

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

LED LCD TV

Model No.	Serial No.	Brand
LTDN46K316XWUS3D	E1204417-02/02	Hisense
46K316DW	--	

FCC ID : W9HLCDE0007

Prepared For : Hisense Electric Co., Ltd.
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Development Zone, Qingdao, China

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Report No. : ACI-F12070
Date of Test : Apr 14 – 22, 2012
Date of Report : Apr 26, 2012

TABLE OF CONTENTS

	Page
1 SUMMARY OF STANDARDS AND RESULTS	4
1.1 Description of Standards and Results.....	4
2 GENERAL INFORMATION	5
2.1 Description of Equipment Under Test.....	5
2.2 Peripherals.....	6
2.3 Description of Test Facility.....	8
2.4 Measurement Uncertainty.....	8
3 CONDUCTED EMISSION TEST	9
3.1 Test Equipment.....	9
3.2 Block Diagram of Test Setup.....	9
3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)].....	10
3.4 Test Configuration.....	10
3.5 Operating Condition of EUT.....	11
3.6 Test Procedures.....	11
3.7 Test Results.....	12
4 RADIATED EMISSION TEST	19
4.1 Test Equipment.....	19
4.2 Block Diagram of Test Setup.....	19
4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)].....	20
4.4 Test Configuration.....	20
4.5 Operating Condition of EUT.....	20
4.6 Test Procedures.....	21
4.7 Test Results.....	21
5 DEBUG DESCRIPTION	28
6 DEVIATION TO TEST SPECIFICATIONS	29

TEST REPORT FOR FCC CERTIFICATE

Applicant : Hisense Electric Co., Ltd.

Manufacturer : Hisense Electric Co., Ltd.

EUT Description : LED LCD TV

Model No.	Serial No.	Brand	Power Supply
LTDN46K316XWUS3D	E1204417-02/02	Hisense	120V/60Hz
46K316DW	--		

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2011
AND ANSI C63.4-2003*

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; S/N: Refer to Sec2.1) which was tested in 3m anechoic chamber Apr 14 – 22, 2012 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.F12071, a Verification report.

Date of Test : Apr 14 – 22, 2012

Date of Report : Apr 26, 2012

Producer :

Yenny Yu.
YENNY YU / Assistant

Review :

Dio Yang.
DIO YANG/ Assistant Manager

AUDIX[®] For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

.....Signatory.....
Authorized Signature EMC SAMMY CHEN / Deputy 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 2011 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2011 AND ANSI C63.4-2003	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.	Serial No.	Brand
LTDN46K316XWUS3D	E1204417-02/02	Hisense
46K316DW	--	

Brand : Hisense

Note : The above models are all the same except for the different model name.
The LTDN46K316XWUS3D was tested and reported in the report.

Applicant : Hisense Electric Co., Ltd.
No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China

Manufacturer : Hisense Electric Co., Ltd.
No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China

LCD Panel : Manufacturer : Hisense
M/N : HE460FD-B01(1000)\PW1

Max Resolution : 1024*768@60Hz

D-Sub Cable : Shielded, Detachable, 1.85m,
with two cores on cable

HDMI Cable : Shielded, Detachable, 1.00m,

Power Cord : Unshielded, Detachable, 1.80m

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

Side Port:

- (1) One HDMI2 Port : Connected with DVD #1
- (2) One HDMI1 Port : Connected with PC
- (3) One Headphone Port : Connected with Earphone
- (4) One ANT Port : Connected with ATSC SG / TV SG
- (5) One component of YPbPr Port : Connected with DVD #1
- (6) One component of YPbPr Audio Port : Connected with DVD #1
- (7) One component of AV Port : Connected with DVD #1
- (8) One DIGITAL AUDIO OUT Port : Connected with DVD

Bottom Port:

- (9) One LAN Port : Connected with PC
- (10) One USB2 Port : Connected with U-Disk
- (11) One USB1 Port : Connected with U-Disk
- (12) One VGA Port : Connected with PC
- (13) One PC/DVI Audio In Port : Connected with PC
- (14) One HDMI4 Port : Connected with DVD #3
- (15) One HDMI3 Port : Connected with DVD #2

2.2 Peripherals

2.2.1 PC

Manufacturer : HP
Model Number : dx7400MT
Serial Number : CNG8130K89
Power Cord : Unshielded, Detachable, 1.8m
Certificate : FCC DoC; CE/EMC; VCCI; C-Tick; UL
BSMI (R33001) 3C (A000111)
MIC (E-A011-04-2659(B))

2.2.2 Printer

Manufacturer : HP
Model Number : C3990A
Serial Number : JPZX020487
Data Cable : Shielded, detachable, 1.5m
Certificate : GS, CE/EMC, C-Tick, FCC DoC

2.2.3 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

2.2.4 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

2.2.5 Modem

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

2.2.6 Earphone

Manufacturer : SONY
Model Number : MDR-E808
Serial Number : 1808030805305506

2.2.7 TV Signal Generator

Manufacturer : FLUKE
Model Number : 54200m01
Serial Number : 814008
Data Cable : Shielded, detachable, 2.0m
Power Cord : Unshielded, detachable, 2.0m
Certificate : CE/EMC, FCC DoC, CCC

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 : FCC DoC, CE/EMC, CCC

2.2.10 DVD PLAYER #2

Manufacturer : LG
 Model Number : DF9921N
 Serial Number : 3850R-M846W
 Certificate : FCC DoC, CE/EMC, CCC

2.2.11 DVD PLAYER #3

Manufacturer : DGT RONIK
 Model Number : DV-A340
 Serial Number : 10004184-C
 Certificate : FCC DoC, CE/EMC, CCC

2.2.12 U-DISK

Manufacturer : LG
 Model Number : 1GB

2.3 Description of Test Facility

Site Description (No.3 3m Chamber) : Sept. 17, 1998 file on
 Apr 29, 2009 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

NVLAP Lab Code : 200371-0

2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty: U = 3.43 dB
 Radiated Emission Expanded Uncertainty (30-200MHz):
 U = 4.67 dB (Horizontal)
 U = 4.72 dB (Vertical)

Radiated Emission Expanded Uncertainty (200M-1GHz):
 U = 4.81 dB (Horizontal)
 U = 4.69 dB (Vertical)

3 CONDUCTED EMISSION TEST

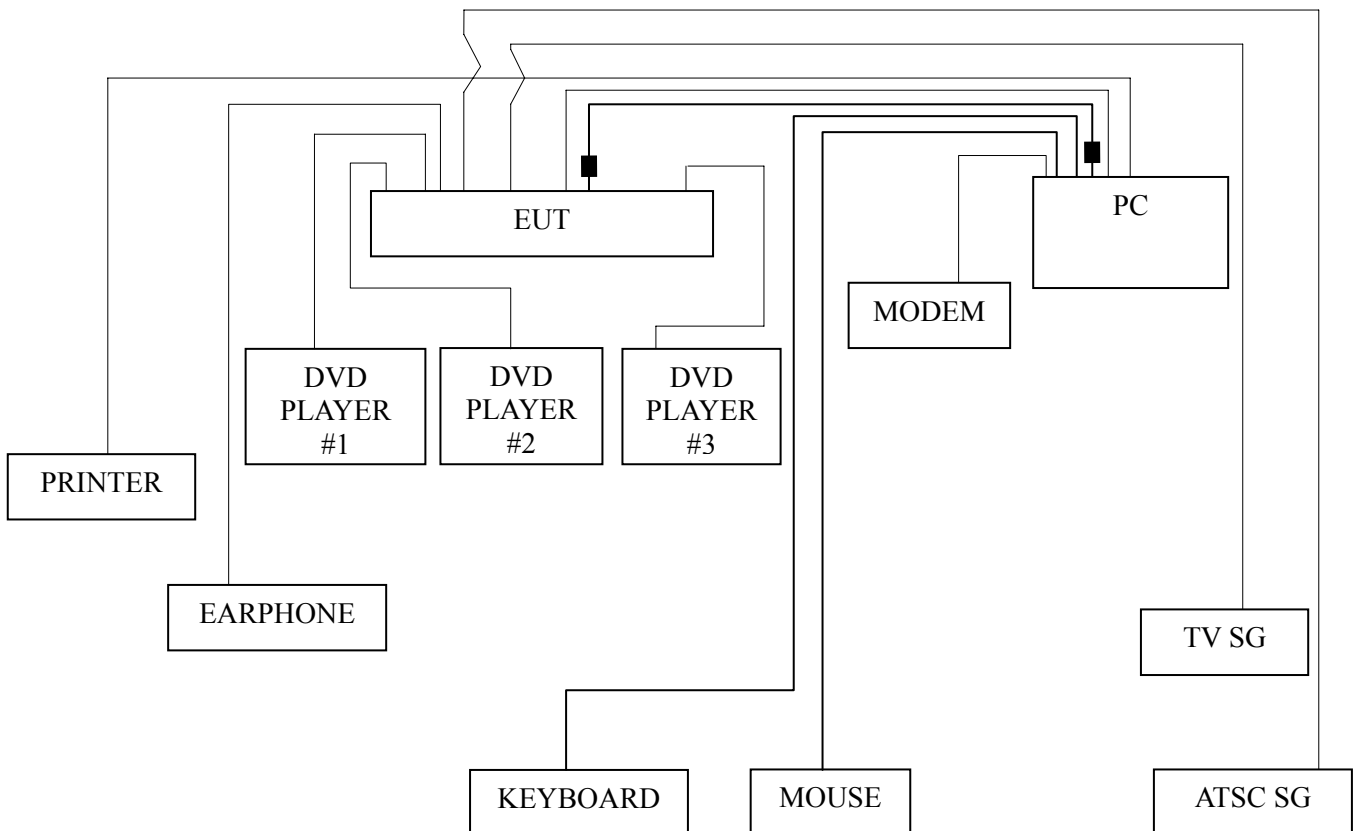
3.1 Test Equipment

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	100841	Mar 22, 2012	Mar 22, 2013
2.	Artificial Mains Network (AMN #1)	R&S	ESH2-Z5	843890/011	Feb 13, 2012	Feb 13, 2013
3.	Artificial Mains Network (AMN #2)	R&S	ENV4200	100125	Mar 22, 2012	Mar 22, 2013
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Mar 18, 2012	Sep 18, 2012
5.	50 Ω Terminator	Anritsu	BNC	001	Mar 22, 2012	Mar 22, 2013
6.	Software	Audix	E3	SET00200 9804M592	--	--

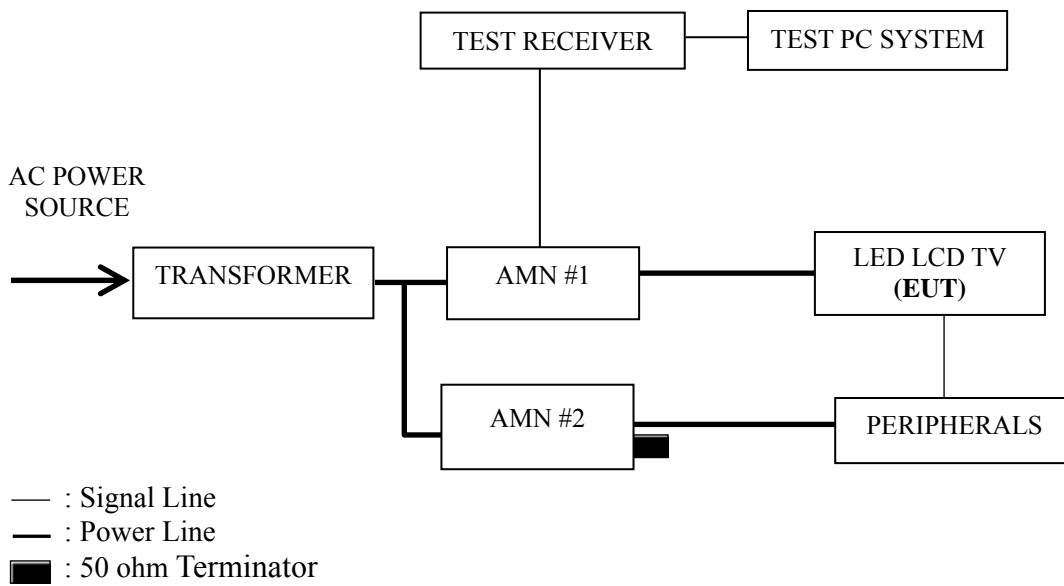
3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



■ : Ferrite core

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 D-Sub & HDMI Input).
- 3.5.5 In USB Play mode, set the EUT play digital media from U-Disk.
- 3.5.6 In LAN mode, set the EUT play digital media through LAN port.
- 3.5.7 Repeat above procedure 3.5.6 for difference test mode.
- 3.5.8 The other peripherals devices were driven and operated during the test.
- 3.5.9 The test modes are as follows:

Test Mode
D-Sub 1024*768@60Hz
HDMI 1024*768@60Hz
D-Sub 800*600@60Hz
D-Sub 640*480@60Hz
USB Play
LAN

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
D-Sub 1024*768@60Hz	P13
HDMI 1024*768@60Hz	P14
D-Sub 800*600@60Hz	P15
D-Sub 640*480@60Hz	P16
USB Play	P17
LAN	P18

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 D-Sub 640*480@60Hz test mode. The worst emission is detected at 0.161 MHz (Average Value) with corrected signal level of 38.24 dB (μV) (limit is 55.43 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K316XWUS3D Humidity : 48%RH

Serial No. : E1204417-02/02 Date of Test : Apr 14, 2012

Test Mode : D-Sub 1024*768@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.161	47.37	0.24	47.61	65.43	17.82	QP
	0.573	28.63	0.30	28.93	56.00	27.07	
	1.054	31.09	0.32	31.41	56.00	24.59	
	2.396	25.19	0.40	25.59	56.00	30.41	
	4.315	23.10	0.49	23.59	56.00	32.41	
	25.321	36.82	1.18	38.00	60.00	22.00	
	0.161	37.50	0.24	37.74	55.43	17.69	AV
	0.573	19.01	0.30	19.31	46.00	26.69	
	1.054	21.50	0.32	21.82	46.00	24.18	
	2.396	15.20	0.40	15.60	46.00	30.40	
	4.315	13.20	0.49	13.69	46.00	32.31	
	25.321	26.50	1.18	27.68	50.00	22.32	
Neutral	0.162	46.72	0.13	46.85	65.34	18.49	QP
	0.552	28.18	0.17	28.35	56.00	27.65	
	1.054	31.49	0.22	31.71	56.00	24.29	
	2.422	26.68	0.19	26.87	56.00	29.13	
	4.114	24.15	0.40	24.55	56.00	31.45	
	23.636	37.48	1.02	38.50	60.00	21.50	
	0.162	36.20	0.13	36.33	55.34	19.01	AV
	0.552	18.21	0.17	18.38	46.00	27.62	
	1.054	21.60	0.22	21.82	46.00	24.18	
	2.422	16.90	0.19	17.09	46.00	28.91	
	4.114	14.50	0.40	14.90	46.00	31.10	
	23.636	27.11	1.02	28.13	50.00	21.87	

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K316XWUS3D Humidity : 48%RH

Serial No. : E1204417-02/02 Date of Test : Apr 14, 2012

Test Mode : HDMI 1024*768@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.162	47.30	0.24	47.54	65.34	17.80	QP
	0.585	28.65	0.28	28.93	56.00	27.07	
	1.043	31.10	0.32	31.42	56.00	24.58	
	2.448	25.60	0.40	26.00	56.00	30.00	
	4.114	23.67	0.49	24.16	56.00	31.84	
	24.142	37.30	1.16	38.46	60.00	21.54	
	0.162	37.40	0.24	37.64	55.34	17.70	AV
	0.585	18.60	0.28	18.88	46.00	27.12	
	1.043	21.20	0.32	21.52	46.00	24.48	
	2.448	15.30	0.40	15.70	46.00	30.30	
	4.114	13.40	0.49	13.89	46.00	32.11	
	24.142	27.20	1.16	28.36	50.00	21.64	
Neutral	0.164	46.39	0.13	46.52	65.25	18.73	QP
	0.564	27.69	0.17	27.86	56.00	28.14	
	1.054	30.91	0.22	31.13	56.00	24.87	
	2.334	26.20	0.19	26.39	56.00	29.61	
	3.642	23.81	0.36	24.17	56.00	31.83	
	24.400	39.12	1.04	40.16	60.00	19.84	
	0.164	36.50	0.13	36.63	55.25	18.62	AV
	0.564	17.51	0.17	17.68	46.00	28.32	
	1.054	21.00	0.22	21.22	46.00	24.78	
	2.334	15.90	0.19	16.09	46.00	29.91	
	3.642	14.01	0.36	14.37	46.00	31.63	
	24.400	28.81	1.04	29.85	50.00	20.15	

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K316XWUS3D Humidity : 48%RH

Serial No. : E1204417-02/02 Date of Test : Apr 14, 2012

Test Mode : D-Sub 800*600@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.161	47.62	0.24	47.86	65.43	17.57	QP
	0.585	28.84	0.28	29.12	56.00	26.88	
	1.054	30.72	0.32	31.04	56.00	24.96	
	2.422	25.77	0.40	26.17	56.00	29.83	
	4.114	23.26	0.49	23.75	56.00	32.25	
	23.888	37.59	1.15	38.74	60.00	21.26	
	0.161	37.20	0.24	37.44	55.43	17.99	AV
	0.585	19.00	0.28	19.28	46.00	26.72	
	1.054	20.10	0.32	20.42	46.00	25.58	
	2.422	15.50	0.40	15.90	46.00	30.10	
	4.114	13.50	0.49	13.99	46.00	32.01	
	23.888	27.90	1.15	29.05	50.00	20.95	
Neutral	0.162	46.66	0.13	46.79	65.34	18.55	QP
	0.573	28.21	0.18	28.39	56.00	27.61	
	1.054	31.83	0.22	32.05	56.00	23.95	
	2.448	27.04	0.19	27.23	56.00	28.77	
	4.224	23.37	0.40	23.77	56.00	32.23	
	23.888	38.64	1.04	39.68	60.00	20.32	
	0.162	36.90	0.13	37.03	55.34	18.31	AV
	0.573	18.50	0.18	18.68	46.00	27.32	
	1.054	21.50	0.22	21.72	46.00	24.28	
	2.448	17.10	0.19	17.29	46.00	28.71	
	4.224	13.50	0.40	13.90	46.00	32.10	
	23.888	28.76	1.04	29.80	50.00	20.20	

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K316XWUS3D Humidity : 48%RH

Serial No. : E1204417-02/02 Date of Test : Apr 14, 2012

Test Mode : D-Sub 640*480@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.161	47.67	0.24	47.91	65.43	17.52	QP
	0.585	28.65	0.28	28.93	56.00	27.07	
	1.054	30.65	0.32	30.97	56.00	25.03	
	2.581	23.90	0.40	24.30	56.00	31.70	
	4.158	23.55	0.49	24.04	56.00	31.96	
	24.400	36.65	1.16	37.81	60.00	22.19	
	0.161	38.00	0.24	38.24	55.43	17.19	AV
	0.585	18.50	0.28	18.78	46.00	27.22	
	1.054	20.90	0.32	21.22	46.00	24.78	
	2.581	15.10	0.40	15.50	46.00	30.50	
	4.158	13.80	0.49	14.29	46.00	31.71	
	24.400	27.01	1.16	28.17	50.00	21.83	
Neutral	0.162	46.73	0.13	46.86	65.34	18.48	QP
	0.552	28.35	0.17	28.52	56.00	27.48	
	1.054	31.79	0.22	32.01	56.00	23.99	
	2.581	26.39	0.20	26.59	56.00	29.41	
	3.985	24.20	0.39	24.59	56.00	31.41	
	24.790	37.53	1.06	38.59	60.00	21.41	
	0.162	36.80	0.13	36.93	55.34	18.41	AV
	0.552	18.61	0.17	18.78	46.00	27.22	
	1.054	21.90	0.22	22.12	46.00	23.88	
	2.581	16.50	0.20	16.70	46.00	29.30	
	3.985	14.30	0.39	14.69	46.00	31.31	
	24.790	27.69	1.06	28.75	50.00	21.25	

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K316XWUS3D Humidity : 48%RH

Serial No. : E1204417-02/02 Date of Test : Apr 14, 2012

Test Mode : USB Play

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.162	47.22	0.24	47.46	65.34	17.88	QP
	0.573	27.28	0.30	27.58	56.00	28.42	
	1.037	30.70	0.32	31.02	56.00	24.98	
	2.581	24.50	0.40	24.90	56.00	31.10	
	4.114	23.12	0.49	23.61	56.00	32.39	
	23.888	37.89	1.15	39.04	60.00	20.96	
	0.162	37.70	0.24	37.94	55.34	17.40	AV
	0.573	17.81	0.30	18.11	46.00	27.89	
	1.037	20.60	0.32	20.92	46.00	25.08	
	2.581	15.20	0.40	15.60	46.00	30.40	
	4.114	14.40	0.49	14.89	46.00	31.11	
	23.888	27.60	1.15	28.75	50.00	21.25	
Neutral	0.162	46.44	0.13	46.57	65.34	18.77	QP
	0.552	27.99	0.17	28.16	56.00	27.84	
	1.043	30.73	0.22	30.95	56.00	25.05	
	2.334	26.58	0.19	26.77	56.00	29.23	
	4.158	23.69	0.40	24.09	56.00	31.91	
	23.888	40.66	1.04	41.70	60.00	18.30	
	0.162	36.70	0.13	36.83	55.34	18.51	AV
	0.552	17.81	0.17	17.98	46.00	28.02	
	1.043	20.80	0.22	21.02	46.00	24.98	
	2.334	16.60	0.19	16.79	46.00	29.21	
	4.158	14.60	0.40	15.00	46.00	31.00	
	23.888	30.69	1.04	31.73	50.00	18.27	

TEST ENGINEER: LUY LV

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K316XWUS3D Humidity : 48%RH

Serial No. : E1204417-02/02 Date of Test : Apr 14, 2012

Test Mode : LAN

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.162	47.30	0.24	47.54	65.34	17.80	QP
	0.579	28.34	0.30	28.64	56.00	27.36	
	1.043	30.56	0.32	30.88	56.00	25.12	
	2.581	25.53	0.40	25.93	56.00	30.07	
	5.419	22.18	0.52	22.70	60.00	37.30	
	23.888	37.57	1.15	38.72	60.00	21.28	
	0.162	37.50	0.24	37.74	55.34	17.60	AV
	0.579	18.10	0.30	18.40	46.00	27.60	
	1.043	20.30	0.32	20.62	46.00	25.38	
	2.581	16.70	0.40	17.10	46.00	28.90	
	5.419	13.40	0.52	13.92	50.00	36.08	
	23.888	27.50	1.15	28.65	50.00	21.35	
Neutral	0.164	46.40	0.13	46.53	65.25	18.72	QP
	0.579	27.74	0.18	27.92	56.00	28.08	
	1.054	31.38	0.22	31.60	56.00	24.40	
	2.334	25.81	0.19	26.00	56.00	30.00	
	4.114	23.15	0.40	23.55	56.00	32.45	
	24.142	36.57	1.04	37.61	60.00	22.39	
	0.164	35.80	0.13	35.93	55.25	19.32	AV
	0.579	17.10	0.18	17.28	46.00	28.72	
	1.054	21.20	0.22	21.42	46.00	24.58	
	2.334	15.10	0.19	15.29	46.00	30.71	
	4.114	14.40	0.40	14.80	46.00	31.20	
	24.142	26.80	1.04	27.84	50.00	22.16	

TEST ENGINEER: LUY LV

4 RADIATED EMISSION TEST

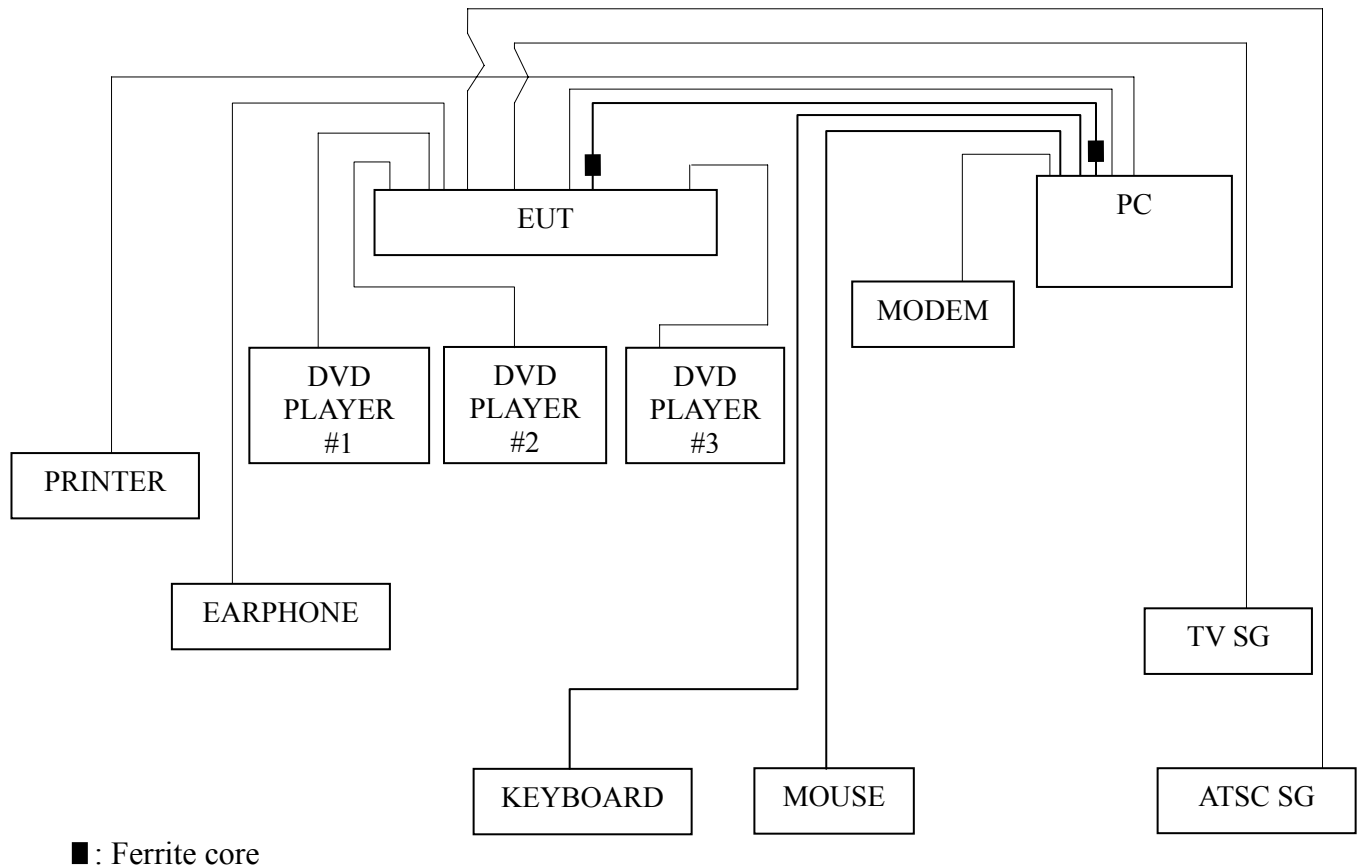
4.1 Test Equipment

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

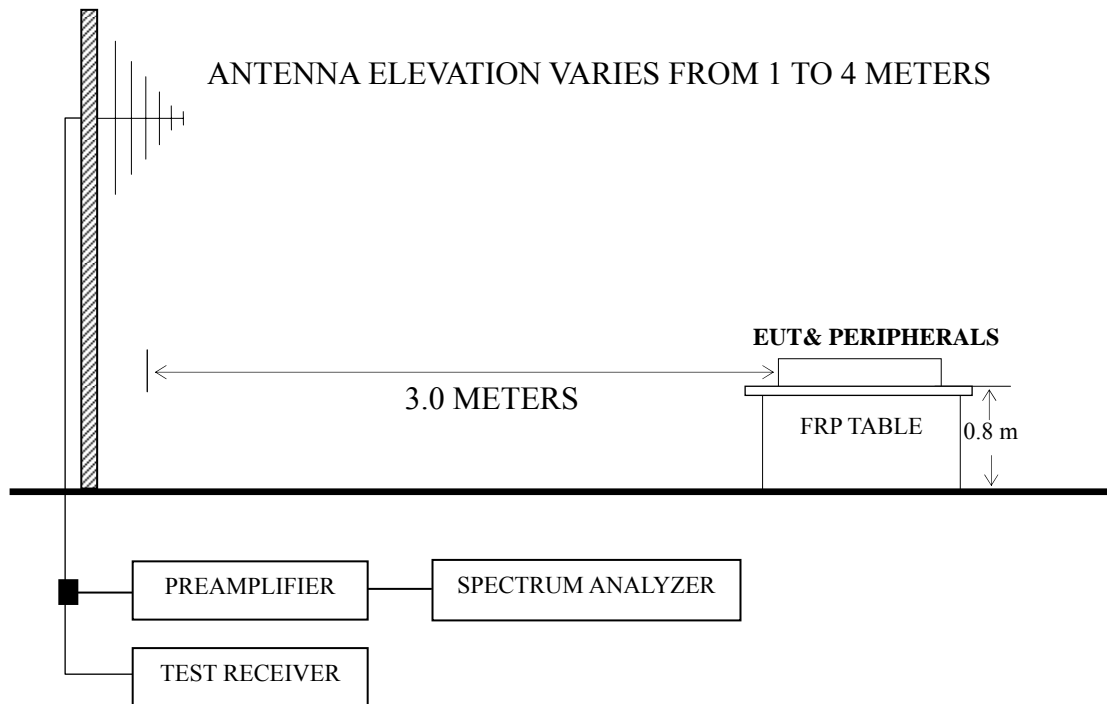
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESVS10	844594/001	Mar 22, 2012	Mar 22, 2013
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 18, 2012	Sep 18, 2012
3.	Bi-log Antenna	TESEQ	CBL6112D	23192	Dec 01, 2011	Dec 01, 2012
4.	Spectrum	Agilent	E7405A	MY45106600	Mar 22, 2012	Mar 22, 2013
5.	50Ω Coaxial Switch	Anritsu	MP59B	6200426390	Mar 18, 2012	Sep 18, 2012
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

4.2 Block Diagram of Test Setup

4.2.1 EUT and Peripherals



4.2.2 Radiated emission test setup



■ : 50 ohm Coaxial Switch

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 C63.4:2003 requirements during radiated emission test.

The I.F. bandwidth of Test Receiver R&S ESVS10 was set at 120 kHz.

The frequency range from 30 MHz to 1000MHz was checked for all test modes.

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
D-Sub 1024*768@60Hz	P22
HDMI 1024*768@60Hz	P23
D-Sub 800*600@60Hz	P24
D-Sub 640*480@60Hz	P25
USB Play	P26
LAN	P27

NOTE 1 – Emission Level = Antenna Factor + Cable Loss + Meter Reading.

NOTE 2 – All readings are Quasi-Peak values.

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 D-Sub 800*600@60Hz test mode. The worst emission at horizontal polarization was detected at 451.950 MHz with corrected signal level of 40.62 dB ($\mu\text{V}/\text{m}$) (limit is 46.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.80 m height and the turntable was at 80°. The worst emission at vertical polarization was detected at 71.700 MHz with corrected signal level of 37.44 dB ($\mu\text{V}/\text{m}$) (limit is 40.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.80 m height and the turntable was at 230°.

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K316XWUS3D Humidity : 60%RH

Serial No. : E1204417-02/02 Date of Test : Apr 22, 2012

Test Mode : D-Sub 1024*768@60Hz

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	89.170	20.38	10.96	1.72	33.06	43.50	10.44
	165.800	24.24	10.17	2.30	36.71	43.50	6.79
	227.880	24.68	10.97	2.53	38.18	46.00	7.82
	271.530	22.68	12.86	2.67	38.21	46.00	7.79
	371.440	19.40	15.68	2.93	38.01	46.00	7.99
	873.900	14.57	20.37	4.60	39.54	46.00	6.46
Vertical	41.640	22.82	11.78	0.88	35.48	40.00	4.52
	64.300	26.00	9.45	1.30	36.75	40.00	3.25
	81.410	25.16	10.62	1.61	37.39	40.00	2.61
	126.030	23.63	10.89	2.07	36.59	43.50	6.91
	370.470	19.66	15.68	2.92	38.26	46.00	7.74
	597.450	18.93	18.19	3.45	40.57	46.00	5.43

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K316XWUS3D Humidity : 60%RH

Serial No. : E1204417-02/02 Date of Test : Apr 22, 2012

Test Mode : HDMI 1024*768@60Hz

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	31.940	17.66	17.29	0.82	35.77	40.00	4.23
	37.760	20.46	14.00	0.86	35.32	40.00	4.68
	84.320	23.93	10.75	1.64	36.32	40.00	3.68
	130.880	23.86	10.80	2.11	36.77	43.50	6.73
	293.840	23.59	13.53	2.74	39.86	46.00	6.14
	589.690	15.60	18.15	3.44	37.19	46.00	8.81
Vertical	84.320	19.55	10.75	1.64	31.94	40.00	8.06
	157.070	23.80	10.30	2.26	36.36	43.50	7.14
	297.720	21.93	13.63	2.75	38.31	46.00	7.69
	447.000	19.30	16.92	3.11	39.33	46.00	6.67
	597.450	17.84	18.19	3.45	39.48	46.00	6.52
	894.270	13.47	20.32	4.89	38.68	46.00	7.32

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K316XWUS3D Humidity : 60%RH

Serial No. : E1204417-02/02 Date of Test : Apr 22, 2012

Test Mode : D-Sub 800*600@60Hz

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	70.740	21.77	9.93	1.43	33.13	40.00	6.87
	110.510	18.61	11.18	1.94	31.73	43.50	11.77
	329.730	19.90	14.54	2.83	37.27	46.00	8.73
	451.950	20.48	17.01	3.13	40.62	46.00	5.38
	600.360	16.45	18.20	3.47	38.12	46.00	7.88
	886.510	14.69	20.34	4.75	39.78	46.00	6.22
Vertical	40.670	20.61	12.33	0.87	33.81	40.00	6.19
	71.700	26.00	9.99	1.45	37.44	40.00	2.56
	139.610	24.19	10.63	2.16	36.98	43.50	6.52
	450.010	19.35	16.98	3.13	39.46	46.00	6.54
	594.540	16.63	18.17	3.45	38.25	46.00	7.75
	886.510	14.04	20.34	4.75	39.13	46.00	6.87

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K316XWUS3 Humidity : 60%RH
D

Serial No. : E1204417-02/02 Date of Test : Apr 22, 2012

Test Mode : D-Sub 640*480@60Hz

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	72.000	25.80	10.02	1.45	37.27	40.00	2.73
	131.850	22.16	10.78	2.11	35.05	43.50	8.45
	448.070	18.64	16.95	3.11	38.70	46.00	7.30
	597.450	19.00	18.19	3.45	40.64	46.00	5.36
	745.860	16.00	20.01	3.80	39.81	46.00	6.19
	890.390	13.28	20.33	4.89	38.50	46.00	7.50
Vertical	72.680	22.82	10.08	1.47	34.37	40.00	5.63
	217.210	22.88	10.48	2.50	35.86	46.00	10.14
	296.750	21.05	13.63	2.75	37.43	46.00	8.57
	331.700	22.00	14.58	2.84	39.42	46.00	6.58
	448.070	19.60	16.95	3.11	39.66	46.00	6.34
	591.630	17.19	18.16	3.45	38.80	46.00	7.20

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K316XWUS3D Humidity : 60%RH

Serial No. : E1204417-02/02 Date of Test : Apr 22, 2012

Test Mode : USB Play

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	85.290	18.96	10.80	1.66	31.42	40.00	8.58
	165.800	22.65	10.17	2.30	35.12	43.50	8.38
	226.910	24.63	10.93	2.53	38.09	46.00	7.91
	297.720	20.99	13.63	2.75	37.37	46.00	8.63
	594.540	15.28	18.17	3.45	36.90	46.00	9.10
	873.900	13.87	20.37	4.60	38.84	46.00	7.16
Vertical	83.350	18.84	10.70	1.64	31.18	40.00	8.82
	161.920	20.38	10.23	2.28	32.89	43.50	10.61
	221.090	23.61	10.68	2.51	36.80	46.00	9.20
	446.130	16.64	16.92	3.11	36.67	46.00	9.33
	594.540	17.54	18.17	3.45	39.16	46.00	6.84
	894.270	11.26	20.32	4.89	36.47	46.00	9.53

TEST ENGINEER: RAVEN JIN

EUT : LED LCD TV Temperature : 22°C

Model No. : LTDN46K316XWUS3D Humidity : 60%RH

Serial No. : E1204417-02/02 Date of Test : Apr 22, 2012

Test Mode : LAN

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	33.880	17.71	16.26	0.83	34.80	40.00	5.20
	84.320	23.64	10.75	1.64	36.03	40.00	3.97
	131.850	24.88	10.78	2.11	37.77	43.50	5.73
	297.720	20.83	13.63	2.75	37.21	46.00	8.79
	591.630	18.77	18.16	3.45	40.38	46.00	5.62
	886.510	11.25	20.34	4.75	36.34	46.00	9.66
Vertical	35.820	19.83	15.19	0.84	35.86	40.00	4.14
	85.290	24.53	10.80	1.66	36.99	40.00	3.01
	131.850	25.30	10.78	2.11	38.19	43.50	5.31
	296.750	20.09	13.63	2.75	36.47	46.00	9.53
	446.500	19.30	16.92	3.11	39.33	46.00	6.67
	589.690	16.38	18.15	3.44	37.97	46.00	8.03

TEST ENGINEER: RAVEN JIN

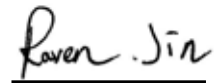
5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Ferrite core	ZCAT2132-1130\ROH	Rui Feng Electronic Co., Ltd.	See Internal Photo Figure 22
EMI Tape	35X0.7X56mm\VGA\ROH	Qingdao Joinset S&T Co., Ltd.	See Internal Photo Figure 24
		TAT ELECTRONIC TECH CO.,LTD.	
Gasket	DAA25X20X75\ROH	Qingdao Joinset S&T Co., Ltd.	See Internal Photo Figure 23
		TAT ELECTRONIC TECH CO.,LTD.	
Gasket	DAA1002\ROH	Qingdao Joinset S&T Co., Ltd.	See Internal Photo Figure 23
		TAT ELECTRONIC TECH CO.,LTD.	

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:



(RAVEN JIN)

6 DEVIATION TO TEST SPECIFICATIONS

None.