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

LED LCD TV

Model No.	Brand
LC-65N5200U	Sharp
LC-65N5200C	

FCC ID : W9HLCDF0070

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-F16032
Date of Test : Dec 29, 2015-Jan 18, 2016
Date of Report : Jan 26, 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-65N5200U	Sharp	120V/60Hz
LC-65N5200C		

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 Dec 29, 2015-Jan 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.F16033, a Verification report.

Date of Test : Dec 29, 2015-Jan 18, 2016 Date of Report : Jan 26, 2016

Producer : HUIMIN YAN / Assistant

Review : SAMMY CHEN / Manager

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

Signatory : BYRON KWO / Assistant General Manager

Authorized Signature EMC

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-65N5200U, LC-65N5200C
Note	:	The above models are all the same except for model number.LC-65N5200U 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 : HE650HF-B51
Tuner .	:	Manufacturer : XuGuang Tech. Co. Ltd. M/N : HFT-96S3/W11FJ4H\ROH
Max Resolution	:	HDMI 1920*1080@60Hz
HDMI Cable*3 (Lab provide)	:	Shielded, Detachable, 1.50m
Power Cord	:	Unshielded, Detachable, 1.80m
LAN Cable	:	Shielded, Detachable, 1.50m
USB Cable*2 (Lab provide)	:	Shielded, Detachable, 1.00m, with one core

Remark:

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

Side Port:

(1) One ANT Port
: Connected with ATSC / TV SG

(2) One HDMI Port
: Connected with DVD PLAYER #1

(3) One HDMI2 Port
: Connected with PC

(4) One USB #1 Port
: Connected with Hard-Disk #1

(5) One Service Port
: This port does not open to user

(6) One USB #2 Port
: Connected with Hard-Disk #2

(7) One AUDIO OUT Port
: Connected with Earphone

Back Port:

(8) One HDMI3 Port
: Connected with DVD PLAYER #2

(9) Digital Audio Out
: Connected with DVD PLAYER #2

(10) One COMPONENT in\AV in Port
: Connected with DVD PLAYER #2

(11) LAN Port
: Connected with PC

2.2 Peripherals

2.2.1 PC

Manufacturer	:	HP
Model Number	:	dx7400MT
Serial Number	:	CNG8130K89
Power Cord	:	Shielded, 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, Detachable, 1.5m
Certificate	:	CE/EMC, FCC DoC, VCCI, MIC, C-Tick, BSMI

2.2.3 Mouse

Manufacturer	:	Microsoft
Model Number	:	RT2300
Serial Number	:	6965712071551
Data Cable	:	Shielded, Detachable, 1.5m.
Certificate	:	CE/EMC, FCC DoC, VCCI, MIC, C-Tick, BSMI

2.2.4 Modem

Manufacturer	:	TP-LINK
Model Number	:	TM-EC5658V
Serial Number	:	07123301053
Data Cable	:	Shielded, Detachable, 1.5m
Certificate	:	CCC

2.2.5 Earphone

Manufacturer	:	audio-technica
Model Number	:	ATH-CKL200

2.2.6 DVD PLAYER #1

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

2.2.7 DVD PLAYER #2

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

2.2.8 Hard Disk #1

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

2.2.9 Hard Disk #2

Manufacturer	:	Tetasys
Model Number	:	F12
Serial Number	:	A010022-4860007
Data Cable	:	Shielded, Detachable, 1.5m.
Certificate	:	CE, FCC DoC

2.2.10 ATSC Signal Generator

Manufacturer	:	SENCORE
Model Number	:	ATSC997
Serial Number	:	6790071

2.2.11 TV Signal Generator

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

2.3 Description of Test Facility

Site Description (No.3 3m Chamber)	:	Sept. 17, 1998 file on Jan.15, 2015 Renewed Federal Communications Commission FCC Engineering Laboratory 7435 Oakland Mills Road Columbia, MD 21046, USA
Name of Firm	:	Audix Technology (Shanghai) Co., Ltd.
Site Location	:	3F 34Bldg 680 Guiping Rd, Caohejing Hi-Tech Park, Shanghai 200233, China
FCC registration Number	:	91789
NVLAP Lab Code	:	200371-0

2.4 Measurement Uncertainty

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

3 CONDUCTED EMISSION TEST

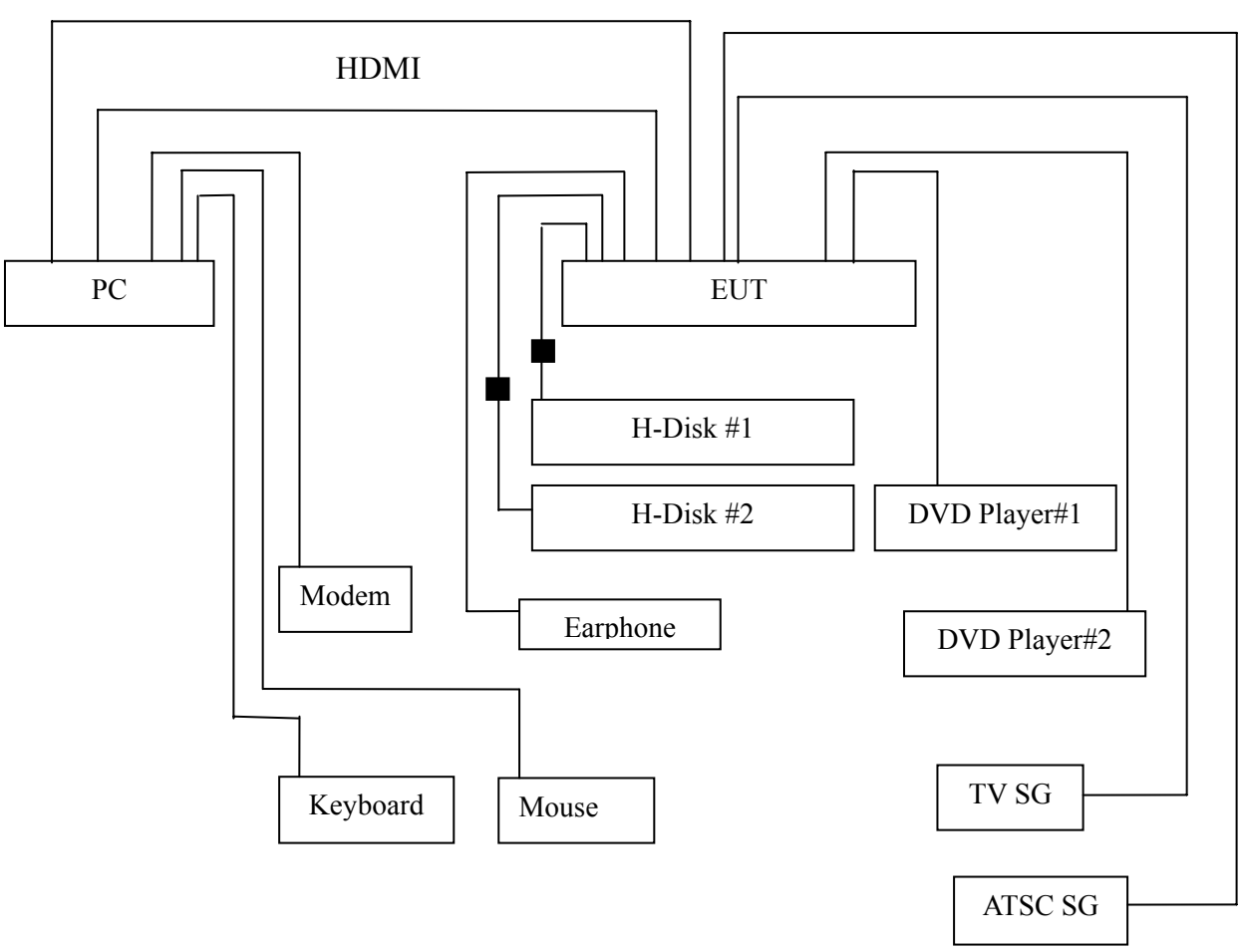
3.1 Test Equipment

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

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	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	--	--

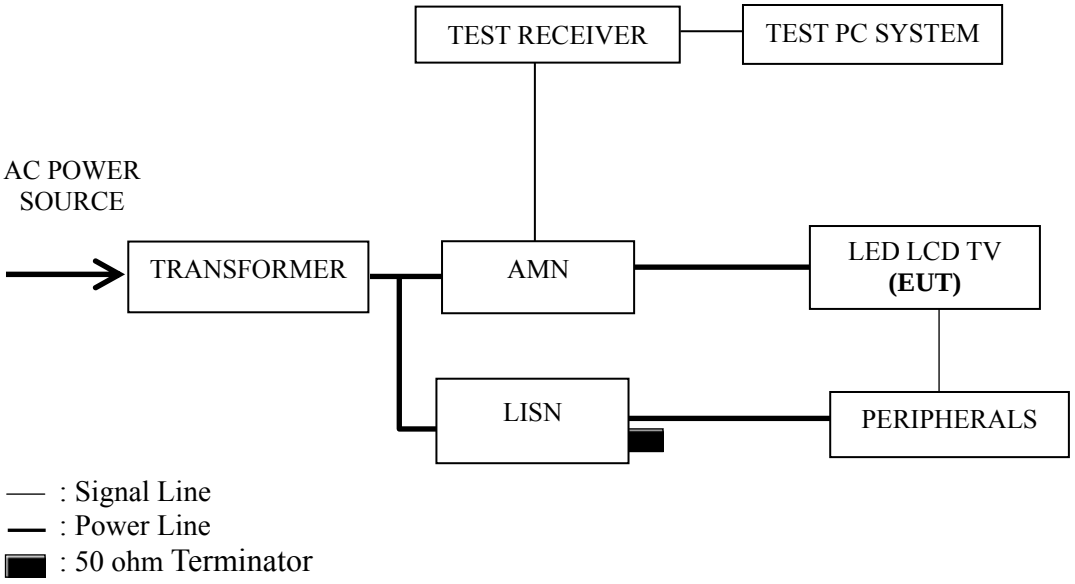
3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



■ : Ferrite Core

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 H-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 LAN Play test mode. The worst emission is detected at 0.194MHz (QP Value) with corrected signal level of 60.63dB (μV) (limit is 63.87 dB (μV)), when the Line of the EUT is connected to AMN.

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LC-65N5200U	Humidity	:	48%RH
Test Mode	:	HDMI 1920*1080@60Hz & 1kHz Playing	Date of Test	:	Dec 18, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	**0.151**	**49.89**	**10.59**	**60.48**	**65.94**	**5.46**	QP
	0.179	47.50	10.55	58.05	64.54	6.49	
	0.367	38.59	10.44	49.03	58.58	9.55	
	0.538	28.10	10.39	38.49	56.00	17.51	
	0.873	19.90	10.38	30.28	56.00	25.72	
	6.226	28.50	10.47	38.97	60.00	21.03	
	0.151	26.29	10.59	36.88	55.94	19.06	AV
	0.179	33.60	10.55	44.15	54.54	10.39	
	0.367	31.09	10.44	41.53	48.58	7.05	
	0.538	17.20	10.39	27.59	46.00	18.41	
	0.873	12.40	10.38	22.78	46.00	23.22	
	6.226	14.60	10.47	25.07	50.00	24.93	
Neutral	**0.170**	**48.10**	**10.55**	**58.65**	**64.98**	**6.33**	QP
	0.204	45.60	10.50	56.10	63.46	7.36	
	0.365	38.59	10.42	49.01	58.62	9.61	
	0.534	28.10	10.37	38.47	56.00	17.53	
	0.874	21.69	10.37	32.06	56.00	23.94	
	6.424	26.30	10.50	36.80	60.00	23.20	
	0.170	32.30	10.55	42.85	54.98	12.13	AV
	0.204	34.20	10.50	44.70	53.46	8.76	
	0.365	30.29	10.42	40.71	48.62	7.91	
	0.534	16.60	10.37	26.97	46.00	19.03	
	0.874	15.19	10.37	25.56	46.00	20.44	
	6.424	12.90	10.50	23.40	50.00	26.60	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LC-65N5200U	Humidity :	48%RH	
Test Mode	:	HDMI 1280*1024@60Hz & 1kHz Playing	Date of Test :	Dec 18, 2015	

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	**0.169**	**48.50**	**10.56**	**59.06**	**65.01**	**5.95**	QP
	0.206	44.80	10.52	55.32	63.36	8.04	
	0.369	38.49	10.44	48.93	58.53	9.60	
	0.537	28.10	10.39	38.49	56.00	17.51	
	0.874	20.80	10.38	31.18	56.00	24.82	
	6.417	25.60	10.47	36.07	60.00	23.93	
	0.169	32.10	10.56	42.66	55.01	12.35	AV
	0.206	31.30	10.52	41.82	53.36	11.54	
	0.369	31.19	10.44	41.63	48.53	6.90	
	0.537	17.20	10.39	27.59	46.00	18.41	
	0.874	14.60	10.38	24.98	46.00	21.02	
	6.417	11.50	10.47	21.97	50.00	28.03	
Neutral	**0.168**	**48.29**	**10.56**	**58.85**	**65.08**	**6.23**	QP
	0.366	38.59	10.42	49.01	58.59	9.58	
	0.535	28.10	10.37	38.47	56.00	17.53	
	0.667	24.51	10.35	34.86	56.00	21.14	
	1.150	16.41	10.37	26.78	56.00	29.22	
	6.412	25.10	10.50	35.60	60.00	24.40	
	0.168	32.39	10.56	42.95	55.08	12.13	AV
	0.366	30.99	10.42	41.41	48.59	7.18	
	0.535	16.80	10.37	27.17	46.00	18.83	
	0.667	13.61	10.35	23.96	46.00	22.04	
	1.150	8.61	10.37	18.98	46.00	27.02	
	6.412	11.20	10.50	21.70	50.00	28.30	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LC-65N5200U	Humidity :	48%RH	
Test Mode	:	HDMI 640*480@60Hz & 1kHz Playing	Date of Test :	Dec 18, 2015	

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	50.29	10.59	60.88	65.96	5.08	QP
	0.191	**49.90**	**10.53**	**60.43**	**63.99**	**3.56**	
	0.369	39.09	10.44	49.53	58.52	8.99	
	0.537	28.20	10.39	38.59	56.00	17.41	
	0.891	19.90	10.38	30.28	56.00	25.72	
	6.248	29.00	10.47	39.47	60.00	20.53	
	0.151	26.59	10.59	37.18	55.96	18.78	AV
	0.191	34.70	10.53	45.23	53.99	8.76	
	0.369	31.39	10.44	41.83	48.52	6.69	
	0.537	17.60	10.39	27.99	46.00	18.01	
	0.891	10.30	10.38	20.68	46.00	25.32	
	6.248	15.30	10.47	25.77	50.00	24.23	
Neutral	**0.170**	**48.30**	**10.55**	**58.85**	**64.96**	**6.11**	QP
	0.370	38.59	10.42	49.01	58.50	9.49	
	0.540	28.30	10.37	38.67	56.00	17.33	
	0.873	20.49	10.37	30.86	56.00	25.14	
	2.161	14.26	10.41	24.67	56.00	31.33	
	6.464	27.19	10.51	37.70	60.00	22.30	
	0.170	32.90	10.55	43.45	54.96	11.51	AV
	0.370	31.29	10.42	41.71	48.50	6.79	
	0.540	17.60	10.37	27.97	46.00	18.03	
	0.873	12.39	10.37	22.76	46.00	23.24	
	2.161	3.61	10.41	14.02	46.00	31.98	
	6.464	13.09	10.51	23.60	50.00	26.40	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LC-65N5200U	Humidity	:	48%RH
Test Mode	:	HDMI 1080P	Date of Test	:	Dec 18, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	**0.192**	**50.10**	**10.53**	**60.63**	**63.94**	**3.31**	QP
	0.367	38.79	10.44	49.23	58.58	9.35	
	0.540	28.30	10.39	38.69	56.00	17.31	
	0.634	26.10	10.38	36.48	56.00	19.52	
	2.162	14.71	10.41	25.12	56.00	30.88	
	6.504	28.50	10.47	38.97	60.00	21.03	
	0.192	34.70	10.53	45.23	53.94	8.71	AV
	0.367	30.89	10.44	41.33	48.58	7.25	
	0.540	18.10	10.39	28.49	46.00	17.51	
	0.634	17.20	10.38	27.58	46.00	18.42	
	2.162	4.11	10.41	14.52	46.00	31.48	
	6.504	14.10	10.47	24.57	50.00	25.43	
Neutral	0.152	50.09	10.59	60.68	65.90	5.22	QP
	0.190	**50.09**	**10.52**	**60.61**	**64.04**	**3.43**	
	0.375	38.30	10.41	48.71	58.39	9.68	
	0.517	27.90	10.37	38.27	56.00	17.73	
	1.127	16.21	10.37	26.58	56.00	29.42	
	6.251	28.10	10.50	38.60	60.00	21.40	
	0.152	26.59	10.59	37.18	55.90	18.72	AV
	0.190	34.89	10.52	45.41	54.04	8.63	
	0.375	31.00	10.41	41.41	48.39	6.98	
	0.517	15.50	10.37	25.87	46.00	20.13	
	1.127	7.31	10.37	17.68	46.00	28.32	
	6.251	13.80	10.50	24.30	50.00	25.70	

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LC-65N5200U	Humidity	:	48%RH
Test Mode	:	USB Play	Date of Test	:	Dec 18, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	50.49	10.59	61.08	65.97	4.89	QP
	0.193	**49.60**	**10.53**	**60.13**	**63.89**	**3.76**	
	0.370	39.09	10.44	49.53	58.49	8.96	
	0.537	28.30	10.39	38.69	56.00	17.31	
	0.889	19.20	10.38	29.58	56.00	26.42	
	6.484	28.10	10.47	38.57	60.00	21.43	
	0.151	26.79	10.59	37.38	55.97	18.59	AV
	0.193	35.00	10.53	45.53	53.89	8.36	
	0.370	31.79	10.44	42.23	48.49	6.26	
	0.537	17.70	10.39	28.09	46.00	17.91	
	0.889	9.60	10.38	19.98	46.00	26.02	
	6.484	14.50	10.47	24.97	50.00	25.03	
Neutral	0.151	50.29	10.59	60.88	65.97	5.09	QP
	0.191	**50.20**	**10.51**	**60.71**	**64.00**	**3.29**	
	0.369	39.09	10.42	49.51	58.52	9.01	
	0.536	28.40	10.37	38.77	56.00	17.23	
	0.872	20.29	10.37	30.66	56.00	25.34	
	6.259	28.30	10.50	38.80	60.00	21.20	
	0.151	26.49	10.59	37.08	55.97	18.89	AV
	0.191	35.10	10.51	45.61	54.00	8.39	
	0.369	31.39	10.42	41.81	48.52	6.71	
	0.536	17.50	10.37	27.87	46.00	18.13	
	0.872	12.09	10.37	22.46	46.00	23.54	
	6.259	14.50	10.50	25.00	50.00	25.00	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LC-65N5200U	Humidity	:	48%RH
Test Mode	:	LAN Play	Date of Test	:	Dec 18, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	50.29	10.59	60.88	65.91	5.03	QP
	0.194	**50.10**	**10.53**	**60.63**	**63.87**	**3.24**	
	0.369	39.09	10.44	49.53	58.53	9.00	
	0.540	28.50	10.39	38.89	56.00	17.11	
	0.891	19.20	10.38	29.58	56.00	26.42	
	6.244	27.70	10.47	38.17	60.00	21.83	
	0.152	26.79	10.59	37.38	55.91	18.53	AV
	0.194	34.90	10.53	45.43	53.87	8.44	
	0.369	31.19	10.44	41.63	48.53	6.90	
	0.540	18.20	10.39	28.59	46.00	17.41	
	0.891	9.70	10.38	20.08	46.00	25.92	
	6.244	13.30	10.47	23.77	50.00	26.23	
Neutral	0.151	50.29	10.59	60.88	65.97	5.09	QP
	0.188	**49.10**	**10.52**	**59.62**	**64.12**	**4.50**	
	0.369	39.09	10.42	49.51	58.53	9.02	
	0.540	28.60	10.37	38.97	56.00	17.03	
	0.873	20.09	10.37	30.46	56.00	25.54	
	6.493	27.59	10.51	38.10	60.00	21.90	
	0.151	26.69	10.59	37.28	55.97	18.69	AV
	0.188	34.80	10.52	45.32	54.12	8.80	
	0.369	31.29	10.42	41.71	48.53	6.82	
	0.540	18.10	10.37	28.47	46.00	17.53	
	0.873	12.49	10.37	22.86	46.00	23.14	
	6.493	13.79	10.51	24.30	50.00	25.70	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

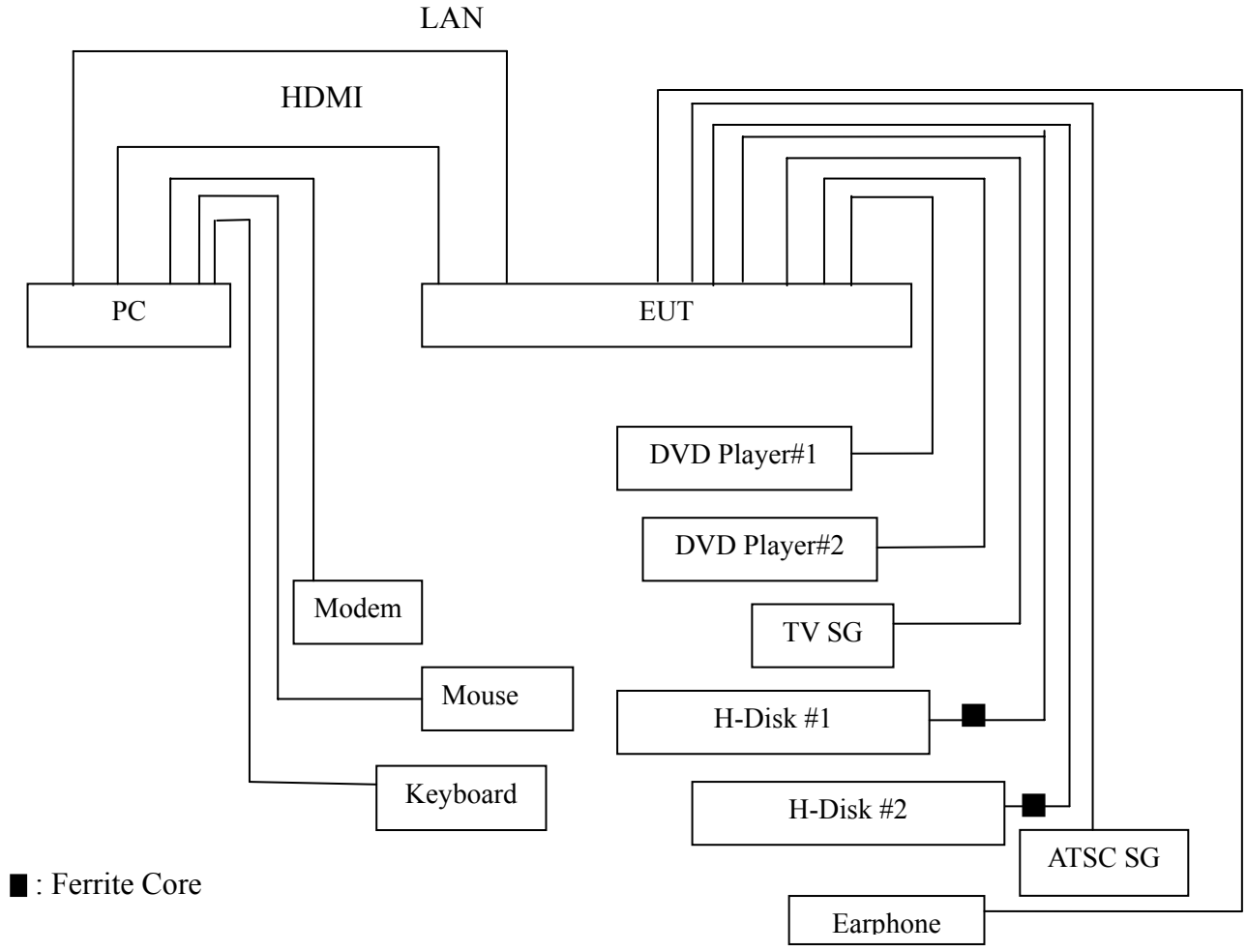
4.1 Test Equipment

The following test equipments are used during the radiated emission test in a semi-anechoic chamber:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101303	May 07, 2015	May 06, 2016
2.	Preamplifier	Agilent	8447D	2944A06664	Apr 27, 2015	Apr 26, 2016
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2015	Sep 19, 2016
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 15, 2015	May 14, 2016
5.	Horn Antenna	EMCO	3115	9607-4878	Jun 03, 2015	Jun 02, 2016
6.	Spectrum	Agilent	N9010A	MY52221182	Jun 12, 2015	Jun 11, 2016
7.	Spectrum	HP	8591EM	3628A00908	May 07, 2015	May 06, 2016
8.	Software	Audix	E3	6.2007-9-10	--	--

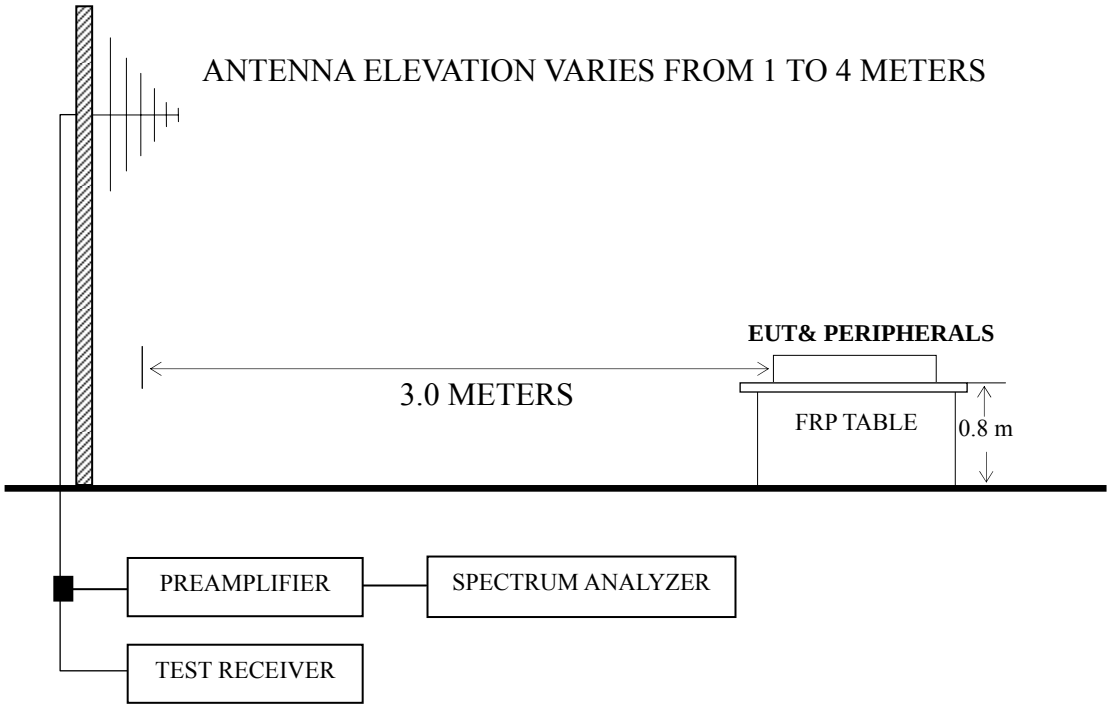
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



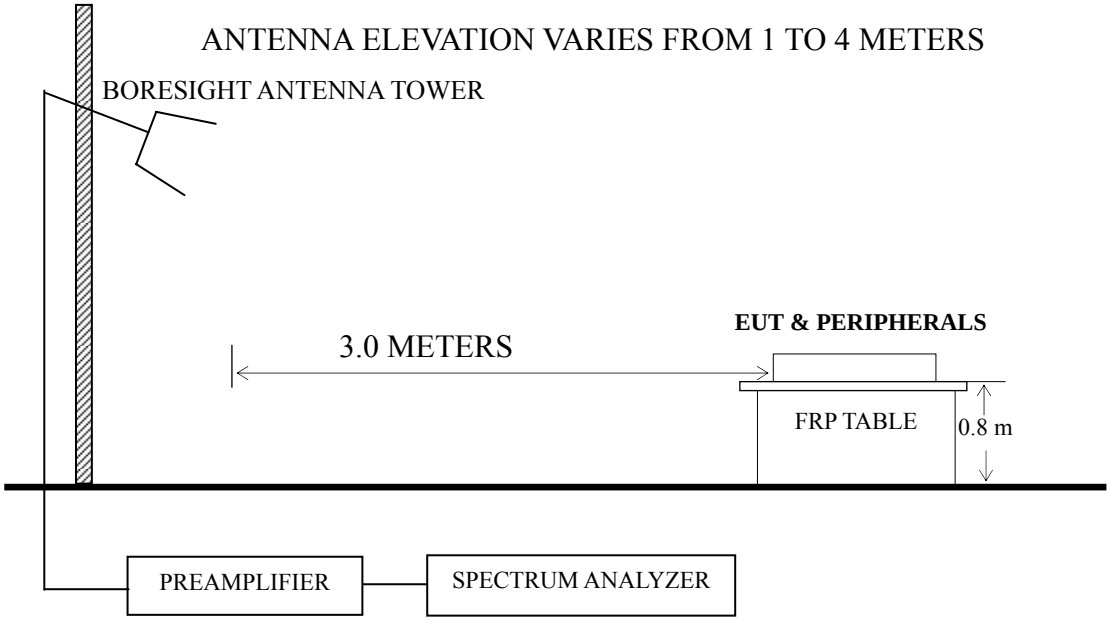
4.2.2 Radiated emission test setup

4.2.2.1 Below 1GHz



■ : 50 ohm Coaxial Switch

4.2.2.2 Above 1GHz



4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)]

Frequency (MHz)	Distance (m)	Field strength limits	
		(μV/m)	dB (μV/m)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level dB (μV/m) = 20 log Emission Level (μV/m)
NOTE 2 - The tighter limit applies at the band edges.
NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
NOTE 4 - The limits shown are based on Quasi-peak value detector.
NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT.

4.4 Test Configuration

The configuration of the EUT and peripherals are same as those used in conducted emission test.

Please refer to Sec.3.4.

4.5 Operating Condition of EUT

Same as conducted emission test which is listed in Sec.3.5, except for the test setup replaced by Sec.4.2.

4.6 Test Procedures

The EUT and peripherals were placed on a FRP turntable that is 0.8 meter above ground. The FRP turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. Broadband antenna (Calibrated Bilog Antenna) was used as receiving antenna. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.4:2003 requirements during radiated emission test.

The I.F. bandwidth of Test Receiver R&S ESCI was set at 120 kHz.

The frequency range from 30 MHz to 1000MHz was checked for all test modes.

The frequency range from 1 GHz to 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	P23-P24
HDMI 1280*1024@60Hz & 1kHz playing	P25
HDMI 640*480@60Hz & 1kHz playing	P26
HDMI1080P	P27
USB Play	P28
LAN Play	P29

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

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

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

NOTE 4 – The worst case is for HDMI 1920*1080@60Hz & 1kHz playing test mode. The worst emission at horizontal polarization was detected at 794.360MHz with corrected signal level of 44.65 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 2.20m height and the turntable was at 70°. The worst emission at vertical polarization was detected at 795.330 MHz with corrected signal level of 44.63dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.5m height and the turntable was at 215°.

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LC-65N5200U	Humidity :	60%RH
Test Mode	:	HDMI 1920*1080@60Hz & 1kHz Playing	Date of Test :	Jan 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	83.350	24.49	9.66	1.13	--	35.28	40.00	4.72	QP
	151.250	22.29	11.43	1.65	--	35.37	43.50	8.13	
	309.360	25.39	14.10	2.60	--	42.09	46.00	3.91	
	677.960	16.34	19.80	3.28	--	39.42	46.00	6.58	
	745.860	19.11	20.03	3.62	--	42.76	46.00	3.24	
	794.360	**20.44**	**20.53**	**3.68**	**--**	**44.65**	**46.00**	**1.35**	
	2538.859	60.65	28.57	4.96	35.16	59.02	74.00	14.98	PK
	2967.138	63.84	30.37	5.76	35.20	64.77	74.00	9.23	
	3393.901	57.51	31.31	6.10	34.81	60.11	74.00	13.89	
	4230.695	48.86	33.18	6.31	34.20	54.15	74.00	19.85	
	4643.823	48.47	33.75	6.51	34.03	54.70	74.00	19.30	
	5925.216	46.44	35.07	8.31	34.09	55.73	74.00	18.27	
	2538.859	41.28	28.57	4.96	35.16	39.65	54.00	14.35	AV
	2967.138	43.30	30.37	5.76	35.20	44.23	54.00	9.77	
	3393.901	38.49	31.31	6.10	34.81	41.09	54.00	12.91	
	4230.695	30.99	33.18	6.31	34.20	36.28	54.00	17.72	
	4643.823	29.90	33.75	6.51	34.03	36.13	54.00	17.87	
	5925.216	27.90	35.07	8.31	34.09	37.19	54.00	16.81	

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LC-65N5200U	Humidity	: 60%RH
Test Mode	:	HDMI 1920*1080@60Hz & 1kHz Playing	Date of Test	: Jan 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
Vertical	51.340	24.45	7.27	0.82	--	32.54	40.00	7.46	QP
	83.350	22.54	9.66	1.13	--	33.33	40.00	6.67	
	302.570	22.76	13.88	2.59	--	39.23	46.00	6.77	
	745.860	19.81	20.03	3.62	--	43.46	46.00	2.54	
	795.330	**20.42**	**20.53**	**3.68**	**--**	**44.63**	**46.00**	**1.37**	
	893.300	16.44	21.30	4.46	--	42.20	46.00	3.80	
	1213.502	61.96	24.51	3.54	36.11	53.90	74.00	20.10	PK
	2047.672	65.38	27.59	4.50	35.11	62.36	74.00	11.64	
	2543.413	66.11	28.60	4.96	35.16	64.51	74.00	9.49	
	2961.827	65.65	30.37	5.76	35.20	66.58	74.00	7.42	
	3399.987	55.40	31.31	6.10	34.81	58.00	74.00	16.00	
	5925.216	44.25	35.07	8.31	34.09	53.54	74.00	20.46	
	1213.502	40.45	24.51	3.54	36.11	32.39	54.00	21.61	AV
	2047.672	44.78	27.59	4.50	35.11	41.76	54.00	12.24	
	2543.413	46.37	28.60	4.96	35.16	44.77	54.00	9.23	
	2961.827	44.64	30.37	5.76	35.20	45.57	54.00	8.43	
	3399.987	36.30	31.31	6.10	34.81	38.90	54.00	15.10	
	5925.216	25.46	35.07	8.31	34.09	34.75	54.00	19.25	

TEST ENGINEER: MARK LI

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LC-65N5200U	Humidity :	60%RH
Test Mode	:	HDMI 1280*1024@60Hz & 1kHz Playing	Date of Test :	Jan 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	151.250	23.45	11.43	1.65	36.53	43.50	6.97
	303.540	24.73	13.91	2.60	41.24	46.00	4.76
	449.040	20.05	16.82	2.84	39.71	46.00	6.29
	597.450	19.83	18.98	2.31	41.12	46.00	4.88
	797.270	17.22	20.57	3.68	41.47	46.00	4.53
	893.300	**17.22**	**21.30**	**4.46**	**42.98**	**46.00**	**3.02**
Vertical	88.200	24.42	10.25	1.18	35.85	43.50	7.65
	151.250	23.78	11.43	1.65	36.86	43.50	6.64
	301.600	22.89	13.88	2.59	39.36	46.00	6.64
	597.450	21.03	18.98	2.31	42.32	46.00	3.68
	745.860	**18.95**	**20.03**	**3.62**	**42.60**	**46.00**	**3.40**
	797.270	16.57	20.57	3.68	40.82	46.00	5.18

TEST ENGINEER: MARK LI

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LC-65N5200U	Humidity :	60%RH
Test Mode	:	HDMI 640*480@60Hz & 1kHz Playing	Date of Test :	Jan 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	80.440	22.20	9.43	1.09	32.72	40.00	7.28
	299.660	22.68	13.80	2.59	39.07	46.00	6.93
	427.700	19.08	16.80	2.78	38.66	46.00	7.34
	701.240	16.35	19.80	3.54	39.69	46.00	6.31
	851.590	16.42	20.73	4.17	41.32	46.00	4.68
	893.300	**15.67**	**21.30**	**4.46**	**41.43**	**46.00**	**4.57**
Vertical	33.880	16.16	16.47	0.67	33.30	40.00	6.70
	81.410	23.01	9.51	1.10	33.62	40.00	6.38
	300.630	20.91	13.84	2.59	37.34	46.00	8.66
	699.300	**17.71**	**19.80**	**3.54**	**41.05**	**46.00**	**4.95**
	754.590	16.27	20.20	3.62	40.09	46.00	5.91
	959.260	13.75	22.20	4.75	40.70	46.00	5.30

TEST ENGINEER: MARK LI

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LC-65N5200U	Humidity :	60%RH
Test Mode	:	HDMI1080P	Date of Test :	Jan 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	81.410	21.71	9.51	1.10	32.32	40.00	7.68
	165.800	24.25	11.24	1.75	37.24	43.50	6.26
	707.060	**20.37**	**19.80**	**3.56**	**43.73**	**46.00**	**2.27**
	779.810	16.59	20.50	3.66	40.75	46.00	5.25
	844.800	17.60	20.73	4.07	42.40	46.00	3.60
	948.590	14.59	21.87	4.70	41.16	46.00	4.84
Vertical	**34.850**	**16.70**	**15.80**	**0.68**	**33.18**	**40.00**	**6.82**
	122.150	22.27	12.92	1.48	36.67	43.50	6.83
	175.500	20.83	10.67	1.82	33.32	43.50	10.18
	431.580	15.39	16.82	2.79	35.00	46.00	11.00
	631.400	11.42	19.50	2.64	33.56	46.00	12.44
	741.010	14.00	19.97	3.60	37.57	46.00	8.43

TEST ENGINEER: MARK LI

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LC-65N5200U	Humidity :	60%RH
Test Mode	:	USB Play	Date of Test :	Jan 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	71.710	24.05	7.68	0.96	32.69	40.00	7.31
	127.000	18.73	12.97	1.51	33.21	43.50	10.29
	210.420	21.20	10.03	2.01	33.24	43.50	10.26
	558.650	14.34	18.88	2.52	35.74	46.00	10.26
	691.540	15.65	19.70	3.41	38.76	46.00	7.24
	892.330	**13.12**	**21.30**	**4.46**	**38.88**	**46.00**	**7.12**
Vertical	**33.880**	**16.36**	**16.47**	**0.67**	**33.50**	**40.00**	**6.50**
	71.710	23.66	7.68	0.96	32.30	40.00	7.70
	100.810	21.28	12.34	1.33	34.95	43.50	8.55
	305.480	17.61	13.99	2.60	34.20	46.00	11.80
	556.710	17.18	18.85	2.57	38.60	46.00	7.40
	766.230	13.37	20.43	3.63	37.43	46.00	8.57

TEST ENGINEER: MARK LI

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LC-65N5200U	Humidity :	60%RH
Test Mode	:	LAN Play	Date of Test :	Jan 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	**83.350**	**22.65**	**9.66**	**1.13**	**33.44**	**40.00**	**6.56**
	233.700	25.31	11.36	2.10	38.77	46.00	7.23
	267.650	21.03	13.25	2.32	36.60	46.00	9.40
	348.160	20.57	15.53	2.65	38.75	46.00	7.25
	554.770	16.68	18.85	2.57	38.10	46.00	7.90
	826.370	14.31	20.70	3.97	38.98	46.00	7.02
Vertical	**80.440**	**23.60**	**9.43**	**1.09**	**34.12**	**40.00**	**5.88**
	221.090	23.76	10.60	2.05	36.41	46.00	9.59
	246.310	24.77	12.34	2.14	39.25	46.00	6.75
	428.670	18.37	16.80	2.78	37.95	46.00	8.05
	568.350	14.88	18.45	2.47	35.80	46.00	10.20
	811.820	14.24	20.60	3.78	38.62	46.00	7.38

TEST ENGINEER: MARK LI

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
SMcontact	SMR-TSL-4-3.5-5R	Qingdao Joinset Co., Ltd	See Internal Photo Figure 22

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.