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

# LED LCD TV

Model No.	Brand
LC-43N6100U, LC-43N6100C	Sharp

FCC ID: W9HLCDD0054

Prepared For: Hisense Electric Co., Ltd.

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Development Zone, Qingdao, China

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Report No.: ACI-F16016

Date of Test: Dec 08, 2015 - Jan 08, 2016

Date of Report: Jan 18, 2016

# **TABLE OF CONTENTS**

			Page
1	SUM	IMARY OF STANDARDS AND RESULTS	4
	1.1	Description of Standards and Results	4
2		VERAL INFORMATION	
		Description of Equipment Under Test	
	2.2	Peripherals	6
		Description of Test Facility	
		Measurement Uncertainty	
3		NDUCTED EMISSION TEST	
	3.1	Test Equipment.	10
		Block Diagram of Test Setup	
		Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)]	
		Test Configuration	
		Operating Condition of EUT	
	3.6	Test Procedures	12
	3.7	Test Results	13
4	RAD	DIATED EMISSION TEST	22
	4.1	Test Equipment.	22
		Block Diagram of Test Setup	
		Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)]	
		Test Configuration	
	4.5	Operating Condition of EUT	25
	4.6	Test Procedures	25
	4.7	Test Results	26
5	DEV	VIATION TO TEST SPECIFICATIONS	37

# 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-43N6100U, LC-43N6100C	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 Dec 08, 2015 - Jan 08, 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.F16015, a Verification report.

Date of Test :	Dec 08, 2015 - Jan 08, 2016	_ Date of Report : _	Jan 18, 2016
Producer:	Alan He		
	ALAN HE / Assistant		
Review:	Sough		
	SAMMY CHEN / Manager		
® For an	d on behalf of		

Audix Technology (Shanghai) Co., Ltd.

Authorized Signature EMCBYRON 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:

<b>Description of Test Item</b>	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 :  $\square$  Production  $\square$  Pre-product  $\square$  Pro-type

Model No : LC-43N6100U, LC-43N6100C

Note : The above models are all the same except for

model number.LC-43N6100U 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 : HD426DU-B51(010)

Tuner : Manufacturer : XuGuang Tech. Co., Ltd.

M/N : HFT-96S3/W11FJ2H\ROH

Max Resolution : 3840\*2160@60Hz

HDMI Cable\*4

Shielded, Detachable, 1.50m

(Lab provide)

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

LAN Cable : Shielded, Detachable, 1.50m

USB Cable\*3

(Lab provide)

Shielded, Detachable, 1.00m, without core

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/ARC Port

: Connected with PC

(3) One HDMI1/MHL Port

: Connected with Smart Mobile Phone

(4) One Service Port

: This port does not open to user

(5) One Audio out Port

: Connected with Earphone

(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 Port

: Connected with DVD PLAYER #1

(11) One HDMI4 Port

: Connected with DVD PLAYER #2

(12) One Digital Audio Out Port

: Connected with DVD PLAYER #1

(13) One COMPONENT IN/AV IN Port

: Connected with DVD PLAYER #1

# 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;

Hisense Electric Co., Ltd. FCC ID: W9HLCDD0054 Page 7 of 36

## 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.

CE, FCC DoC Certificate

#### 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

#### 2.2.12 Hard Disk #3

Manufacturer **Tetasys** Model Number F12

Serial Number A010022-40F0005

Shielded, Undetachable, 1.8m. Data Cable

Certificate CE, FCC DoC

#### 2.2.13 Smart Mobile Phone

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

## 2.3 Description of Test Facility

Site Description Sept. 17, 1998 file on (No.3 3m Chamber) 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 = 4.3 dB (Vertical)

Radiated Emission Expanded Uncertainty (200M-1GHz):

U = 4.5 dB (Horizontal)

U = 5.4 dB (Vertical)

Radiated Emission Expanded Uncertainty (1GHz-6GHz):

U = 5.1 dB

# 3 CONDUCTED EMISSION TEST

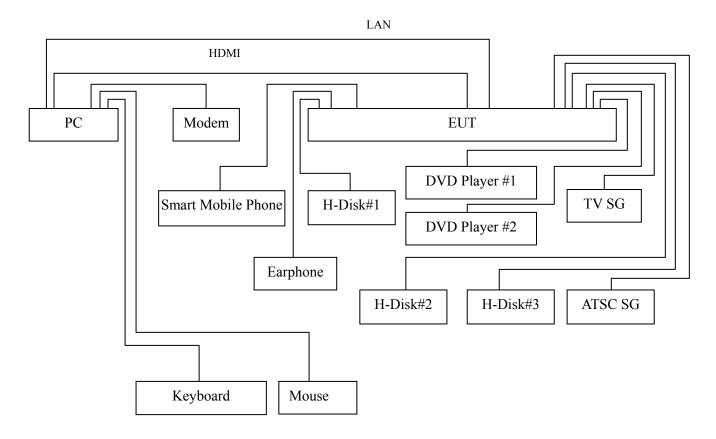
# 3.1 Test Equipment

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

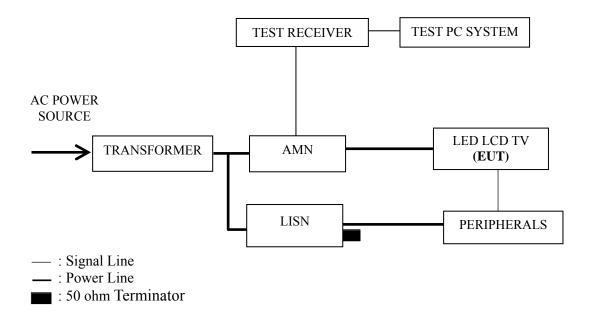
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Jul 03, 2015	Jul 02, 2016
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2015	Jun 26, 2016
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-5	Mar 20, 2015	Mar 19, 2016
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	Limits dB (µV)				
(MHz)	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 C63.4:2003 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 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 HDMI 1920\*1080@60Hz & 1kHz playing test mode. The worst emission is detected at 0.485MHz (Average Value) with corrected signal level of 34.17 dB ( $\mu$ V) (limit is 46.26 dB ( $\mu$ V)), when the Neutral of the EUT is connected to AMN.

Model No. : LC-43N6100U Humidity : 48%RH

Test Mode : HDMI 3840\*2160@60Hz Date of Test : Dec 28, 2015

& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(µV)	Limits dB(µV)	Margin (dB)	Remark
	0.207	36.30	10.51	46.81	63.32	16.51	
	0.478	30.20	10.40	40.60	56.37	15.77	
	0.897	27.20	10.38	37.58	56.00	18.42	OD
	1.933	26.10	10.41	36.51	56.00	19.49	QP
	3.520	20.90	10.45	31.35	56.00	24.65	
Line	7.588	22.80	10.47	33.27	60.00	26.73	
Line	0.207	23.40	10.51	33.91	53.32	19.41	
	0.478	20.70	10.40	31.10	46.37	15.27	
	0.897	8.40	10.38	18.78	46.00	27.22	AV
	1.933	12.70	10.41	23.11	46.00	22.89	
	3.520	9.30	10.45	19.75	46.00	26.25	
	7.588	17.70	10.47	28.17	50.00	21.83	
	0.208	37.70	10.49	48.19	63.30	15.11	
	0.481	32.70	10.38	43.08	56.32	13.24	
	0.622	28.80	10.36	39.16	56.00	16.84	OD
	1.174	27.11	10.37	37.48	56.00	18.52	QP
	4.357	22.20	10.46	32.66	56.00	23.34	
Neutral	7.034	23.20	10.51	33.71	60.00	26.29	
Neutrai	0.208	23.90	10.49	34.39	53.30	18.91	
	0.481	23.30	10.38	33.68	46.32	12.64	AV
	0.622	15.50	10.36	25.86	46.00	20.14	
	1.174	11.21	10.37	21.58	46.00	24.42	
	4.357	10.50	10.46	20.96	46.00	25.04	
	7.034	14.10	10.51	24.61	50.00	25.39	

Model No. : LC-43N6100U Humidity : 48%RH

Test Mode : HDMI 1920\*1080@60Hz Date of Test : Dec 28, 2015

& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(µV)	Limits dB(µV)	Margin (dB)	Remark
	0.209	35.80	10.51	46.31	63.23	16.92	
	0.483	30.50	10.39	40.89	56.29	15.40	OD
	0.881	27.90	10.38	38.28	56.00	17.72	
	1.443	27.20	10.40	37.60	56.00	18.40	QP
	2.753	21.19	10.44	31.63	56.00	24.37	
Line	7.528	22.30	10.47	32.77	60.00	27.23	
Line	0.209	22.70	10.51	33.21	53.23	20.02	
	0.483	21.40	10.39	31.79	46.29	14.50	
	0.881	7.50	10.38	17.88	46.00	28.12	AV
	1.443	11.30	10.40	21.70	46.00	24.30	
	2.753	9.69	10.44	20.13	46.00	25.87	
	7.528	12.60	10.47	23.07	50.00	26.93	
	0.210	37.50	10.49	47.99	63.21	15.22	
	0.485	32.70	10.37	43.07	56.26	13.19	
	0.726	31.50	10.36	41.86	56.00	14.14	OD
	1.449	27.70	10.39	38.09	56.00	17.91	QP
	3.346	22.79	10.45	33.24	56.00	22.76	
Noutro1	7.515	22.80	10.52	33.32	60.00	26.68	
Neutral	0.210	23.80	10.49	34.29	53.21	18.92	
	0.485	23.80	10.37	34.17	46.26	12.09	AV
	0.726	21.20	10.36	31.56	46.00	14.44	
	1.449	12.10	10.39	22.49	46.00	23.51	
	3.346	10.69	10.45	21.14	46.00	24.86	
	7.515	12.10	10.52	22.62	50.00	27.38	

Model No. : LC-43N6100U Humidity : 48%RH

Test Mode : HDMI 1280\*1024@60Hz Date of Test : Dec 28, 2015

& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(µV)	Limits dB(µV)	Margin (dB)	Remark
	0.209	35.90	10.51	46.41	63.24	16.83	
	0.482	30.30	10.40	40.70	56.31	15.61	i
	0.727	30.10	10.38	40.48	56.00	15.52	OD
	1.707	27.49	10.41	37.90	56.00	18.10	QP
	3.564	20.90	10.45	31.35	56.00	24.65	
Line	7.450	20.30	10.47	30.77	60.00	29.23	
Line	0.209	22.70	10.51	33.21	53.24	20.03	
	0.482	20.70	10.40	31.10	46.31	15.21	
	0.727	20.00	10.38	30.38	46.00	15.62	AV
	1.707	13.29	10.41	23.70	46.00	22.30	
	3.564	8.80	10.45	19.25	46.00	26.75	
	7.450	14.40	10.47	24.87	50.00	25.13	
	0.210	37.50	10.49	47.99	63.19	15.20	
	0.481	32.30	10.38	42.68	56.32	13.64	
	0.900	27.90	10.37	38.27	56.00	17.73	QP
	1.946	26.60	10.41	37.01	56.00	18.99	Qr
	4.193	22.50	10.46	32.96	56.00	23.04	
Neutral	7.540	22.60	10.52	33.12	60.00	26.88	
Neutrai	0.210	24.00	10.49	34.49	53.19	18.70	
	0.481	23.00	10.38	33.38	46.32	12.94	AV
	0.900	8.50	10.37	18.87	46.00	27.13	
	1.946	13.40	10.41	23.81	46.00	22.19	
	4.193	11.40	10.46	21.86	46.00	24.14	
	7.540	15.70	10.52	26.22	50.00	23.78	

Model No. : LC-43N6100U Humidity : 48%RH

Test Mode : HDMI 640\*480@60Hz & Date of Test : Dec 28, 2015

1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(µV)	Limits dB(µV)	Margin (dB)	Remark	
	0.210	36.00	10.51	46.51	63.20	16.69		
	0.482	30.30	10.40	40.70	56.30	15.60		
	0.726	30.10	10.38	40.48	56.00	15.52	OD	
Line	1.201	26.60	10.39	36.99	56.00	19.01	QP	
	2.922	22.70	10.44	33.14	56.00	22.86		
	7.515	21.70	10.47	32.17	60.00	27.83	-	
	0.210	22.80	10.51	33.31	53.20	19.89		
	0.482	21.00	10.40	31.40	46.30	14.90		
	0.726	20.00	10.38	30.38	46.00	15.62	AV	
	1.201	14.10	10.39	24.49	46.00	21.51		
	2.922	8.20	10.44	18.64	46.00	27.36		
	7.515	12.20	10.47	22.67	50.00	27.33		
	0.208	37.20	10.49	47.69	63.30	15.61		
	0.482	32.30	10.38	42.68	56.30	13.62		
	0.727	31.60	10.36	41.96	56.00	14.04	OD	
	1.463	25.50	10.39	35.89	56.00	20.11	QP	
	3.333	22.59	10.45	33.04	56.00	22.96		
Neutral	7.324	23.40	10.52	33.92	60.00	26.08		
Neuman	0.208	22.90	10.49	33.39	53.30	19.91		
	0.482	23.10	10.38	33.48	46.30	12.82		
	0.727	21.20	10.36	31.56	46.00	14.44	AV	
	1.463	9.90	10.39	20.29	46.00	25.71		
	3.333	10.69	10.45	21.14	46.00	24.86		
	7.324	12.00	10.52	22.52	50.00	27.48		

Model No. : LC-43N6100U Humidity : 48%RH

Test Mode : HDMI1080P Date of Test : Dec 28, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(µV)	Limits dB(µV)	Margin (dB)	Remark	
	0.211	35.90	10.51	46.41	63.16	16.75		
	0.482	30.40	10.40	40.80	56.30	15.50		
	0.892	27.70	10.38	38.08	56.00	17.92	OD	
	1.699	27.29	10.41	37.70	56.00	18.30	QP	
	2.931	23.50	10.44	33.94	56.00	22.06		
Time	7.535	21.10	10.47	31.57	60.00	28.43	-	
Line	0.211	22.70	10.51	33.21	53.16	19.95		
	0.482	21.50	10.40	31.90	46.30	14.40	AV	
	0.892	8.50	10.38	18.88	46.00	27.12		
	1.699	13.39	10.41	23.80	46.00	22.20		
	2.931	8.20	10.44	18.64	46.00	27.36		
	7.535	13.20	10.47	23.67	50.00	26.33		
	0.209	37.50	10.49	47.99	63.24	15.25		
	0.485	32.60	10.37	42.97	56.26	13.29		
	0.966	29.90	10.37	40.27	56.00	15.73	OD	
	1.943	26.50	10.41	36.91	56.00	19.09	QP	
	4.194	22.80	10.46	33.26	56.00	22.74		
NI asstmal	7.519	21.90	10.52	32.42	60.00	27.58		
Neutral	0.209	23.40	10.49	33.89	53.24	19.35		
	0.485	23.80	10.37	34.17	46.26	12.09		
	0.966	18.10	10.37	28.47	46.00	17.53	AV	
	1.943	13.80	10.41	24.21	46.00	21.79		
	4.194	11.90	10.46	22.36	46.00	23.64		
	7.519	12.60	10.52	23.12	50.00	26.88		

Model No. : LC-43N6100U Humidity : 48%RH

Test Mode : MHL Date of Test : Dec 28, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(µV)	Limits dB(µV)	Margin (dB)	Remark	
	0.210	36.10	10.51	46.61	63.21	16.60		
	0.485	30.50	10.39	40.89	56.26	15.37		
	0.909	27.20	10.38	37.58	56.00	18.42	OD	
	1.691	27.19	10.41	37.60	56.00	18.40	QP	
	3.345	22.50	10.45	32.95	56.00	23.05		
Lina	7.539	21.90	10.47	32.37	60.00	27.63		
Line	0.210	22.90	10.51	33.41	53.21	19.80		
	0.485	21.60	10.39	31.99	46.26	14.27	AV	
	0.909	9.10	10.38	19.48	46.00	26.52		
	1.691	13.29	10.41	23.70	46.00	22.30		
	3.345	10.70	10.45	21.15	46.00	24.85		
	7.539	15.80	10.47	26.27	50.00	23.73		
	0.197	38.20	10.50	48.70	63.72	15.02		
	0.454	31.40	10.38	41.78	56.80	15.02		
	0.911	27.60	10.37	37.97	56.00	18.03	OD	
	1.590	23.51	10.39	33.90	56.00	22.10	QP	
	3.498	19.50	10.45	29.95	56.00	26.05		
NI asstral	7.558	25.50	10.52	36.02	60.00	23.98		
Neutral	0.197	25.10	10.50	35.60	53.72	18.12		
	0.454	21.90	10.38	32.28	46.80	14.52		
	0.911	9.10	10.37	19.47	46.00	26.53	AV	
	1.590	5.41	10.39	15.80	46.00	30.20		
	3.498	8.90	10.45	19.35	46.00	26.65		
	7.558	22.60	10.52	33.12	50.00	16.88		

Model No. : LC-43N6100U Humidity : 48%RH

Test Mode : USB Play Date of Test : Dec 28, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(µV)	Limits dB(µV)	Margin (dB)	Remark
	0.209	35.10	10.51	45.61	63.25	17.64	
	0.485	30.60	10.39	40.99	56.25	15.26	
	0.890	19.80	10.38	30.18	56.00	25.82	QP
	1.174	26.51	10.38	36.89	56.00	19.11	Q1
	1.893	21.30	10.41	31.71	56.00	24.29	
Lina	7.520	19.90	10.47	30.37	60.00	29.63	
Line	0.209	21.20	10.51	31.71	53.25	21.54	
	0.485	21.50	10.39	31.89	46.25	14.36	AV
	0.890	5.20	10.38	15.58	46.00	30.42	
	1.174	10.31	10.38	20.69	46.00	25.31	
	1.893	10.90	10.41	21.31	46.00	24.69	
	7.520	12.50	10.47	22.97	50.00	27.03	
	0.209	37.50	10.49	47.99	63.26	15.27	
	0.477	31.70	10.38	42.08	56.39	14.31	
	0.727	31.60	10.36	41.96	56.00	14.04	OD
	1.198	27.09	10.39	37.48	56.00	18.52	QP
	2.669	23.10	10.43	33.53	56.00	22.47	
NI asstmal	7.320	23.10	10.52	33.62	60.00	26.38	
Neutral	0.209	23.20	10.49	33.69	53.26	19.57	
	0.477	17.80	10.38	28.18	46.39	18.21	
	0.727	21.30	10.36	31.66	46.00	14.34	AV
	1.198	11.79	10.39	22.18	46.00	23.82	
	2.669	11.80	10.43	22.23	46.00	23.77	
	7.320	11.90	10.52	22.42	50.00	27.58	

Model No. : LC-43N6100U Humidity : 48%RH

Test Mode : LAN Play Date of Test : Dec 28, 2015

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(µV)	Limits dB(µV)	Margin (dB)	Remark	
	0.209	35.90	10.51	46.41	63.23	16.82		
	0.483	30.40	10.39	40.79	56.29	15.50		
	0.891	27.70	10.38	38.08	56.00	17.92	OD	
	1.711	21.39	10.41	31.80	56.00	24.20	QP	
	3.342	20.30	10.45	30.75	56.00	25.25		
Lina	7.541	21.10	10.47	31.57	60.00	28.43		
Line	0.209	22.60	10.51	33.11	53.23	20.12		
	0.483	21.50	10.39	31.89	46.29	14.40	AV	
	0.891	8.50	10.38	18.88	46.00	27.12		
	1.711	7.59	10.41	18.00	46.00	28.00		
	3.342	9.90	10.45	20.35	46.00	25.65		
	7.541	15.40	10.47	25.87	50.00	24.13		
	0.196	38.50	10.51	49.01	63.80	14.79		
	0.456	32.20	10.38	42.58	56.77	14.19		
	0.680	30.91	10.35	41.26	56.00	14.74	OD	
	1.109	26.81	10.37	37.18	56.00	18.82	QP	
	4.468	20.10	10.46	30.56	56.00	25.44		
Neutral	7.544	21.90	10.52	32.42	60.00	27.58		
Neutrai	0.196	25.00	10.51	35.51	53.80	18.29		
	0.456	22.00	10.38	32.38	46.77	14.39		
	0.680	20.71	10.35	31.06	46.00	14.94	AV	
	1.109	11.91	10.37	22.28	46.00	23.72		
	4.468	10.70	10.46	21.16	46.00	24.84		
	7.544	13.80	10.52	24.32	50.00	25.68		

# 4 RADIATED EMISSION TEST

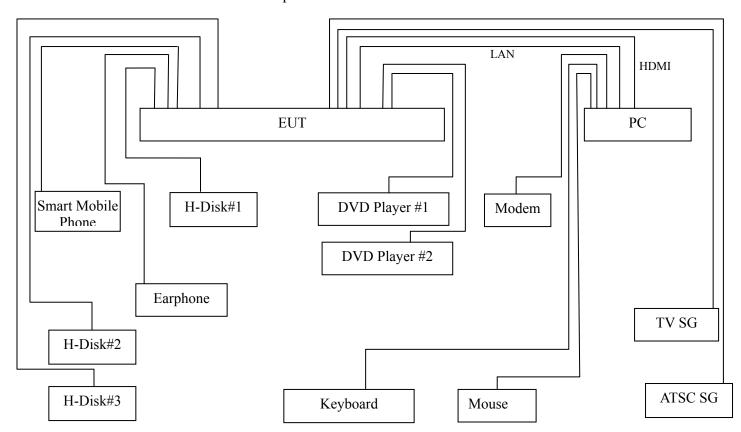
# 4.1 Test Equipment

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		

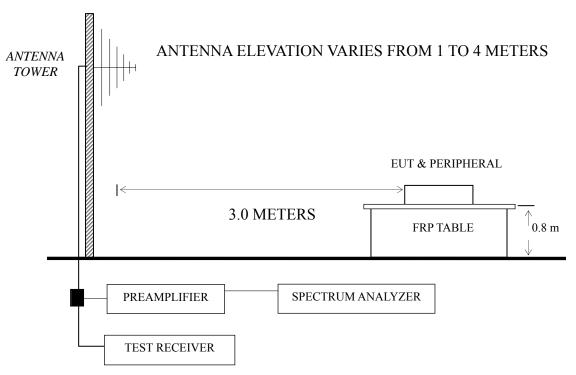
# 4.2 Block Diagram of Test Setup

# 4.2.1 EUT & Peripherals



## 4.2.2 Test Setup

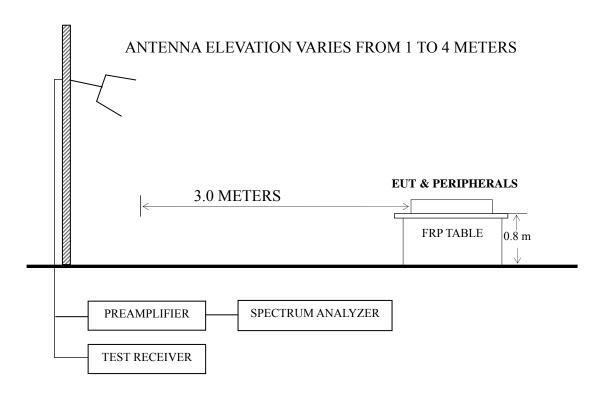
## 4.2.2.1 Below 1GHz



: 50 ohm Coaxial Switch

4.2.2.2 Above 1GHz

## **BORE-SIGHT ANTENNA TOWER**



Hisense Electric Co., Ltd. FCC ID: W9HLCDD0054 Page 24 of 36

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

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

## 4.4 Test Configuration

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

Please refer to Sec.3.4.

## 4.5 Operating Condition of EUT

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

#### 4.6 Test Procedures

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

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

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

The frequency range from 1 GHz to 6 GHz was checked for the maximum resolution test mode.

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

#### 4.7 Test Results

#### <PASS>

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

Test Mode	Data Page
HDMI 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  $3-0^{\circ}$  was the table front facing the antenna. Degree is calculated from  $0^{\circ}$  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 852.560 MHz with corrected signal level of 44.97 dB ( $\mu$ V/m) (limit is 46.00 dB ( $\mu$ V/m)), when the antenna was 1.9 m height and the turntable was at 35°. The worst emission at vertical polarization was detected at 890.900 MHz with corrected signal level of 44.16 dB ( $\mu$ V/m) (limit is 46.00 dB ( $\mu$ V/m)), when the antenna was 1.3m height and the turntable was at 355°.

Model No. : LC-43N6100U Humidity : 60%RH

Test Mode : HDMI 3840\*2160@60Hz Date of Test : Jan 08, 2015

& 1kHz Playing

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB ( $\mu V/m$ )	Margin (dB)	Remark	
	78.500	22.89	9.12	1.05	-	33.06	40.00	6.94		
	143.490	22.39	12.20	1.60		36.19	43.50	7.31		
	252.130	20.93	12.58	2.18		35.69	46.00	10.31	OD	
	852.560	20.07	20.73	4.17		44.97	46.00	1.03	QP	
	890.980	19.00	21.30	4.46		44.76	46.00	1.24		
	932.100	15.84	21.70	4.65		42.19	46.00	3.81		
	1764.712	62.65	26.68	4.13	35.36	58.10	74.00	15.90		
	2114.790	70.29	27.72	4.55	35.11	67.45	74.00	6.55		
Horizontal	3176.198	65.65	30.88	5.93	35.02	67.44	74.00	6.56	PK	
	3524.036	61.74	31.58	6.13	34.70	64.75	74.00	9.25	ГK	
	4569.538	53.94	33.68	6.61	34.06	60.17	74.00	13.83		
	5254.943	47.10	34.51	6.84	33.95	54.50	74.00	19.50		
	1764.712	43.21	26.68	4.13	35.36	38.66	54.00	15.34		
	2114.790	50.01	27.72	4.55	35.11	47.17	54.00	6.83		
	3176.198	44.94	30.88	5.93	35.02	46.73	54.00	7.27	AV	
	3524.036	41.00	31.58	6.13	34.70	44.01	54.00	9.99		
	4569.538	35.23	33.68	6.61	34.06	41.46	54.00	12.54		
	5254.943	30.83	34.51	6.84	33.95	38.23	54.00	15.77		

Model No. : LC-43N6100U Humidity : 60%RH

Test Mode : HDMI 3840\*2160@60Hz Date of Test : Jan 08, 2015

& 1kHz Playing

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB ( $\mu V/m$ )	Margin (dB)	Remark	
	30.970	16.20	18.15	0.64		34.99	40.00	5.01		
	88.200	26.89	10.25	1.18		38.32	43.50	5.18		
	145.430	24.51	12.03	1.61		38.15	43.50	5.35	ΩD	
	597.450	21.07	18.98	2.31		42.36	46.00	3.64	QP	
	846.740	18.59	20.73	4.07		43.39	46.00	2.61		
	890.900	18.40	21.30	4.46		44.16	46.00	1.84		
	1045.812	65.51	23.73	4.55	36.41	57.38	74.00	16.62		
	1222.230	65.99	24.53	3.56	36.10	57.98	74.00	16.02		
Vertical	1764.712	69.67	26.68	4.13	35.36	65.12	74.00	8.88	PK	
	2449.490	65.07	28.32	4.86	35.15	63.10	74.00	10.90	ГK	
	3170.512	67.29	30.86	5.93	35.03	69.05	74.00	4.95		
	4577.732	53.30	33.68	6.61	34.06	59.53	74.00	14.47		
	1045.812	45.63	23.73	4.55	36.41	37.50	54.00	16.50		
	1222.230	44.23	24.53	3.56	36.10	36.22	54.00	17.78		
	1764.712	50.68	26.68	4.13	35.36	46.13	54.00	7.87	AV	
	2449.490	46.38	28.32	4.86	35.15	44.41	54.00	9.59		
	3170.512	56.90	30.86	5.93	35.03	58.66	54.00	4.66		
	4577.732	34.72	33.68	6.61	34.06	40.95	54.00	13.05		

Model No. : LC-43N6100U Humidity : 60%RH

Test Mode : HDMI 1920\*1080@60Hz Date of Test : Jan 08, 2015

& 1kHz Playing

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (µV/m)	Limits dB ( $\mu V/m$ )	Margin (dB)
	83.350	24.45	9.66	1.13	35.24	40.00	4.76
	131.850	23.76	12.71	1.53	38.00	43.50	5.50
Horizontal	242.430	21.99	12.10	2.13	36.22	46.00	9.78
попиона	745.860	16.95	20.03	3.62	40.60	46.00	5.40
	845.770	18.77	20.73	4.07	43.57	46.00	2.43
	893.300	16.42	21.30	4.46	42.18	46.00	3.82
	32.910	16.03	16.99	0.66	33.68	40.00	6.32
	88.200	27.53	10.25	1.18	38.96	43.50	4.54
Vertical	150.280	24.06	11.46	1.63	37.15	43.50	6.35
vertical	597.450	18.80	18.98	2.31	40.09	46.00	5.91
	817.640	18.09	20.67	3.88	42.64	46.00	3.36
	852.560	17.77	20.73	4.17	42.67	46.00	3.33

Model No. : LC-43N6100U Humidity : 60%RH

Test Mode : HDMI 1280\*1024@60Hz Date of Test : Jan 08, 2015

& 1kHz Playing

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)		Emission Level dB (µV/m)	Limits dB ( $\mu V/m$ )	Margin (dB)
	86.260	23.88	9.95	1.16	34.99	40.00	5.01
	145.430	22.08	12.03	1.61	35.72	43.50	7.78
Horizontal	247.280	21.79	12.38	2.14	36.31	46.00	9.69
Поптенца	542.160	18.77	18.56	2.63	39.96	46.00	6.04
	844.800	19.52	20.73	4.07	44.32	46.00	1.68
	901.060	13.74	21.30	4.56	39.60	46.00	6.40
	31.940	15.65	17.50	0.65	33.80	40.00	6.20
	86.260	24.34	9.95	1.16	35.45	40.00	4.55
Vertical	145.430	23.99	12.03	1.61	37.63	43.50	5.87
vertical	542.160	17.90	18.56	2.63	39.09	46.00	6.91
	847.710	15.49	20.70	4.07	40.26	46.00	5.74
	928.220	12.37	21.63	4.65	38.65	46.00	7.35

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-43N6100U Humidity : 60%RH

Test Mode : HDMI 640\*480@60Hz & Date of Test : Jan 08, 2015

1kHz Playing

		1	1	ı	1		
Polarization	Eroguanav	Meter	Antenna	Cable	Emission	Limits	Margin
	Frequency (MHz)	Reading	Factor	Loss	Level dB	dB	_
	(WILIZ)	dB (µV)	(dB/m)	(dB)	$(\mu V/m)$	$(\mu V/m)$	(dB)
	80.440	23.98	9.43	1.09	34.50	40.00	5.50
	128.940	22.10	12.87	1.52	36.49	43.50	7.01
Horizontal	202.660	24.85	9.75	1.98	36.58	43.50	6.92
Пописний	243.400	23.10	12.10	2.13	37.33	46.00	8.67
	844.800	18.91	20.73	4.07	43.71	46.00	2.29
	901.060	15.71	21.30	4.56	41.57	46.00	4.43
	68.800	26.74	7.12	0.92	34.78	40.00	5.22
	88.200	25.93	10.25	1.18	37.36	43.50	6.14
Vertical	144.460	24.67	12.15	1.60	38.42	43.50	5.08
	426.730	16.13	16.80	2.78	35.71	46.00	10.29
	600.360	14.02	19.10	2.26	35.38	46.00	10.62
	852.560	17.86	20.73	4.17	42.76	46.00	3.24

: HDMI1080P

Test Mode

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-43N6100U Humidity : 60%RH

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (µV/m)	Limits dB ( $\mu V/m$ )	Margin (dB)
	80.440	23.80	9.43	1.09	34.32	40.00	5.68
	128.940	22.48	12.87	1.52	36.87	43.50	6.63
Horizontal	253.100	23.41	12.62	2.18	38.21	46.00	7.79
Пописний	794.360	15.84	20.53	3.68	40.05	46.00	5.95
	851.590	18.00	20.73	4.17	42.90	46.00	3.10
	893.300	17.24	21.30	4.46	43.00	46.00	3.00
	31.940	15.97	17.50	0.65	34.12	40.00	5.88
	86.260	24.15	9.95	1.16	35.26	40.00	4.74
Vertical	145.430	24.26	12.03	1.61	37.90	43.50	5.60
	597.450	18.00	18.98	2.31	39.29	46.00	6.71
	851.590	15.09	20.73	4.17	39.99	46.00	6.01
	893.300	16.45	21.30	4.46	42.21	46.00	3.79

TEST ENGINEER: BILL WU

Date of Test: Jan 08, 2015

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-43N6100U Humidity : 60%RH

Test Mode : MHL Date of Test : Jan 08, 2015

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)		Emission Level dB (µV/m)	Limits dB ( $\mu V/m$ )	Margin (dB)
	81.410	21.36	9.51	1.10	31.97	40.00	8.03
	141.550	22.79	12.40	1.59	36.78	43.50	6.72
Horizontal	205.570	24.93	9.80	1.99	36.72	43.50	6.78
Пописний	287.050	22.46	13.55	2.49	38.50	46.00	7.50
	542.160	15.19	18.56	2.63	36.38	46.00	9.62
	743.920	17.98	20.03	3.60	41.61	46.00	4.39
	33.880	14.65	16.47	0.67	31.79	40.00	8.21
	42.610	20.21	12.12	0.75	33.08	40.00	6.92
Vertical	76.560	25.37	8.78	1.04	35.19	40.00	4.81
	151.250	26.03	11.43	1.65	39.11	43.50	4.39
	474.260	21.21	17.38	2.88	41.47	46.00	4.53
	785.630	14.30	20.50	3.66	38.46	46.00	7.54

EUT : LED LCD TV Temperature :  $22^{\circ}$ C

Model No. : LC-43N6100U Humidity : 60%RH

Test Mode : USB Play Date of Test : Jan 08, 2015

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)		Emission Level dB (µV/m)	Limits dB ( $\mu V/m$ )	Margin (dB)
	85.290	21.17	9.85	1.15	32.17	40.00	7.83
	137.670	21.53	12.54	1.56	35.63	43.50	7.87
Horizontal	243.400	21.85	12.10	2.13	36.08	46.00	9.92
Поптенца	564.470	13.39	18.60	2.52	34.51	46.00	11.49
	803.090	13.02	20.60	3.78	37.40	46.00	8.60
	882.630	14.01	21.10	4.36	39.47	46.00	6.53
	81.410	23.28	9.51	1.10	33.89	40.00	6.11
	130.880	22.26	12.76	1.53	36.55	43.50	6.95
Vertical	363.680	15.33	16.03	2.67	34.03	46.00	11.97
	564.470	14.03	18.60	2.52	35.15	46.00	10.85
	817.640	12.79	20.67	3.88	37.34	46.00	8.66
	882.630	13.43	21.10	4.36	38.89	46.00	7.11

EUT : LED LCD TV Temperature :  $22^{\circ}$ C

Model No. : LC-43N6100U Humidity :  $60^{\circ}$ RH

Test Mode : LAN Play Date of Test : Jan 08, 2015

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)		Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)
	87.230	21.69	10.10	1.18	32.97	40.00	7.03
	135.730	20.92	12.59	1.55	35.06	43.50	8.44
Horizontal	252.130	20.75	12.58	2.18	35.51	46.00	10.49
Поптенца	564.470	13.14	18.60	2.52	34.26	46.00	11.74
	832.190	11.27	20.70	3.97	35.94	46.00	10.06
	878.750	11.45	21.03	4.36	36.84	46.00	9.16
	81.410	23.02	9.51	1.10	33.63	40.00	6.37
	143.490	23.05	12.20	1.60	36.85	43.50	6.65
Vertical	241.460	19.55	12.00	2.13	33.68	46.00	12.32
	359.800	14.47	15.90	2.67	33.04	46.00	12.96
	532.460	12.86	18.35	2.73	33.94	46.00	12.06
	888.450	9.62	21.30	4.46	35.38	46.00	10.62

## **5 DEBUG DESCRIPTION**

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Ferrite Core	ZCAT1519-0830	Jiangsu Ruifeng Electronics Co., Ltd	See Internal Photos Figure 22
SMcontact	SMR-TSL-4-3.5-5R	Qingdao Joinset Co., Ltd	See Internal Photos Figure 23

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)

Hisense Electric Co., Ltd. FCC ID: W9HLCDD0054 Page 37 of 36

6	DEVI	ATION TO	TEST	SPECIFICA	ZIONS
			14.7		

None.