

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

LED LCD TV

Model No.	Brand
LC-50N4000U	Sharp
LC-50N4000C	

FCC ID : W9HLCDF0078

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-F16072
Date of Test : Mar 14 – 22, 2016
Date of Report : Mar 25, 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-50N4000U	Sharp	120V/60Hz
LC-50N4000C		

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 Mar 14 – 22, 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.

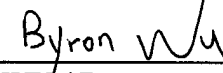
The test results for EUT's TV functions are contained in No.F16071, a Verification report.

Date of Test : Mar 14 – 22, 2016 Date of Report : Mar 25, 2016

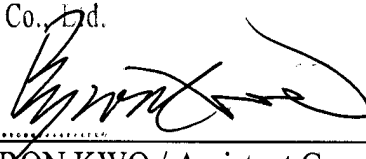
Producer :


HUI MIN YAN / Assistant

Review :


BYRON WU / Deputy Assistant Manager

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

Signatory : 
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	:	☒ Production ☐ Pre-product ☐ Pro-type
Model No	:	LC-50N4000U, LC-50N4000C
Note	:	The above models are all the same except for model number.LC-50N4000U model is tested and recorded in the report.
Brand	:	Sharp
Applicant	:	Hisense Electric Co., Ltd. No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China
Manufacturer	:	Same as Applicant
Factory #1	:	Same as Applicant
Factory #2	:	Tatung Mexico S.A. de C.V. Miguel Catalán 420, Parque Industrial Rio Bravo, Cd. Juarez, Chih., CP 32557
Factory #3	:	HISENSE ELECTRONICA MEXICO,S.A. DE C.V. Blvd. Sharp #3510 Parque Industrial Rosarito, C.P. 22710 Playas de Rosarito, B.C.
LCD Panel	:	Manufacturer : Hisense M/N : HD500DF-B54(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 USB Port : Connected with H-Disk
 - (2) ANT Port : Connected with ATSC SG
 - (3) AUDIO OUT Port : Connected with Earphone #2
 - (4) One HDMI1 Port : Connected with PC
 - (5) One HDMI2 Port : Connected with DVD PLAYER #1
- Back Port:**
- (6) One HDMI3 Port : Connected with DVD PLAYER #2
 - (7) Digital Audio Out : Connected with Audio Converter to Earphone #2
 - (1) One AV in Port : Connected with DVD PLAYER #1

2.2 Peripherals

2.2.1 PC

Manufacturer : HP
Model Number : dx7400MT
Serial Number : CNG8130K89
Power Cord : Unshielded, Detachable, 1.8m
Certificate : FCC DoC; CE/EMC; VCCI; C-Tick;

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 Printer

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

2.2.4 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

2.2.5 Modem

Manufacturer : TP-LINK
Model Number : TM-EC5658V
Serial Number : 07123301053
Data Cable : Shielded, Detachable, 1.5m
Certificate : CCC

2.2.6 Earphone *2

Manufacturer : EDIFIER
Model Number : H210

2.2.7 DVD PLAYER #1

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

2.2.8 DVD PLAYER #2

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

2.2.9 Hard Disk

Manufacturer : Tetasy
Model Number : F12
Serial Number : A010022-4860010X
Data Cable : Shielded, Detachable, 1.5m.
Certificate : CE, FCC DoC

2.2.10 ATSC Signal Generator

Manufacturer : SENCORE
Model Number : ATSC997
Serial Number : 6790071

2.2.11 TV Signal Generator

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

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

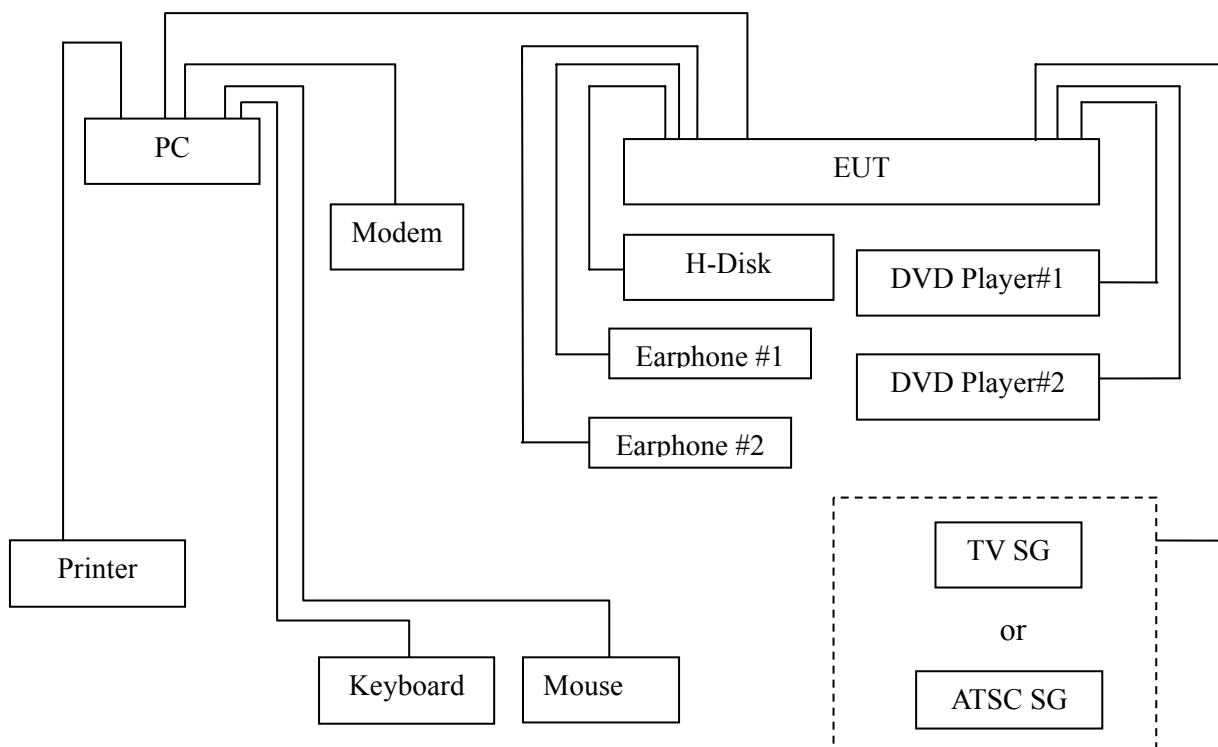
3.1 Test Equipment

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

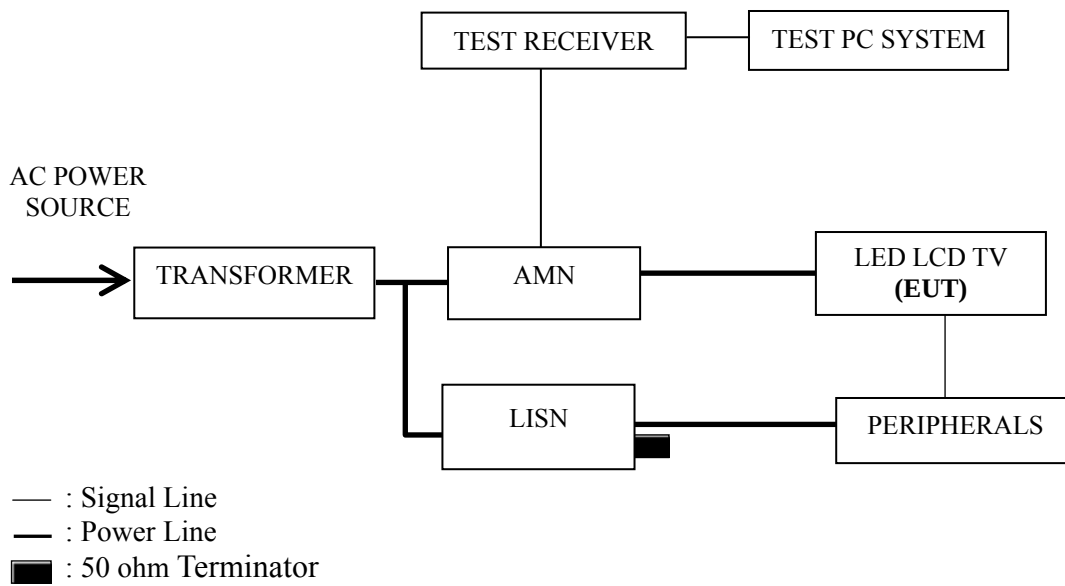
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Jul 03, 2015	Jul 02, 2016
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2015	Jun 26, 2016
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-5	Mar 20, 2016	Mar 19, 2017
4.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2016	Mar 19, 2017
5.	Software	Audix	E3	6.111206	--	--

3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



3.2.2 Conducted Disturbance Test Setup



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

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

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

3.4 Test Configuration

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

3.5 Operating Condition of EUT

- 3.5.1 Setup the EUT and peripherals as shown in Sec. 3.2.
- 3.5.2 Turn on the power of all equipments and the EUT.
- 3.5.3 Set the contrast & brightness of EUT to maximum.
- 3.5.4 PC system ran the self-test program “EMC Test” by windows XP and sent “H” characters to EUT through graphic card, the EUT’s screen displayed and filled with “H” pattern by its resolution (Via HDMI Input).
- 3.5.5 PC system sent the 1kHz audio signal to EUT through audio port, the EUT speak out 1kHz audio signal.
- 3.5.6 In USB Play mode, set the EUT play digital media from 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 C63.4:2014 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 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 HDMI 1280*1024@60Hz & 1kHz playing for test mode.
The worst emission is detected at 0.578MHz (Quasi-Peak Value) with corrected signal level of 41.28dB (μV) (limit is 56.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 23°C

Model No. : LC-50N4000U Humidity : 52%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Mar 14, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.164	33.10	10.57	43.67	65.25	21.58	QP
	0.385	30.50	10.43	40.93	58.18	17.25	
	0.576	30.60	10.38	40.98	56.00	15.02	
	1.535	26.00	10.40	36.40	56.00	19.60	
	4.382	21.50	10.47	31.97	56.00	24.03	
	7.851	29.10	10.47	39.57	60.00	20.43	
	0.164	22.60	10.57	33.17	55.25	22.08	AV
	0.385	19.60	10.43	30.03	48.18	18.15	
	0.576	19.80	10.38	30.18	46.00	15.82	
	1.535	16.30	10.40	26.70	46.00	19.30	
	4.382	15.00	10.47	25.47	46.00	20.53	
	7.851	16.60	10.47	27.07	50.00	22.93	
Neutral	0.160	34.90	10.57	45.47	65.46	19.99	QP
	0.379	27.80	10.41	38.21	58.30	20.09	
	0.579	29.80	10.36	40.16	56.00	15.84	
	1.337	25.70	10.39	36.09	56.00	19.91	
	2.299	23.10	10.42	33.52	56.00	22.48	
	7.873	29.10	10.53	39.63	60.00	20.37	
	0.160	20.50	10.57	31.07	55.46	24.39	AV
	0.379	16.20	10.41	26.61	48.30	21.69	
	0.579	19.20	10.36	29.56	46.00	16.44	
	1.337	14.50	10.39	24.89	46.00	21.11	
	2.299	15.20	10.42	25.62	46.00	20.38	
	7.873	16.60	10.53	27.13	50.00	22.87	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 23°C

Model No. : LC-50N4000U Humidity : 52%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : Mar 14, 2016
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.181	32.40	10.54	42.94	64.44	21.50	QP
	0.379	30.10	10.43	40.53	58.31	17.78	
	0.578	30.90	10.38	41.28	56.00	14.72	
	0.761	28.60	10.38	38.98	56.00	17.02	
	1.467	26.00	10.40	36.40	56.00	19.60	
	7.598	28.00	10.47	38.47	60.00	21.53	
	0.181	20.50	10.54	31.04	54.44	23.40	AV
	0.379	18.50	10.43	28.93	48.31	19.38	
	0.578	19.80	10.38	30.18	46.00	15.82	
	0.761	16.80	10.38	27.18	46.00	18.82	
	1.467	17.80	10.40	28.20	46.00	17.80	
	7.598	17.30	10.47	27.77	50.00	22.23	
Neutral	0.164	33.80	10.56	44.36	65.26	20.90	QP
	0.376	27.70	10.41	38.11	58.36	20.25	
	0.579	29.90	10.36	40.26	56.00	15.74	
	1.338	25.80	10.39	36.19	56.00	19.81	
	4.331	21.40	10.46	31.86	56.00	24.14	
	7.872	28.80	10.53	39.33	60.00	20.67	
	0.164	21.90	10.56	32.46	55.26	22.80	AV
	0.376	14.40	10.41	24.81	48.36	23.55	
	0.579	18.70	10.36	29.06	46.00	16.94	
	1.338	14.40	10.39	24.79	46.00	21.21	
	4.331	15.00	10.46	25.46	46.00	20.54	
	7.872	16.30	10.53	26.83	50.00	23.17	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 23°C

Model No. : LC-50N4000U Humidity : 52%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Mar 14, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.162	33.70	10.57	44.27	65.38	21.11	QP
	0.378	30.30	10.43	40.73	58.33	17.60	
	0.578	30.90	10.38	41.28	56.00	14.72	
	1.678	24.90	10.40	35.30	56.00	20.70	
	4.641	21.89	10.48	32.37	56.00	23.63	
	7.582	28.40	10.47	38.87	60.00	21.13	
	0.162	22.30	10.57	32.87	55.38	22.51	AV
	0.378	19.60	10.43	30.03	48.33	18.30	
	0.578	19.80	10.38	30.18	46.00	15.82	
	1.678	14.50	10.40	24.90	46.00	21.10	
	4.641	14.69	10.48	25.17	46.00	20.83	
	7.582	17.60	10.47	28.07	50.00	21.93	
Neutral	0.163	34.79	10.57	45.36	65.34	19.98	QP
	0.370	27.39	10.42	37.81	58.51	20.70	
	0.578	29.80	10.36	40.16	56.00	15.84	
	1.534	26.00	10.39	36.39	56.00	19.61	
	3.962	20.49	10.46	30.95	56.00	25.05	
	7.604	28.10	10.52	38.62	60.00	21.38	
	0.163	21.89	10.57	32.46	55.34	22.88	AV
	0.370	10.99	10.42	21.41	48.51	27.10	
	0.578	19.30	10.36	29.66	46.00	16.34	
	1.534	16.30	10.39	26.69	46.00	19.31	
	3.962	12.69	10.46	23.15	46.00	22.85	
	7.604	17.00	10.52	27.52	50.00	22.48	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 23°C

Model No. : LC-50N4000U Humidity : 52%RH

Test Mode : HDMI 1080P Date of Test : Mar 14, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.166	32.79	10.57	43.36	65.16	21.80	QP
	0.373	29.90	10.43	40.33	58.42	18.09	
	0.575	29.60	10.38	39.98	56.00	16.02	
	1.340	25.70	10.39	36.09	56.00	19.91	
	2.329	23.90	10.42	34.32	56.00	21.68	
	7.580	28.00	10.47	38.47	60.00	21.53	
	0.166	22.59	10.57	33.16	55.16	22.00	AV
	0.373	15.10	10.43	25.53	48.42	22.89	
	0.575	20.00	10.38	30.38	46.00	15.62	
	1.340	14.20	10.39	24.59	46.00	21.41	
	2.329	15.30	10.42	25.72	46.00	20.28	
	7.580	17.40	10.47	27.87	50.00	22.13	
Neutral	0.163	33.49	10.57	44.06	65.32	21.26	QP
	0.376	27.80	10.41	38.21	58.38	20.17	
	0.575	29.00	10.36	39.36	56.00	16.64	
	1.542	27.11	10.39	37.50	56.00	18.50	
	3.492	20.50	10.45	30.95	56.00	25.05	
	7.871	29.20	10.53	39.73	60.00	20.27	
	0.163	21.79	10.57	32.36	55.32	22.96	AV
	0.376	14.50	10.41	24.91	48.38	23.47	
	0.575	19.30	10.36	29.66	46.00	16.34	
	1.542	16.91	10.39	27.30	46.00	18.70	
	3.492	13.00	10.45	23.45	46.00	22.55	
	7.871	16.60	10.53	27.13	50.00	22.87	

TEST ENGINEER: SEVEN LU

EUT : LED LCD TV Temperature : 23°C

Model No. : LC-50N4000U Humidity : 52%RH

Test Mode : USB Play Date of Test : Mar 14, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.165	32.89	10.57	43.46	65.21	21.75	QP
	0.381	30.30	10.43	40.73	58.26	17.53	
	0.578	30.80	10.38	41.18	56.00	14.82	
	1.340	25.80	10.39	36.19	56.00	19.81	
	4.192	21.20	10.47	31.67	56.00	24.33	
	7.636	28.80	10.47	39.27	60.00	20.73	
	0.165	22.49	10.57	33.06	55.21	22.15	AV
	0.381	19.60	10.43	30.03	48.26	18.23	
	0.578	20.00	10.38	30.38	46.00	15.62	
	1.340	14.30	10.39	24.69	46.00	21.31	
	4.192	14.70	10.47	25.17	46.00	20.83	
	7.636	17.30	10.47	27.77	50.00	22.23	
Neutral	0.160	34.40	10.57	44.97	65.49	20.52	QP
	0.385	27.90	10.41	38.31	58.17	19.86	
	0.575	29.20	10.36	39.56	56.00	16.44	
	1.369	25.50	10.39	35.89	56.00	20.11	
	4.389	21.30	10.46	31.76	56.00	24.24	
	7.890	28.90	10.53	39.43	60.00	20.57	
	0.160	19.90	10.57	30.47	55.49	25.02	AV
	0.385	16.80	10.41	27.21	48.17	20.96	
	0.575	19.30	10.36	29.66	46.00	16.34	
	1.369	14.30	10.39	24.69	46.00	21.31	
	4.389	15.20	10.46	25.66	46.00	20.34	
	7.890	16.60	10.53	27.13	50.00	22.87	

TEST ENGINEER: SEVEN LU

4 RADIATED EMISSION TEST

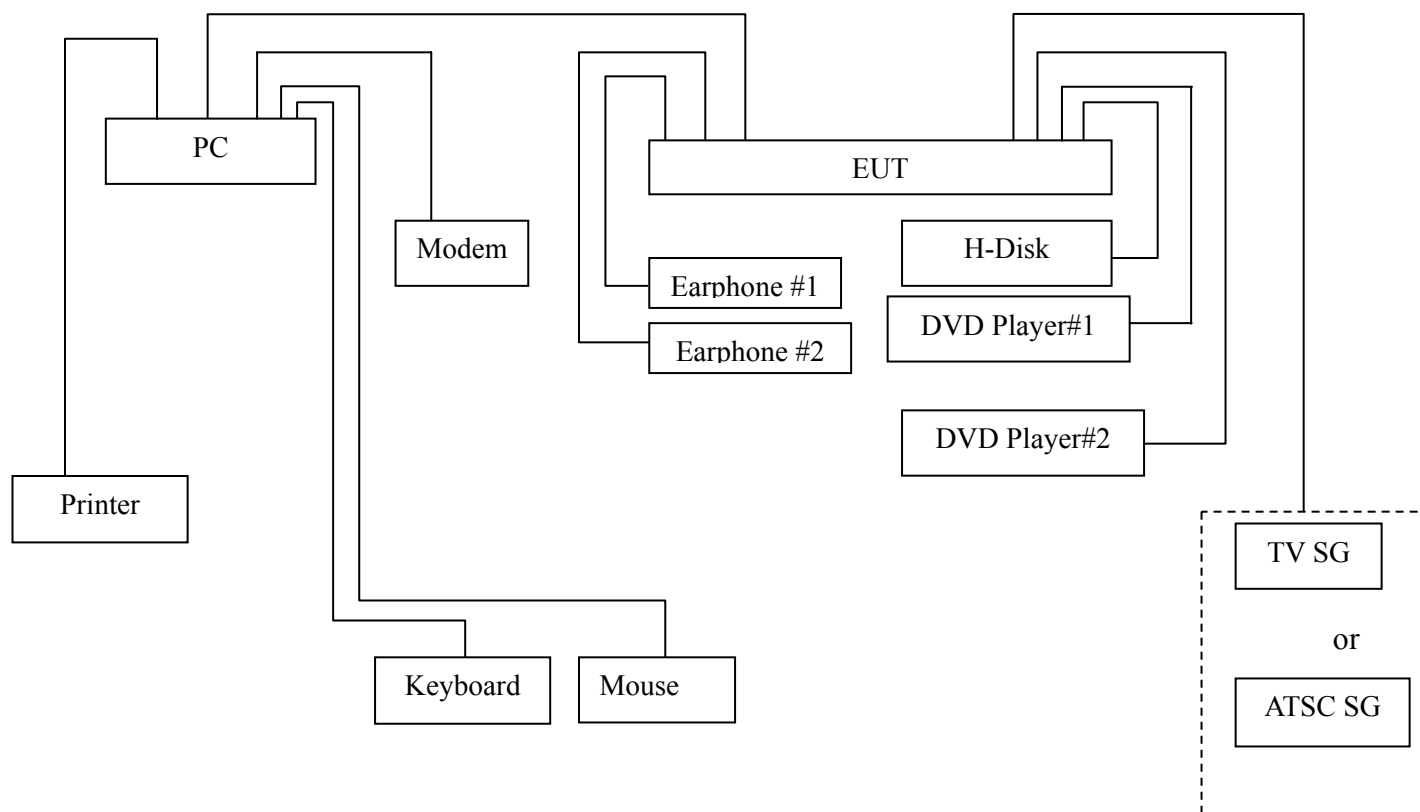
4.1 Test Equipment

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, 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	--	--

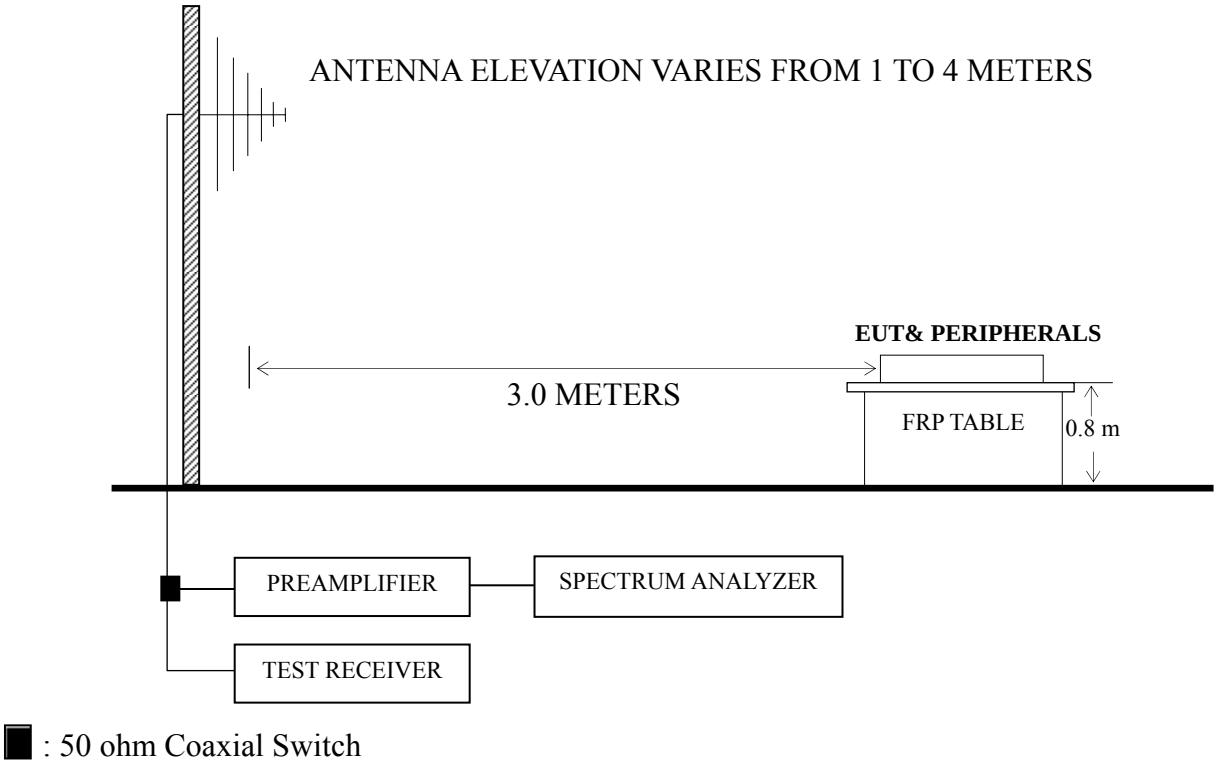
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals

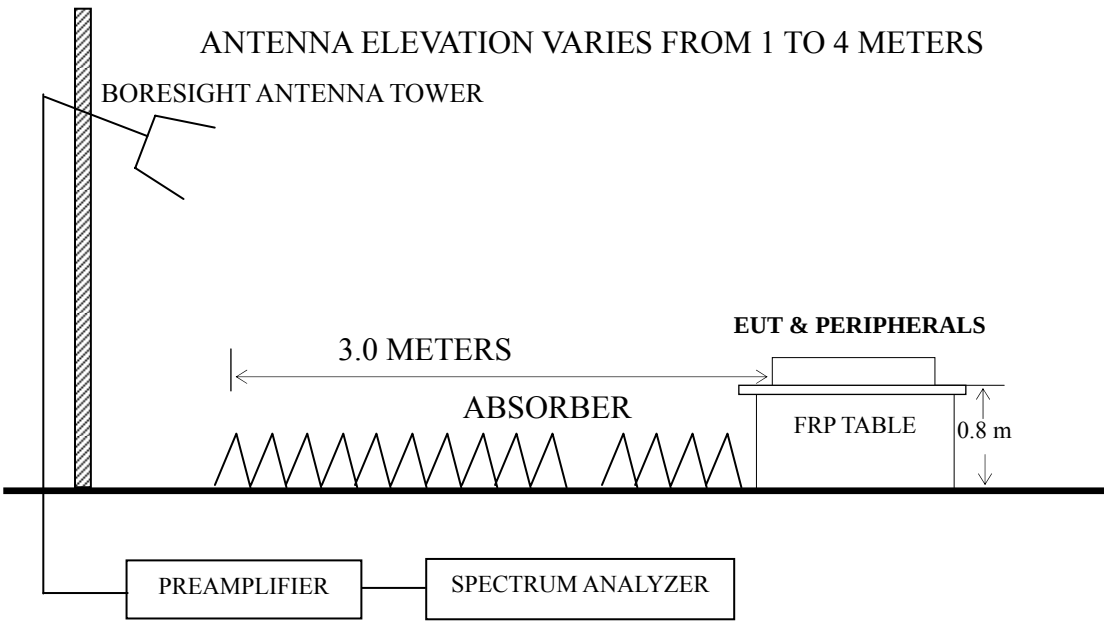


4.2.2 Radiated emission test setup

4.2.2.1 Below 1GHz



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 C63.4:2014 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 742.26MHz with corrected signal level of 43.76 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.90 m height and the turntable was at 120°. The worst emission at vertical polarization was detected at 593.96 MHz with corrected signal level of 43.26dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.00 m height and the turntable was at 75°.

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N4000U Humidity : 54%RH

Test Mode : HDMI 1920*1080@60Hz
& 1kHz Playing Date of Test : Mar 22, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	131.758	22.06	12.73	1.53	--	36.32	43.50	7.18	QP
	191.074	25.68	10.27	1.92	--	37.87	43.50	5.63	
	306.754	26.81	14.03	2.60	--	43.44	46.00	2.56	
	444.851	18.39	16.85	2.82	--	38.06	46.00	7.94	
	593.960	21.00	18.85	2.31	--	42.16	46.00	3.84	
	742.259	20.19	19.97	3.60	--	43.76	46.00	2.24	
	1055.224	49.94	23.78	4.55	36.39	41.88	74.00	32.12	PK
	1206.996	53.68	24.48	3.54	36.12	45.58	74.00	28.42	
	1278.223	52.95	24.77	3.63	36.00	45.35	74.00	28.65	
	1485.838	52.56	25.56	3.86	35.70	46.28	74.00	27.72	
	1684.388	56.85	26.36	4.07	35.45	51.83	74.00	22.17	
	1892.439	49.77	27.14	4.31	35.21	46.01	74.00	27.99	
	1055.224	34.98	23.78	4.55	36.39	26.92	54.00	27.08	AV
	1206.996	38.27	24.48	3.54	36.12	30.17	54.00	23.83	
	1278.223	39.74	24.77	3.63	36.00	32.14	54.00	21.86	
	1485.838	38.28	25.56	3.86	35.70	32.00	54.00	22.00	
	1684.388	40.25	26.36	4.07	35.45	35.23	54.00	18.77	
	1892.439	34.38	27.14	4.31	35.21	30.62	54.00	23.38	

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N4000U Humidity : 54%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Mar 22, 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	34.760	18.24	15.90	0.68	--	34.82	40.00	5.18	QP
	63.313	27.46	6.41	0.90	--	34.77	40.00	5.23	
	129.468	26.21	12.83	1.52	--	40.56	43.50	2.94	
	183.844	27.11	10.50	1.87	--	39.48	43.50	4.02	
	296.184	21.96	13.65	2.56	--	38.17	46.00	7.83	
	593.960	22.10	18.85	2.31	--	43.26	46.00	2.74	
	1027.241	55.15	23.64	4.66	36.45	47.00	74.00	27.00	PK
	1215.678	67.46	24.52	3.54	36.10	59.42	74.00	14.58	
	1273.651	56.44	24.76	3.61	36.01	48.80	74.00	25.20	
	1501.898	51.07	25.62	3.89	35.68	44.90	74.00	29.10	
	1705.647	55.47	26.45	4.09	35.42	50.59	74.00	23.41	
	1796.617	51.73	26.80	4.15	35.32	47.36	74.00	26.64	
	1027.241	40.54	23.64	4.66	36.45	32.39	54.00	21.61	AV
	1215.678	52.63	24.52	3.54	36.10	44.59	54.00	9.41	
	1273.651	40.72	24.76	3.61	36.01	33.08	54.00	20.92	
	1501.898	37.26	25.62	3.89	35.68	31.09	54.00	22.91	
	1705.647	42.62	26.45	4.09	35.42	37.74	54.00	16.26	
	1796.617	36.53	26.80	4.15	35.32	32.16	54.00	21.84	

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N4000U Humidity : 54%RH

Test Mode : HDMI 1280*1024@60Hz & 1kHz Playing Date of Test : Mar 22, 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	106.385	20.31	12.53	1.36	34.20	43.50	9.30
	129.015	23.02	12.87	1.52	37.41	43.50	6.09
	186.441	27.29	10.44	1.88	39.61	43.50	3.89
	302.040	26.00	13.88	2.59	42.47	46.00	3.53
	599.321	17.28	19.10	2.31	38.69	46.00	7.31
	739.661	14.35	19.90	3.60	37.85	46.00	8.15
Vertical	35.240	18.00	15.60	0.69	34.29	40.00	5.71
	64.433	27.08	6.47	0.90	34.45	40.00	5.55
	131.297	24.89	12.73	1.53	39.15	43.50	4.35
	189.739	27.62	10.33	1.90	39.85	43.50	3.65
	302.481	24.15	13.88	2.59	40.62	46.00	5.38
	614.214	19.59	19.20	2.39	41.18	46.00	4.82

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N4000U Humidity : 54%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Mar 22, 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	107.510	22.46	12.55	1.38	36.39	43.50	7.11
	129.015	24.76	12.87	1.52	39.15	43.50	4.35
	185.138	25.64	10.50	1.88	38.02	43.50	5.48
	303.544	24.84	13.91	2.60	41.35	46.00	4.65
	599.321	13.12	19.10	2.31	34.53	46.00	11.47
	810.265	12.24	20.60	3.78	36.62	46.00	9.38
Vertical	35.160	17.80	15.60	0.69	34.09	40.00	5.91
	62.871	27.56	6.37	0.89	34.82	40.00	5.18
	130.837	24.94	12.76	1.53	39.23	43.50	4.27
	189.074	27.33	10.36	1.90	39.59	43.50	3.91
	303.544	23.23	13.91	2.60	39.74	46.00	6.26
	609.922	20.09	19.10	2.39	41.58	46.00	4.42

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N4000U Humidity : 54%RH

Test Mode : HDMI1080P Date of Test : Mar 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	60.280	25.03	6.22	0.88	32.13	40.00	7.87
	116.132	20.74	12.72	1.43	34.89	43.50	8.61
	170.793	23.41	10.87	1.78	36.06	43.50	7.44
	267.546	16.71	13.25	2.32	32.28	46.00	13.72
	401.839	17.65	16.60	2.72	36.97	46.00	9.03
	744.866	18.97	20.03	3.60	42.60	46.00	3.40
Vertical	33.799	16.00	16.55	0.67	33.22	40.00	6.78
	56.792	24.58	6.26	0.86	31.70	40.00	8.30
	88.964	21.12	10.35	1.20	32.67	43.50	10.83
	178.758	24.65	10.56	1.83	37.04	43.50	6.46
	316.589	21.98	14.35	2.62	38.95	46.00	7.05
	522.718	21.12	18.14	2.78	42.04	46.00	3.96

TEST ENGINEER: BILL WU

EUT : LED LCD TV Temperature : 22°C

Model No. : LC-50N4000U Humidity : 54%RH

Test Mode : USB Play Date of Test : Mar 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	80.644	21.78	9.43	1.09	32.30	40.00	7.70
	127.665	21.20	12.93	1.51	35.64	43.50	7.86
	171.393	24.07	10.84	1.78	36.69	43.50	6.81
	242.525	22.37	12.10	2.13	36.60	46.00	9.40
	472.176	15.91	17.34	2.88	36.13	46.00	9.87
	824.597	13.98	20.70	3.88	38.56	46.00	7.44
Vertical	44.120	18.94	11.60	0.77	31.31	40.00	8.69
	73.876	22.39	8.27	0.99	31.65	40.00	8.35
	169.599	23.30	10.96	1.77	36.03	43.50	7.47
	368.112	17.18	16.23	2.68	36.09	46.00	9.91
	545.183	14.12	18.68	2.63	35.43	46.00	10.57
	827.493	12.88	20.70	3.97	37.55	46.00	8.45

TEST ENGINEER: BILL WU

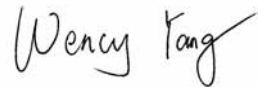
5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
FERRITE RING	BNF1730GR\ROH	Brigitte Liu Si (Shandong) photoelectric co., LTD	See Internal Photos Figure 23

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

TEST ENGINEER:



(WENCY YANG)

6 DEVIATION TO TEST SPECIFICATIONS

None