.920	**15.60**	**20.03**	**3.60**	**39.23**	**46.00**	**6.77**
Vertical	**44.550**	**20.83**	**11.20**	**0.77**	**32.80**	**40.00**	**7.20**
	142.520	19.20	12.30	1.59	33.09	43.50	10.41
	216.240	22.69	10.26	2.03	34.98	46.00	11.02
	404.420	18.45	16.60	2.72	37.77	46.00	8.23
	546.040	15.32	18.68	2.63	36.63	46.00	9.37
	717.730	12.25	19.88	3.57	35.70	46.00	10.30

TEST ENGINEER: BILL WU

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LC-60N5100U	Humidity :	60%RH
Test Mode	:	LAN Play	Date of Test :	Jan 25, 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	81.410	20.54	9.51	1.10	31.15	40.00	8.85
	161.920	21.27	11.16	1.72	34.15	43.50	9.35
	207.510	22.55	9.92	1.99	34.46	43.50	9.04
	389.870	17.40	16.50	2.71	36.61	46.00	9.39
	754.590	**15.92**	**20.20**	**3.62**	**39.74**	**46.00**	**6.26**
	882.630	11.65	21.10	4.36	37.11	46.00	8.89
Vertical	**47.460**	**21.87**	**9.11**	**0.79**	**31.77**	**40.00**	**8.23**
	84.320	20.08	9.74	1.13	30.95	40.00	9.05
	148.340	20.51	11.65	1.62	33.78	43.50	9.72
	446.130	15.57	16.83	2.82	35.22	46.00	10.78
	738.100	12.95	19.90	3.60	36.45	46.00	9.55
	882.630	12.15	21.10	4.36	37.61	46.00	8.39

TEST ENGINEER: BILL WU

5 DEVIATION TO TEST SPECIFICATIONS

None.