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

LED LCD TV

Model No.	Brand
LHD32K20DWUS	Hisense
32K20DW	

FCC ID : W9HLCDC0024

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

Prepared By : Audix Technology (Shanghai) Co., Ltd.
3F and 4F, 34Bldg 680 Guiping Rd,
Caohejing Hi-Tech Park,
Shanghai 200233, China

Tel: +86-21-64955500
Fax: +86-21-64955491

Report No. : ACI-F13113
Date of Test : Aug 15 – 16, 2013
Date of Report : Aug 21, 2013

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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.

EUT Description : LED LCD TV

Model No.	Brand	Power Supply
LHD32K20DWUS	Hisense	120V/60Hz
32K20DW		

Test Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2012 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) which was tested in 3m anechoic chamber Aug 15 – 16, 2013 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.F13114, a Verification report.

Date of Test : Aug 15 – 16, 2013 Date of Report : Aug 21, 2013

Producer : Kathy Wang
KATHY WANG / Supervisor

Review : Dio Yang
DIO YANG / Assistant Manager

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

Signatory : Sammy Chen
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 2012 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2012 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.	:	LHD32K20DWUS, 32K20DW
Bread Name	:	Hisense
Note	:	The above models are all the same except for the model name. LHD32K20DWUS model was tested and recorded 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
Factory #1	:	Hisense Electric Co., Ltd. No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China
Factory #2	:	Tatung Mexico S.A. de C.V. Miguel Catalán 420, Parque Industrial Rio Bravo, Cd. Juarez, Chih., CP 32557
LCD Panel	:	Manufacturer : Hisense M/N : HD315DH-E82\S2
Max Resolution	:	1920*1080@60Hz
HDMI Cable	:	Shielded, Detachable, 1.00m
Power Cord	:	Unshielded, Detachable, 1.80m

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

Side Port:
(1) One HDMI1 Port
: Connected with PC
(2) One HDMI2 Port
: Connected with DVD PLAYER
(3) One HDMI Audio In Port
: Connected with PC

(4) One component of Audio/YPbPr Audio Port
: Connected with DVD PLAYER
(5) One component of Video/YPbPr Port
: Connected with DVD PLAYER
(6) One ANT/CABLE IN Port
: Connected with Antenna or ATSC SG / TV SG
(7) One DIGITAL AUDIO OUT Port
: Connected with DVD PLAYER
(8) One USB Port
: Connected with U-Disk
(9) One LAN Port
: Connected with PC
(10) One Audio Out Port
: Connected with Earphone

2.2 Peripherals

2.2.1 PC

Manufacturer	:	HP
Model Number	:	dx7200MT
Serial Number	:	CNG622017W
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	:	1406
Serial Number	:	0200702302609
Data Cable	:	Shielded, undetachable ,1.8m
Certificate	:	CE/EMC, FCC DoC, VCCI, MIC, C-Tick, BSMI

2.2.4 Mouse

Manufacturer	:	Microsoft
Model Number	:	1405
Serial Number	:	0204603562213
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 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

2.2.7 ATSC Signal Generator

Manufacturer	:	SENCORE
Model Number	:	ATSC997
Serial Number	:	6790071

2.2.8 DVD PLAYER

Manufacturer	:	PHILIPS
Model Number	:	DVP3986K/93
Serial Number	:	KX1A0902120108
Certificate	:	FCC DoC, CE/EMC, CCC

2.2.9 Earphone

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

2.2.10 U-DISK

Manufacturer	:	LG
Model Number	:	1GB

2.3 Description of Test Facility

Site Description (No.3 3m Chamber)	:	Sept. 17, 1998 file on Mar 16, 2012 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 = 3.42 dB

Radiated Emission Expanded Uncertainty (30-200MHz):

U = 4.14 dB (Horizontal)

U = 4.28 dB (Vertical)

Radiated Emission Expanded Uncertainty (200M-1GHz):

U = 4.18 dB (Horizontal)

U = 4.26 dB (Vertical)

Radiated Emission Expanded Uncertainty (Above 1GHz):

U = 4.50 dB (Horizontal)

U = 4.16 dB (Vertical)

3 CONDUCTED EMISSION TEST

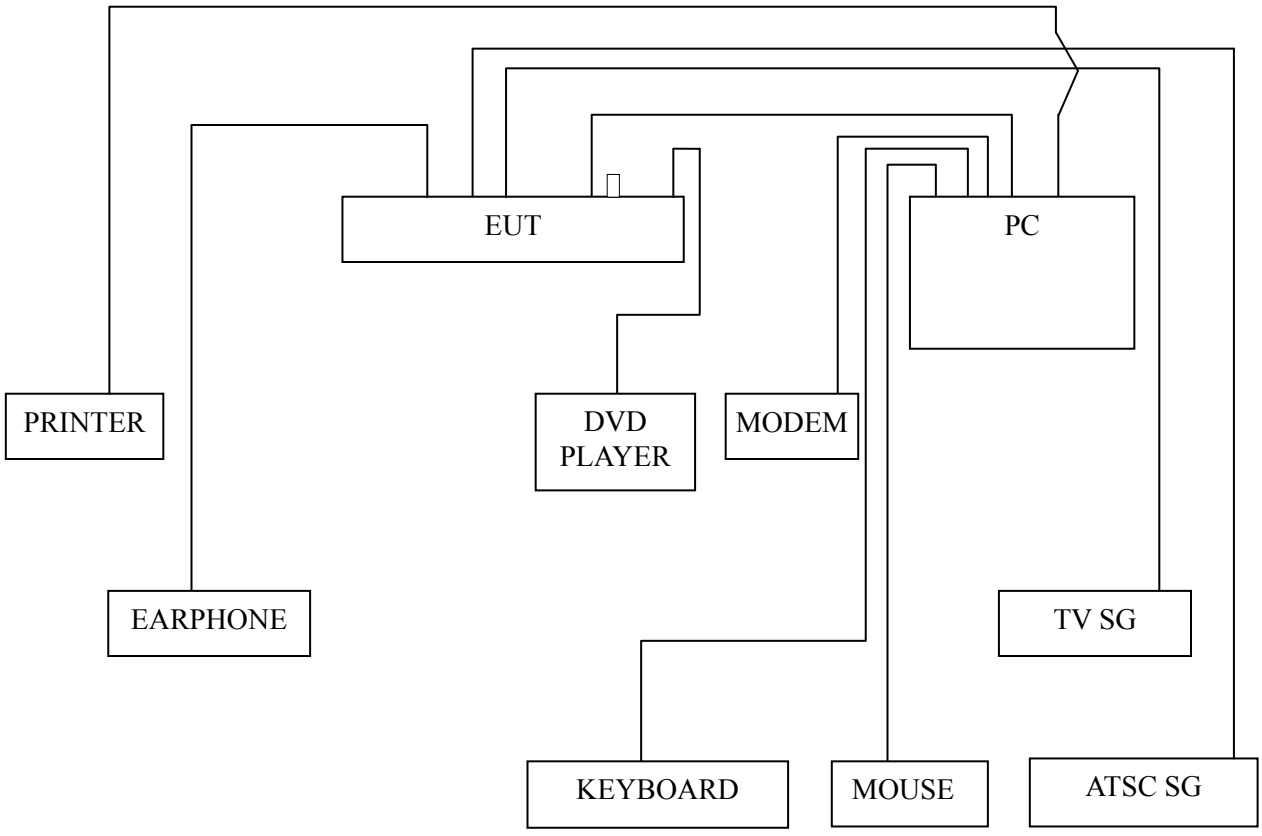
3.1 Test Equipment

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 20, 2013	Mar 20, 2014
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Feb 25, 2013	Feb 25, 2014
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2013	Mar 20, 2014
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Mar 18, 2013	Sep 18, 2013
5.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2013	Mar 20, 2014
6.	Software	Audix	E3	SET00200 9804M592	--	--

3.2 Block Diagram of Test Setup

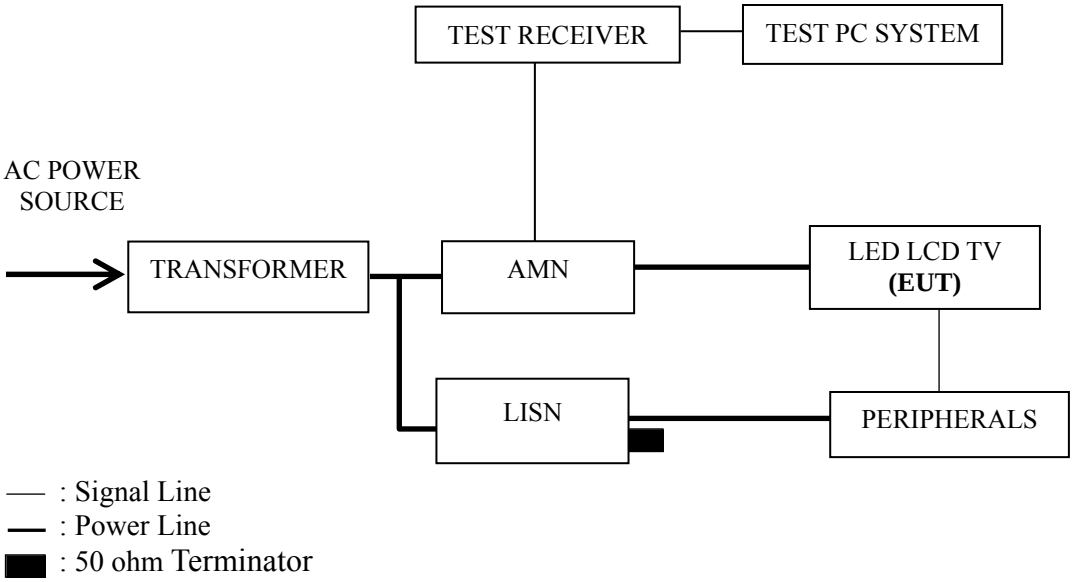
3.2.1 EUT & Peripherals



■: Ferrite core

: U-Disk

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 (μV)	
	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 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 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
HDMI 1280*1024@60Hz
HDMI 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
HDMI 1920*1080@60Hz	P13
HDMI 1280*1024@60Hz	P14
HDMI 640*480@60Hz	P15
USB Play	P16
LAN	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 3 – The worst case is for USB Play test mode. The worst emission is detected at 0.152 MHz (Quasi-Peak Value) with corrected signal level of 57.18 dB (μV) (limit is 65.91 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LHD32K20DWUS	Humidity	:	48%RH
Test Mode	:	HDMI 1920*1080@60Hz	Date of Test	:	Aug 15, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.154	56.30	0.15	56.45	65.77	9.32	QP
	0.253	39.27	0.13	39.40	61.66	22.26	
	0.749	30.15	0.25	30.40	56.00	25.60	
	2.408	26.50	0.23	26.73	56.00	29.27	
	7.996	24.85	0.35	25.20	60.00	34.80	
	21.500	35.73	-0.03	35.70	60.00	24.30	
	0.154	39.20	0.15	39.35	55.77	16.42	AV
	0.253	26.10	0.13	26.23	51.66	25.43	
	0.749	28.89	0.25	29.14	46.00	16.86	
	2.408	17.69	0.23	17.92	46.00	28.08	
	7.996	20.10	0.35	20.45	50.00	29.55	
	21.500	30.50	-0.03	30.47	50.00	19.53	
Neutral	**0.153**	**56.69**	**0.15**	**56.84**	**65.86**	**9.02**	QP
	0.252	39.38	0.26	39.64	61.69	22.05	
	0.750	32.27	0.28	32.55	56.00	23.45	
	2.343	25.91	0.29	26.20	56.00	29.80	
	9.142	29.72	0.50	30.22	60.00	29.78	
	27.690	32.07	1.17	33.24	60.00	26.76	
	0.153	39.30	0.15	39.45	55.86	16.41	AV
	0.252	25.50	0.26	25.76	51.69	25.93	
	0.750	29.19	0.28	29.47	46.00	16.53	
	2.343	20.81	0.29	21.10	46.00	24.90	
	9.142	25.10	0.50	25.60	50.00	24.40	
	27.690	26.80	1.17	27.97	50.00	22.03	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LHD32K20DWUS	Humidity	:	48%RH
Test Mode	:	HDMI 1280*1024@60Hz	Date of Test	:	Aug 15, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	**0.151**	**56.67**	**0.15**	**56.82**	**65.92**	**9.10**	QP
	0.256	39.03	0.13	39.16	61.57	22.41	
	0.750	30.20	0.25	30.45	56.00	25.55	
	2.413	24.52	0.23	24.75	56.00	31.25	
	11.030	30.94	0.28	31.22	60.00	28.78	
	21.480	34.03	-0.03	34.00	60.00	26.00	
	0.151	38.30	0.15	38.45	55.92	17.47	AV
	0.256	26.60	0.13	26.73	51.57	24.84	
	0.750	28.89	0.25	29.14	46.00	16.86	
	2.413	12.99	0.23	13.22	46.00	32.78	
	11.030	25.81	0.28	26.09	50.00	23.91	
	21.480	28.70	-0.03	28.67	50.00	21.33	
Neutral	0.156	56.05	0.15	56.20	65.69	9.49	QP
	0.257	38.88	0.26	39.14	61.51	22.37	
	0.749	32.06	0.28	32.34	56.00	23.66	
	2.408	26.04	0.30	26.34	56.00	29.66	
	9.138	30.07	0.50	30.57	60.00	29.43	
	21.510	32.13	1.00	33.13	60.00	26.87	
	0.156	38.91	0.15	39.06	55.69	16.63	AV
	0.257	26.30	0.26	26.56	51.51	24.95	
	0.749	28.99	0.28	29.27	46.00	16.73	
	2.408	19.10	0.30	19.40	46.00	26.60	
	9.138	25.60	0.50	26.10	50.00	23.90	
	21.510	26.80	1.00	27.80	50.00	22.20	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LHD32K20DWUS	Humidity	:	48%RH
Test Mode	:	HDMI 640*480@60Hz	Date of Test	:	Aug 15, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.153	56.04	0.15	56.19	65.86	9.67	QP
	0.251	39.07	0.13	39.20	61.72	22.52	
	0.749	29.98	0.25	30.23	56.00	25.77	
	2.409	26.39	0.23	26.62	56.00	29.38	
	7.824	22.13	0.35	22.48	60.00	37.52	
	21.460	33.05	-0.03	33.02	60.00	26.98	
	0.153	38.90	0.15	39.05	55.86	16.81	AV
	0.251	24.80	0.13	24.93	51.72	26.79	
	0.749	28.69	0.25	28.94	46.00	17.06	
	2.409	17.19	0.23	17.42	46.00	28.58	
	7.824	13.90	0.35	14.25	50.00	35.75	
	21.460	27.50	-0.03	27.47	50.00	22.53	
Neutral	**0.151**	**56.81**	**0.15**	**56.96**	**65.93**	**8.97**	QP
	0.253	39.15	0.26	39.41	61.65	22.24	
	0.627	30.24	0.30	30.54	56.00	25.46	
	2.407	25.51	0.30	25.81	56.00	30.19	
	9.139	30.44	0.50	30.94	60.00	29.06	
	21.530	33.66	1.00	34.66	60.00	25.34	
	0.151	38.90	0.15	39.05	55.93	16.88	AV
	0.253	26.10	0.26	26.36	51.65	25.29	
	0.627	19.30	0.30	19.60	46.00	26.40	
	2.407	18.80	0.30	19.10	46.00	26.90	
	9.139	26.20	0.50	26.70	50.00	23.30	
	21.530	28.60	1.00	29.60	50.00	20.40	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LHD32K20DWUS	Humidity	:	48%RH
Test Mode	:	USB Play	Date of Test	:	Aug 15, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	56.58	0.15	56.73	65.91	9.18	QP
	0.252	39.35	0.13	39.48	61.69	22.21	
	0.751	30.05	0.25	30.30	56.00	25.70	
	2.334	24.19	0.22	24.41	56.00	31.59	
	10.905	30.22	0.29	30.51	60.00	29.49	
	27.416	34.34	0.00	34.34	60.00	25.66	
	0.152	38.90	0.15	39.05	55.91	16.86	AV
	0.252	26.10	0.13	26.23	51.69	25.46	
	0.751	27.99	0.25	28.24	46.00	17.76	
	2.334	12.75	0.22	12.97	46.00	33.03	
	10.905	25.64	0.29	25.93	50.00	24.07	
	27.416	29.90	0.00	29.90	50.00	20.10	
Neutral	**0.152**	**57.03**	**0.15**	**57.18**	**65.91**	**8.73**	QP
	0.249	39.09	0.25	39.34	61.78	22.44	
	0.751	32.40	0.28	32.68	56.00	23.32	
	2.396	25.72	0.30	26.02	56.00	29.98	
	10.233	31.53	0.54	32.07	60.00	27.93	
	27.416	34.77	1.16	35.93	60.00	24.07	
	0.152	39.10	0.15	39.25	55.91	16.66	AV
	0.249	26.20	0.25	26.45	51.78	25.33	
	0.751	28.66	0.28	28.94	46.00	17.06	
	2.396	19.30	0.30	19.60	46.00	26.40	
	10.233	28.90	0.54	29.44	50.00	20.56	
	27.416	26.60	1.16	27.76	50.00	22.24	

TEST ENGINEER: WENCY YANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LHD32K20DWUS	Humidity	:	48%RH
Test Mode	:	LAN	Date of Test	:	Aug 15, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	**0.150**	**57.02**	**0.16**	**57.18**	**65.98**	**8.80**	QP
	0.252	39.02	0.13	39.15	61.68	22.53	
	0.750	30.09	0.25	30.34	56.00	25.66	
	2.410	26.41	0.23	26.64	56.00	29.36	
	7.785	26.11	0.35	26.46	60.00	33.54	
	21.360	39.08	-0.01	39.07	60.00	20.93	
	0.150	38.70	0.16	38.86	55.98	17.12	AV
	0.252	25.80	0.13	25.93	51.68	25.75	
	0.750	28.89	0.25	29.14	46.00	16.86	
	2.410	18.19	0.23	18.42	46.00	27.58	
	7.785	19.70	0.35	20.05	50.00	29.95	
	21.360	32.30	-0.01	32.29	50.00	17.71	
Neutral	0.152	56.27	0.15	56.42	65.91	9.49	QP
	0.253	39.11	0.26	39.37	61.65	22.28	
	0.749	31.93	0.28	32.21	56.00	23.79	
	2.411	25.36	0.30	25.66	56.00	30.34	
	9.129	25.39	0.50	25.89	60.00	34.11	
	27.720	35.87	1.17	37.04	60.00	22.96	
	0.152	39.00	0.15	39.15	55.91	16.76	AV
	0.253	26.10	0.26	26.36	51.65	25.29	
	0.749	28.79	0.28	29.07	46.00	16.93	
	2.411	16.40	0.30	16.70	46.00	29.30	
	9.129	19.90	0.50	20.40	50.00	29.60	
	27.720	31.50	1.17	32.67	50.00	17.33	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

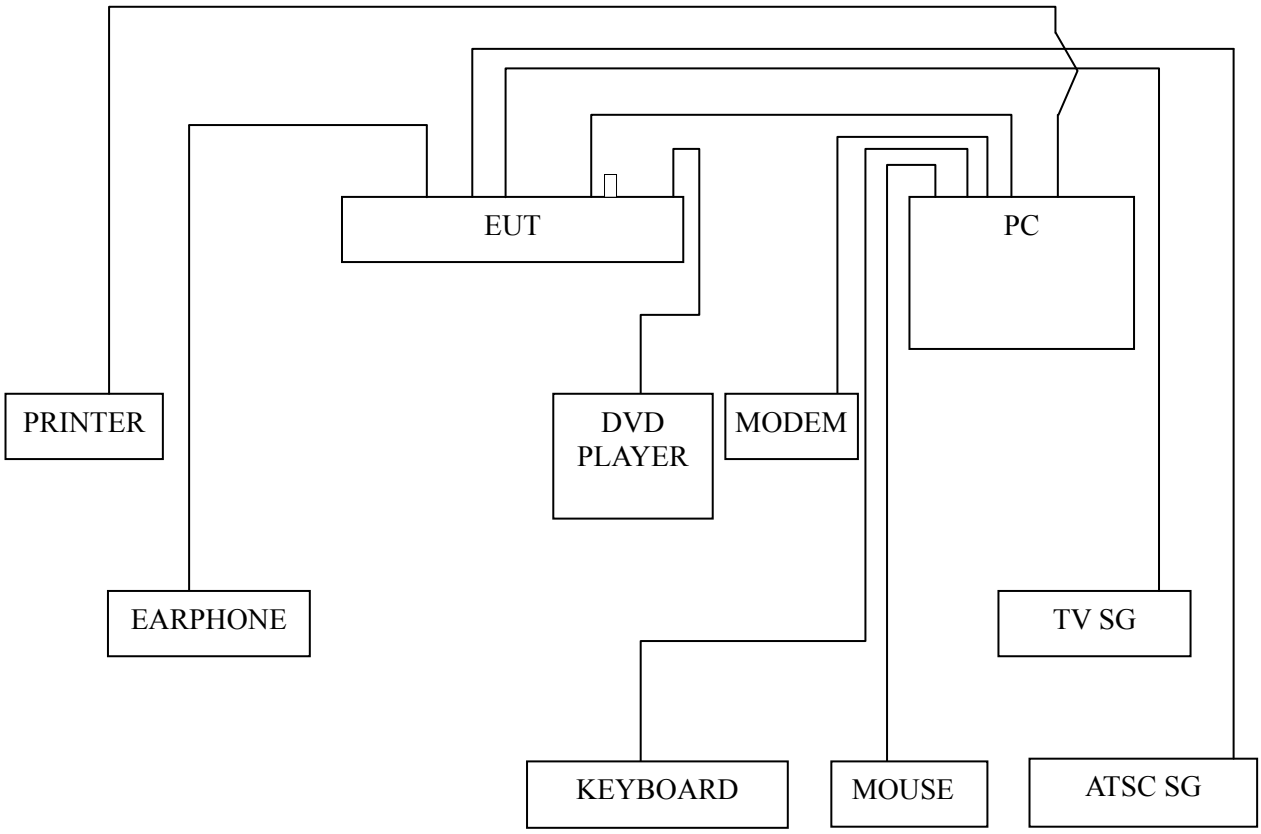
4.1 Test Equipment

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	101302	Sep 11, 2012	Sep 11, 2013
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 18, 2013	Sep 18, 2013
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2013	Mar 20, 2014
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 03, 2013	May 03, 2014
5.	Horn Antenna	EMCO	3115	9607-4878	May 03, 2013	May 03, 2014
6.	Spectrum	Agilent	E7405A	MY45106600	Dec 17, 2012	Dec 17, 2013
7.	50Ω Coaxial Switch	Anritsu	MP59B	6200426390	Mar 18, 2013	Sep 18, 2013
8.	Software	Audix	E3	SET00200 9912M295-2	--	--

4.2 Block Diagram of Test Setup

4.2.1 EUT and Peripherals

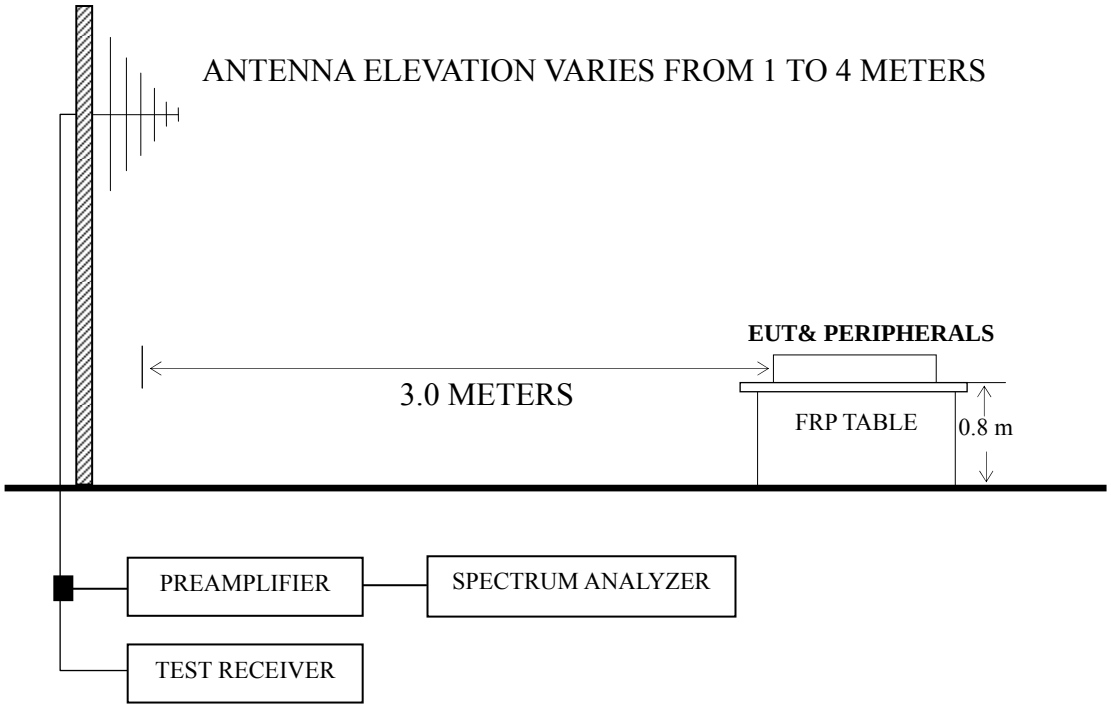


■: Ferrite core

□: U-Disk

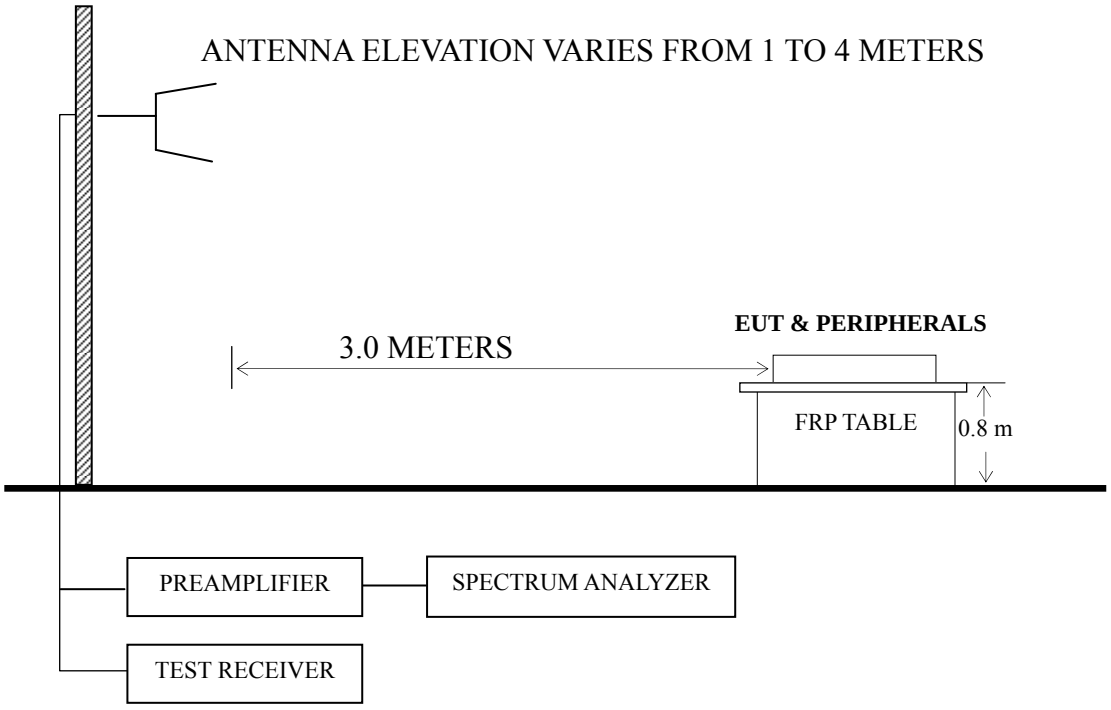
4.2.2 Radiated emission test setup

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	
		(μV/m)	dB (μV/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 (μV/m) = 20 log Emission Level (μV/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) or horn 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 ESCI was set at 120 kHz and The Spectrum Agilent E7405A was set at 1MHz above 1GHz..

The frequency range from 30 MHz to 1GHz was checked for all test modes.

The frequency range from 1 GHz to 2 GHz was checked for the worst test mode in 30 – 1000 MHz test.

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	P22
HDMI 1280*1024@60Hz	P23 – P24
HDMI 640*480@60Hz	P25
USB Play	P26
LAN	P27

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

NOTE 2 – Emission Level = Antenna Factor + Cable Loss – Preamp Factor + Meter Reading. (> 1GHz)

NOTE 3 – All readings are Quasi-Peak values below or equal to 1GHz, Peak values and Average values above 1GHz.

NOTE 4 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

NOTE 5 – The worst case is for HDMI 640*480@60Hz test mode. The worst emission at horizontal polarization was detected at 65.890 MHz with corrected signal level of 31.49 dB (μV/m) (limit is 40.00 dB (μV/m)), when the antenna was 1.50 m height and the turntable was at 330°. The worst emission at vertical polarization was detected at 704.150 MHz with corrected signal level of 42.88 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.00 m height and the turntable was at 68°.

EUT	:	LED LCD TV	Temperature :	22℃
Model No.	:	LHD32K20DWUS	Humidity :	60%RH
Test Mode	:	HMDI 1920*1080@60Hz	Date of Test :	Aug 16, 2013

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	31.940	15.45	16.50	0.68	--	32.63	40.00	7.37	QP
	83.350	**26.68**	**7.19**	**1.13**	**--**	**35.00**	**40.00**	**5.00**	
	139.610	20.96	10.37	1.59	--	32.92	43.50	10.58	
	231.760	22.84	9.80	2.11	--	34.75	46.00	11.25	
	430.610	15.94	17.60	2.78	--	36.32	46.00	9.68	
	878.750	10.27	19.77	4.32	--	34.36	46.00	11.64	
	1048.000	47.62	23.88	4.94	38.10	38.34	74.00	35.66	PK
	1138.000	47.58	24.25	5.05	37.89	38.99	74.00	35.01	
	1252.000	49.50	24.79	5.25	37.61	41.93	74.00	32.07	
	1471.000	45.91	25.54	5.62	36.99	40.08	74.00	33.92	
	1712.000	47.00	28.04	6.01	36.48	44.57	74.00	29.43	
	1922.000	45.76	30.35	6.18	36.19	46.10	74.00	27.90	
	1048.000	35.20	23.88	4.94	38.10	25.92	54.00	28.08	AV
	1138.000	34.49	24.25	5.05	37.89	25.90	54.00	28.10	
	1252.000	36.24	24.79	5.25	37.61	28.67	54.00	25.33	
	1471.000	33.48	25.54	5.62	36.99	27.65	54.00	26.35	
	1712.000	33.46	28.04	6.01	36.48	31.03	54.00	22.97	
	1922.000	32.11	30.35	6.18	36.19	32.45	54.00	21.55	

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LHD32K20DWUS	Humidity	:	60%RH
Test Mode	:	HDMI 1920*1080@60Hz	Date of Test	:	Aug 16, 2013

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	**33.880**	**19.38**	**16.12**	**0.70**	**--**	**36.20**	**40.00**	**3.80**	QP
	70.740	25.09	5.89	0.94	--	31.92	40.00	8.08	
	143.490	22.87	10.30	1.61	--	34.78	43.50	8.72	
	237.580	21.58	10.67	2.15	--	34.40	46.00	11.60	
	304.510	22.40	12.90	2.56	--	37.86	46.00	8.14	
	525.670	15.74	18.35	3.03	--	37.12	46.00	8.88	
	1040.000	46.39	23.85	4.92	38.11	37.05	74.00	36.95	PK
	1112.000	45.68	24.14	5.01	37.95	36.88	74.00	37.12	
	1248.000	45.51	24.77	5.25	37.62	37.91	74.00	36.09	
	1611.000	45.79	26.81	5.74	36.66	41.68	74.00	32.32	
	1803.000	47.93	29.17	6.15	36.34	46.91	74.00	27.09	
	1957.000	44.68	30.64	6.19	36.15	45.36	74.00	28.64	
	1040.000	33.75	23.85	4.92	38.11	24.41	54.00	29.59	AV
	1112.000	32.48	24.14	5.01	37.95	23.68	54.00	30.32	
	1248.000	32.41	24.77	5.25	37.62	24.81	54.00	29.19	
	1611.000	33.94	26.81	5.74	36.66	29.83	54.00	24.17	
	1803.000	35.19	29.17	6.15	36.34	34.17	54.00	19.83	
	1957.000	31.63	30.64	6.19	36.15	32.31	54.00	21.69	

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LHD32K20DWUS	Humidity	:	60%RH
Test Mode	:	HDMI 1280*1024@60Hz	Date of Test	:	Aug 16, 2013

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	**44.550**	**18.23**	**9.91**	**0.81**	**28.95**	**40.00**	**11.05**
	73.650	19.72	6.33	0.98	27.03	40.00	12.97
	157.070	17.02	9.60	1.68	28.30	43.50	15.20
	293.840	14.10	12.67	2.49	29.26	46.00	16.74
	376.290	12.40	15.00	2.66	30.06	46.00	15.94
	574.170	6.95	19.10	3.16	29.21	46.00	16.79
Vertical	30.970	11.56	17.65	0.67	29.88	40.00	10.12
	134.760	16.47	11.00	1.57	29.04	43.50	14.46
	240.490	20.15	11.03	2.17	33.35	46.00	12.65
	290.930	**25.00**	**12.83**	**2.49**	**40.32**	**46.00**	**5.68**
	576.110	7.90	18.95	3.16	30.01	46.00	15.99
	881.660	11.32	19.50	4.32	35.14	46.00	10.86

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LHD32K20DWUS	Humidity	:	60%RH
Test Mode	:	HDMI 640*480@60Hz	Date of Test	:	Aug 16, 2013

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	30.970	12.22	17.65	0.67	30.54	40.00	9.46
	65.890	**25.70**	**4.88**	**0.91**	**31.49**	**40.00**	**8.51**
	133.790	18.59	11.22	1.56	31.37	43.50	12.13
	228.850	23.51	9.50	2.09	35.10	46.00	10.90
	309.360	21.13	13.30	2.56	36.99	46.00	9.01
	685.720	9.87	19.65	3.51	33.03	46.00	12.97
Vertical	30.970	17.02	17.65	0.67	35.34	40.00	4.66
	72.680	23.49	6.20	0.97	30.66	40.00	9.34
	134.760	15.88	11.00	1.57	28.45	43.50	15.05
	250.190	15.84	12.20	2.20	30.24	46.00	15.76
	704.150	**19.20**	**20.13**	**3.55**	**42.88**	**46.00**	**3.12**
	875.840	15.03	20.03	4.32	39.38	46.00	6.62

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LHD32K20DWUS	Humidity	:	60%RH
Test Mode	:	USB Play	Date of Test	:	Aug 16, 2013

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	30.970	10.25	17.65	0.67	28.57	40.00	11.43
	74.620	17.45	6.46	1.00	24.91	40.00	15.09
	145.430	**21.73**	**10.28**	**1.62**	**33.63**	**43.50**	**9.87**
	228.850	21.43	9.50	2.09	33.02	46.00	12.98
	292.870	19.05	12.67	2.49	34.21	46.00	11.79
	695.420	9.98	20.30	3.54	33.82	46.00	12.18
Vertical	**34.850**	**17.50**	**15.85**	**0.71**	**34.06**	**40.00**	**5.94**
	44.550	20.79	9.91	0.81	31.51	40.00	8.49
	153.190	19.77	9.79	1.65	31.21	43.50	12.29
	298.690	19.70	12.52	2.52	34.74	46.00	11.26
	468.440	10.47	17.55	2.90	30.92	46.00	15.08
	806.970	3.62	20.07	3.70	27.39	46.00	18.61

TEST ENGINEER: NEAL WANG

EUT	:	LED LCD TV	Temperature :	22℃	
Model No.	:	LHD32K20DWUS	Humidity :	60%RH	
Test Mode	:	LAN	Date of Test :	Aug 16, 2013	

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	**30.970**	**12.60**	**17.65**	**0.67**	**30.92**	**40.00**	**9.08**
	73.650	19.51	6.33	0.98	26.82	40.00	13.18
	90.140	19.29	8.20	1.22	28.71	43.50	14.79
	135.730	19.14	10.91	1.57	31.62	43.50	11.88
	236.610	22.26	10.50	2.13	34.89	46.00	11.11
	574.170	11.01	19.10	3.16	33.27	46.00	12.73
Vertical	45.520	18.58	9.32	0.82	28.72	40.00	11.28
	65.890	**24.75**	**4.88**	**0.91**	**30.54**	**40.00**	**9.46**
	97.900	20.22	10.01	1.32	31.55	43.50	11.95
	139.610	18.01	10.37	1.59	29.97	43.50	13.53
	304.510	19.84	12.90	2.56	35.30	46.00	10.70
	473.290	11.41	17.73	2.90	32.04	46.00	13.96

TEST ENGINEER: NEAL WANG

5 DEVIATION TO TEST SPECIFICATIONS

None.