

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

LED LCD TV

Model No.	Brand
LC-55N4000U	Sharp
LC-55N4000C	

FCC ID : W9HLCDF0080

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-F16062
Date of Test : Feb 29 - Mar 15, 2016
Date of Report : Mar 22, 2016

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TEST REPORT FOR FCC CERTIFICATE

Applicant : Hisense Electric Co., Ltd.
 Manufacturer : Hisense Electric Co., Ltd.
 Factory #1 : Hisense Electric Co., Ltd.
 Factory #2 : Tatung Mexico S.A. de C.V.
 Factory #3 : HISENSE ELECTRONICA MEXICO, S.A. DE C.V.
 EUT Description : LED LCD TV

Model No.	Brand	Power Supply
LC-55N4000U	Sharp	120V/60Hz
LC-55N4000C		

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 Feb 29 - Mar 15, 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.F16061, a Verification report.


Date of Test : Feb 29 - Mar 15, 2016 Date of Report : Mar 22, 2016

Producer :

Alan He
ALAN HE / Assistant

Review :

Byron Wu
BYRON WU / Deputy Assistant Manager

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

Signatory :

EMC BYRON KWO
Authorized Signature EMC BYRON 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:

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	:	<input checked="" type="checkbox"/> Production <input type="checkbox"/> Pre-product <input type="checkbox"/> Pro-type
Model No	:	LC-55N4000U, LC-55N4000C
Note #1	:	The above models are all the same except for model number.LC-55N4000U model is tested and recorded in the report.
Note #2	:	“+”represents any of the Arabic numeral.
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 : HD550DF-B52(020)
Tuner	:	Manufacturer : XuGuang Tech. Co., Ltd M/N : HFT-96S3/W11FJ4H\ROH
Max Resolution	:	1920*1080@60Hz
HDMI Cable*3 (Lab provide)	:	Shielded, Detachable, 1.50m
Power Cord	:	Unshielded, Detachable, 1.80m, 2C
USB Cable*1 (Lab provide)	:	Shielded, Detachable, 1.00m

Remark:

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

Side Port:

- (1) One HDMI 3 Port : Connected with DVD PLAYER #2
- (2) One Digital Audio Out Port : Connected with DVD PLAYER #2
- (3) One COMPONENT IN/AV IN Port : Connected with DVD PLAYER #2

Bottom Port:

- (4) One HDMI 2 Port : Connected with DVD PLAYER #1
- (5) One HDMI 1/ARC Port : Connected with PC
- (6) One Audio out Port : Connected with Earphone
- (7) One ANT/CABLE IN Port : Connected with ATSC SG / TV SG
- (8) One USB Port : Connected with Hard-Disk #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;

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 Printer

Manufacturer : HP
 Model Number : C8060A
 Serial Number : CN3J19564X
 Data Cable : Shielded, Detachable, 1.5m
 Certificate : CE/EMC, FCC DoC, VCCI, MIC, C-Tick, BSMI

2.2.5 Modem

Manufacturer : TP-LINK
Model Number : TM-EC5658V
Serial Number : 07123301053
Data Cable : Shielded, Detachable, 1.8m
Certificate : CCC

2.2.6 Earphone*2

Manufacturer : Edifier
Model Number : H210

2.2.7 TV Signal Generator

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

2.2.8 ATSC Signal Generator

Manufacturer : SENCORE
Model Number : ATSC997
Serial Number : 6790071

2.2.9 DVD PLAYER #1

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

2.2.10 DVD PLAYER #2

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

2.2.11 Hard Disk

Manufacturer : Tetasys
Model Number : F12
Serial Number : A010022-4860010X
Data Cable : Shielded, Undetachable, 1.8m.
Certificate : CE, FCC DoC

2.3 Description of Test Facility

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

2.4 Measurement Uncertainty

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

3 CONDUCTED EMISSION TEST

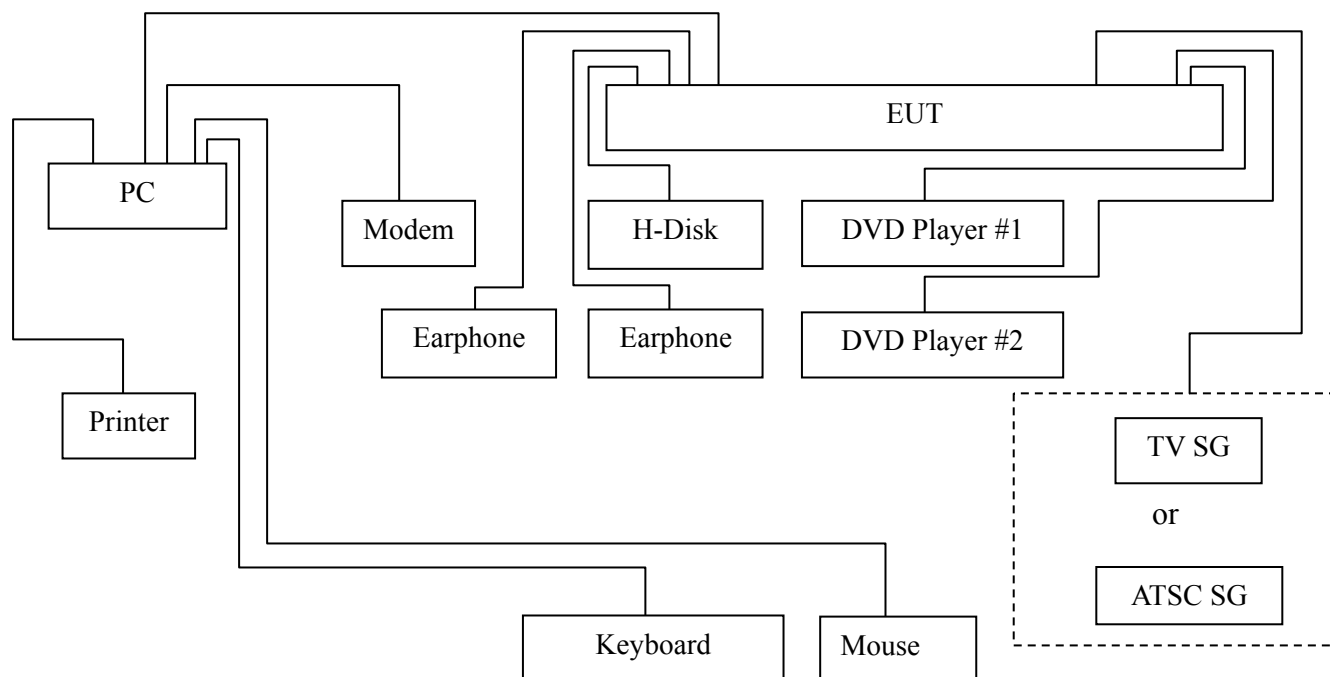
3.1 Test Equipment

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

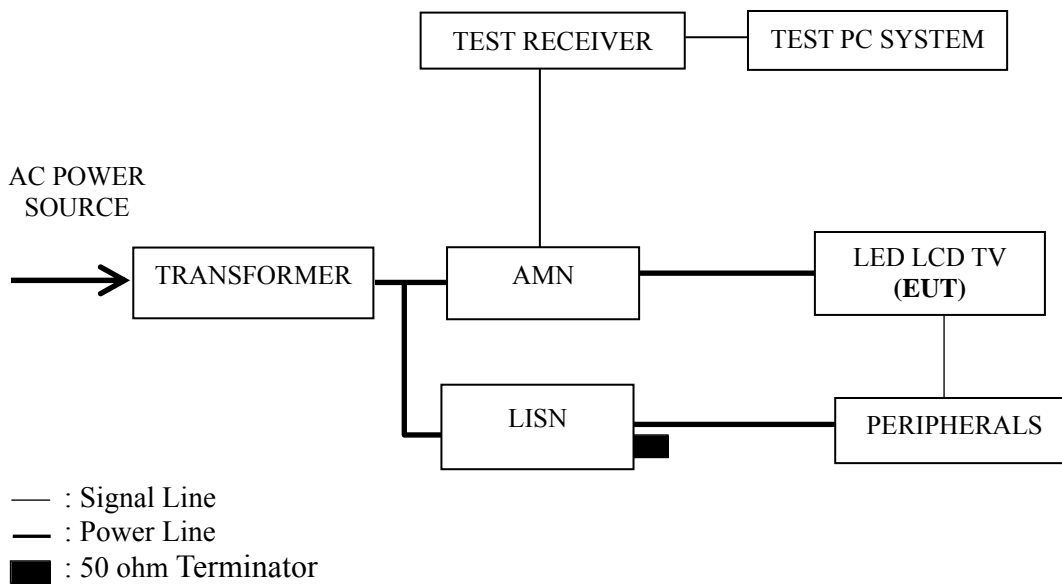
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Jul 03, 2015	Jul 02, 2016
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2015	Jun 26, 2016
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-5	Mar 20, 2015	Mar 19, 2016
4.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2015	Mar 19, 2016
5.	Software	Audix	e3	6.111206	--	--

3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



3.2.2 Conducted Disturbance Test Setup



3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)]

Frequency Range (MHz)	Limits dB (μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56	56~46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE 1 – The lower limit shall apply at the transition frequencies.
 NOTE 2 – The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz

3.4 Test Configuration

The EUT (listed in Sec.2.1) and the peripherals (listed in Sec 2.2) were installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner that tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

- 3.5.1 Setup the EUT and peripherals as shown in Sec. 3.2.
- 3.5.2 Turn on the power of all equipments and the EUT.
- 3.5.3 Set the contrast & brightness of EUT to maximum.
- 3.5.4 PC system ran the self-test program “EMC Test” by windows XP and sent “H” characters to EUT through graphic card, the EUT’s screen displayed and filled with “H” pattern by its resolution (Via HDMI Input).
- 3.5.5 PC system sent the 1kHz audio signal to EUT through audio port, the EUT speak out 1kHz audio signal.
- 3.5.6 In USB Play mode, set the EUT play digital media from H-Disk.
- 3.5.7 The other peripherals devices were driven and operated during the test.
- 3.5.8 The test modes are as follows:

Test Mode
HDMI 1920*1080@60Hz & 1kHz playing
HDMI 1280*1024@60Hz & 1kHz playing
HDMI 640*480@60Hz & 1kHz playing
HDMI1080P
USB Play

3.6 Test Procedures

The EUT and peripherals were connected to the power mains through an Artificial Mains Network (AMN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line (Line & Neutral) were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to ANSI C63.4:2003 during conducted emission test.

The bandwidth of R&S Test Receiver ESCI was set at 9 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7.

3.7 Test Results

< **PASS** >

The frequency and amplitude of the highest conducted emission relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

Test Mode	Data Page
HDMI 1920*1080@60Hz & 1kHz playing	P13
HDMI 1280*1024@60Hz & 1kHz playing	P14
HDMI 640*480@60Hz & 1kHz playing	P15
HDMI1080P	P16
USB Play	P17

NOTE 1 – Factor = Cable Loss + AMN Factor.

NOTE 2 – Emission Level = Meter Reading + Factor.

NOTE 3 – “QP” means “Quasi-Peak” values, “AV” means “Average” values.

NOTE 4 – The worst case is for USB Play test mode. The worst emission is detected at 0.150MHz (Quasi-Peak Value) with corrected signal level of 56.69 dB (μ V) (limit is 65.98 dB (μ V)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22

Model No. : LC-55N4000U Humidity : 48%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Feb 29, 2016
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.151	45.39	10.59	55.98	65.96	9.98	QP
	0.587	28.30	10.38	38.68	56.00	17.32	
	1.178	27.61	10.38	37.99	56.00	18.01	
	2.791	27.60	10.44	38.04	56.00	17.96	
	6.302	31.80	10.47	42.27	60.00	17.73	
	16.910	26.41	10.56	36.97	60.00	23.03	
	0.151	33.49	10.59	44.08	55.96	11.88	AV
	0.587	17.20	10.38	27.58	46.00	18.42	
	1.178	18.21	10.38	28.59	46.00	17.41	
	2.791	14.90	10.44	25.34	46.00	20.66	
	6.302	20.30	10.47	30.77	50.00	19.23	
	16.910	20.71	10.56	31.27	50.00	18.73	
Neutral	0.151	42.59	10.59	53.18	65.94	12.76	QP
	0.275	32.10	10.45	42.55	60.97	18.42	
	0.528	31.20	10.37	41.57	56.00	14.43	
	1.206	28.19	10.39	38.58	56.00	17.42	
	3.306	26.89	10.45	37.34	56.00	18.66	
	23.060	25.90	10.80	36.70	60.00	23.30	
	0.151	30.49	10.59	41.08	55.94	14.86	AV
	0.275	14.30	10.45	24.75	50.97	26.22	
	0.528	19.00	10.37	29.37	46.00	16.63	
	1.206	18.99	10.39	29.38	46.00	16.62	
	3.306	15.39	10.45	25.84	46.00	20.16	
	23.060	19.10	10.80	29.90	50.00	20.10	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22

Model No. : LC-55N4000U Humidity : 48%RH

Test Mode : HDMI 1280*1024@60Hz & 1kHz Playing Date of Test : Feb 29, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.150	45.60	10.59	56.19	65.98	9.79	QP
	0.525	31.20	10.39	41.59	56.00	14.41	
	1.207	28.40	10.39	38.79	56.00	17.21	
	2.286	27.60	10.42	38.02	56.00	17.98	
	6.630	31.40	10.47	41.87	60.00	18.13	
	18.280	27.80	10.58	38.38	60.00	21.62	
	0.150	33.70	10.59	44.29	55.98	11.69	AV
	0.525	19.00	10.39	29.39	46.00	16.61	
	1.207	18.40	10.39	28.79	46.00	17.21	
	2.286	15.40	10.42	25.82	46.00	20.18	
6.630	18.60	10.47	29.07	50.00	20.93		
18.280	22.30	10.58	32.88	50.00	17.12		
Neutral	0.151	45.39	10.59	55.98	65.97	9.99	QP
	0.278	32.20	10.45	42.65	60.87	18.22	
	0.538	31.20	10.37	41.57	56.00	14.43	
	1.470	28.10	10.39	38.49	56.00	17.51	
	2.797	27.70	10.43	38.13	56.00	17.87	
	5.703	28.60	10.49	39.09	60.00	20.91	
	0.151	33.59	10.59	44.18	55.97	11.79	AV
	0.278	14.50	10.45	24.95	50.87	25.92	
	0.538	18.50	10.37	28.87	46.00	17.13	
	1.470	19.20	10.39	29.59	46.00	16.41	
2.797	15.30	10.43	25.73	46.00	20.27		
5.703	18.30	10.49	28.79	50.00	21.21		

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22

Model No. : LC-55N4000U Humidity : 48%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Feb 29, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.151	45.79	10.59	56.38	65.94	9.56	QP
	0.537	31.60	10.39	41.99	56.00	14.01	
	1.205	28.80	10.39	39.19	56.00	16.81	
	2.827	28.80	10.44	39.24	56.00	16.76	
	6.333	30.80	10.47	41.27	60.00	18.73	
	18.160	27.50	10.58	38.08	60.00	21.92	
	0.151	33.99	10.59	44.58	55.94	11.36	AV
	0.537	18.40	10.39	28.79	46.00	17.21	
	1.205	19.30	10.39	29.69	46.00	16.31	
	2.827	16.90	10.44	27.34	46.00	18.66	
	6.333	18.90	10.47	29.37	50.00	20.63	
	18.160	21.80	10.58	32.38	50.00	17.62	
Neutral	0.151	45.79	10.59	56.38	65.97	9.59	QP
	0.276	32.10	10.45	42.55	60.93	18.38	
	0.522	31.20	10.37	41.57	56.00	14.43	
	1.202	28.79	10.39	39.18	56.00	16.82	
	2.810	28.20	10.43	38.63	56.00	17.37	
	6.369	31.50	10.50	42.00	60.00	18.00	
	0.151	34.09	10.59	44.68	55.97	11.29	AV
	0.276	14.00	10.45	24.45	50.93	26.48	
	0.522	19.10	10.37	29.47	46.00	16.53	
	1.202	19.09	10.39	29.48	46.00	16.52	
	2.810	16.80	10.43	27.23	46.00	18.77	
	6.369	19.20	10.50	29.70	50.00	20.30	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22

Model No. : LC-55N4000U Humidity : 48%RH

Test Mode : HDMI 1080P Date of Test : Feb 29, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.150	46.09	10.59	56.68	65.98	9.30	QP
	0.538	31.90	10.39	42.29	56.00	13.71	
	1.218	28.90	10.39	39.29	56.00	16.71	
	2.550	28.80	10.43	39.23	56.00	16.77	
	6.362	31.10	10.47	41.57	60.00	18.43	
	18.020	26.99	10.58	37.57	60.00	22.43	
	0.150	34.19	10.59	44.78	55.98	11.20	AV
	0.538	19.40	10.39	29.79	46.00	16.21	
	1.218	20.00	10.39	30.39	46.00	15.61	
	2.550	16.20	10.43	26.63	46.00	19.37	
	6.362	18.80	10.47	29.27	50.00	20.73	
	18.020	21.19	10.58	31.77	50.00	18.23	
Neutral	0.151	45.79	10.59	56.38	65.93	9.55	QP
	0.280	32.20	10.45	42.65	60.83	18.18	
	0.680	29.71	10.35	40.06	56.00	15.94	
	2.270	27.80	10.42	38.22	56.00	17.78	
	6.340	30.50	10.50	41.00	60.00	19.00	
	18.190	27.40	10.69	38.09	60.00	21.91	
	0.151	33.89	10.59	44.48	55.93	11.45	AV
	0.280	14.60	10.45	25.05	50.83	25.78	
	0.680	20.61	10.35	30.96	46.00	15.04	
	2.270	17.30	10.42	27.72	46.00	18.28	
	6.340	18.20	10.50	28.70	50.00	21.30	
	18.190	22.00	10.69	32.69	50.00	17.31	

EUT : LED LCD TV Temperature : 22

Model No. : LC-55N4000U Humidity : 48%RH

Test Mode : USB Play Date of Test : Feb 29, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.150	46.10	10.59	56.69	65.98	9.29	QP
	0.543	32.00	10.39	42.39	56.00	13.61	
	1.223	29.50	10.39	39.89	56.00	16.11	
	2.558	29.10	10.43	39.53	56.00	16.47	
	6.339	30.60	10.47	41.07	60.00	18.93	
	18.030	27.29	10.58	37.87	60.00	22.13	
	0.150	34.30	10.59	44.89	55.98	11.09	AV
	0.543	20.10	10.39	30.49	46.00	15.51	
	1.223	20.70	10.39	31.09	46.00	14.91	
	2.558	16.60	10.43	27.03	46.00	18.97	
	6.339	18.50	10.47	28.97	50.00	21.03	
	18.030	21.39	10.58	31.97	50.00	18.03	
Neutral	0.151	45.09	10.59	55.68	65.97	10.29	QP
	0.276	32.10	10.45	42.55	60.93	18.38	
	0.586	29.90	10.36	40.26	56.00	15.74	
	1.224	29.79	10.39	40.18	56.00	15.82	
	2.569	28.11	10.42	38.53	56.00	17.47	
	6.343	30.20	10.50	40.70	60.00	19.30	
	0.151	33.19	10.59	43.78	55.97	12.19	AV
	0.276	14.20	10.45	24.65	50.93	26.28	
	0.586	18.80	10.36	29.16	46.00	16.84	
	1.224	21.29	10.39	31.68	46.00	14.32	
	2.569	15.21	10.42	25.63	46.00	20.37	
	6.343	18.30	10.50	28.80	50.00	21.20	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

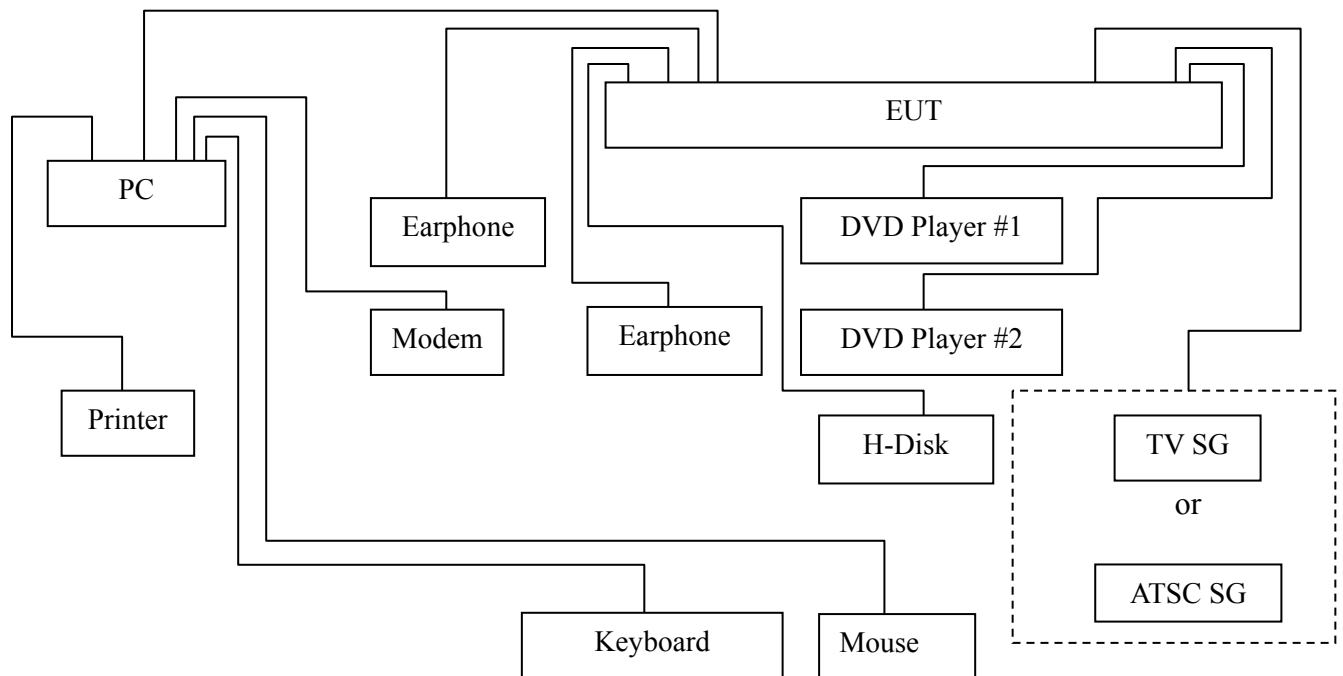
4.1 Test Equipment

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

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101303	May 07, 2015	May 06, 2016
2.	Preamplifier	Agilent	8447D	2944A06664	Apr 27, 2015	Apr 26, 2016
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2015	Sep 19, 2016
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 15, 2015	May 14, 2016
5.	Horn Antenna	EMCO	3115	9607-4878	Jun 03, 2015	Jun 02, 2016
6.	Spectrum	Agilent	N9010A	MY52221182	Jun 12, 2015	Jun 11, 2016
7.	Spectrum	HP	8591EM	3628A00908	May 07, 2015	May 06, 2016
8.	Software	Audix	e3	6.2007-9-10	--	--

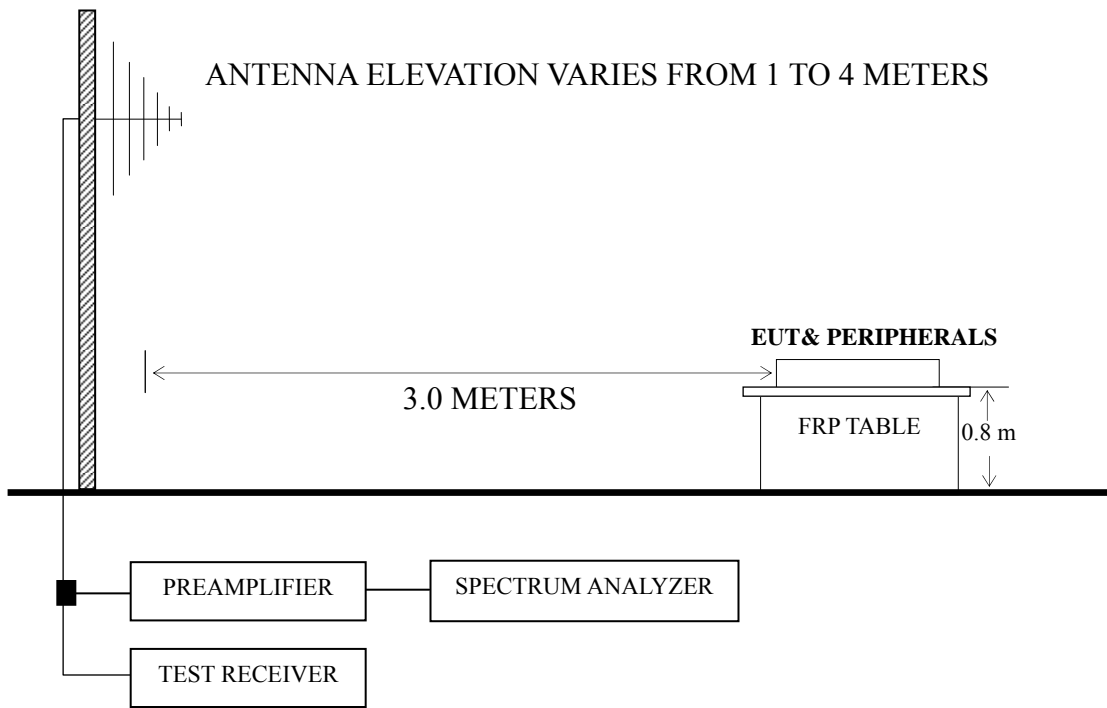
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



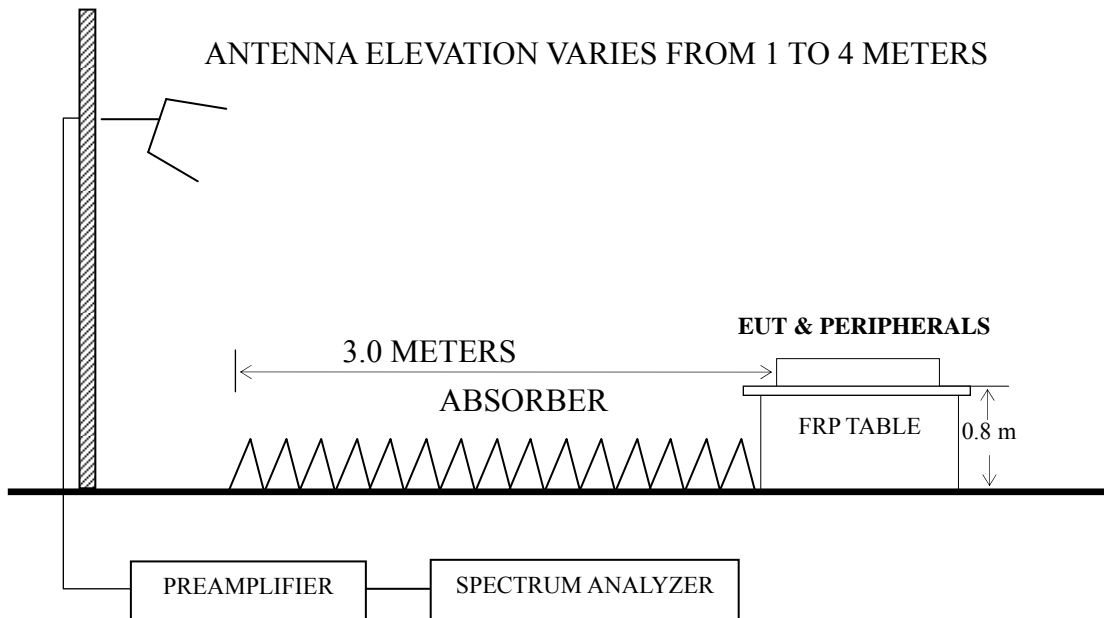
4.2.2 Radiated emission test setup

4.2.2.1 Below 1GHz



■ : 50 ohm Coaxial Switch

4.2.2.2 Above 1GHz



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

Frequency (MHz)	Distance (m)	Field strength limits	
		($\mu\text{V/m}$)	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 2 GHz was checked for the maximum resolution test mode.

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

4.7 Test Results

<PASS>

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

Test Mode	Data Page
HDMI 1920*1080@60Hz & 1kHz playing	P22-P23
HDMI 1280*1024@60Hz & 1kHz playing	P24
HDMI 640*480@60Hz & 1kHz playing	P25
HDMI1080P	P26
USB Play	P27

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

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

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

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

NOTE 4 – The worst case is for HDMI 1920*1080@60Hz & 1 kHz playing test mode. The worst emission at horizontal polarization was detected at 742.440 MHz with corrected signal level of 44.97 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 2.00 m height and the turntable was at 145°. The worst emission at vertical polarization was detected at 69.357 MHz with corrected signal level of 37.26 dB (μV/m) (limit is 40.00 dB (μV/m)), when the antenna was 1.40 m height and the turntable was at 80°.

EUT : LED LCD TV Temperature : 22

Model No. : LC-55N4000U Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz Date of Test : Mar 15, 2016
& 1kHz Playing

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)	Remark
Horizontal	73.359	27.96	8.12	0.99	--	37.07	40.00	2.93	QP
	85.898	24.60	9.90	1.16	--	35.66	40.00	4.34	
	242.525	25.93	12.10	2.13	--	40.16	46.00	5.84	
	337.216	19.33	15.01	2.64	--	36.98	46.00	9.02	
	742.440	21.40	19.97	3.60	--	44.97	46.00	1.03	
	896.997	13.54	21.30	4.46	--	39.30	46.00	6.70	
	1045.812	49.41	23.73	4.55	36.41	41.28	74.00	32.72	PK
	1211.329	57.91	24.49	3.54	36.11	49.83	74.00	24.17	
	1271.371	53.96	24.75	3.61	36.02	46.30	74.00	27.70	
	1501.898	52.45	25.62	3.89	35.68	46.28	74.00	27.72	
	1690.434	50.48	26.40	4.07	35.44	45.51	74.00	28.49	
	1961.484	50.77	27.37	4.39	35.14	47.39	74.00	26.61	AV
	1045.812	34.73	23.73	4.55	36.41	26.60	54.00	27.40	
	1211.329	40.29	24.49	3.54	36.11	32.21	54.00	21.79	
	1271.371	38.28	24.75	3.61	36.02	30.62	54.00	23.38	
1501.898	39.28	25.62	3.89	35.68	33.11	54.00	20.89		
1690.434	33.29	26.40	4.07	35.44	28.32	54.00	25.68	AV	
1961.484	36.46	27.37	4.39	35.14	33.08	54.00	20.92		

EUT : LED LCD TV Temperature : 22

Model No. : LC-55N4000U Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Mar 15, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)	Remark
Vertical	31.120	17.40	18.06	0.65	--	36.11	40.00	3.89	QP
	69.357	29.12	7.21	0.93	--	37.26	40.00	2.74	
	109.412	23.87	12.59	1.39	--	37.85	43.50	5.65	
	134.559	23.67	12.62	1.55	--	37.84	43.50	5.66	
	240.830	22.05	11.90	2.13	--	36.08	46.00	9.92	
	742.259	16.31	19.97	3.60	--	39.88	46.00	6.12	
	1010.809	56.34	23.56	4.78	36.48	48.20	74.00	25.80	PK
	1185.562	55.92	24.39	3.52	36.16	47.67	74.00	26.33	
	1213.502	58.85	24.51	3.54	36.11	50.79	74.00	23.21	
	1496.525	58.24	25.59	3.89	35.69	52.03	74.00	21.97	
	1690.434	54.32	26.40	4.07	35.44	49.35	74.00	24.65	
	1868.851	52.75	27.04	4.27	35.24	48.82	74.00	25.18	AV
	1010.809	41.52	23.56	4.78	36.48	33.38	54.00	20.62	
	1185.562	40.68	24.39	3.52	36.16	32.43	54.00	21.57	
	1213.502	43.82	24.51	3.54	36.11	35.76	54.00	18.24	
1496.525	44.77	25.59	3.89	35.69	38.56	54.00	15.44		
1690.434	38.91	26.40	4.07	35.44	33.94	54.00	20.06		
1868.851	37.29	27.04	4.27	35.24	33.36	54.00	20.64		

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22

Model No. : LC-55N4000U Humidity : 60%RH

Test Mode : HDMI 1280*1024@60Hz & 1kHz Playing Date of Test : Mar 15, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	83.230	24.56	9.66	1.12	35.34	40.00	4.66
	120.277	21.13	12.83	1.46	35.42	43.50	8.08
	152.130	22.83	11.35	1.65	35.83	43.50	7.67
	280.024	24.95	13.20	2.42	40.57	46.00	5.43
	414.722	17.57	16.68	2.75	37.00	46.00	9.00
	719.200	19.50	19.88	3.57	42.95	46.00	3.05
Vertical	67.675	26.98	6.94	0.92	34.84	40.00	5.16
	97.798	19.93	12.02	1.30	33.25	43.50	10.25
	135.032	21.89	12.60	1.55	36.04	43.50	7.46
	237.476	25.17	11.64	2.11	38.92	46.00	7.08
	552.883	20.54	18.82	2.57	41.93	46.00	4.07
	804.603	17.99	20.60	3.78	42.37	46.00	3.63

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22

Model No. : LC-55N4000U Humidity : 60%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Mar 15, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	66.499	27.62	6.77	0.91	35.30	40.00	4.70
	146.888	20.01	11.88	1.62	33.51	43.50	9.99
	281.008	23.46	13.27	2.42	39.15	46.00	6.85
	381.249	17.28	16.50	2.69	36.47	46.00	9.53
	614.214	17.15	19.20	2.39	38.74	46.00	7.26
	804.603	16.91	20.60	3.78	41.29	46.00	4.71
Vertical	39.576	20.71	12.97	0.73	34.41	40.00	5.59
	63.536	28.25	6.42	0.90	35.57	40.00	4.43
	96.775	22.74	11.93	1.29	35.96	43.50	7.54
	220.617	25.45	10.55	2.05	38.05	46.00	7.95
	457.507	18.16	17.04	2.85	38.05	46.00	7.95
	636.134	18.12	19.50	2.77	40.39	46.00	5.61

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22

Model No. : LC-55N4000U Humidity : 60%RH

Test Mode : HDMI1080P Date of Test : Mar 15, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	63.983	28.08	6.44	0.90	35.42	40.00	4.58
	118.601	20.82	12.77	1.45	35.04	43.50	8.46
	215.268	24.49	10.20	2.03	36.72	43.50	6.78
	385.281	17.32	16.50	2.70	36.52	46.00	9.48
	540.000	22.20	18.50	2.68	43.38	46.00	2.62
	869.130	13.63	20.90	4.27	38.80	46.00	7.20
Vertical	69.845	25.76	7.26	0.93	33.95	40.00	6.05
	144.335	20.78	12.15	1.60	34.53	43.50	8.97
	186.441	25.93	10.44	1.88	38.25	43.50	5.25
	293.084	21.51	13.60	2.52	37.63	46.00	8.37
	540.000	21.20	18.50	2.68	42.38	46.00	3.62
	821.710	14.19	20.70	3.88	38.77	46.00	7.23

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22

Model No. : LC-55N4000U Humidity : 60%RH

Test Mode : USB Play Date of Test : Mar 15, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)
Horizontal	86.200	21.06	9.95	1.16	32.17	40.00	7.83
	131.758	24.74	12.73	1.53	39.00	43.50	4.50
	196.510	24.40	9.97	1.95	36.32	43.50	7.18
	258.326	19.41	13.00	2.22	34.63	46.00	11.37
	381.249	18.75	16.50	2.69	37.94	46.00	8.06
	790.619	14.71	20.50	3.68	38.89	46.00	7.11
Vertical	39.162	18.72	13.04	0.72	32.48	40.00	7.52
	83.522	22.81	9.69	1.13	33.63	40.00	6.37
	143.326	21.55	12.25	1.60	35.40	43.50	8.10
	202.810	26.25	9.75	1.98	37.98	43.50	5.52
	309.998	21.81	14.10	2.60	38.51	46.00	7.49
	463.970	19.43	17.18	2.87	39.48	46.00	6.52

TEST ENGINEER: MARK LI

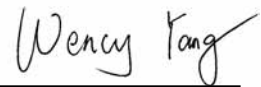
5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Ferrite Core BNF	BNF1730GR	Feelux Optoelectronic (Shandong) Co., Ltd.	See Appendix Figure 28

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

TEST ENGINEER:



(WENCY YANG)

6 DEVIATION TO TEST SPECIFICATIONS

None.