

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

LED LCD TV

Model No.	Brand
LTDN48K2207WUS	Hisense
48H4C	
48H4C+	

FCC ID : W9HLCDE0017

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-F16060
Date of Test : Feb 27 - Mar 14, 2016
Date of Report : Mar 18, 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
LTDN48K2207WUS	Hisense	120V/60Hz
48H4C		
48H4C+		

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 27 - Mar 14, 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.

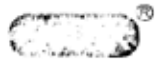
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

The test results for EUT's TV functions are contained in No.F16059, a Verification report.

Date of Test : Feb 27 - Mar 14, 2016 Date of Report : Mar 18, 2016

Producer : Hui Min Yan
HUI MIN YAN / Assistant

Review : Byron Wu
BYRON WU / Deputy Assistant Manager

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

Signatory : 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	:	☒ Production ☐ Pre-product ☐ Pro-type
Model No	:	LTDN48K2207WUS, 48H4C, 48H4C+
Note #1	:	The above models are all the same except for model number.48H4C model is tested and recorded in the report.
Note #2	:	“+”represents any of the Arabic numeral.
Brand	:	Hisense
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 : HD480DF-E32(010)
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 HDMI2 Port : Connected with DVD PLAYER #1
- (2) One HDMI1 (ARC) Port : Connected with PC
- (3) One AUDIO OUT Port : Connected with Earphone #1
- (4) One ANT Port : Connected with ATSC SG
- (5) One USB Port : Connected with H-Disk

Back Port:

- (6) One HDMI3 Port : Connected with DVD PLAYER #2
- (7) Digital Audio Out : Connected with Audio Converter to Earphone #2
- (8) 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 : CE/EMC, FCC DoC, VCCI, MIC, C-Tick, BSMI

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 : H180P

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

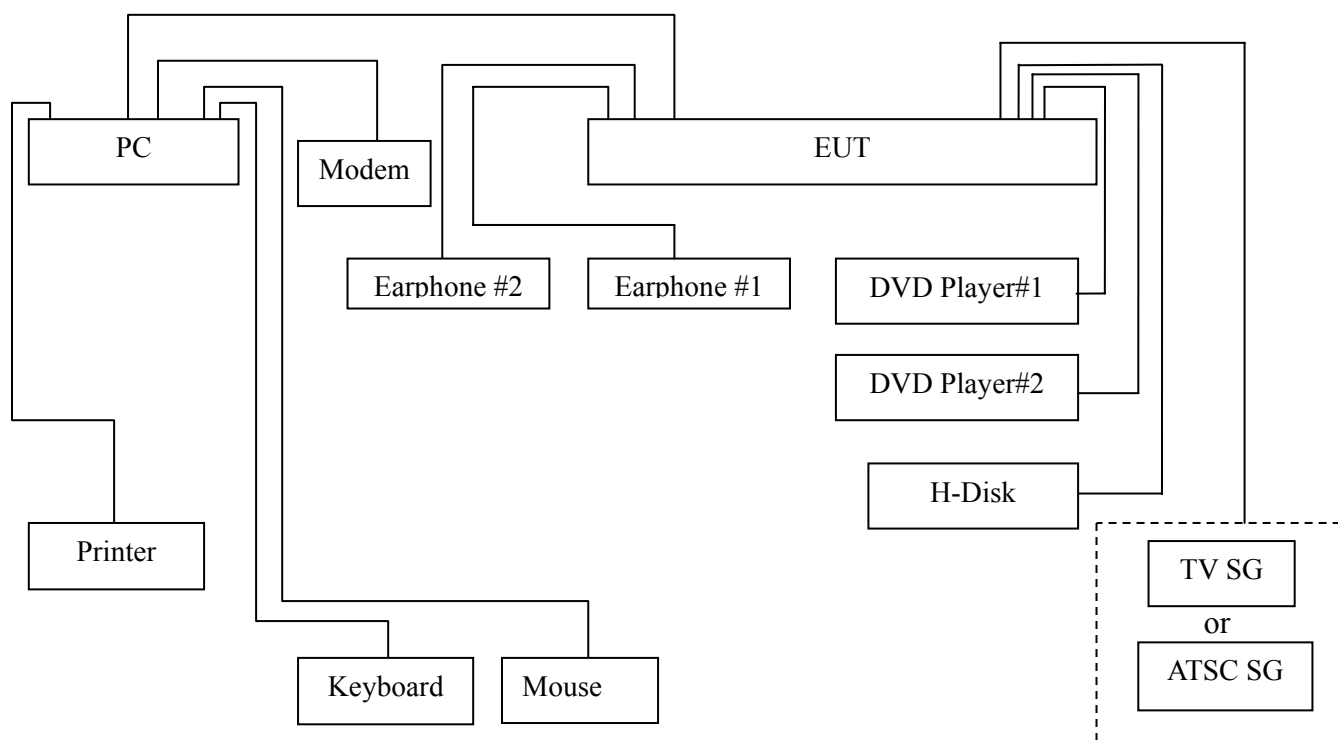
3.1 Test Equipment

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

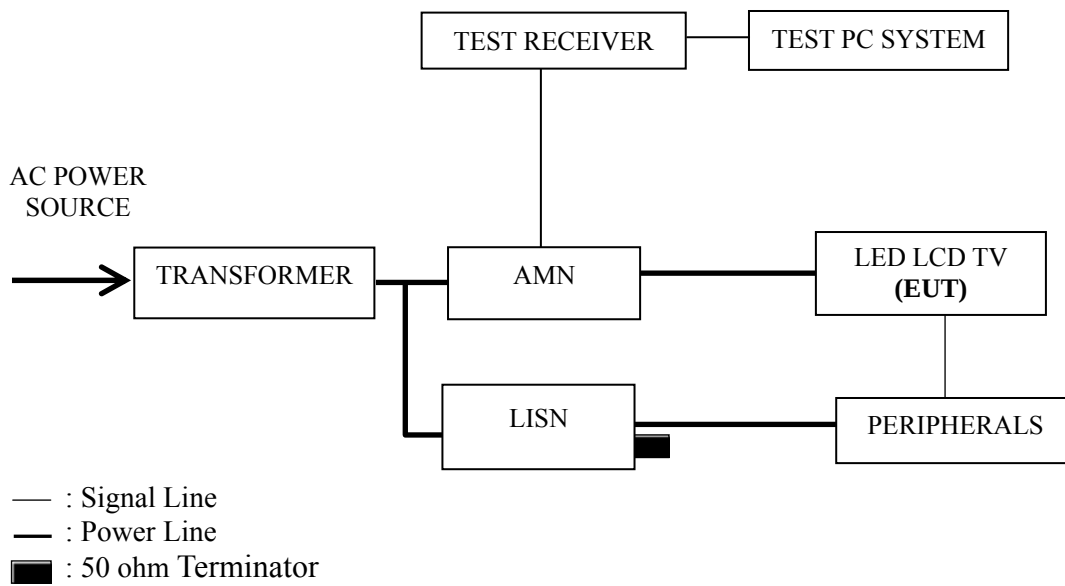
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Jul 03, 2015	Jul 02, 2016
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2015	Jun 26, 2016
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-5	Mar 20, 2015	Mar 19, 2016
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 C63.4:2014 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 USB Play for test mode. The worst emission is detected at 0.159MHz (Quasi-Peak Value) with corrected signal level of 62.37dB (μV) (limit is 65.54 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : 48H4C Humidity : 48%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Feb 27, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.158	51.59	10.58	62.17	65.57	3.40	QP
	0.350	24.90	10.44	35.34	58.96	23.62	
	0.744	29.10	10.38	39.48	56.00	16.52	
	1.336	28.90	10.39	39.29	56.00	16.71	
	2.527	28.50	10.43	38.93	56.00	17.07	
	7.300	33.30	10.47	43.77	60.00	16.23	
	0.158	39.69	10.58	50.27	55.57	5.30	AV
	0.350	9.70	10.44	20.14	48.96	28.82	
	0.744	22.90	10.38	33.28	46.00	12.72	
	1.336	21.10	10.39	31.49	46.00	14.51	
	2.527	19.20	10.43	29.63	46.00	16.37	
	7.300	22.60	10.47	33.07	50.00	16.93	
Neutral	0.157	50.99	10.58	61.57	65.62	4.05	QP
	0.374	29.40	10.41	39.81	58.42	18.61	
	0.738	30.30	10.36	40.66	56.00	15.34	
	1.338	29.10	10.39	39.49	56.00	16.51	
	2.822	27.70	10.43	38.13	56.00	17.87	
	7.532	33.50	10.52	44.02	60.00	15.98	
	0.157	39.39	10.58	49.97	55.62	5.65	AV
	0.374	18.30	10.41	28.71	48.42	19.71	
	0.738	23.00	10.36	33.36	46.00	12.64	
	1.338	21.20	10.39	31.59	46.00	14.41	
	2.822	17.10	10.43	27.53	46.00	18.47	
	7.532	21.40	10.52	31.92	50.00	18.08	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 48H4C Humidity : 48%RH

Test Mode : HDMI 1280*1024@60Hz Date of Test : Feb 27, 2016
& 1kHz Playing

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.156	51.30	10.58	61.88	65.67	3.79	QP
	0.374	26.60	10.43	37.03	58.41	21.38	
	0.561	29.90	10.38	40.28	56.00	15.72	
	1.331	29.10	10.39	39.49	56.00	16.51	
	4.286	27.30	10.47	37.77	56.00	18.23	
	7.526	34.10	10.47	44.57	60.00	15.43	
	0.156	38.80	10.58	49.38	55.67	6.29	AV
	0.374	15.80	10.43	26.23	48.41	22.18	
	0.561	20.00	10.38	30.38	46.00	15.62	
	1.331	21.20	10.39	31.59	46.00	14.41	
	4.286	18.50	10.47	28.97	46.00	17.03	
	7.526	22.00	10.47	32.47	50.00	17.53	
Neutral	0.158	51.40	10.57	61.97	65.58	3.61	QP
	0.369	29.19	10.42	39.61	58.52	18.91	
	0.656	27.21	10.35	37.56	56.00	18.44	
	1.339	29.10	10.39	39.49	56.00	16.51	
	2.514	28.01	10.42	38.43	56.00	17.57	
	7.307	33.70	10.52	44.22	60.00	15.78	
	0.158	39.50	10.57	50.07	55.58	5.51	AV
	0.369	18.79	10.42	29.21	48.52	19.31	
	0.656	17.21	10.35	27.56	46.00	18.44	
	1.339	21.30	10.39	31.69	46.00	14.31	
	2.514	18.81	10.42	29.23	46.00	16.77	
	7.307	22.30	10.52	32.82	50.00	17.18	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 48H4C Humidity : 48%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Feb 27, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.158	51.79	10.58	62.37	65.57	3.20	QP
	0.370	26.39	10.44	36.83	58.51	21.68	
	0.563	30.00	10.38	40.38	56.00	15.62	
	1.328	28.80	10.39	39.19	56.00	16.81	
	2.514	28.61	10.42	39.03	56.00	16.97	
	7.540	34.30	10.47	44.77	60.00	15.23	
	0.158	39.29	10.58	49.87	55.57	5.70	AV
	0.370	15.49	10.44	25.93	48.51	22.58	
	0.563	19.70	10.38	30.08	46.00	15.92	
	1.328	21.10	10.39	31.49	46.00	14.51	
	2.514	19.11	10.42	29.53	46.00	16.47	
	7.540	22.20	10.47	32.67	50.00	17.33	
Neutral	0.157	51.39	10.58	61.97	65.64	3.67	QP
	0.373	29.20	10.41	39.61	58.42	18.81	
	0.564	30.20	10.36	40.56	56.00	15.44	
	1.336	28.80	10.39	39.19	56.00	16.81	
	2.519	28.61	10.42	39.03	56.00	16.97	
	7.290	33.10	10.52	43.62	60.00	16.38	
	0.157	38.99	10.58	49.57	55.64	6.07	AV
	0.373	19.10	10.41	29.51	48.42	18.91	
	0.564	19.80	10.36	30.16	46.00	15.84	
	1.336	21.00	10.39	31.39	46.00	14.61	
	2.519	18.91	10.42	29.33	46.00	16.67	
	7.290	23.70	10.52	34.22	50.00	15.78	

TEST ENGINEER: WENCY YANG

EUT : LED LCD TV Temperature : 22°C

Model No. : 48H4C Humidity : 48%RH

Test Mode : HDMI 1080P Date of Test : Feb 27, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.156	51.50	10.58	62.08	65.68	3.60	QP
	0.373	26.50	10.43	36.93	58.44	21.51	
	0.562	30.20	10.38	40.58	56.00	15.42	
	1.336	28.80	10.39	39.19	56.00	16.81	
	4.296	26.60	10.47	37.07	56.00	18.93	
	7.551	33.50	10.47	43.97	60.00	16.03	
	0.156	40.00	10.58	50.58	55.68	5.10	AV
	0.373	16.40	10.43	26.83	48.44	21.61	
	0.562	20.30	10.38	30.68	46.00	15.32	
	1.336	21.10	10.39	31.49	46.00	14.51	
	4.296	17.50	10.47	27.97	46.00	18.03	
	7.551	23.00	10.47	33.47	50.00	16.53	
Neutral	0.158	51.30	10.57	61.87	65.55	3.68	QP
	0.374	29.30	10.41	39.71	58.41	18.70	
	0.562	30.50	10.36	40.86	56.00	15.14	
	1.334	29.10	10.39	39.49	56.00	16.51	
	4.300	26.50	10.46	36.96	56.00	19.04	
	7.548	33.50	10.52	44.02	60.00	15.98	
	0.158	39.70	10.57	50.27	55.55	5.28	AV
	0.374	18.20	10.41	28.61	48.41	19.80	
	0.562	20.60	10.36	30.96	46.00	15.04	
	1.334	21.00	10.39	31.39	46.00	14.61	
	4.300	17.50	10.46	27.96	46.00	18.04	
	7.548	22.00	10.52	32.52	50.00	17.48	

EUT : LED LCD TV Temperature : 22°C

Model No. : 48H4C Humidity : 48%RH

Test Mode : USB Play Date of Test : Feb 27, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.159	51.79	10.58	62.37	65.54	3.17	QP
	0.373	26.40	10.43	36.83	58.44	21.61	
	0.744	29.00	10.38	39.38	56.00	16.62	
	2.237	28.30	10.42	38.72	56.00	17.28	
	4.325	27.50	10.47	37.97	56.00	18.03	
	7.537	34.30	10.47	44.77	60.00	15.23	
	0.159	39.99	10.58	50.57	55.54	4.97	AV
	0.373	16.50	10.43	26.93	48.44	21.51	
	0.744	23.10	10.38	33.48	46.00	12.52	
	2.237	19.80	10.42	30.22	46.00	15.78	
	4.325	18.60	10.47	29.07	46.00	16.93	
	7.537	22.50	10.47	32.97	50.00	17.03	
Neutral	0.158	51.40	10.57	61.97	65.57	3.60	QP
	0.369	29.29	10.42	39.71	58.53	18.82	
	0.742	29.50	10.36	39.86	56.00	16.14	
	1.337	28.70	10.39	39.09	56.00	16.91	
	2.517	27.91	10.42	38.33	56.00	17.67	
	7.531	33.90	10.52	44.42	60.00	15.58	
	0.158	39.60	10.57	50.17	55.57	5.40	AV
	0.369	18.59	10.42	29.01	48.53	19.52	
	0.742	23.30	10.36	33.66	46.00	12.34	
	1.337	20.90	10.39	31.29	46.00	14.71	
	2.517	18.81	10.42	29.23	46.00	16.77	
	7.531	21.70	10.52	32.22	50.00	17.78	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

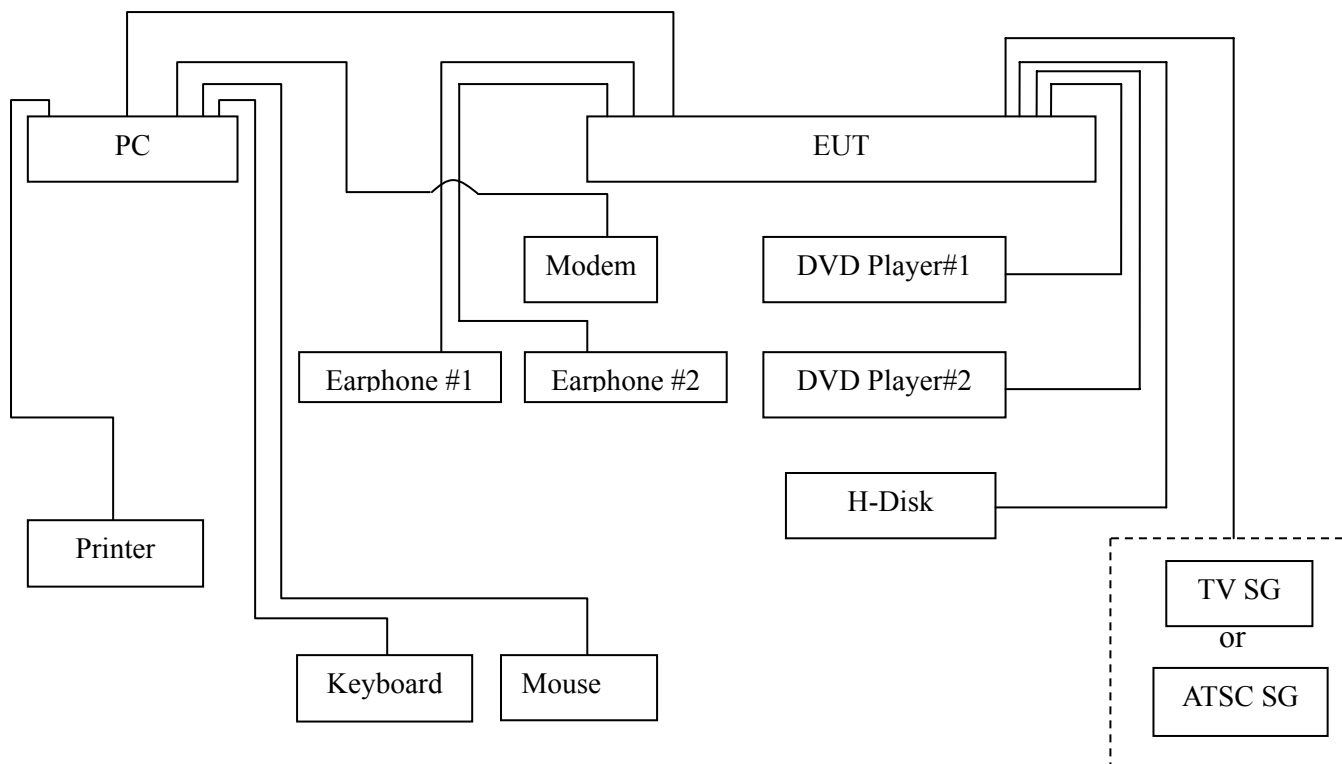
4.1 Test Equipment

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	--	--

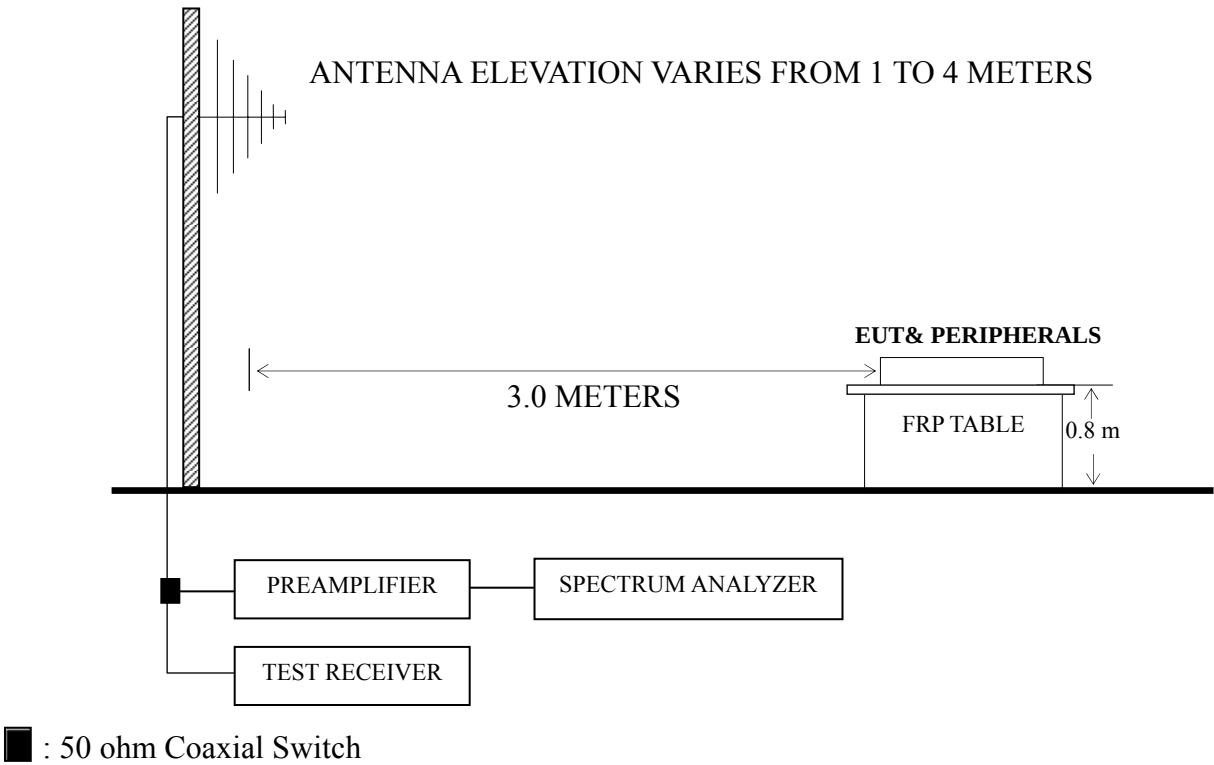
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals

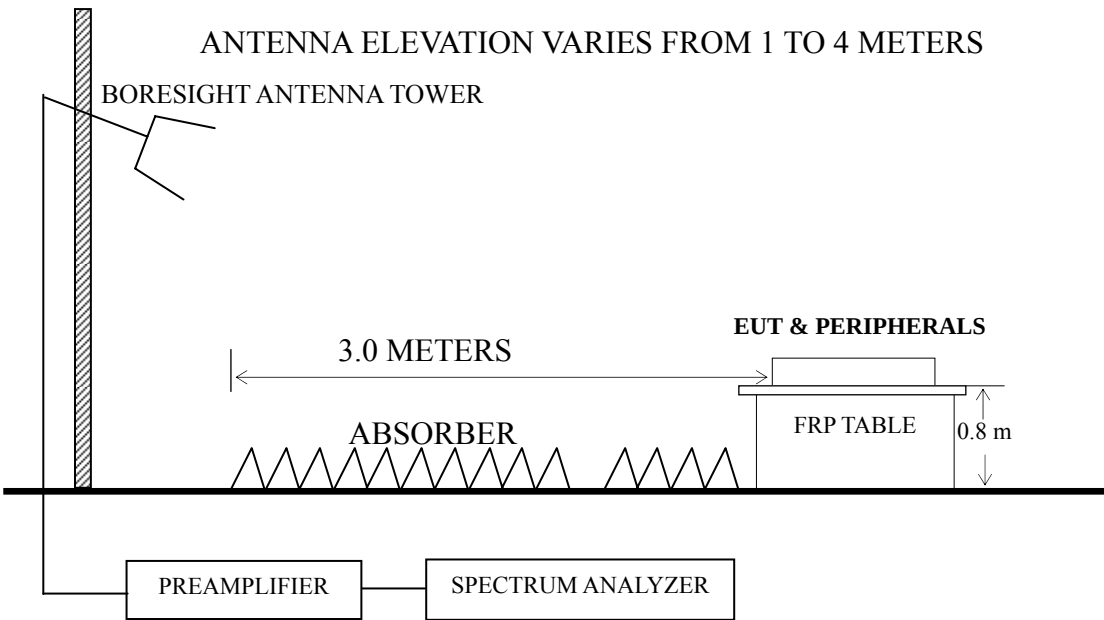


4.2.2 Radiated emission test setup

4.2.2.1 Below 1GHz



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 742.480MHz with corrected signal level of 44.97 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.9 m height and the turntable was at 150°. The worst emission at vertical polarization was detected at 742.480 MHz with corrected signal level of 43.37dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.0 m height and the turntable was at 25°.

EUT : LED LCD TV Temperature : 22°C

Model No. : 48H4C Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Mar 14, 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	80.927	24.74	9.46	1.09	--	35.29	40.00	4.71	QP
	148.963	26.71	11.57	1.63	--	39.91	43.50	3.59	
	166.068	28.56	11.24	1.75	--	41.55	43.50	1.95	
	593.950	23.70	18.85	2.31	--	44.86	46.00	1.14	
	742.480	21.40	19.97	3.60	--	44.97	46.00	1.03	
	890.728	17.63	21.30	4.46	--	43.39	46.00	2.61	
	1064.720	48.22	23.83	4.43	36.37	40.11	74.00	33.89	PK
	1235.441	48.87	24.59	3.56	36.07	40.95	74.00	33.05	
	1356.081	47.84	25.08	3.72	35.89	40.75	74.00	33.25	
	1499.209	52.33	25.60	3.89	35.68	46.14	74.00	27.86	
	1717.915	47.94	26.49	4.09	35.41	43.11	74.00	30.89	
	1933.569	49.53	27.27	4.35	35.17	45.98	74.00	28.02	
	1064.720	35.37	23.83	4.43	36.37	27.26	54.00	26.74	AV
	1235.441	33.29	24.59	3.56	36.07	25.37	54.00	28.63	
	1356.081	33.29	25.08	3.72	35.89	26.20	54.00	27.80	
	1499.209	36.74	25.60	3.89	35.68	30.55	54.00	23.45	
	1717.915	34.29	26.49	4.09	35.41	29.46	54.00	24.54	
	1933.569	35.85	27.27	4.35	35.17	32.30	54.00	21.70	

EUT : LED LCD TV Temperature : 22°C

Model No. : 48H4C Humidity : 60%RH

Test Mode : HDMI 1920*1080@60Hz & 1kHz Playing Date of Test : Mar 14, 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	35.200	19.20	15.60	0.69	--	35.49	40.00	4.51	QP
	78.689	24.72	9.17	1.07	--	34.96	40.00	5.04	
	182.559	26.94	10.50	1.87	--	39.31	43.50	4.19	
	595.133	19.80	18.85	2.31	--	40.96	46.00	5.04	
	742.480	19.80	19.97	3.60	--	43.37	46.00	2.63	
	890.728	15.62	21.30	4.46	--	41.38	46.00	4.62	
	1027.241	50.03	23.64	4.66	36.45	41.88	74.00	32.12	PK
	1174.989	52.63	24.34	3.63	36.18	44.42	74.00	29.58	
	1296.677	49.53	24.85	3.65	35.98	42.05	74.00	31.95	
	1430.969	48.97	25.36	3.79	35.78	42.34	74.00	31.66	
	1720.996	47.70	26.51	4.09	35.40	42.90	74.00	31.10	
	1895.833	52.33	27.14	4.31	35.21	48.57	74.00	25.43	
	1027.241	36.95	23.64	4.66	36.45	28.80	54.00	25.20	AV
	1174.989	35.67	24.34	3.63	36.18	27.46	54.00	26.54	
	1296.677	34.90	24.85	3.65	35.98	27.42	54.00	26.58	
	1430.969	34.73	25.36	3.79	35.78	28.10	54.00	25.90	
	1720.996	32.19	26.51	4.09	35.40	27.39	54.00	26.61	
	1895.833	36.54	27.14	4.31	35.21	32.78	54.00	21.22	

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : 48H4C Humidity : 60%RH

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

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	78.689	22.43	9.17	1.07	32.67	40.00	7.33
	243.377	22.71	12.10	2.13	36.94	46.00	9.06
	286.982	21.58	13.55	2.49	37.62	46.00	8.38
	480.528	22.08	17.50	2.90	42.48	46.00	3.52
	540.000	23.00	18.50	2.68	44.18	46.00	1.82
	890.728	15.92	21.30	4.46	41.68	46.00	4.32
Vertical	35.280	19.20	15.50	0.69	35.39	40.00	4.61
	79.800	26.58	9.34	1.09	37.01	40.00	2.99
	145.861	22.87	11.95	1.61	36.43	43.50	7.07
	219.075	23.83	10.44	2.04	36.31	46.00	9.69
	540.000	21.10	18.50	2.68	42.28	46.00	3.72
	925.756	10.23	21.63	4.61	36.47	46.00	9.53

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : 48H4C Humidity : 60%RH

Test Mode : HDMI 640*480@60Hz & 1kHz Playing Date of Test : Mar 14, 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	44.587	20.27	11.20	0.77	32.24	40.00	7.76
	80.927	25.63	9.46	1.09	36.18	40.00	3.82
	148.963	19.49	11.57	1.63	32.69	43.50	10.81
	243.377	25.51	12.10	2.13	39.74	46.00	6.26
	480.000	17.80	17.50	2.90	38.20	46.00	7.80
	906.482	8.27	21.50	4.56	34.33	46.00	11.67
Vertical	35.260	19.20	15.60	0.69	35.49	40.00	4.51
	78.413	25.77	9.12	1.05	35.94	40.00	4.06
	150.011	22.56	11.50	1.63	35.69	43.50	7.81
	222.170	22.35	10.65	2.05	35.05	46.00	10.95
	480.528	17.06	17.50	2.90	37.46	46.00	8.54
	925.756	7.29	21.63	4.61	33.53	46.00	12.47

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : 48H4C Humidity : 60%RH

Test Mode : HDMI1080P Date of Test : Mar 14, 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	75.182	27.04	8.56	1.01	36.61	40.00	3.39
	135.032	21.39	12.60	1.55	35.54	43.50	7.96
	480.528	21.07	17.50	2.90	41.47	46.00	4.53
	593.050	20.06	18.85	2.31	41.22	46.00	4.78
	742.480	19.00	19.97	3.60	42.57	46.00	3.43
	916.069	12.52	21.50	4.61	38.63	46.00	7.37
Vertical	31.071	14.81	18.15	0.65	33.61	40.00	6.39
	72.592	28.67	7.90	0.98	37.55	40.00	2.45
	80.644	25.53	9.43	1.09	36.05	40.00	3.95
	159.784	25.02	11.11	1.70	37.83	43.50	5.67
	480.528	16.37	17.50	2.90	36.77	46.00	9.23
	922.516	14.96	21.57	4.61	41.14	46.00	4.86

TEST ENGINEER: MARK LI

EUT : LED LCD TV Temperature : 22°C

Model No. : 48H4C Humidity : 60%RH

Test Mode : USB Play Date of Test : Mar 14, 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	67.675	23.61	6.94	0.92	31.47	40.00	8.53
	108.267	21.68	12.57	1.39	35.64	43.50	7.86
	149.486	19.90	11.57	1.63	33.10	43.50	10.40
	230.099	23.41	11.20	2.09	36.70	46.00	9.30
	535.707	12.36	18.40	2.68	33.44	46.00	12.56
	766.057	13.57	20.37	3.63	37.57	46.00	8.43
Vertical	39.437	18.29	12.99	0.73	32.01	40.00	7.99
	72.084	23.89	7.83	0.98	32.70	40.00	7.30
	135.032	21.39	12.60	1.55	35.54	43.50	7.96
	230.907	23.52	11.24	2.09	36.85	46.00	9.15
	492.469	17.47	17.66	2.93	38.06	46.00	7.94
	752.743	15.18	20.15	3.62	38.95	46.00	7.05

TEST ENGINEER: MARK LI

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
FERRITE CORE	BNF1730GR\ROH	Brigitte Liu Si (Shandong) photoelectric co., LTD	See Appendix Figure 20

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

TEST ENGINEER:



(BYRON WU)

6 DEVIATION TO TEST SPECIFICATIONS

None.

