

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

LED LCD TV

Model No.	Brand
RLED4350-UHD-B-SM	RCA

FCC ID : W9HLCDD0059

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-F16167
Date of Test : Jun 16 – Jul 11, 2016
Date of Report : Jul 20, 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
RLED4350-UHD-B-SM	RCA	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 Jun 16 – Jul 11, 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.F16168, a Verification report.

Date of Test : Jun 16 – Jul 11, 2016 Date of Report : Jul 20, 2016

Producer :

Tina Liang
TINA LIANG / Assistant

Review:

Byron Wu
BYRON WU / Deputy Assistant Manager



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

Signatory:

Sammy Chen
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
Model No	:	RLED4350-UHD-B-SM
Brand	:	RCA
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
Tuner	:	Manufacturer : XuGuang Tech. Co., Ltd M/N : HFT-96S3/W11FJ4H\ROH
Max Resolution	:	3840*2160@60Hz
HDMI Cable*4 (Lab provide)	:	Shielded, Detachable, 1.50m, with two cores
Power Cord	:	Unshielded, Detachable, 1.80m, 2C
USB Cable*3 (Lab provide)	:	Shielded, Detachable, 1.00m
LAN Cable	:	Unshielded, Detachable, 1.50m
MHL to HDMI Adaptor: with RCP (Lab provide)	:	Manufacture: CE-Link M/N: 3002

Remark:

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

Side Port:

(1) One ANT Port

: Connected with ATSC SG/TV SG

(2) One USB #1 Port

: Connected with Hard-Disk #1

(3) One USB #2 Port

: Connected with Hard-Disk #2

(4) One Service Port

: Do not open to the customers

(5) One AUDIO OUT Port

: Connected with Earphone #1

(6) One HDMI1 /MHL Port

: Connected with Smart Mobile Phone

(7) One HDMI2 Port

: Connected with PC

(8) One USB #3 Port

: Connected with Hard-Disk #3

Bottom Port:

(9) One COMPONENT IN / AV IN Port

: Connected with DVD PLAYER #1

(10) One LAN Port

: Connected with PC

(11) One DIGITAL AUDIO OUT Port

: Connected with Audio Converter to Earphone

(12) One HDMI3 Port

: Connected with DVD PLAYER #1

(13) One HDMI4 Port

: Connected with DVD PLAYER #2

2.2 Peripherals

2.2.1 PC

Manufacturer : HP
 Model Number : DX7400MT
 Serial Number : CNG8130K89
 Power Cord : Unshielded, Detachable, 1.8m
 Certificate : FCC DoC; CE/EMC; VCCI; C-Tick

2.2.2 Keyboard

Manufacturer : Microsoft
 Model Number : RT2300
 Serial Number : 7668200662248
 Data Cable : Shielded, 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 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, Detachable, 1.5m.
Certificate : CE, FCC DoC

2.2.11 Hard Disk #2

Manufacturer : Tetasys
Model Number : F12
Serial Number : A010022-486006
Data Cable : Shielded, Detachable, 1.5m.
Certificate : CE, FCC DoC

2.2.12 Hard Disk #3

Manufacturer : Tetasys
Model Number : F12
Serial Number : A010022-4A60007
Data Cable : Shielded, Detachable, 1.5m.
Certificate : CE, FCC DoC

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

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

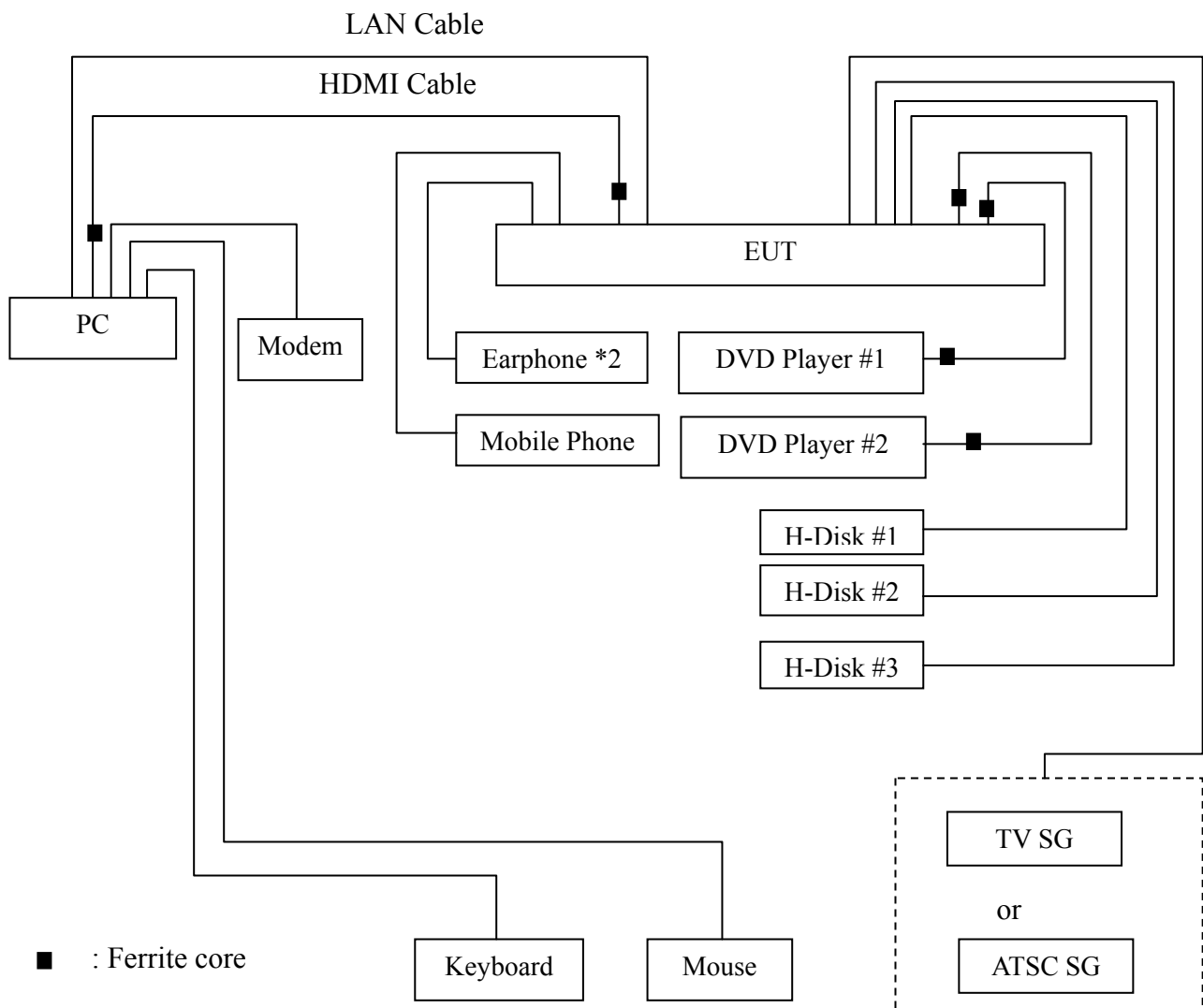
3.1 Test Equipment

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

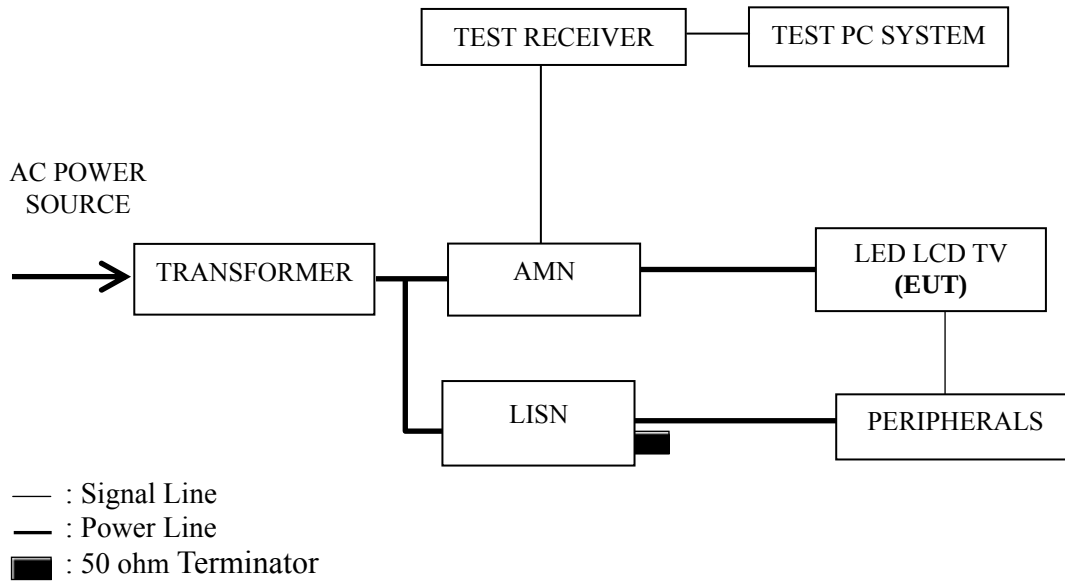
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Apr 27, 2016	Apr 26, 2017
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 25, 2016	Jun 24, 2017
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2016	Mar 19, 2017
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 (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 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 C63.4:2014 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	P13
HDMI 1920*1080@60Hz & 1kHz Playing	P14
HDMI 1280*1024@60Hz & 1kHz playing	P15
HDMI 640*480@60Hz & 1kHz playing	P16
HDMI1080P	P17
MHL	P18
USB Play	P19
LAN Play	P20

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 0.221MHz (Quasi-Peak Value) with corrected signal level of 51.10 dB (μV) (limit is 62.78 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 48%RH

Test Mode : HDMI 3840*2160@60Hz Date of Test : Jun 16, 2016
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.224	38.90	10.51	49.41	62.68	13.27	QP
	0.487	26.20	10.40	36.60	56.21	19.61	
	1.026	26.80	10.39	37.19	56.00	18.81	
	1.799	25.80	10.42	36.22	56.00	19.78	
	3.802	22.21	10.46	32.67	56.00	23.33	
	26.500	23.60	10.83	34.43	60.00	25.57	
	0.224	25.20	10.51	35.71	52.68	16.97	AV
	0.487	15.30	10.40	25.70	46.21	20.51	
	1.026	16.20	10.39	26.59	46.00	19.41	
	1.799	14.70	10.42	25.12	46.00	20.88	
	3.802	11.41	10.46	21.87	46.00	24.13	
	26.500	17.90	10.83	28.73	50.00	21.27	
Neutral	0.224	39.90	10.49	50.39	62.66	12.27	QP
	0.492	28.50	10.38	38.88	56.13	17.25	
	0.769	29.30	10.37	39.67	56.00	16.33	
	1.269	26.39	10.40	36.79	56.00	19.21	
	2.686	23.20	10.44	33.64	56.00	22.36	
	5.339	21.41	10.48	31.89	60.00	28.11	
	0.224	26.10	10.49	36.59	52.66	16.07	AV
	0.492	15.70	10.38	26.08	46.13	20.05	
	0.769	19.50	10.37	29.87	46.00	16.13	
	1.269	14.89	10.40	25.29	46.00	20.71	
	2.686	14.00	10.44	24.44	46.00	21.56	
	5.339	11.51	10.48	21.99	50.00	28.01	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 48%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Jun 16, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.223	39.10	10.51	49.61	62.69	13.08	QP
	0.498	26.70	10.40	37.10	56.04	18.94	
	0.934	24.90	10.39	35.29	56.00	20.71	
	2.040	25.60	10.42	36.02	56.00	19.98	
	4.508	24.70	10.48	35.18	56.00	20.82	
	28.170	24.10	10.90	35.00	60.00	25.00	
	0.223	25.20	10.51	35.71	52.69	16.98	AV
	0.498	11.60	10.40	22.00	46.04	24.04	
	0.934	8.50	10.39	18.89	46.00	27.11	
	2.040	15.00	10.42	25.42	46.00	20.58	
	4.508	13.60	10.48	24.08	46.00	21.92	
	28.170	19.00	10.90	29.90	50.00	20.10	
Neutral	0.224	40.10	10.49	50.59	62.68	12.09	QP
	0.513	30.50	10.38	40.88	56.00	15.12	
	0.770	29.20	10.37	39.57	56.00	16.43	
	1.245	25.49	10.40	35.89	56.00	20.11	
	3.797	22.20	10.46	32.66	56.00	23.34	
	18.010	20.60	10.70	31.30	60.00	28.70	
	0.224	26.00	10.49	36.49	52.68	16.19	AV
	0.513	20.70	10.38	31.08	46.00	14.92	
	0.770	19.40	10.37	29.77	46.00	16.23	
	1.245	14.59	10.40	24.99	46.00	21.01	
	3.797	11.50	10.46	21.96	46.00	24.04	
	18.010	15.30	10.70	26.00	50.00	24.00	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 48%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : Jun 16, 2016
& 1kHz playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.223	39.10	10.51	49.61	62.71	13.10	QP
	0.510	28.00	10.40	38.40	56.00	17.60	
	0.960	24.90	10.39	35.29	56.00	20.71	
	2.027	25.50	10.42	35.92	56.00	20.08	
	4.904	20.10	10.49	30.59	56.00	25.41	
	27.310	24.10	10.86	34.96	60.00	25.04	
	0.223	24.80	10.51	35.31	52.71	17.40	AV
	0.510	18.30	10.40	28.70	46.00	17.30	
	0.960	10.70	10.39	21.09	46.00	24.91	
	2.027	14.60	10.42	25.02	46.00	20.98	
	4.904	13.90	10.49	24.39	46.00	21.61	
	27.310	18.60	10.86	29.46	50.00	20.54	
Neutral	0.224	40.00	10.49	50.49	62.68	12.19	QP
	0.513	30.40	10.38	40.78	56.00	15.22	
	0.772	29.00	10.37	39.37	56.00	16.63	
	1.269	26.29	10.40	36.69	56.00	19.31	
	4.243	21.30	10.47	31.77	56.00	24.23	
	18.130	21.70	10.70	32.40	60.00	27.60	
	0.224	25.70	10.49	36.19	52.68	16.49	AV
	0.513	20.70	10.38	31.08	46.00	14.92	
	0.772	18.40	10.37	28.77	46.00	17.23	
	1.269	15.39	10.40	25.79	46.00	20.21	
	4.243	14.20	10.47	24.67	46.00	21.33	
	18.130	16.30	10.70	27.00	50.00	23.00	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 48%RH

Test Mode : HDMI 640*480@60Hz & 1kHz playing Date of Test : Jun 16, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.223	39.10	10.51	49.61	62.73	13.12	QP
	0.495	26.60	10.40	37.00	56.09	19.09	
	0.982	23.90	10.39	34.29	56.00	21.71	
	2.017	24.90	10.42	35.32	56.00	20.68	
	4.504	24.70	10.48	35.18	56.00	20.82	
	26.690	22.70	10.84	33.54	60.00	26.46	
	0.223	24.50	10.51	35.01	52.73	17.72	AV
	0.495	13.40	10.40	23.80	46.09	22.29	
	0.982	12.20	10.39	22.59	46.00	23.41	
	2.017	14.30	10.42	24.72	46.00	21.28	
	4.504	13.60	10.48	24.08	46.00	21.92	
	26.690	17.50	10.84	28.34	50.00	21.66	
Neutral	0.225	39.60	10.49	50.09	62.62	12.53	QP
	0.514	30.50	10.38	40.88	56.00	15.12	
	0.952	25.40	10.38	35.78	56.00	20.22	
	1.806	25.89	10.42	36.31	56.00	19.69	
	3.807	23.20	10.46	33.66	56.00	22.34	
	17.940	20.20	10.70	30.90	60.00	29.10	
	0.225	26.00	10.49	36.49	52.62	16.13	AV
	0.514	20.20	10.38	30.58	46.00	15.42	
	0.952	10.50	10.38	20.88	46.00	25.12	
	1.806	14.39	10.42	24.81	46.00	21.19	
	3.807	11.50	10.46	21.96	46.00	24.04	
	17.940	15.50	10.70	26.20	50.00	23.80	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 48%RH

Test Mode : HDMI1080P Date of Test : Jun 16, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.225	38.90	10.51	49.41	62.63	13.22	QP
	0.498	27.70	10.40	38.10	56.03	17.93	
	0.681	23.90	10.39	34.29	56.00	21.71	
	1.281	23.50	10.40	33.90	56.00	22.10	
	4.612	19.89	10.49	30.38	56.00	25.62	
	28.130	23.80	10.90	34.70	60.00	25.30	
	0.225	25.80	10.51	36.31	52.63	16.32	AV
	0.498	16.80	10.40	27.20	46.03	18.83	
	0.681	10.40	10.39	20.79	46.00	25.21	
	1.281	11.30	10.40	21.70	46.00	24.30	
	4.612	10.99	10.49	21.48	46.00	24.52	
	28.130	18.30	10.90	29.20	50.00	20.80	
Neutral	0.221	40.51	10.49	51.00	62.77	11.77	QP
	0.498	29.90	10.38	40.28	56.03	15.75	
	0.760	29.20	10.37	39.57	56.00	16.43	
	1.216	24.79	10.40	35.19	56.00	20.81	
	2.844	22.30	10.44	32.74	56.00	23.26	
	17.840	22.19	10.70	32.89	60.00	27.11	
	0.221	26.31	10.49	36.80	52.77	15.97	AV
	0.498	17.80	10.38	28.18	46.03	17.85	
	0.760	18.00	10.37	28.37	46.00	17.63	
	1.216	13.39	10.40	23.79	46.00	22.21	
	2.844	11.60	10.44	22.04	46.00	23.96	
	17.840	17.59	10.70	28.29	50.00	21.71	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 48%RH

Test Mode : MHL Date of Test : Jun 16, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.220	39.40	10.52	49.92	62.83	12.91	QP
	0.489	27.30	10.40	37.70	56.18	18.48	
	0.912	25.30	10.39	35.69	56.00	20.31	
	1.328	25.50	10.40	35.90	56.00	20.10	
	2.965	23.30	10.45	33.75	56.00	22.25	
	7.537	19.60	10.48	30.08	60.00	29.92	
	0.220	24.50	10.52	35.02	52.83	17.81	AV
	0.489	15.80	10.40	26.20	46.18	19.98	
	0.912	9.90	10.39	20.29	46.00	25.71	
	1.328	14.00	10.40	24.40	46.00	21.60	
	2.965	10.60	10.45	21.05	46.00	24.95	
	7.537	13.90	10.48	24.38	50.00	25.62	
Neutral	0.221	40.61	10.49	51.10	62.79	11.69	QP
	0.493	29.50	10.38	39.88	56.11	16.23	
	1.261	26.19	10.40	36.59	56.00	19.41	
	1.978	25.70	10.42	36.12	56.00	19.88	
	4.518	23.20	10.47	33.67	56.00	22.33	
	24.030	24.89	10.83	35.72	60.00	24.28	
	0.221	25.91	10.49	36.40	52.79	16.39	AV
	0.493	16.30	10.38	26.68	46.11	19.43	
	1.261	16.69	10.40	27.09	46.00	18.91	
	1.978	14.80	10.42	25.22	46.00	20.78	
	4.518	13.60	10.47	24.07	46.00	21.93	
	24.030	19.59	10.83	30.42	50.00	19.58	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 48%RH

Test Mode : USB Play Date of Test : Jun 16, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.222	39.40	10.51	49.91	62.76	12.85	QP
	0.493	27.40	10.40	37.80	56.13	18.33	
	0.960	24.40	10.39	34.79	56.00	21.21	
	1.969	24.20	10.42	34.62	56.00	21.38	
	4.603	23.19	10.49	33.68	56.00	22.32	
	28.130	24.50	10.90	35.40	60.00	24.60	
	0.222	25.90	10.51	36.41	52.76	16.35	AV
	0.493	15.70	10.40	26.10	46.13	20.03	
	0.960	9.80	10.39	20.19	46.00	25.81	
	1.969	13.70	10.42	24.12	46.00	21.88	
	4.603	11.89	10.49	22.38	46.00	23.62	
	28.130	18.70	10.90	29.60	50.00	20.40	
Neutral	0.222	40.40	10.49	50.89	62.75	11.86	QP
	0.494	29.40	10.38	39.78	56.10	16.32	
	1.011	27.50	10.38	37.88	56.00	18.12	
	1.979	24.40	10.42	34.82	56.00	21.18	
	4.449	21.90	10.47	32.37	56.00	23.63	
	24.030	24.89	10.83	35.72	60.00	24.28	
	0.222	26.60	10.49	37.09	52.75	15.66	AV
	0.494	16.30	10.38	26.68	46.10	19.42	
	1.011	15.60	10.38	25.98	46.00	20.02	
	1.979	14.20	10.42	24.62	46.00	21.38	
	4.449	14.30	10.47	24.77	46.00	21.23	
	24.030	19.49	10.83	30.32	50.00	19.68	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 48%RH

Test Mode : LAN Play Date of Test : Jun 16, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.219	39.20	10.52	49.72	62.85	13.13	QP
	0.489	27.10	10.40	37.50	56.19	18.69	
	1.011	26.90	10.39	37.29	56.00	18.71	
	2.048	25.10	10.42	35.52	56.00	20.48	
	4.600	23.99	10.49	34.48	56.00	21.52	
	17.800	23.49	10.59	34.08	60.00	25.92	
	0.219	23.90	10.52	34.42	52.85	18.43	AV
	0.489	15.40	10.40	25.80	46.19	20.39	
	1.011	15.80	10.39	26.19	46.00	19.81	
	2.048	13.90	10.42	24.32	46.00	21.68	
	4.600	11.79	10.49	22.28	46.00	23.72	
	17.800	18.59	10.59	29.18	50.00	20.82	
Neutral	0.221	40.61	10.49	51.10	62.78	11.68	QP
	0.491	29.10	10.38	39.48	56.16	16.68	
	1.010	27.90	10.38	38.28	56.00	17.72	
	2.047	25.20	10.42	35.62	56.00	20.38	
	4.596	24.49	10.48	34.97	56.00	21.03	
	17.800	23.19	10.70	33.89	60.00	26.11	
	0.221	26.51	10.49	37.00	52.78	15.78	AV
	0.491	16.30	10.38	26.68	46.16	19.48	
	1.010	16.30	10.38	26.68	46.00	19.32	
	2.047	14.00	10.42	24.42	46.00	21.58	
	4.596	12.29	10.48	22.77	46.00	23.23	
	17.800	18.39	10.70	29.09	50.00	20.91	

TEST ENGINEER: SEVEN LU

4 RADIATED EMISSION TEST

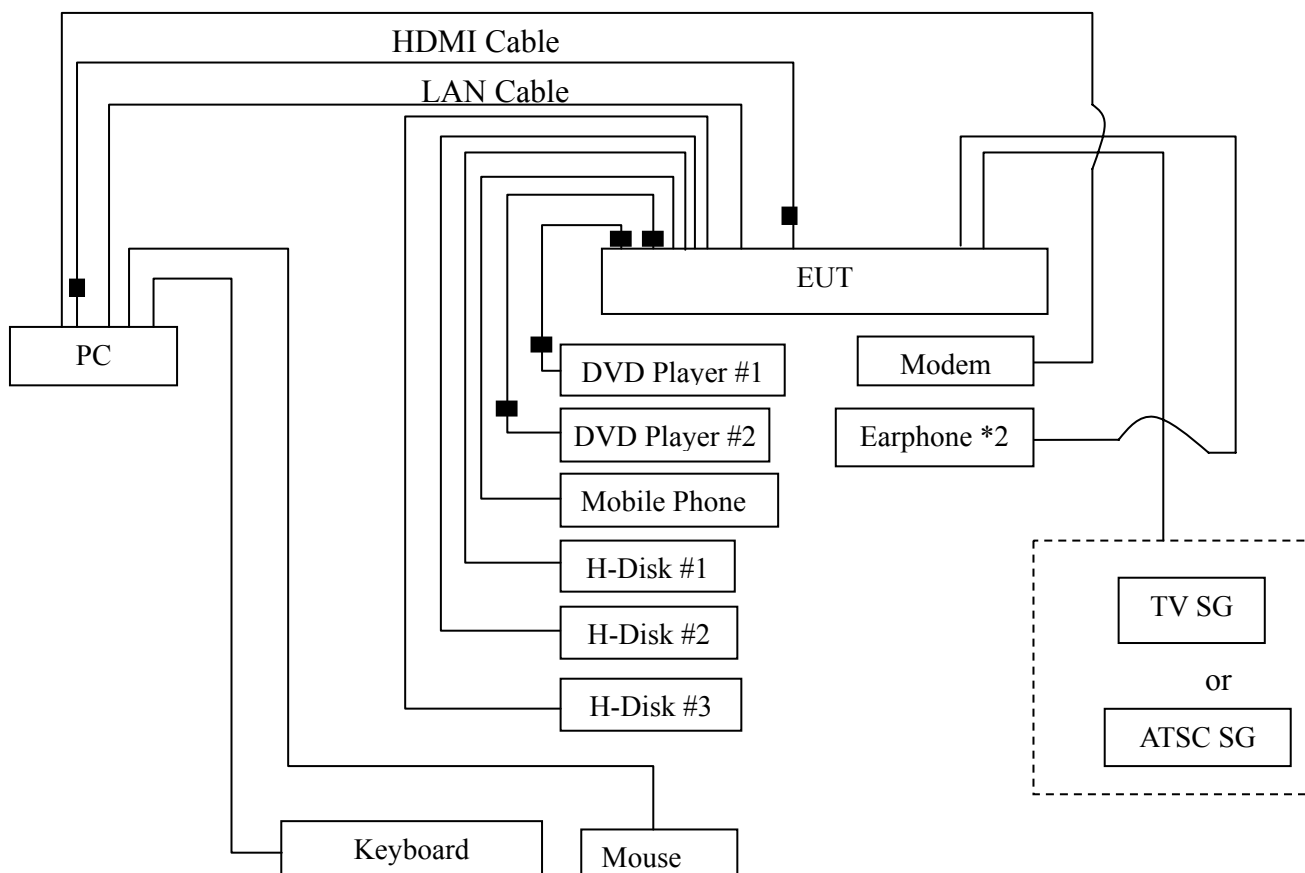
4.1 Test Equipment

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, 2017
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 10, 2016	May 09, 2017
5.	Horn Antenna	EMCO	3115	9607-4878	May 31, 2016	May 30, 2017
6.	Spectrum	Agilent	E7405A	MY45106600	Feb 26, 2016	Feb 25, 2017
7.	Software	Audix	e3	6.2007-9-10	--	--

4.2 Block Diagram of Test Setup

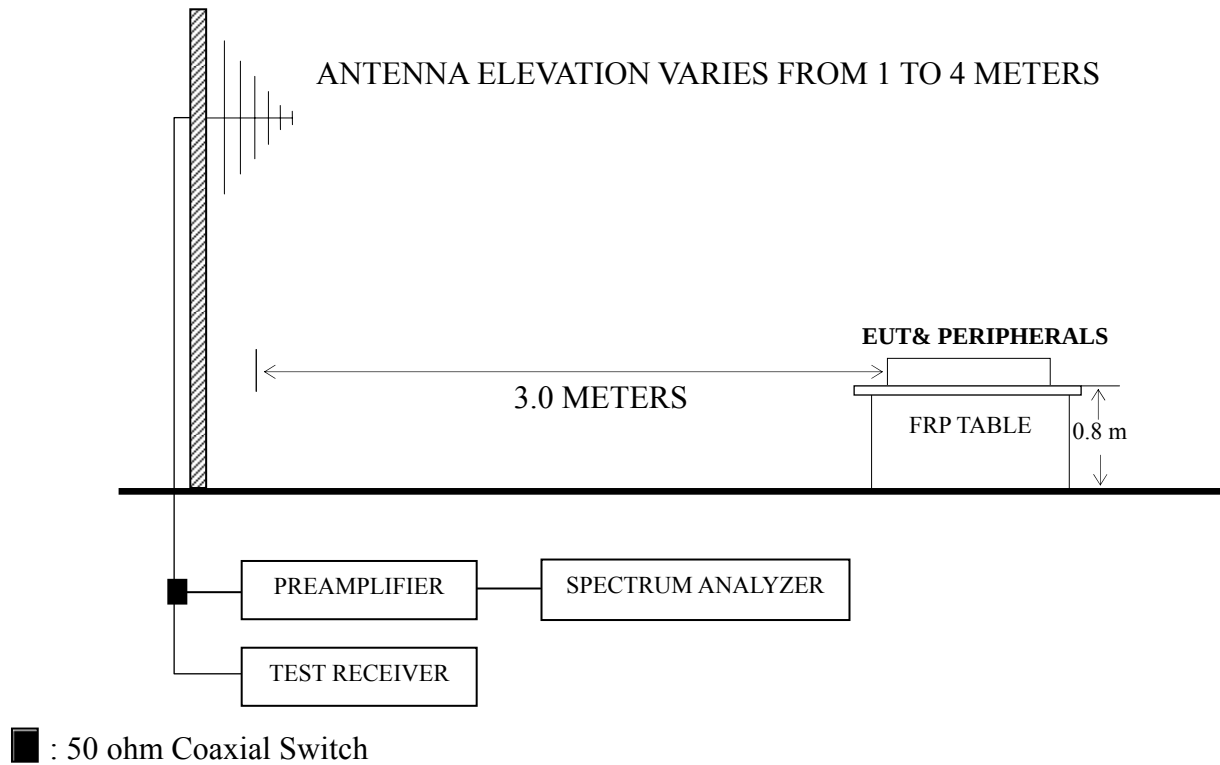
4.2.1 EUT & Peripherals



■ : Ferrite core

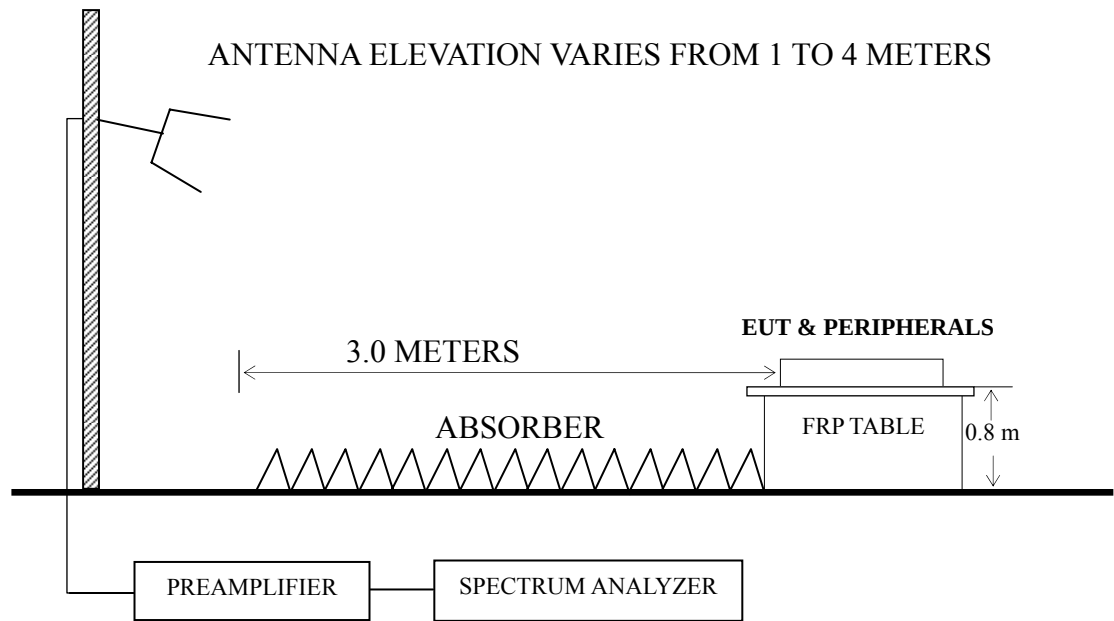
4.2.2 Radiated emission test setup

4.2.2.1 Below 1GHz



4.2.2.2 Above 1GHz

BORE-SIGHT ANTENNA TOWER



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

Frequency (MHz)	Distance (m)	Field strength limits	
		($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0
NOTE 1 - Emission Level dB ($\mu\text{V/m}$) = 20 log Emission Level ($\mu\text{V/m}$) NOTE 2 - The tighter limit applies at the band edges. NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system. NOTE 4 - The limits shown are based on Quasi-peak value detector. NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT.			

4.4 Test Configuration

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

Please refer to Sec.3.4.

4.5 Operating Condition of EUT

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

4.6 Test Procedures

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

Frequency	Test Mode	Data Page
Below 1GHz	HDMI 3840*2160@60Hz & 1kHz Playing	P25-P26
	HDMI 1920*1080@60Hz & 1kHz Playing	P27
	HDMI 1280*1024@60Hz & 1kHz playing	P28
	HDMI 640*480@60Hz & 1kHz playing	P29
	HDMI1080P	P30
	MHL	P31
	USB Play	P32
	LAN Play	P33
Above 1GHz	HDMI 3840*2160@60Hz & 1kHz Playing	P25-P26

NOTE 1 – Emission Level = Antenna Factor + Cable Loss + 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 890.960 MHz with corrected signal level of 44.37 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.40 m height and the turntable was at 130°. The worst emission at vertical polarization was detected at 32.650 MHz with corrected signal level of 37.42 dB (μV/m) (limit is 40.00 dB (μV/m)), when the antenna was 1.10 m height and the turntable was at 75°.

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 60%RH

Test Mode : HDMI 3840*2160@60Hz Date of Test : Jul 11, 2016
& 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 (μV/m)	Margin (dB)	Remark
Horizontal	87.112	21.35	10.40	0.93	--	32.68	40.00	7.32	QP
	142.324	21.32	12.90	1.24	--	35.46	43.50	8.04	
	240.830	22.13	12.16	1.61	--	35.90	46.00	10.10	
	297.224	24.89	13.60	1.75	--	40.24	46.00	5.76	
	851.035	16.36	20.57	3.00	--	39.93	46.00	6.07	
	890.960	20.20	21.10	3.07	--	44.37	46.00	1.63	
	1702.593	62.52	26.44	4.07	35.43	57.60	74.00	16.40	PK
	2122.382	59.91	27.73	4.58	35.11	57.11	74.00	16.89	
	2534.314	61.48	28.57	4.96	35.16	59.85	74.00	14.15	
	1702.593	40.62	26.44	4.07	35.43	35.70	54.00	18.30	AV
	2122.382	38.74	27.73	4.58	35.11	35.94	54.00	18.06	
	2534.314	40.03	28.57	4.96	35.16	38.40	54.00	15.60	

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 60%RH

Test Mode : HDMI 3840*2160@60Hz & 1kHz Playing Date of Test : Jul 11, 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	32.650	20.01	16.83	0.58	--	37.42	40.00	2.58	QP
	52.391	25.01	8.03	0.72	--	33.76	40.00	6.24	
	88.342	22.28	10.55	0.94	--	33.77	43.50	9.73	
	144.335	22.50	12.68	1.25	--	36.43	43.50	7.07	
	595.133	19.17	18.25	2.50	--	39.92	46.00	6.08	
	890.960	18.20	21.10	3.07	--	42.37	46.00	3.63	
	1774.224	61.64	26.70	4.13	35.34	57.13	74.00	16.87	PK
	2679.065	56.51	29.20	5.25	35.17	55.79	74.00	18.21	
	3387.825	55.47	31.29	6.10	34.82	58.04	74.00	15.96	
	1774.224	40.37	26.70	4.13	35.34	35.86	54.00	18.14	AV
	2679.065	35.23	29.20	5.25	35.17	34.51	54.00	19.49	
	3387.825	33.48	31.29	6.10	34.82	36.05	54.00	17.95	

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Jul 11, 2016
& 1kHz Playing

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	86.200	22.08	10.25	0.93	33.26	40.00	6.74
	143.326	21.39	12.82	1.25	35.46	43.50	8.04
	234.991	22.42	11.80	1.59	35.81	46.00	10.19
	446.414	19.39	16.73	2.15	38.27	46.00	7.73
	842.130	15.60	20.30	2.98	38.88	46.00	7.12
	890.728	14.76	21.10	3.07	38.93	46.00	7.07
Vertical	32.067	16.69	17.05	0.58	34.32	40.00	5.68
	51.240	25.80	8.32	0.71	34.83	40.00	5.17
	86.200	22.50	10.25	0.93	33.68	40.00	6.32
	141.330	20.61	13.05	1.24	34.90	43.50	8.60
	446.414	18.17	16.73	2.15	37.05	46.00	8.95
	890.728	14.36	21.10	3.07	38.53	46.00	7.47

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 60%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : Jul 11, 2016
& 1kHz Playing

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	86.503	21.72	10.30	0.93	32.95	40.00	7.05
	147.921	21.16	12.29	1.27	34.72	43.50	8.78
	245.951	21.07	12.44	1.62	35.13	46.00	10.87
	323.320	19.90	14.21	1.83	35.94	46.00	10.06
	647.386	13.18	19.27	2.61	35.06	46.00	10.94
	848.056	14.19	20.50	2.98	37.67	46.00	8.33
Vertical	32.520	18.94	16.89	0.58	36.41	40.00	3.59
	51.240	25.90	8.32	0.71	34.93	40.00	5.07
	87.418	22.05	10.45	0.93	33.43	40.00	6.57
	142.824	20.89	12.82	1.25	34.96	43.50	8.54
	647.386	18.10	19.27	2.61	39.98	46.00	6.02
	896.997	15.35	21.17	3.07	39.59	46.00	6.41

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 60%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Jul 11, 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	85.598	21.56	10.20	0.92	32.68	40.00	7.32
	144.842	21.07	12.60	1.26	34.93	43.50	8.57
	243.377	21.65	12.28	1.61	35.54	46.00	10.46
	582.743	10.73	18.25	2.48	31.46	46.00	14.54
	848.056	13.39	20.50	2.98	36.87	46.00	9.13
	932.272	10.85	21.40	3.14	35.39	46.00	10.61
Vertical	32.749	17.32	16.78	0.58	34.68	40.00	5.32
	51.200	24.80	8.32	0.71	33.83	40.00	6.17
	88.033	22.41	10.50	0.93	33.84	43.50	9.66
	141.826	20.77	12.98	1.24	34.99	43.50	8.51
	582.743	14.92	18.25	2.48	35.65	46.00	10.35
	848.056	11.88	20.50	2.98	35.36	46.00	10.64

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 60%RH

Test Mode : HDMI1080P Date of Test : Jul 11, 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	58.203	26.26	7.04	0.76	34.06	40.00	5.94
	97.456	21.81	12.03	0.99	34.83	43.50	8.67
	297.224	25.25	13.60	1.75	40.60	46.00	5.40
	593.920	17.90	18.25	2.50	38.65	46.00	7.35
	677.580	20.23	19.53	2.67	42.43	46.00	3.57
	890.728	18.71	21.10	3.07	42.88	46.00	3.12
Vertical	31.731	16.66	17.27	0.58	34.24	40.00	5.76
	50.764	25.10	8.43	0.71	35.54	40.00	4.46
	87.725	24.16	10.45	0.93	36.76	43.50	6.74
	139.851	22.33	13.20	1.23	39.03	46.00	6.97
	595.133	18.28	18.25	2.50	41.77	46.00	4.23
	890.940	17.60	21.10	3.07	34.24	40.00	5.76

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 60%RH

Test Mode : MHL Date of Test : Jul 11, 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	81.497	23.71	9.24	0.90	33.85	40.00	6.15
	185.138	23.39	10.20	1.43	35.02	43.50	8.48
	594.000	19.70	18.25	2.50	40.45	46.00	5.55
	742.259	18.63	19.57	2.79	40.99	46.00	5.01
	851.035	15.16	20.57	3.00	38.73	46.00	7.27
	890.960	17.30	21.10	3.07	41.47	46.00	4.53
Vertical	30.000	17.00	18.40	0.56	35.96	40.00	4.04
	87.418	22.78	10.45	0.93	34.16	40.00	5.84
	146.374	21.66	12.48	1.26	35.40	43.50	8.10
	252.948	21.01	12.90	1.64	35.55	46.00	10.45
	595.133	19.98	18.25	2.50	40.73	46.00	5.27
	742.500	19.00	19.57	2.79	41.36	46.00	4.64

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 60%RH

Test Mode : USB Play Date of Test : Jul 11, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	82.359	23.24	9.41	0.90	33.55	40.00	6.45
	151.067	23.52	11.95	1.29	36.76	43.50	6.74
	184.490	22.87	10.20	1.42	34.49	43.50	9.01
	245.951	22.71	12.44	1.62	36.77	46.00	9.23
	539.920	19.50	17.60	2.36	39.46	46.00	6.54
	851.035	15.16	20.57	3.00	38.73	46.00	7.27
Vertical	30.000	17.70	18.40	0.56	36.66	40.00	3.34
	88.033	26.56	10.50	0.93	37.99	43.50	5.51
	139.851	20.72	13.20	1.23	35.15	43.50	8.35
	251.180	20.28	12.70	1.64	34.62	46.00	11.38
	541.373	20.20	17.66	2.36	40.22	46.00	5.78
	851.035	14.17	20.57	3.00	37.74	46.00	8.26

TEST ENGINEER: CAESAR WU

EUT : LED LCD TV Temperature : 22°C

Model No. : RLED4350-UHD-B-SM Humidity : 60%RH

Test Mode : LAN Play Date of Test : Jul 11, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	82.648	23.46	9.50	0.90	33.86	40.00	6.14
	147.404	22.15	12.35	1.27	35.77	43.50	7.73
	185.138	24.37	10.20	1.43	36.00	43.50	7.50
	243.377	22.93	12.28	1.61	36.82	46.00	9.18
	379.914	17.57	15.80	1.99	35.36	46.00	10.64
	848.056	14.62	20.50	2.98	38.10	46.00	7.90
Vertical	30.000	17.80	18.40	0.56	36.76	40.00	3.24
	53.131	23.59	7.93	0.72	32.24	40.00	7.76
	93.440	23.30	11.40	0.96	35.66	43.50	7.84
	258.326	19.30	13.32	1.65	34.27	46.00	11.73
	588.905	10.89	18.10	2.48	31.47	46.00	14.53
	848.056	11.33	20.50	2.98	34.81	46.00	11.19

TEST ENGINEER: CAESAR WU

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Conductive Tape	DCF/40\ROH	Qingdao Hisense Electric co., LTD	See Internal Photos Figure 22
SM contact	SMR-TSL-4-3.5-5R	Qingdao Joinset.	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:



(BYRON WU)

6 DEVIATION TO TEST SPECIFICATIONS

None