FCC ID:W8U40FS4610R

# APPLICATION OF CERTIFICATION For

TTE Technology Inc.

### LCD TV

Brand Name	Model Number
TCL	40FS4600R; 40FS4610R; 40FS4620R; 40FS4630R; 40FS4640R; 40FS4650R; 40FS4660R; 40FS4670R; 40FS4680R; 40FS4690R

FCC ID: W8U40FS4610R

Prepared for: TTE Technology Inc.

555 S. Promenade Ave., Suite 103, Corona, CA 92879,

U.S.A.

Prepared By: Audix Technology (Shenzhen) Co., Ltd.

No. 6, Ke Feng Rd., 52 Block, Shenzhen Science & Industrial Park, Nantou, Shenzhen, Guangdong, China

Tel: (0755) 26639496 Fax: (0755) 26632877

Report Number : ACS- F14202
Date of Test : Jun.03~04, 2014
Date of Report : Jun.26, 2014



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FCC ID: W8U40FS4610R

#### CERTIFICATION TEST REPORT

**Applicant** TTE Technology Inc.

Manufacturer TCL King Electrical Appliances (Huizhou) Co., Ltd.

LCD TV **EUT Description** 

FCC ID W8U40FS4610R

(A) Model No. &

**Brand Name** 

<b>Brand Name</b>	Model Number
TCL	40FS4600R; 40FS4610R; 40FS4620R;
	40FS4630R; 40FS4640R; 40FS4650R;
	40FS4660R; 40FS4670R; 40FS4680R;
	40FS4690R

(B) Power Supply AC 120V/60Hz (C) Test Voltage AC 120V/60Hz

Measurement Standard Used:

FCC Rules and Regulations Part 15 Subpart B Class B 2013

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) 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 conducted and radiated emissions. The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed of full responsibility for the accuracy and completeness of these tests. This report contains data that are not covered by the NVLAP accreditation.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This Report is made under FCC Part 2.1075. No modifications were required during testing to bring this product into compliance.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

The 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.

Date of Test: Jun.03~04, 2014 Report of date: Jun.26, 2014

Prepared by: Reviewed by:

Lisa Liang / Assistant Sun Zeng / Assistant Manager

> 信華科技 (深圳) 有限公司 Audix Technology (Shenzhen) Co., Ltd. EMC部門報告專用章

Stamp only for EMC Dept. Report

Signature:

David Jin / Manager

Approved & Authorized Signer:



FCC ID: W8U40FS4610R Page 1-1

# 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.

EMISSION						
<b>Description of Test Item</b>	Standard	Results	Remarks			
Power Line Conducted Emission Test	FCC Part 15: 2013 ANSI C63.4: 2009	PASS	Meets Class B Limit Minimum passing margin is 11.39dB at 0.57300MHz			
Radiated Emission Test (30-1000MHz)	FCC Part 15: 2013 ANSI C63.4: 2009	PASS	Meets Class B Limit Minimum passing margin is 4.21dB at 891.36MHz			
Radiated Emission Test (1-5GHz)	FCC Part 15: 2013 ANSI C63.4: 2009	PASS	Meets Class B Limit Minimum passing margin is 11.07dB at 2220.52MHz			



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### 2. GENERAL INFORMATION

2.1.Description of Device (EUT)

Description : LCD TV

Model Number& Brand Name

_		
	Brand Name	Model Number
	TO	40FS4600R; 40FS4610R; 40FS4620R;
		40FS4630R; 40FS4640R; 40FS4650R;
		40FS4660R; 40FS4670R; 40FS4680R;
		40FS4690R

All  $40^{\circ}$  models are identical except for different appearance (only for color, silk-screen and decorative parts) and model number for trading

purpose.

FCC ID : W8U40FS4610R

:

Test Mode : 40FS4610R

Remote : Manufacturer: TCL

Applicant : TTE Technology Inc.

555 S. Promenade Ave., Suite 103, Corona, CA 92879,

U.S.A.

Manufacturer : TCL King Electrical Appliances (Huizhou) Co., Ltd.

Section 19, Zhongkai Development Zone for New and High Level

TECH Industries, Huizhou, Guangdong 516006, P.R. China.

FREQUENCIES USED AND GENERATED WITHIN DEVICE					
LVDS (HD) 75MHZ					
LVDS (FHD)	75MHZ				
IF	6MHz				
DDR	736MHz				

Internal photos of the EUT shows AC sockets line, FCC WIRE line, debug with the countermeasure scheme, these countermeasures and EUT production together.

Date of Test : Jun.03~04, 2014

Date of Receipt : Jun.02, 2014

Sample Type : Prototype production



FCC ID: W8U40FS4610R Page 2-2

# 2.2.Tested Supporting System Details

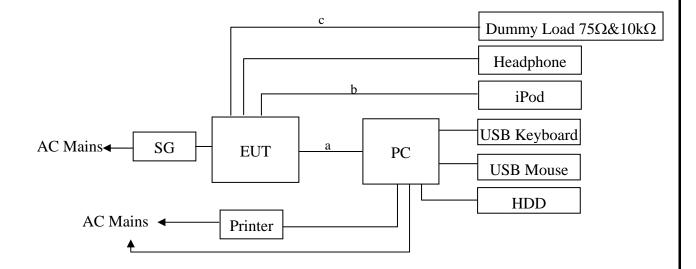
	Description	ACS No.	Manufacturer	Model	Serial Number	Approved type		
1.	Personal	Test PC S	DELL	Vostro 470	2SP05W1	☑FCC DoC ☑BSMI ID:R33002		
	Computer	Power Cord: Unshie Display Card: HD34	· · · · · · · · · · · · · · · · · · ·					
2.	USB Keyboard	ACS-EMC- K04R	DELL	SK-8115	CN-ODJ313-71616-6 BB-049J	☑ FCC DoC ☑BSMI ID: T3A002		
		Data Cable: shielded	l, Undetachable, 2	2.0m				
		ACS-EMC-PT04	НР	C9079A	N/A	☑FCC DoC ☑BSMI ID: R33001		
3.								
4.	USB Mouse	ACS-EMC-M04R	DELL	M056UO	512024282	☑ FCC DoC ☑BSMI ID: R41108		
		Data Cable: shielded	l, Undetachable, 1	1.8m				
5.	Headphone	ACS-EMC-EP02	OVANN	OV880V	N/A	□FCC ID □BSMI ID		
	Пешфионе	Cable: Shielded, Undetachabled, 4.0m						
6.	iPod	ACS-EMC-IP01	APPLE	A1199	YM711H3LVQ5	☑FCC DoC ☑BSMI ID: R33057		
		Data Cable: Shielded	d, Detachabled, 1	.0m				
7.	HDD	ACS-EMC-HDD01	Terasys	F12-UF	A0100215-5390018	☑FCC DoC ☑BSMI ID: 4912A022		
	USB Cable: Shielded, Detachable, 1.8m							
	Power Cable: Unshielded, Detachable, 1.8m							

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2.3.Block diagram of connection between the EUT and simulators



a: HDMI\*3 Cable

b: USB Cable

c: AV In Cable

(EUT: LCD TV)



FCC ID:W8U40FS4610R Page 2-4

# 2.4. Test Facility

Site Description

Name of Firm : Audix Technology (Shenzhen) Co., Ltd.

No. 6, Ke Feng Rd., 52 Block, Shenzhen

Science & Industrial Park, Nantou, Shenzhen, Guangdong, China

3m Anechoic Chamber : Certificated by FCC, USA

Registration Number: 90454 Valid Date: Feb.22, 2015

3m & 10m Anechoic Chamber : Certificated by FCC, USA

Registration Number: 794232

Valid Date: Oct.31, 2015

EMC Lab. : Accredited by DAkkS, Germany

Registration No: D-PL-12151-01-00

Valid Date: Dec.15, 2016

: Accredited by NVLAP, USA

NVLAP Code: 200372-0 Valid Date: Mar.31, 2015

# 2.5. Measurement Uncertainty (95% confidence levels, k=2)

Test Item	Uncertainty		
Uncertainty for Conduction emission test in No. 1 Conduction	3.1 dB(150KHz to 30MHz)		
	3.22 dB(30~200MHz, Polarize: H)		
Uncertainty for Radiation Emission test	3.23 dB(30~200MHz, Polarize: V)		
in 3m chamber	3.49 dB(200M~1GHz, Polarize: H)		
	3.39 dB(200M~1GHz, Polarize: V)		
Uncertainty for Radiation Emission test in	4.97 dB(1~6GHz, Distance: 3m)		
3m chamber (1GHz-18GHz)	4.99 dB(6~18GHz, Distance: 3m)		
Uncertainty for test site temperature	3%		
and humidity	0.6℃		

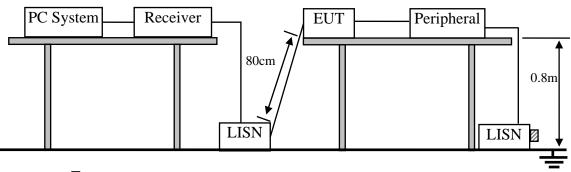


# 3. POWER LINE CONDUCTED EMISSION MEASUREMENT

# 3.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	1# Shielding Room	AUDIX	N/A	N/A	Apr.17,14	1 Year
2.	Test Receiver	Rohde & Schwarz	ESHS10	838693/001	Oct.31, 13	1 Year
3.	L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	100429	Jan.22, 14	1 Year
4.	L.I.S.N.#3	Kyoritsu	KNW-242C	8-1920-1	Apr. 28,14	1 Year
5.	Terminator	Hubersuhner	$50\Omega$	No. 1	Apr. 28,14	1 Year
6.	Terminator	Hubersuhner	50Ω	No. 2	Apr. 28,14	1 Year
7.	RF Cable	Hubersuhner	RG58	0100.6954.20#	Jan.22, 14	1 Year
8.	Coaxial Switch	Anritsu	MP59B	6200298346	Apr. 28,14	1 Year
9.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	101838	Jan.22, 14	1 Year
10.	Oscilloscope	Tektronix	TDS3052B	B026036	May.09, 14	1 Year
11.	MPEG2 Measurement Generator	ROHDE&SCHW ARZ	DVG	100319	Dec.11, 13	1 Year
12.	TV Transmitter	ROHDE&SCHW ARZ	SFQ	100521	Apr. 28,14	1 Year
13.	Signal Generator	HP	8648A	3625U00573	Apr. 28,14	1 Year
14.	Pattern Generator	Philips	PM5418	LO625020	Apr. 28,14	1 Year

# 3.2.Block Diagram of Test Setup



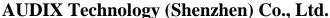
 $\square$  :50 $\Omega$  Terminator

### 3.3. Power Line Conducted Emission Test Limits

	Maximum RF Line Voltage			
Frequency	Quasi-Peak Level	Average Level		
	$dB(\mu V)$	$dB(\mu V)$		
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*		
500kHz ~ 5MHz	56	46		
5MHz ~ 30MHz	60	50		

Notes: 1. \* Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.





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### 3.4. Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

#### 3.4.1.LCD TV (EUT)

Model Number : 40FS4610R

Serial Number : N/A

3.4.2. Support Equipment: As Tested Supporting System Detail, in Section 2.2.

### 3.5. Operating Condition of EUT

- 3.5.1. Setup the EUT and simulator as shown as Section 3.2.
- 3.5.2. Turn on the power of all equipment.
- 3.5.3. PC system ran the Self-test program "EMC Test. exe" by windows XP and sent "H" Character to LCD TV (EUT), the Screen of EUT displayed and filled with "H" pattern, use white letters on a black ground, set the contrast control to maximum, set the brightness control to maximum and measure it.
- 3.5.4. The other peripheral devices were driven and operated in turn during all testing.

### 3.6.Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). This provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.# 3). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4: 2009 on conducted Emission test.

The bandwidth of test receiver (R&S TEST RECEIVER ESHS10) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked. The test result are reported on Section 3.7.

### 3.7. Conducted Emission at Mains Terminals Test Results

**PASS.** (All emissions not reported below are too low against the prescribed limits.)

The EUT with the following test modes were tested and selected to read Q.P values and average values, all the test results are listed in next pages.



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EUT: LCD TV Model No.: 40FS4610R

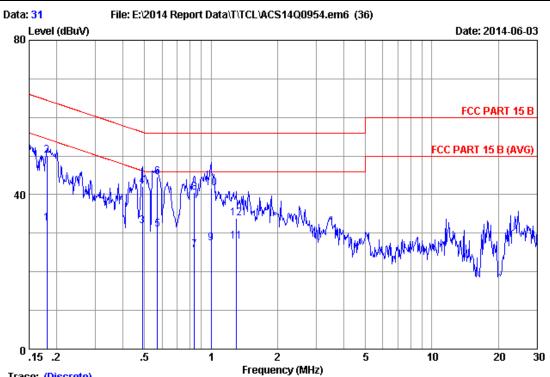
Test Date: Jun.03, 2014 Temperature: 25.5°C Humidity: 52%

The details of test modes are as follows:

No.	Test Mode	Input Port	Resolution &	Reference Test Data No.		
NO.	Test Mode	Input Fort	Frequency	Line	Neutral	
1. 💥		HDMI 1	1920*1080/60Hz	#31	#32	
2.	PC Mode	HDMI 2	1920*1080/60Hz	#34	#33	
3.		HDMI 3	1920*1080/60Hz	#35	#36	

(\* Worst test mode)





Site no :1#conduction Data No :31

Dis./Ant. :2014 ESH2-Z5 LINE Limit :FCC PART 15 B

Env./Ins. :25.5\*C/52% Engineer :Alan\_Chen

:LCD TV M/N:40FS4610R EUT

Power Rating :AC 120V/60Hz

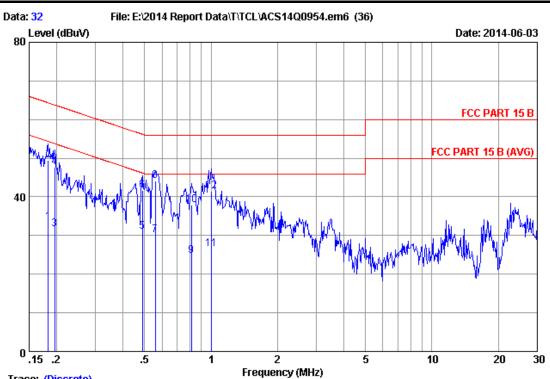
Test Mode :Running "H" Pattern And 1 KHz Playing

HDMI 1:1920\*1080@60Hz

		LISN	Cable		Emissior	ı		
No	Freq	Factor	Loss	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dB)	
1	0.18100	0.13	9.88	22.44	32.45	54.44	21.99	Average
2	0.18100	0.13	9.88	40.06	50.07	64.44	14.37	QP
3	0.48800	0.15	9.88	21.83	31.86	46.20	14.34	Average
4	0.48800	0.15	9.88	32.13	42.16	56.20	14.04	QP
5	0.57300	0.15	9.88	21.02	31.05	46.00	14.95	Average
6	0.57300	0.15	9.88	34.58	44.61	56.00	11.39	QP
7	0.83900	0.17	9.89	15.57	25.63	46.00	20.37	Average
8	0.83900	0.17	9.89	30.48	40.54	56.00	15.46	QP
9	0.99900	0.17	9.89	17.26	27.32	46.00	18.68	Average
10	0.99900	0.17	9.89	31.54	41.60	56.00	14.40	QP
11	1.302	0.18	9.90	17.72	27.80	46.00	18.20	Average
12	1.302	0.18	9.90	23.70	33.78	56.00	22.22	QP

Remarks: 1. Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit) +Reading.





Site no :1#conduction Data No :32

Dis./Ant. :2014 ESH2-Z5 NEUTRAL

:FCC PART 15 B Limit

Env./Ins. :25.5\*C/52% Engineer :Alan\_Chen

:LCD TV M/N:40FS4610R EUT

Power Rating :AC 120V/60Hz

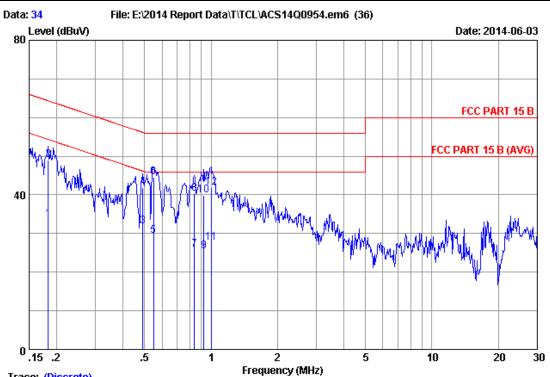
:Running "H" Pattern And 1 KHz Playing Test Mode

HDMI 1:1920\*1080@60Hz

		LISN	Cable		Emission	1		
No	Freq	Factor	Loss	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dB)	
1	0.18300	0.13	9.88	23.39	33.40	54.35	20.95	Average
2	0.18300	0.13	9.88	39.56	49.57	64.35	14.78	QP
3	0.19600	0.13	9.88	21.62	31.63	53.78	22.15	Average
4	0.19600	0.13	9.88	37.67	47.68	63.78	16.10	QP
5	0.48800	0.15	9.88	21.05	31.08	46.20	15.12	Average
6	0.48800	0.15	9.88	31.62	41.65	56.20	14.55	QP
7	0.55800	0.15	9.88	19.98	30.01	46.00	15.99	Average
8	0.55800	0.15	9.88	34.02	44.05	56.00	11.95	QP
9	0.81300	0.16	9.89	14.58	24.63	46.00	21.37	Average
10	0.81300	0.16	9.89	27.94	37.99	56.00	18.01	QP
11	0.99900	0.17	9.89	16.41	26.47	46.00	19.53	Average
12	0.99900	0.17	9.89	31.34	41.40	56.00	14.60	QP

Remarks: 1. Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)





Site no :1#conduction Data No :34

Dis./Ant. :2014 ESH2-Z5 LINE :FCC PART 15 B Limit

Env./Ins. :25.5\*C/52% Engineer :Alan\_Chen

:LCD TV M/N:40FS4610R EUT

Power Rating :AC 120V/60Hz

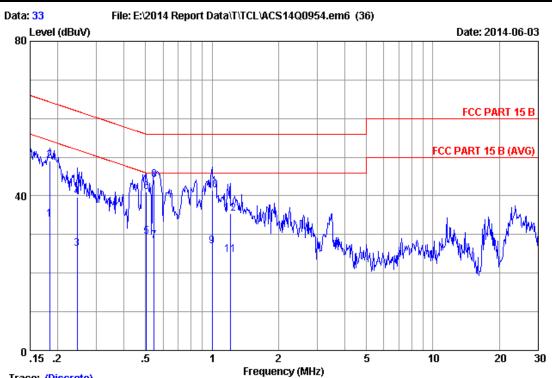
:Running "H" Pattern And 1 KHz Playing Test Mode

HDMI 2:1920\*1080@60Hz

N-	E	LISN	Cable	Deeding	Emission	_	V-v-viv	Dawasla
No	Freq	Factor	Loss	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dB)	
1	0.18300	0.13	9.88	23.73	33.74	54.35	20.61	A
_								Average
2	0.18300	0.13	9.88	39.04	49.05	64.35	15.30	QP
3	0.49100	0.15	9.88	21.76	31.79	46.15	14.36	Average
4	0.49100	0.15	9.88	31.94	41.97	56.15	14.18	QP
5	0.54900	0.15	9.88	19.29	29.32	46.00	16.68	Average
6	0.54900	0.15	9.88	34.57	44.60	56.00	11.40	QP
7	0.83900	0.17	9.89	15.85	25.91	46.00	20.09	Average
8	0.83900	0.17	9.89	30.26	40.32	56.00	15.68	QP
9	0.92800	0.17	9.89	15.43	25.49	46.00	20.51	Average
10	0.92800	0.17	9.89	29.89	39.95	56.00	16.05	QP
11	0.99900	0.17	9.89	17.53	27.59	46.00	18.41	Average
12	0.99900	0.17	9.89	31.84	41.90	56.00	14.10	QP

Remarks: 1. Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)





Site no :1#conduction Data No :33

Dis./Ant. :2014 ESH2-Z5 NEUTRAL

:FCC PART 15 B Limit

Env./Ins. :25.5\*C/52% Engineer :Alan\_Chen

:LCD TV M/N:40FS4610R EUT

Power Rating :AC 120V/60Hz

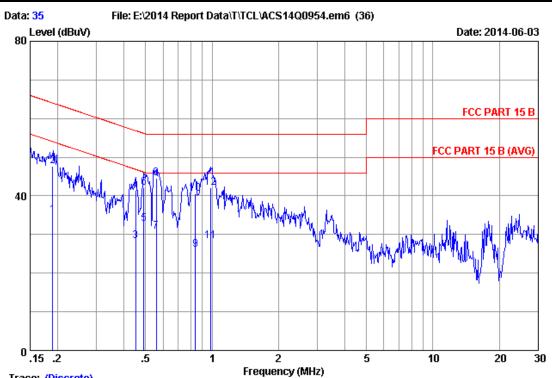
:Running "H" Pattern And 1 KHz Playing Test Mode

HDMI 2:1920\*1080@60Hz

No	Freq	LISN Factor	Cable Loss	Reading	Emissior Level	n Limits	Margin	Remark
	(MHz)	(dB)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dB)	
1	0.18400	0.13	9.88	23.87	33.88	54.30	20.42	Average
2	0.18400	0.13	9.88	38.93	48.94	64.30	15.36	QP
3	0.24500	0.13	9.88	16.34	26.35	51.92	25.57	Average
4	0.24500	0.13	9.88	29.72	39.73	61.92	22.19	QP
5	0.50400	0.15	9.88	19.45	29.48	46.00	16.52	Average
6	0.50400	0.15	9.88	30.99	41.02	56.00	14.98	QP
7	0.54600	0.15	9.88	18.27	28.30	46.00	17.70	Average
8	0.54600	0.15	9.88	34.01	44.04	56.00	11.96	QP
9	0.99900	0.17	9.89	16.81	26.87	46.00	19.13	Average
10	0.99900	0.17	9.89	31.46	41.52	56.00	14.48	QP
11	1.209	0.18	9.90	14.57	24.65	46.00	21.35	Average
12	1.209	0.18	9.90	25.41	35.49	56.00	20.51	QP

Remarks: 1. Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)





Site no :1#conduction Data No :35

Dis./Ant. :2014 ESH2-Z5 LINE :FCC PART 15 B Limit

Env./Ins. :25.5\*C/52% Engineer :Alan\_Chen

:LCD TV M/N:40FS4610R EUT

Power Rating :AC 120V/60Hz

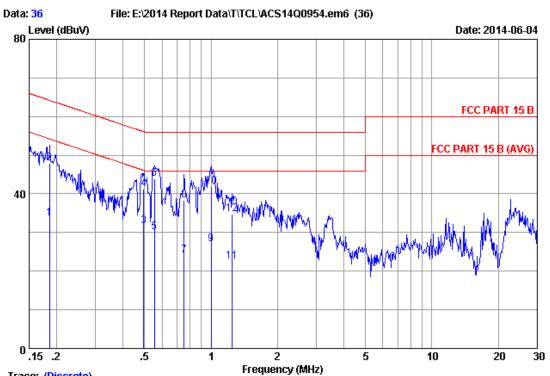
:Running "H" Pattern And 1 KHz Playing Test Mode

HDMI 3:1920\*1080@60Hz

		LISN	Cable		Emissior	ı		
No	Freq	Factor	Loss	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dB)	
1	0.19000	0.13	9.88	24.90	34.91	54.04	19.13	Average
2	0.19000	0.13	9.88	37.74	47.75	64.04	16.29	QP
3	0.45100	0.15	9.88	18.32	28.35	46.86	18.51	Average
4	0.45100	0.15	9.88	31.31	41.34	56.86	15.52	QP
5	0.49100	0.15	9.88	22.79	32.82	46.15	13.33	Average
6	0.49100	0.15	9.88	32.07	42.10	56.15	14.05	QP
7	0.55800	0.15	9.88	20.62	30.65	46.00	15.35	Average
8	0.55800	0.15	9.88	34.46	44.49	56.00	11.51	QP
9	0.83900	0.17	9.89	16.03	26.09	46.00	19.91	Average
10	0.83900	0.17	9.89	30.52	40.58	56.00	15.42	QP
11	0.98300	0.17	9.89	18.24	28.30	46.00	17.70	Average
12	0.98300	0.17	9.89	32.03	42.09	56.00	13.91	QP

Remarks: 1. Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)





Site no :1#conduction Data No :36

Dis./Ant. :2014 ESH2-Z5 NEUTRAL

:FCC PART 15 B Limit

Env./Ins. :25.5\*C/52% Engineer :Alan\_Chen

:LCD TV M/N:40FS4610R EUT

Power Rating :AC 120V/60Hz

:Running "H" Pattern And 1 KHz Playing Test Mode

HDMI 3:1920\*1080@60Hz

		LISN	Cable		Emissior	ı		
No	Freq	Factor	Loss	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dB)	
1	0.18600	0.13	9.88	23.74	33.75	54.21	20.46	Average
2	0.18600	0.13	9.88	37.82	47.83	64.21	16.38	QP
3	0.49600	0.15	9.88	21.58	31.61	46.07	14.46	Average
4	0.49600	0.15	9.88	31.24	41.27	56.07	14.80	QP
5	0.55500	0.15	9.88	20.12	30.15	46.00	15.85	Average
6	0.55500	0.15	9.88	33.97	44.00	56.00	12.00	QP
7	0.75400	0.15	9.89	14.06	24.10	46.00	21.90	Average
8	0.75400	0.15	9.89	28.23	38.27	56.00	17.73	QP
9	0.99900	0.17	9.89	16.81	26.87	46.00	19.13	Average
10	0.99900	0.17	9.89	31.75	41.81	56.00	14.19	QP
11	1.248	0.18	9.90	12.36	22.44	46.00	23.56	Average
12	1.248	0.18	9.90	24.78	34.86	56.00	21.14	QP

Remarks: 1. Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)



# 4. RADIATED EMISSION MEASUREMENT

# 4.1.Test Equipment

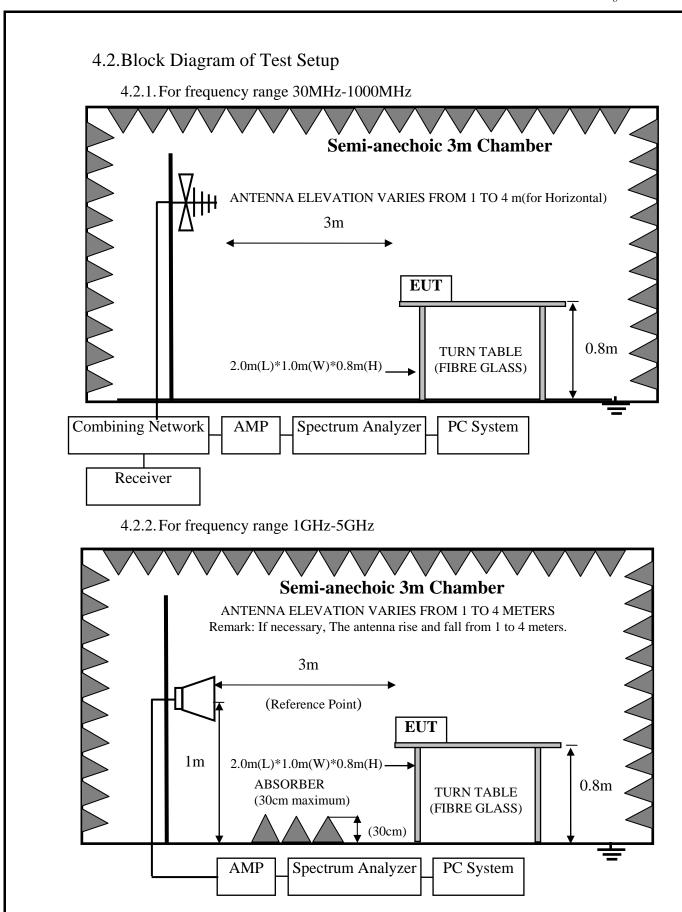
# 4.1.1. For frequency range 30MHz~1000MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3#Chamber	AUDIX	N/A	N/A	Nov.24, 13	1 Year
2.	EMI Spectrum	Agilent	E4407B	MY41440292	Apr. 28,14	1 Year
3.	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	Apr. 28,14	1 Year
4.	Amplifier	HP	8447D	2648A04738	Apr. 28,14	1 Year
5.	Bilog Antenna	Schaffner	CBL6111C	2598	Apr. 08,14	1 Year
6.	RF Cable	MIYAZAKI	CFD400-NL	3# Chamber No.1	Apr. 28,14	1 Year
7.	Coaxial Switch	Anritsu	MP59B	6200313662	Apr. 28,14	1 Year
8.	MPEG2 Measurement Generator	ROHDE&SCHWA RZ	DVG	100319	Dec.11, 13	1 Year
9.	TV Transmitter	ROHDE&SCHWA RZ	SFQ	100521	Apr. 28,14	1 Year
10.	Signal Generator	HP	8648A	3625U00573	Apr. 28,14	1 Year
11.	Pattern Generator	Philips	PM5418	LO625020	Apr. 28,14	1 Year

# 4.1.2. For frequency range 1GHz~5GHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	3#Chamber	AUDIX	N/A	N/A	Nov.03, 13	1 Year
2	Spectrum Analyzer	Agilent	E4407B	MY41440292	Apr. 28,14	1 Year
3	Horn Antenna	EMCO	3115	9607-4877	Aug.27, 13	1 Year
4	Amplifier	Agilent	8449B	3008A00863	Apr. 28,14	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX106	77977/6	Apr. 28,14	1 Year
6	RF Cable	Hubersuhner	SUCOFLEX106	28616/2	Apr. 28,14	1 Year
7	MPEG2 Measurement Generator	ROHDE&SC HWARZ	DVG	100319	Dec.11, 13	1 Year
8	TV Transmitter	ROHDE&SC HWARZ	SFQ	100521	Apr. 28,14	1 Year
9	Pattern Generator	Philips	PM5418	LO625020	Apr. 28,14	1 Year







### 4.3. Radiated Emission Limit

Frequency	Distance	Field Strengths Limits
MHz	(Meters)	$dB(\mu V)/m$
30 ~ 88	3	40.0
88 ~ 216	3	43.5
216 ~ 960	3	46.0
960 ~ 1000	3	54.0
Above 1000	3	74(Peak)54(Average)

Remark: (1) Emission level = Antenna Factor + Cable Loss + Reading Emission level = Antenna Factor - Amp Factor + Cable Loss + Reading (above 1000MHz)

- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

### 4.4.EUT Configuration on Test

The configurations of EUT are listed in Section 3.4

### 4.5. Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.5. except the test set up replaced by Section 4.2.

### 4.6.Test Procedure

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4: 2009 on Radiated Emission test.

The bandwidth of the EMI test receiver (R&S ESVS10) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's RBW is set at 1MHz and VBW is set at 3MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz.



### 4.7. Radiated Emission Test Results

**PASS.** (All emissions not reported below are too low against the prescribed limits.)

EUT: LCD TV Model No.: 40FS4610R

### For frequency range 30MHz~1000MHz

The EUT with the following test modes were tested and selected to read Q.P values, all the test results are listed in next pages.

Test Date: Jun.03, 2014 Temperature: 22.1°C Humidity: 48%

The details of test modes are as follows:

No.	Test Mode	T (D)	Resolution &	Reference Test Data No.		
		Input Port	Frequency	Horizontal	Vertical	
1.		HDMI 1	1920*1080/60Hz	#32	#31	
2.	PC Mode	HDMI 2	1920*1080/60Hz	#33	#34	
3. ※		HDMI 3	1920*1080/60Hz	#35	#36	

<sup>(\*</sup> Worst test mode)

### For frequency range 1GHz~5GHz

The EUT with below test mode were measured within Anechoic Chamber and the test results listed in next pages

Note: For all the emissions above 1GHz, the peak measured level comply with peak limit, so the average level were deemed to comply with average limit.

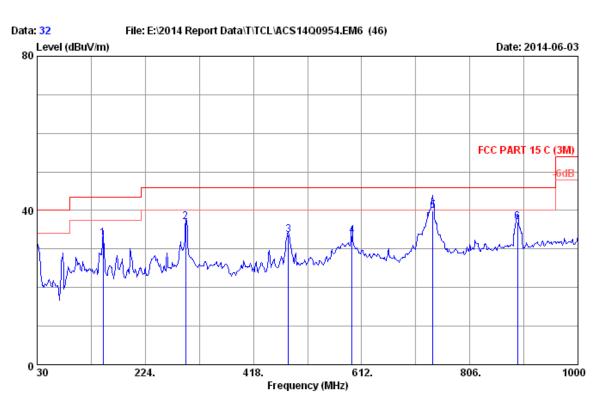
Test Date: Jun.03, 2014 Temperature: 22.1°C Humidity: 48%

No.	T ( ) ( )		Resolution &	Reference Test Data No.		
	Test Mode	Input Port	Frequency	Horizontal	Vertical	
1.		HDMI 1	1920*1080/60Hz	#44	#43	
2. 💥	PC Mode	HDMI 2	1920*1080/60Hz	#45	#46	
3.		HDMI 3	1920*1080/60Hz	#47	#48	

(\* Worst test mode)



### 30MHz~1000MHz



Site no. : 3m Chamber Data no. : 32

Dis. / Ant. : 3m 2014 CBL6111C 2598 Ant. pol. : HORIZONTAL

Limit : FCC PART 15 C (3M)

Env. / Ins. : 22.1\*C/48% Engineer : Even\_Deng

EUT : LCD TV M/N:40FS4610R

Power rating : AC 120V/60Hz

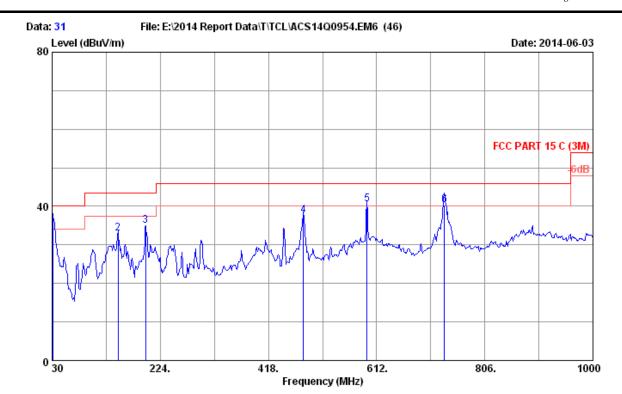
Test Mode : Running"H"Pattern And 1KHz Playing

HDMI1:1920\*1080@60Hz

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	148.34	11.57	1.53	19.62	32.72	43.50	10.78	QP
2	296.75	13.70	2.26	20.95	36.91	46.00	9.09	QP
3	481.05	17.92	3.15	12.47	33.54	46.00	12.46	QP
4	594.54	19.60	3.68	10.22	33.50	46.00	12.50	QP
5	740.04	21.80	4.27	13.77	39.84	46.00	6.16	QP
6	891.36	22.73	4.84	9.45	37.02	46.00	8.98	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

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Site no. : 3m Chamber Data no. : 31
Dis. / Ant. : 3m 2014 CBL6111C 2598 Ant. pol. : VERTICAL

Limit : FCC PART 15 C (3M)

Env. / Ins. : 22.1\*C/48% Engineer : Even\_Deng

EUT : LCD TV M/N:40FS4610R

Power rating : AC 120V/60Hz

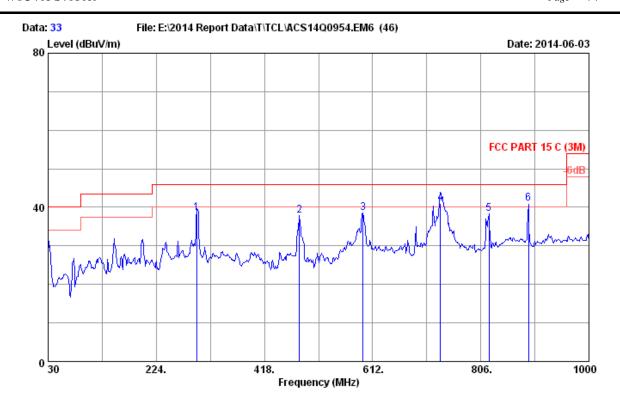
Test Mode : Running"H"Pattern And 1KHz Playing

HDMI1:1920\*1080@60Hz

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	31.94	19.91	0.62	14.95	35.48	40.00	4.52	QP
2	148.34	11.57	1.53	19.84	32.94	43.50	10.56	QP
3	197.81	9.99	1.83	23.24	35.06	43.50	8.44	QP
4	481.05	17.92	3.15	16.52	37.59	46.00	8.41	QP
5	594.54	19.60	3.68	17.17	40.45	46.00	5.55	QP
6	733.25	21.80	4.25	14.37	40.42	46.00	5.58	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

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Site no. : 3m Chamber Data no. : 33

Dis. / Ant. : 3m 2014 CBL6111C 2598 Ant. pol. : HORIZONTAL

Limit : FCC PART 15 C (3M)

Env. / Ins. : 22.1\*C/48% Engineer : Even\_Deng

EUT : LCD TV M/N:40FS4610R

Power rating : AC 120V/60Hz

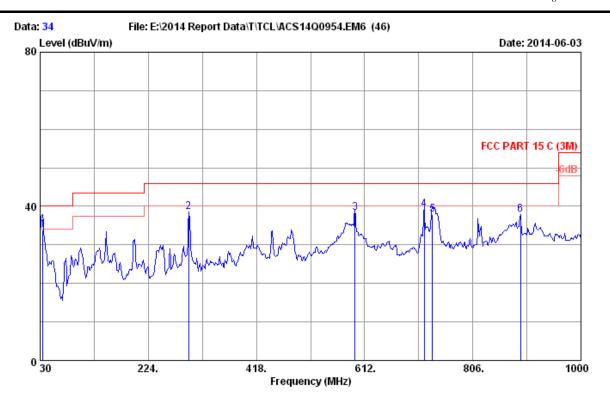
Test Mode : Running"H"Pattern And 1KHz Playing

HDMI2:1920\*1080@60Hz

No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	296.75	13.70	2.26	22.63	38.59	46.00	7.41	QP
2	481.05	17.92	3.15	16.80	37.87	46.00	8.13	QP
3	594.54	19.60	3.68	15.32	38.60	46.00	7.40	QP
4	733.25	21.80	4.25	14.85	40.90	46.00	5.10	QP
5	820.55	22.71	4.56	11.14	38.41	46.00	7.59	QP
6	891.36	22.73	4.84	13.33	40.90	46.00	5.10	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

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Site no. : 3m Chamber Data no. : 34
Dis. / Ant. : 3m 2014 CBL6111C 2598 Ant. pol. : VERTICAL

Limit : FCC PART 15 C (3M)

Env. / Ins. : 22.1\*C/48% Engineer : Even\_Deng

EUT : LCD TV M/N:40FS4610R

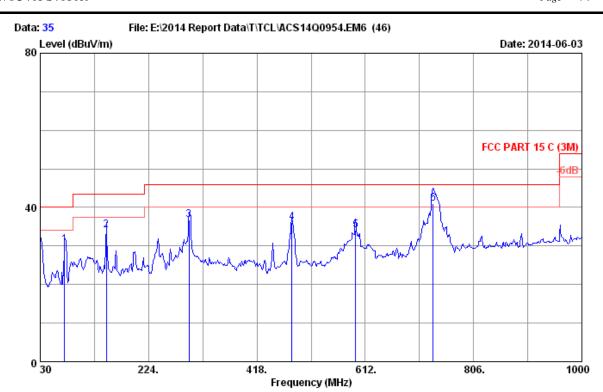
Power rating : AC 120V/60Hz

Test Mode : Running"H"Pattern And 1KHz Playing

HDMI2:1920\*1080@60Hz

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	34.85	18.25	0.65	15.03	33.93	40.00	6.07	QP
2	296.75	13.70	2.26	22.67	38.63	46.00	7.37	QP
3	594.54	19.60	3.68	15.02	38.30	46.00	7.70	QP
4	718.70	21.30	4.19	13.64	39.13	46.00	6.87	QP
5	733.25	21.80	4.25	11.85	37.90	46.00	8.10	QP
6	891.36	22.73	4.84	10.42	37.99	46.00	8.01	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.



Site no. : 3m Chamber Data no. : 35

Dis. / Ant. : 3m 2014 CBL6111C 2598 Ant. pol. : HORIZONTAL

Limit : FCC PART 15 C (3M)

Env. / Ins. : 22.1\*C/48% Engineer : Even\_Deng

EUT : LCD TV M/N:40FS4610R

Power rating: AC 120V/60Hz

Test Mode : Running"H"Pattern And 1KHz Playing

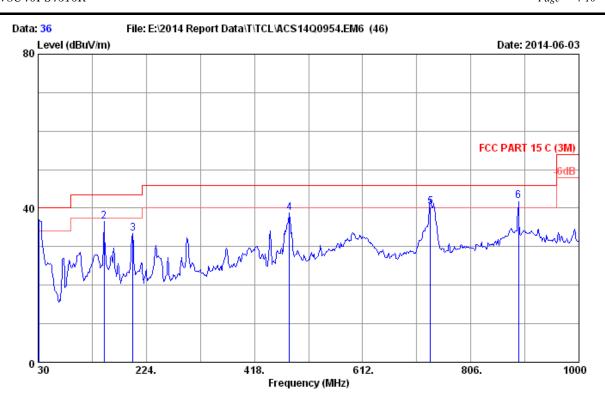
HDMI3:1920\*1080@60Hz

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	73.65	7.23	0.96	22.16	30.35	40.00	9.65	QP
2	148.34	11.57	1.53	21.05	34.15	43.50	9.35	QP
3	296.75	13.70	2.26	20.73	36.69	46.00	9.31	QP
4	481.05	17.92	3.15	15.13	36.20	46.00	9.80	QP
5	594.54	19.60	3.68	10.76	34.04	46.00	11.96	QP
6	733.25	21.80	4.25	15.06	41.11	46.00	4.89	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

- 2. The emission levels that are 20dB below the official limit are not reported.
- 3. The worst emission was detected at 733.25 MHz with corrected signal level of 41.11 dB $\mu$ V/m (Limit is 46.00 dB $\mu$ V/m) when the antenna was at horizontal polarization and at 1.0m high and the turn table was at 75°.
- 4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

FCC ID: W8U40FS4610R Page 4-10



Site no. : 3m Chamber Data no. : 36
Dis. / Ant. : 3m 2014 CBL6111C 2598 Ant. pol. : VERTICAL

Limit : FCC PART 15 C (3M)

Env. / Ins. : 22.1\*C/48% Engineer : Even\_Deng

EUT : LCD TV M/N:40FS4610R

Power rating : AC 120V/60Hz

Test Mode : Running"H"Pattern And 1KHz Playing

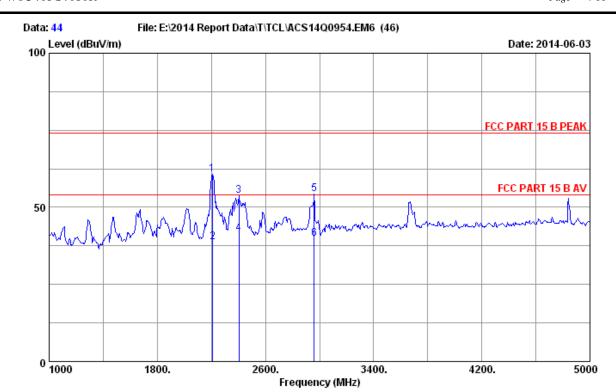
HDMI3:1920\*1080@60Hz

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	32.30	19.70	0.62	14.00	34.32	40.00	5.68	QP
2	148.34	11.57	1.53	23.35	36.45	43.50	7.05	QP
3	199.75	10.26	1.84	21.26	33.36	43.50	10.14	QP
4	481.05	17.92	3.15	17.81	38.88	46.00	7.12	QP
5	733.25	21.80	4.25	14.32	40.37	46.00	5.63	QP
6	891.36	22.73	4.84	14.22	41.79	46.00	4.21	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

- 2. The emission levels that are 20dB below the official limit are not reported.
- 3. The worst emission was detected at 891.36 MHz with corrected signal level of 41.79 dB $\mu$ V/m (Limit is 46.00 dB $\mu$ V/m) when the antenna was at vertical polarization and at 1.0m high and the turn table was at 235°.
- 4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

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Site no. : 3m Chamber Data no. : 44

Dis. / Ant. : 3m 2013 3115 (4877) Ant. pol. : HORIZONTAL

Limit : FCC PART 15 B PEAK Env. / Ins. : 22.1\*C/48% Engineer : Even\_Deng

EUT : LCD TV M/N:40FS4610R

Power rating : AC 120V/60Hz

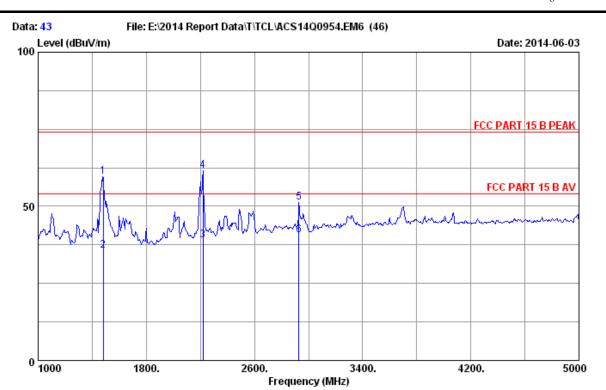
Test Mode : Running"H"Pattern And 1KHz Playing

HDMI1:1920\*1080@60Hz

N	o. Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2208.23	26.68	3.43	34.90	65.47	60.68	74.00	13.32	Peak
2	2208.62	26.68	3.43	34.90	43.62	38.83	54.00	15.17	Average
3	2404.17	27.23	3.46	34.85	57.88	53.72	74.00	20.28	Peak
4	2404.95	27.23	3.46	34.85	45.59	41.43	54.00	12.57	Average
5	2960.35	28.79	3.66	34.89	56.67	54.23	74.00	19.77	Peak
6	2960.62	28.79	3.66	34.89	42.18	39.74	54.00	14.26	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.

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Site no. : 3m Chamber Data no. : 43 Dis. / Ant. : 3m 2013 3115 (4877) Ant. pol. : VERTICAL

Limit : FCC PART 15 B PEAK Env. / Ins. : 22.1\*C/48% Engineer : Even\_Deng

EUT : LCD TV M/N:40FS4610R

Power rating : AC 120V/60Hz

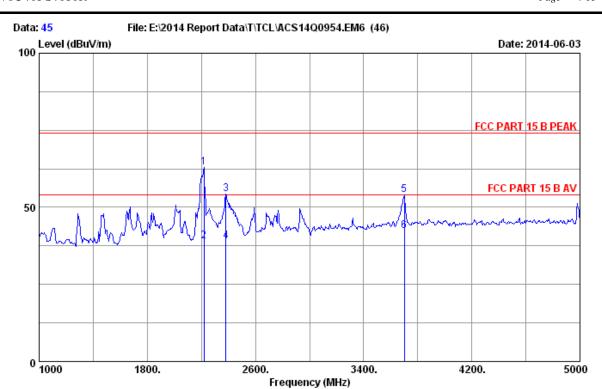
Test Mode : Running"H"Pattern And 1KHz Playing

HDMI1:1920\*1080@60Hz

_	No	. Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Amp factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	l Limits (dBuV/m)	Margin (dB)	Remark
	1	1480.22	25.51	2.21	35.28	67.30	59.74	74.00	14.26	Peak
	2	1480.62	25.51	2.21	35.28	43.28	35.72	54.00	18.28	Average
	3	2220.43	26.72	3.43	34.90	43.62	38.87	54.00	15.13	Average
	4	2220.62	26.72	3.43	34.90	66.28	61.53	74.00	12.47	Peak
	5	2928.14	28.70	3.65	34.89	53.71	51.17	74.00	22.83	Peak
	6	2928.83	28.70	3.65	34.89	43.15	40.61	54.00	13.39	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.

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Site no. : 3m Chamber Data no. : 45

Dis. / Ant. : 3m 2013 3115 (4877) Ant. pol. : HORIZONTAL

Limit : FCC PART 15 B PEAK Env. / Ins. : 22.1\*C/48% Engineer : Even\_Deng

EUT : LCD TV M/N:40FS4610R

Power rating : AC 120V/60Hz

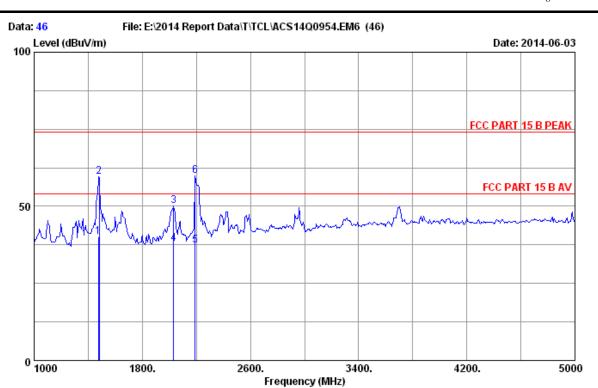
Test Mode : Running"H"Pattern And 1KHz Playing

HDMI2:1920\*1080@60Hz

No	. Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Amp factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2220.52	26.72	3.43	34.90	67.68	62.93	74.00	11.07	Peak
2	2220.62	26.72	3.43	34.90	43.62	38.87	54.00	15.13	Average
3	2380.22	27.16	3.45	34.85	58.45	54.21	74.00	19.79	Peak
4	2380.66	27.17	3.45	34.85	43.25	39.02	54.00	14.98	Average
5	3700.16	31.38	4.25	34.57	52.99	54.05	74.00	19.95	Peak
6	3700.95	31.38	4.26	34.57	41.29	42.36	54.00	11.64	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.

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Site no. : 3m Chamber Data no. : 46 Dis. / Ant. : 3m 2013 3115 (4877) Ant. pol. : VERTICAL

Limit : FCC PART 15 B PEAK Env. / Ins. : 22.1\*C/48%

Engineer : Even\_Deng

EUT : LCD TV M/N:40FS4610R

Power rating : AC 120V/60Hz

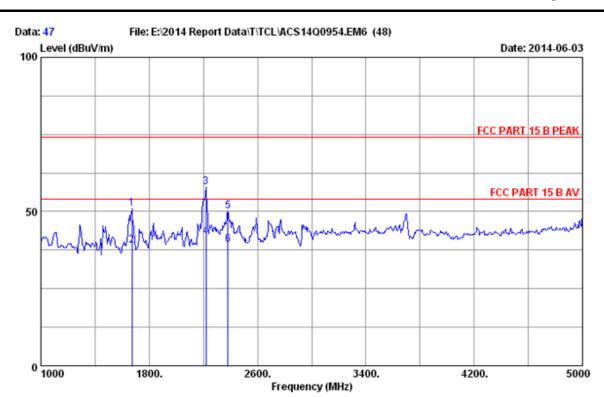
Test Mode : Running"H"Pattern And 1KHz Playing

HDMI2:1920\*1080@60Hz

No	. Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Amp factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1476.03	25.49	2.21	35.29	47.75	40.16	54.00	13.84	Average
2	1480.36	25.51	2.21	35.28	67.22	59.66	74.00	14.34	Peak
3	2032.12	26.19	3.40	34.96	55.46	50.09	74.00	23.91	Peak
4	2032.96	26.19	3.41	34.96	43.29	37.93	54.00	16.07	Average
5	2192.33	26.64	3.43	34.91	42.18	37.34	54.00	16.66	Average
6	2192.37	26.64	3.43	34.91	64.74	59.90	74.00	14.10	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.





Site no. : 3m Chamber Data no. : 47

Dis. / Ant. : 3m 2013 3115 (4877) Ant. pol. : HORIZONTAL

Limit : FCC PART 15 B PEAK

Env. / Ins. : 22.1\*C/48% Engineer : Even\_Deng

EUT : LCD TV M/N:40FS4610R

Power rating : AC 120V/60Hz

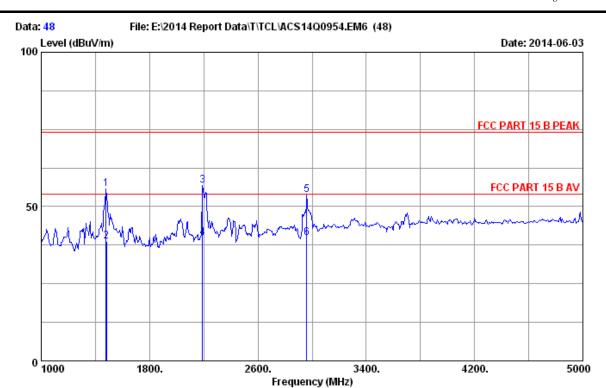
Test Mode : Running"H"Pattern And 1KHz Playing

HDMI3:1920\*1080@60Hz

		Ant.	Cable	Amp		Emission			
No	. Freq. (MHz)	Factor (dB/m)	Loss (dB)	factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1672.00	25.77	2.67	35.15	57.76	51.05	74.00	22.95	Peak
2	1672.31	25.77	2.67	35.15	45.79	39.08	54.00	14.92	Average
3	2220.00	26.72	3.43	34.90	62.68	57.93	74.00	16.07	Peak
4	2220.15	26.72	3.43	34.90	46.67	41.92	54.00	12.08	Average
5	2380.00	27.16	3.45	34.85	54.45	50.21	74.00	23.79	Peak
6	2380.18	27.16	3.45	34.85	43.46	39.22	54.00	14.78	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.

Page



Site no. : 3m Chamber Data no. : 48 Dis. / Ant. : 3m 2013 3115 (4877) Ant. pol. : VERTICAL

Limit

: FCC PART 15 B PEAK ns. : 22.1\*C/48% Env. / Ins. Engineer : Even Deng

EUT : LCD TV M/N:40FS4610R

Power rating : AC 120V/60Hz

: Running"H"Pattern And 1KHz Playing

HDMI3:1920\*1080@60Hz

No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Amp factor (dB)	Reading (dBuV)	Emissior Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1480.00	25.51	2.21	35.28	63.22	55.66	74.00	18.34	Peak
2	1480.26	25.51	2.21	35.28	46.28	38.72	54.00	15.28	Average
3	2192.00	26.64	3.43	34.91	61.74	56.90	74.00	17.10	Peak
4	2192.15	26.64	3.43	34.91	44.72	39.88	54.00	14.12	Average
5	2960.00	28.79	3.66	34.89	56.15	53.71	74.00	20.29	Peak
6	2960.31	28.79	3.66	34.89	42.17	39.73	54.00	14.27	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.

AUDIX Technology (Shenzhen) Co., Ltd. FCC ID: W8U40FS4610R Page 5-1 5. DEVIATION TO TEST SPECIFICATIONS [NONE]