

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

LED LCD TV

Brand	Model No.
Hisense	HU55K5500UWG
Sharp	LC-55N7000U
	LC-55N7000C
	LC-55N620CU

FCC ID : W9HLCDF0089

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

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Report No. : ACI-F16182
Date of Test : May 17 - Jun 06, 2016
Date of Report : Jun 14, 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. : Refer to Sec.2.1
Brand : Refer to Sec.2.1
Power Supply : 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 May 17 - Jun 06, 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.

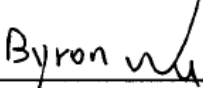
This report contains data that are not covered by the NVLAP accreditation.


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.F15243A2, a Verification report.

Date of Test : May 17 - Jun 06, 2016 Date of Report : Jun 14, 2016

Producer : 
ALAN HE / Assistant

Review : 
BYRON WU / Deputy Assistant Manager

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

Signatory : 
Authorized Signature EMC SAMMY CHEN / Manager

1 SUMMARY OF STANDARDS AND RESULTS

1.1 Description of Standards and Results

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

Description of Test Item	Standard	Limits	Results
EMISSION			
Conducted Disturbance at the Mains Terminal	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2015 AND ANSI C63.4-2014	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

Brand	Model No.
Hisense	HU55K5500UWG
Sharp	LC-55N7000U
	LC-55N7000C
	LC-55N620CU

Note : The above models are all the same except for the brand.
The LC-55N7000U was tested.

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 : HE500IU-B51(110)

Tuner : Manufacturer : XuGuang Tech. Co., Ltd.
M/N : HFT-96S3/W11FJ2H\RoH

Max Resolution : 3840*2160@60Hz

HDMI Cable*4 : Shielded, Detachable, 1.50m, with two cores
(Lab provide)

Power Cord : Unshielded, Detachable, 1.80m, 2C

LAN Cable : Shielded, Detachable, 1.50m

USB Cable*3 : Shielded, Detachable, 1.00m, without core
(Lab provide)

MHL to HDMI Adaptor: Manufacture: CE-Link
with RCP (Lab provide) M/N: 3002

Remark:

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

Side Port:

- (1) One USB3 Port : Connected with Hard-Disk #1
- (2) One HDMI2(4K@30Hz)/ARC Port : Connected with DVD PLAYER #2
- (3) One HDMI1(4K@30Hz)/MHL Port : Connected with Smart Mobile Phone
- (4) One Audio out Port : Connected with Earphone
- (5) One Service Port : Do not open to customer
- (6) One USB1 Port : Connected with Hard-Disk #2
- (7) One USB2 Port : Connected with Hard-Disk #3
- (8) One ANT/CABLE IN Port : Connected with ATSC SG / TV SG

Back Port:

- (9) One LAN Port : Connected with PC
- (10) One HDMI3(4K@60Hz) Port : Connected with DVD PLAYER #1
- (11) One HDMI4(4K@60Hz) Port : Connected with PC
- (12) One Digital Audio Out Port : Connected with Audio Converter to Earphone
- (13) One component of YPbPr +Video Port : Connected with DVD PLAYER #2
- (14) One AV Port : Connected with DVD PLAYER #1

2.2 Peripherals

2.2.1 PC

Manufacturer : HP
Model Number : Pro3340
Serial Number : 6CR2512VFD
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, 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 *2

Manufacturer : EDIFIER
Model Number : H210

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, Undetachable, 1.8m.
Certificate : CE, FCC DoC

2.2.9 Hard Disk #2

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

2.2.10 Hard Disk #3

Manufacturer : Tetasys
Model Number : F12
Serial Number : A010022-486006
Data Cable : Shielded, Undetachable, 1.8m.
Certificate : CE, FCC DoC

2.2.11 Smart Mobile Phone

Manufacturer : SAMSUNG
Model Number : GT-I9100G
Serial Number : 6935152011519
Certificate : CE/EMC

2.2.12 ATSC Signal Generator

Manufacturer : SENCORE
Model Number : ATSC997
Serial Number : 6790071

2.2.13 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

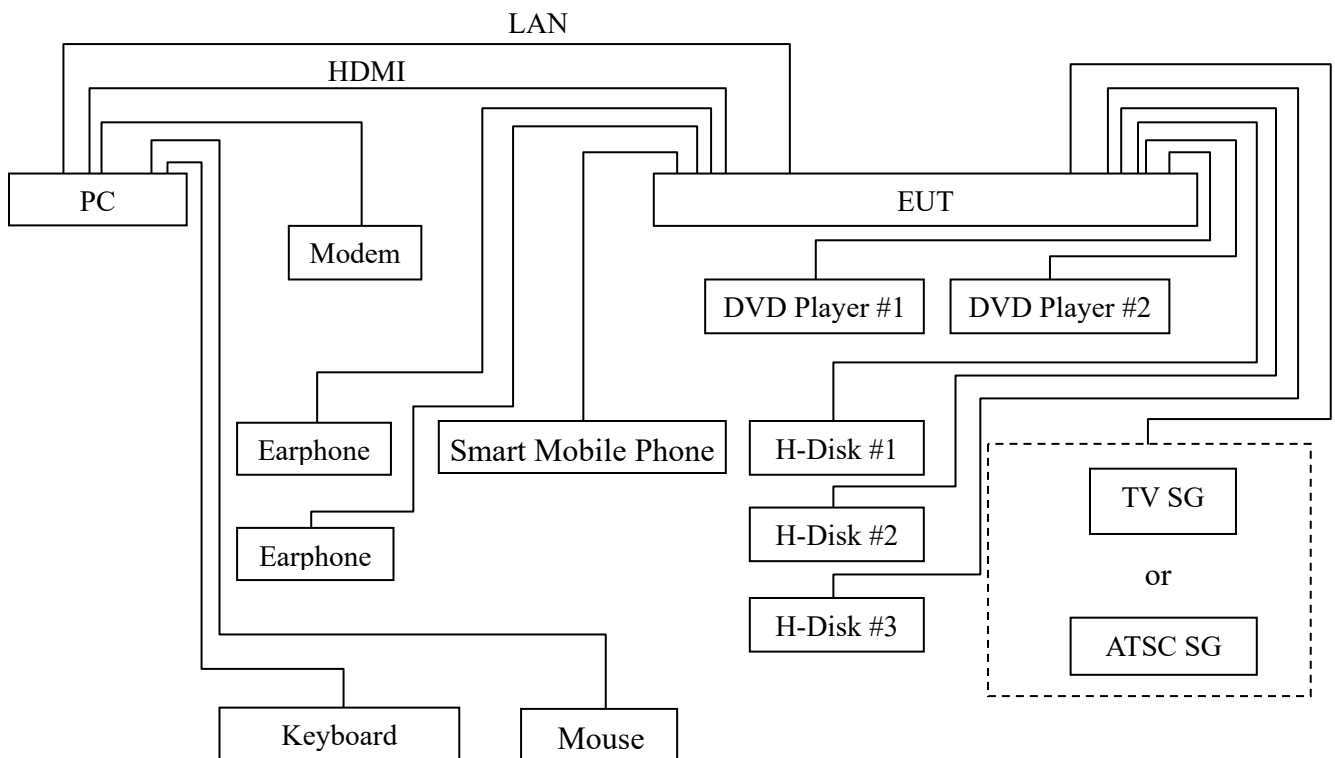
3.1 Test Equipment

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

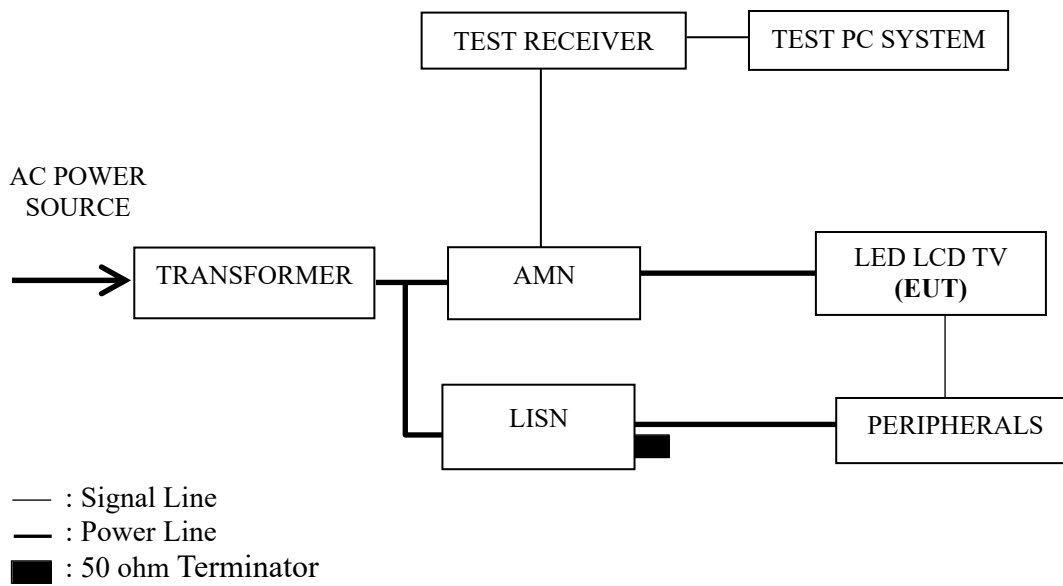
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Jul 03, 2015	Jul 02, 2016
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2015	Jun 26, 2016
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-5	Mar 20, 2016	Mar 19, 2017
4.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2016	Mar 19, 2017
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 In MHL mode, set the EUT play digital media from mobile phone.
- 3.5.9 The other peripherals devices were driven and operated during the test.
- 3.5.10 The test modes are as follows:

Test Mode
HDMI 3840*2160@60Hz & 1kHz playing
HDMI 1920*1080@60Hz & 1kHz playing
HDMI 1280*1024@60Hz & 1kHz playing
HDMI 640*480@60Hz & 1kHz playing
HDMI1080P
MHL
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 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 3840*2160@60Hz & 1kHz playing	P14
HDMI 1920*1080@60Hz & 1kHz playing	P15
HDMI 1280*1024@60Hz & 1kHz playing	P16
HDMI 640*480@60Hz & 1kHz playing	P17
HDMI1080P	P18
MHL	P19
USB Play	P20
LAN Play	P21

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 USB Play test mode. The worst emission is detected at 0.163 MHz (Quasi-Peak Value) with corrected signal level of 62.07 dB (μ V) (limit is 65.31 dB (μ V)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 48%RH

Test Mode : HDMI 3840*2160@60Hz & 1kHz Playing Date of Test : May 17, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.161	51.41	10.57	61.98	65.43	3.45	QP
	0.368	28.79	10.45	39.24	58.56	19.32	
	0.562	30.31	10.39	40.70	56.00	15.30	
	1.107	25.70	10.39	36.09	56.00	19.91	
	4.246	24.20	10.48	34.68	56.00	21.32	
	22.220	26.49	10.68	37.17	60.00	22.83	
	0.161	41.11	10.57	51.68	55.43	3.75	AV
	0.368	16.49	10.45	26.94	48.56	21.62	
	0.562	19.51	10.39	29.90	46.00	16.10	
	1.107	12.50	10.39	22.89	46.00	23.11	
4.246	16.30	10.48	26.78	46.00	19.22		
22.220	21.19	10.68	31.87	50.00	18.13		
Neutral	0.160	51.20	10.57	61.77	65.49	3.72	QP
	0.351	31.60	10.43	42.03	58.95	16.92	
	0.562	32.61	10.37	42.98	56.00	13.02	
	0.999	26.80	10.38	37.18	56.00	18.82	
	2.147	25.50	10.42	35.92	56.00	20.08	
	22.340	25.30	10.78	36.08	60.00	23.92	
	0.160	40.50	10.57	51.07	55.49	4.42	AV
	0.351	16.90	10.43	27.33	48.95	21.62	
	0.562	20.51	10.37	30.88	46.00	15.12	
	0.999	15.10	10.38	25.48	46.00	20.52	
	2.147	15.60	10.42	26.02	46.00	19.98	
	22.340	19.90	10.78	30.68	50.00	19.32	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 48%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : May 17, 2016
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark	
Line	0.163	51.30	10.57	61.87	65.30	3.43	QP	
	0.355	28.00	10.45	38.45	58.85	20.40		
	0.568	30.91	10.39	41.30	56.00	14.70		
	1.043	28.60	10.39	38.99	56.00	17.01		
	1.741	27.39	10.42	37.81	56.00	18.19		
	21.840	25.79	10.67	36.46	60.00	23.54		
	0.163	38.90	10.57	49.47	55.30	5.83	AV	
	0.355	14.60	10.45	25.05	48.85	23.80		
	0.568	20.11	10.39	30.50	46.00	15.50		
	1.043	17.30	10.39	27.69	46.00	18.31		
	1.741	16.79	10.42	27.21	46.00	18.79		
	21.840	20.09	10.67	30.76	50.00	19.24		
	Neutral	0.164	51.10	10.56	61.66	65.27	3.61	QP
		0.383	33.00	10.42	43.42	58.21	14.79	
0.575		33.20	10.37	43.57	56.00	12.43		
0.986		28.30	10.38	38.68	56.00	17.32		
1.685		25.19	10.42	35.61	56.00	20.39		
16.180		24.20	10.68	34.88	60.00	25.12		
0.164		39.60	10.56	50.16	55.27	5.11	AV	
0.383		22.40	10.42	32.82	48.21	15.39		
0.575		23.00	10.37	33.37	46.00	12.63		
0.986		16.10	10.38	26.48	46.00	19.52		
1.685		14.79	10.42	25.21	46.00	20.79		
16.180		19.50	10.68	30.18	50.00	19.82		

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 48%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : May 17, 2016
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.165	51.10	10.57	61.67	65.23	3.56	QP
	0.376	28.90	10.44	39.34	58.36	19.02	
	0.572	32.00	10.39	42.39	56.00	13.61	
	1.052	27.50	10.39	37.89	56.00	18.11	
	2.403	25.50	10.43	35.93	56.00	20.07	
	22.310	25.70	10.68	36.38	60.00	23.62	
	0.165	40.30	10.57	50.87	55.23	4.36	AV
	0.376	17.00	10.44	27.44	48.36	20.92	
	0.572	21.40	10.39	31.79	46.00	14.21	
	1.052	16.20	10.39	26.59	46.00	19.41	
	2.403	15.20	10.43	25.63	46.00	20.37	
	22.310	19.80	10.68	30.48	50.00	19.52	
Neutral	0.163	51.20	10.57	61.77	65.33	3.56	QP
	0.378	32.90	10.42	43.32	58.32	15.00	
	0.575	33.80	10.37	44.17	56.00	11.83	
	1.531	28.10	10.40	38.50	56.00	17.50	
	3.881	26.89	10.47	37.36	56.00	18.64	
	21.860	25.10	10.77	35.87	60.00	24.13	
	0.163	38.80	10.57	49.37	55.33	5.96	AV
	0.378	21.00	10.42	31.42	48.32	16.90	
	0.575	22.90	10.37	33.27	46.00	12.73	
	1.531	17.40	10.40	27.80	46.00	18.20	
	3.881	16.49	10.47	26.96	46.00	19.04	
	21.860	19.60	10.77	30.37	50.00	19.63	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 48%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : May 17, 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	0.163	51.50	10.57	62.07	65.31	3.24	QP
	0.361	27.90	10.45	38.35	58.70	20.35	
	0.560	31.31	10.39	41.70	56.00	14.30	
	1.224	25.10	10.40	35.50	56.00	20.50	
	3.778	24.11	10.46	34.57	56.00	21.43	
	22.350	24.90	10.68	35.58	60.00	24.42	
	0.163	38.90	10.57	49.47	55.31	5.84	AV
	0.361	13.10	10.45	23.55	48.70	25.15	
	0.560	18.91	10.39	29.30	46.00	16.70	
	1.224	10.80	10.40	21.20	46.00	24.80	
	3.778	15.91	10.46	26.37	46.00	19.63	
	22.350	19.30	10.68	29.98	50.00	20.02	
Neutral	0.164	51.11	10.56	61.67	65.28	3.61	QP
	0.377	32.80	10.42	43.22	58.35	15.13	
	0.569	32.10	10.37	42.47	56.00	13.53	
	1.535	29.10	10.40	39.50	56.00	16.50	
	3.746	24.50	10.46	34.96	56.00	21.04	
	22.230	23.30	10.78	34.08	60.00	25.92	
	0.164	39.61	10.56	50.17	55.28	5.11	AV
	0.377	20.50	10.42	30.92	48.35	17.43	
	0.569	21.00	10.37	31.37	46.00	14.63	
	1.535	18.30	10.40	28.70	46.00	17.30	
	3.746	16.10	10.46	26.56	46.00	19.44	
	22.230	17.80	10.78	28.58	50.00	21.42	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 48%RH

Test Mode : HDMI1080P Date of Test : May 17, 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	0.165	51.40	10.57	61.97	65.23	3.26	QP	
	0.357	27.90	10.45	38.35	58.81	20.46		
	0.568	31.11	10.39	41.50	56.00	14.50		
	1.052	29.90	10.39	40.29	56.00	15.71		
	3.851	25.10	10.47	35.57	56.00	20.43		
	21.890	25.40	10.67	36.07	60.00	23.93		
	0.165	39.90	10.57	50.47	55.23	4.76	AV	
	0.357	15.00	10.45	25.45	48.81	23.36		
	0.568	19.21	10.39	29.60	46.00	16.40		
	1.052	18.20	10.39	28.59	46.00	17.41		
	3.851	16.30	10.47	26.77	46.00	19.23		
	21.890	19.60	10.67	30.27	50.00	19.73		
	Neutral	0.166	50.80	10.56	61.36	65.18	3.82	QP
		0.383	33.10	10.42	43.52	58.22	14.70	
0.575		32.20	10.37	42.57	56.00	13.43		
1.539		28.40	10.40	38.80	56.00	17.20		
3.860		25.49	10.47	35.96	56.00	20.04		
21.500		24.50	10.76	35.26	60.00	24.74		
0.166		40.00	10.56	50.56	55.18	4.62	AV	
0.383		22.80	10.42	33.22	48.22	15.00		
0.575		22.60	10.37	32.97	46.00	13.03		
1.539		18.80	10.40	29.20	46.00	16.80		
3.860		16.79	10.47	27.26	46.00	18.74		
21.500		18.90	10.76	29.66	50.00	20.34		

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 48%RH

Test Mode : MHL Date of Test : May 17, 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	0.163	51.50	10.57	62.07	65.34	3.27	QP
	0.383	30.00	10.44	40.44	58.21	17.77	
	0.575	32.00	10.39	42.39	56.00	13.61	
	1.762	27.99	10.42	38.41	56.00	17.59	
	3.777	24.51	10.46	34.97	56.00	21.03	
	22.720	24.40	10.69	35.09	60.00	24.91	
	0.163	39.70	10.57	50.27	55.34	5.07	AV
	0.383	20.50	10.44	30.94	48.21	17.27	
	0.575	21.70	10.39	32.09	46.00	13.91	
	1.762	16.89	10.42	27.31	46.00	18.69	
	3.777	16.41	10.46	26.87	46.00	19.13	
	22.720	18.70	10.69	29.39	50.00	20.61	
Neutral	0.163	51.31	10.56	61.87	65.29	3.42	QP
	0.383	33.10	10.42	43.52	58.22	14.70	
	0.569	32.10	10.37	42.47	56.00	13.53	
	1.133	28.31	10.38	38.69	56.00	17.31	
	2.457	26.20	10.43	36.63	56.00	19.37	
	6.641	23.59	10.52	34.11	60.00	25.89	
	0.163	39.51	10.56	50.07	55.29	5.22	AV
	0.383	22.60	10.42	33.02	48.22	15.20	
	0.569	21.50	10.37	31.87	46.00	14.13	
	1.133	17.11	10.38	27.49	46.00	18.51	
	2.457	16.30	10.43	26.73	46.00	19.27	
	6.641	17.19	10.52	27.71	50.00	22.29	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 48%RH

Test Mode : USB Play Date of Test : May 17, 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	0.163	51.50	10.57	62.07	65.31	3.24	QP
	0.349	26.39	10.46	36.85	59.00	22.15	
	0.575	33.30	10.39	43.69	56.00	12.31	
	1.548	26.80	10.41	37.21	56.00	18.79	
	3.807	27.41	10.46	37.87	56.00	18.13	
	21.610	24.40	10.66	35.06	60.00	24.94	
	0.163	39.60	10.57	50.17	55.31	5.14	AV
	0.349	16.79	10.46	27.25	49.00	21.75	
	0.575	21.10	10.39	31.49	46.00	14.51	
	1.548	14.10	10.41	24.51	46.00	21.49	
	3.807	16.91	10.46	27.37	46.00	18.63	
	21.610	18.80	10.66	29.46	50.00	20.54	
Neutral	0.163	51.20	10.57	61.77	65.33	3.56	QP
	0.383	33.10	10.42	43.52	58.22	14.70	
	0.573	32.90	10.37	43.27	56.00	12.73	
	1.537	28.50	10.40	38.90	56.00	17.10	
	3.914	24.49	10.47	34.96	56.00	21.04	
	23.450	23.30	10.81	34.11	60.00	25.89	
	0.163	39.00	10.57	49.57	55.33	5.76	AV
	0.383	22.80	10.42	33.22	48.22	15.00	
	0.573	22.80	10.37	33.17	46.00	12.83	
	1.537	18.10	10.40	28.50	46.00	17.50	
	3.914	16.39	10.47	26.86	46.00	19.14	
	23.450	17.70	10.81	28.51	50.00	21.49	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 48%RH

Test Mode : LAN Play Date of Test : May 17, 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	0.164	51.40	10.57	61.97	65.25	3.28	QP
	0.374	28.70	10.44	39.14	58.42	19.28	
	0.578	32.90	10.39	43.29	56.00	12.71	
	1.753	27.49	10.42	37.91	56.00	18.09	
	3.796	25.61	10.46	36.07	56.00	19.93	
	21.900	25.30	10.67	35.97	60.00	24.03	
	0.164	39.70	10.57	50.27	55.25	4.98	AV
	0.374	16.90	10.44	27.34	48.42	21.08	
	0.578	21.00	10.39	31.39	46.00	14.61	
	1.753	17.59	10.42	28.01	46.00	17.99	
	3.796	16.91	10.46	27.37	46.00	18.63	
	21.900	19.60	10.67	30.27	50.00	19.73	
Neutral	0.166	51.00	10.56	61.56	65.18	3.62	QP
	0.383	33.20	10.42	43.62	58.22	14.60	
	0.560	31.41	10.37	41.78	56.00	14.22	
	1.530	28.90	10.40	39.30	56.00	16.70	
	3.768	24.40	10.46	34.86	56.00	21.14	
	21.940	23.90	10.77	34.67	60.00	25.33	
	0.166	40.10	10.56	50.66	55.18	4.52	AV
	0.383	22.70	10.42	33.12	48.22	15.10	
	0.560	19.91	10.37	30.28	46.00	15.72	
	1.530	18.80	10.40	29.20	46.00	16.80	
	3.768	16.20	10.46	26.66	46.00	19.34	
	21.940	18.30	10.77	29.07	50.00	20.93	

TEST ENGINEER: SEVEN LU

4 RADIATED EMISSION TEST

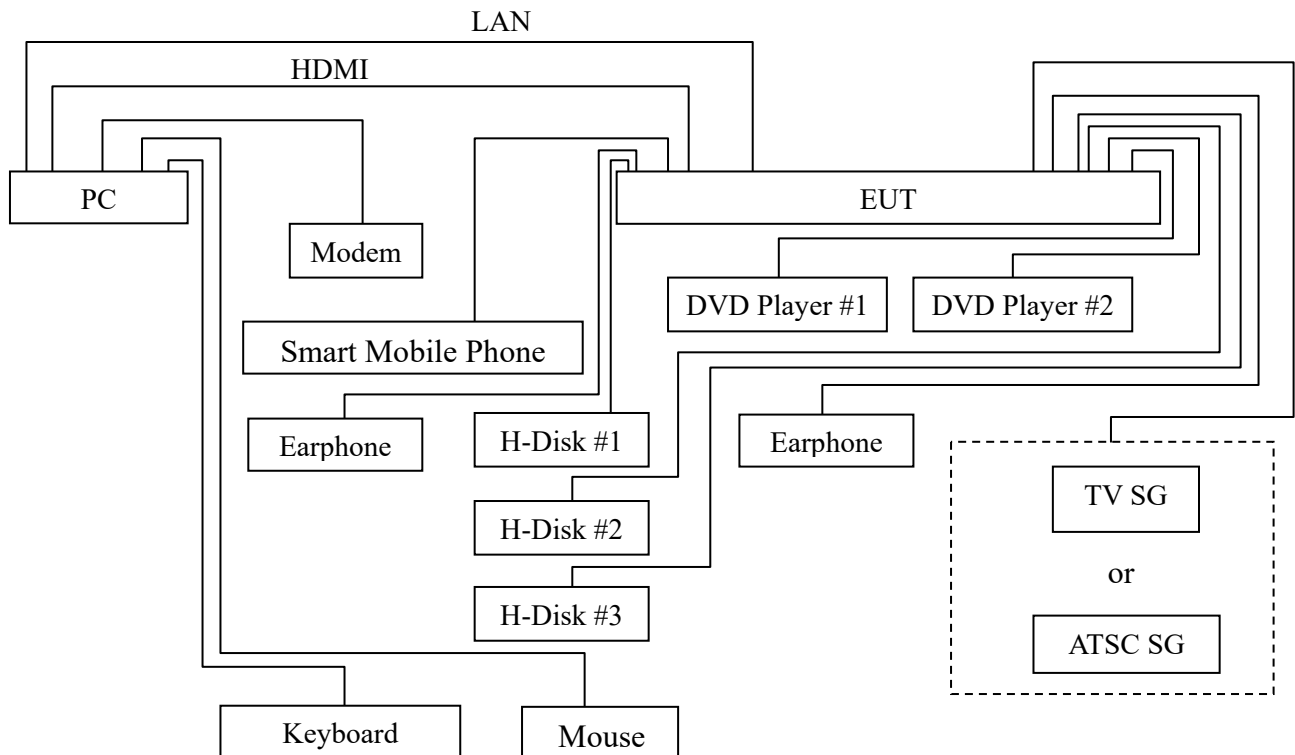
4.1 Test Equipment

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, 2016	May 06, 2017
2.	Preamplifier	Agilent	8447D	2944A06664	Apr 27, 2016	Apr 26, 2017
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2016	Sep 19, 2016
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 15, 2016	May 14, 2017
5.	Horn Antenna	EMCO	3115	9607-4878	Jun 03, 2016	Jun 02, 2017
6.	Spectrum	Agilent	E7405A	MY45106600	Apr 26, 2016	Apr 25, 2017
7.	Spectrum	HP	8591EM	3628A00908	May 07, 2016	May 06, 2017
8.	Software	Audix	e3	6.2007-9-10	--	--

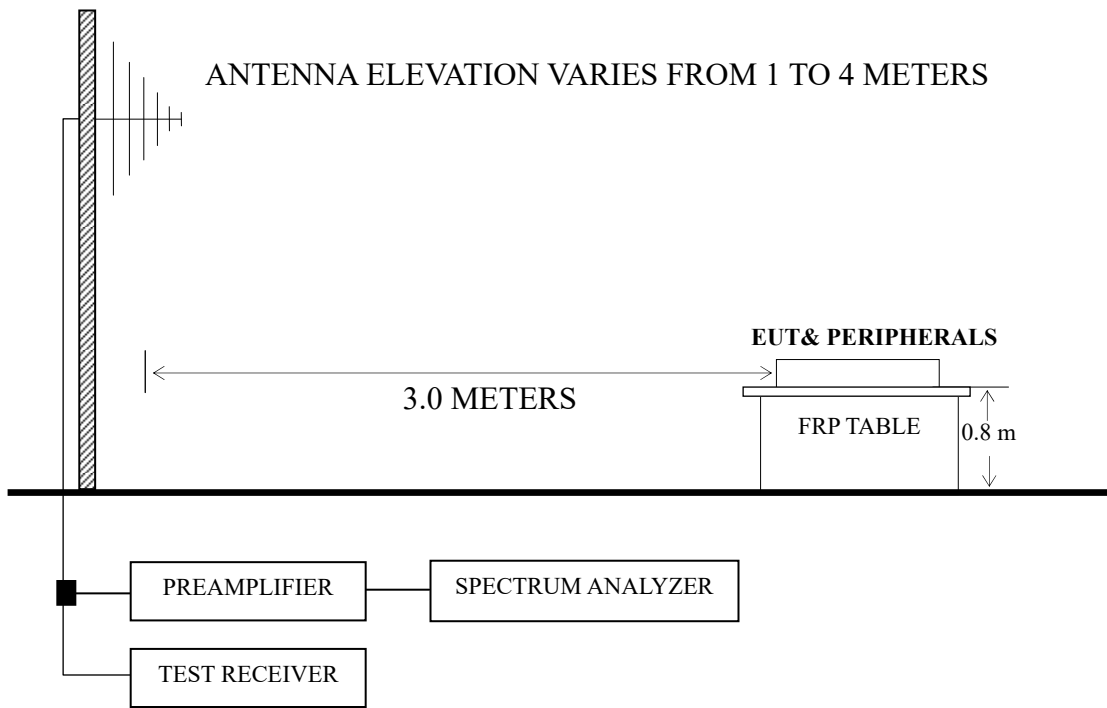
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



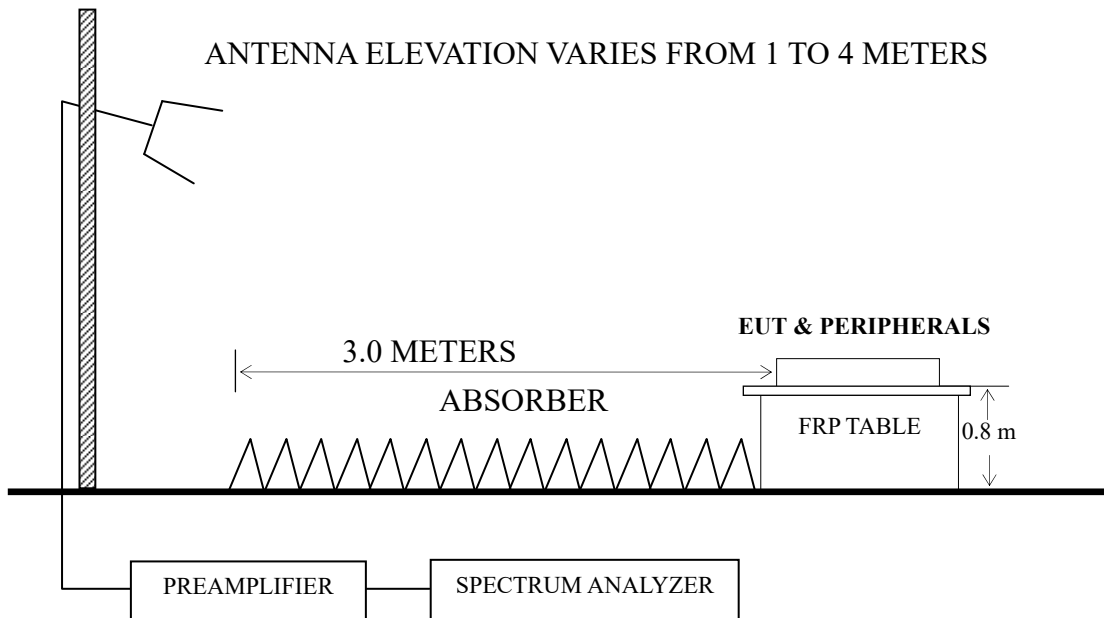
4.2.2 Radiated emission test setup

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	
		($\mu\text{V/m}$)	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 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 3840*2160@60Hz & 1kHz playing	P26 - P27
HDMI 1920*1080@60Hz & 1kHz playing	P28
HDMI 1280*1024@60Hz & 1kHz playing	P29
HDMI 640*480@60Hz & 1kHz playing	P30
HDMI1080P	P31
MHL	P32
USB Play	P33
LAN Play	P34

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 3840*2160@60Hz & 1kHz playing test mode. The worst emission at horizontal polarization was detected at 891.000 MHz with corrected signal level of 43.07 dB ($\mu\text{V}/\text{m}$) (limit is 46.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 2.00 m height and the turntable was at 265°. The worst emission at vertical polarization was detected at 32.330 MHz with corrected signal level of 36.24 dB ($\mu\text{V}/\text{m}$) (limit is 40.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.90 m height and the turntable was at 290°.

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 60%RH

Test Mode : HDMI 3840*2160@60Hz & 1kHz Playing Date of Test : Jun 06, 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	75.977	23.05	8.53	0.87	--	32.45	40.00	7.55	QP
	185.788	24.39	10.29	1.43	--	36.11	43.50	7.39	
	245.951	26.39	12.62	1.62	--	40.63	46.00	5.37	
	425.800	23.90	16.40	2.10	--	42.40	46.00	3.60	
	683.800	20.20	19.50	2.69	--	42.39	46.00	3.61	
	891.000	18.70	21.30	3.07	--	43.07	46.00	2.93	PK
	1690.434	63.39	26.40	4.07	35.44	58.42	74.00	15.58	
	2956.525	62.92	30.33	5.69	35.20	63.74	74.00	10.26	
	3375.707	57.73	31.27	6.10	34.83	60.27	74.00	13.73	
	1690.434	47.30	26.40	4.07	35.44	42.33	54.00	11.67	AV
	2956.525	43.39	30.33	5.69	35.20	44.21	54.00	9.79	
3375.707	40.13	31.27	6.10	34.83	42.67	54.00	11.33		

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 60%RH

Test Mode : HDMI 3840*2160@60Hz & 1kHz Playing Date of Test : Jun 06, 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	32.330	18.60	17.06	0.58	--	36.24	40.00	3.76	QP
	47.160	25.93	9.32	0.68	--	35.93	40.00	4.07	
	153.200	25.18	11.74	1.29	--	38.21	43.50	5.29	
	425.028	21.87	16.40	2.10	--	40.37	46.00	5.63	
	669.100	19.60	19.30	2.65	--	41.55	46.00	4.45	
	891.000	17.40	21.30	3.07	--	41.77	46.00	4.23	PK
	1705.647	61.25	26.45	4.09	35.42	56.37	74.00	17.63	
	2557.121	63.72	28.67	4.96	35.16	62.19	74.00	11.81	
	2956.525	62.30	30.33	5.69	35.20	63.12	74.00	10.88	AV
	1705.647	44.20	26.45	4.09	35.42	39.32	54.00	14.68	
	2557.121	43.03	28.67	4.96	35.16	41.50	54.00	12.50	
2956.525	43.21	30.33	5.69	35.20	44.03	54.00	9.97		

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Jun 06, 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	149.486	24.42	11.88	1.28	37.58	43.50	5.92
	245.090	26.57	12.60	1.62	40.79	46.00	5.21
	425.800	22.70	16.40	2.10	41.20	46.00	4.80
	683.800	20.30	19.50	2.69	42.49	46.00	3.51
	742.500	19.70	19.73	2.79	42.22	46.00	3.78
	845.088	17.80	20.47	2.98	41.25	46.00	4.75
Vertical	31.760	18.39	17.39	0.58	36.36	40.00	3.64
	46.340	25.68	9.44	0.68	35.80	40.00	4.20
	148.480	26.60	11.95	1.27	39.82	43.50	3.68
	425.028	22.68	16.40	2.10	41.18	46.00	4.82
	683.800	20.30	19.50	2.69	42.49	46.00	3.51
	742.500	19.20	19.73	2.79	41.72	46.00	4.28

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 60%RH

Test Mode : HDMI 1280*1024@60Hz & 1kHz Playing Date of Test : Jun 06, 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	31.180	14.28	17.82	0.57	32.67	40.00	7.33
	108.000	25.60	12.45	1.05	39.10	43.50	4.40
	154.821	22.07	11.70	1.30	35.07	43.50	8.43
	425.028	24.03	16.40	2.10	42.53	46.00	3.47
	679.960	20.19	19.50	2.67	42.36	46.00	3.64
	848.056	16.88	20.50	2.98	40.36	46.00	5.64
Vertical	31.760	17.59	17.39	0.58	35.56	40.00	4.44
	47.326	25.83	9.29	0.69	35.81	40.00	4.19
	108.000	26.00	12.45	1.05	39.50	43.50	4.00
	155.364	25.80	11.65	1.30	38.75	43.50	4.75
	541.373	22.05	18.08	2.36	42.49	46.00	3.51
	683.800	20.20	19.50	2.69	42.39	46.00	3.61

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 60%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Jun 06, 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	30.000	14.10	18.60	0.56	33.26	40.00	6.74
	154.821	24.98	11.70	1.30	37.98	43.50	5.52
	248.552	24.56	12.66	1.63	38.85	46.00	7.15
	426.521	23.37	16.40	2.10	41.87	46.00	4.13
	684.600	20.40	19.50	2.69	42.59	46.00	3.41
	848.056	17.62	20.50	2.98	41.10	46.00	4.90
Vertical	31.760	18.59	17.39	0.58	36.56	40.00	3.44
	46.995	26.33	9.35	0.68	36.36	40.00	3.64
	148.441	26.19	11.95	1.27	39.41	43.50	4.09
	425.028	24.17	16.40	2.10	42.67	46.00	3.33
	684.600	19.70	19.50	2.69	41.89	46.00	4.11
	845.088	14.72	20.47	2.98	38.17	46.00	7.83

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C
 Model No. : LC-55N7000U Humidity : 60%RH
 Test Mode : HDMI1080P Date of Test : Jun 06, 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	77.593	21.90	8.75	0.88	31.53	40.00	8.47
	243.377	24.57	12.36	1.61	38.54	46.00	7.46
	425.028	21.90	16.40	2.10	40.40	46.00	5.60
	593.050	18.69	18.75	2.50	39.94	46.00	6.06
	668.142	16.62	19.30	2.65	38.57	46.00	7.43
	845.088	17.01	20.47	2.98	40.46	46.00	5.54
Vertical	32.406	18.76	17.06	0.58	36.40	40.00	3.60
	57.191	26.27	6.91	0.76	33.94	40.00	6.06
	72.084	27.09	7.84	0.85	35.78	40.00	4.22
	147.921	24.20	12.02	1.27	37.49	43.50	6.01
	423.540	19.07	16.40	2.10	37.57	46.00	8.43
	663.473	20.76	19.30	2.65	42.71	46.00	3.29

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 60%RH

Test Mode : MHL Date of Test : Jun 06, 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	56.792	26.41	6.99	0.75	34.15	40.00	5.85
	204.238	24.76	9.68	1.49	35.93	43.50	7.57
	230.099	25.41	11.70	1.58	38.69	46.00	7.31
	423.540	18.80	16.40	2.10	37.30	46.00	8.70
	670.489	17.64	19.30	2.65	39.59	46.00	6.41
	848.056	17.12	20.50	2.98	40.60	46.00	5.40
Vertical	31.399	17.33	17.65	0.57	35.55	40.00	4.45
	54.643	27.69	7.17	0.73	35.59	40.00	4.41
	75.446	24.56	8.49	0.87	33.92	40.00	6.08
	425.028	19.63	16.40	2.10	38.13	46.00	7.87
	675.208	17.73	19.37	2.67	39.77	46.00	6.23
	890.728	16.80	21.30	3.07	41.17	46.00	4.83

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 60%RH

Test Mode : USB Play Date of Test : Jun 06, 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	55.027	25.00	7.16	0.74	32.90	40.00	7.10
	81.212	21.91	9.34	0.90	32.15	40.00	7.85
	146.374	22.55	12.25	1.26	36.06	43.50	7.44
	241.676	23.71	12.24	1.61	37.56	46.00	8.44
	425.028	19.23	16.40	2.10	37.73	46.00	8.27
	665.804	18.58	19.30	2.65	40.53	46.00	5.47
Vertical	32.864	18.42	16.74	0.58	35.74	40.00	4.26
	52.760	27.48	7.27	0.72	35.47	40.00	4.53
	70.090	26.38	7.40	0.84	34.62	40.00	5.38
	149.486	24.12	11.88	1.28	37.28	43.50	6.22
	670.489	18.18	19.30	2.65	40.13	46.00	5.87
	890.728	16.12	21.30	3.07	40.49	46.00	5.51

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-55N7000U Humidity : 60%RH

Test Mode : LAN Play Date of Test : Jun 06, 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	77.593	22.95	8.75	0.88	32.58	40.00	7.42
	158.668	23.60	11.40	1.32	36.32	43.50	7.18
	195.822	24.20	9.85	1.46	35.51	43.50	7.99
	327.887	22.37	14.34	1.85	38.56	46.00	7.44
	420.580	21.42	16.40	2.09	39.91	46.00	6.09
	672.845	16.97	19.37	2.65	38.99	46.00	7.01
Vertical	32.634	18.08	16.90	0.58	35.56	40.00	4.44
	56.593	25.84	7.03	0.75	33.62	40.00	6.38
	69.114	27.11	7.30	0.83	35.24	40.00	4.76
	147.921	23.50	12.02	1.27	36.79	43.50	6.71
	665.804	18.77	19.30	2.65	40.72	46.00	5.28
	890.728	16.45	21.30	3.07	40.82	46.00	5.18

TEST ENGINEER: CAESAR WU

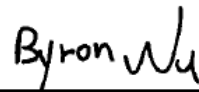
5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Gasket	SMR-TSL-4-3.5-5R	Qingdao Joinset Co., Ltd	See Internal Photo Figure 21

Note: We had required the applicant and manufacturer that all electrical and mechanical devices employed for spurious radiation suppression, including any modifications made during certification testing, must be incorporated in each unit marked

TEST ENGINEER:



(BYRON WU)

6 DEVIATION TO TEST SPECIFICATIONS

None.