

Application for FCC Certificate
On Behalf of
LG Electronics U.S.A., Inc.

Network Monitor

Model No.: N1942HET

Serial No.: 002NDPH19760

FCC ID : BEJN1942LET

Prepared For : LG Electronics U.S.A., Inc.
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Date of Test : Mar 15-16, 2010
Date of Report : Mar 26, 2010

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TEST REPORT FOR FCC CERTIFICATE

Applicant : LG Electronics U.S.A., Inc.
Manufacturer : LG Electronics Nanjing Display Co., Ltd.
EUT Description : Network Monitor
(A) Model No. : N1942HET
(B) Serial No. : 002NDPH19760
(C) Power Supply : 120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2009
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) and ICES-003, Issue 4 February 2004 (CISPR 22:2002) 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: N1942HET; S/N: 002NDPH19760) which was tested in 3m anechoic chamber Mar 15-16, 2010 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.

Date of Test : Mar 15-16, 2010 Date of Report : Mar 26, 2010

Producer : Alan He
ALAN HE / Assistant

Review : Dio Yang
DIO YANG / Deputy Assistant Manager

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

Signatory : Sammy Chen
Authorized Signature EMC SAMMY CHEN / Assistant 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 2009 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2009 AND ANSI C63.4-2003	15.109(a) Class B	Pass

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description	:	Network Monitor
Type of EUT	:	☒ Production ☐ Pre-product ☐ Pro-type
Model No.	:	N1942HET
Serial No.	:	002NDPH19760
Real Power	:	22.00W
Applicant	:	LG Electronics U.S.A., Inc. 1000 Sylvan Avenue, Englewood Cliffs, NJ 07632, United States
Manufacturer	:	LG Electronics Nanjing Display Co., Ltd. No.346, Yao Xin Road, Economic & Technical Development Zone, Nanjing, China
LCD Panel	:	Manufacturer : LG Display M/N : LM190E08 (TL) (J7)
Max Resolution	:	D-Sub 1280*1024@75Hz, X-PORT 1440*900@60Hz
D-Sub Cable #1	:	Shielded, Detachable, 1.85m, with two cores on cable
D-Sub Cable #2	:	Shielded, Detachable, 1.85m, with two cores in connector
STP Cable	:	Shielded, Detachable, 5.00m, with two cores on cable
Power Cord	:	Unshielded, Detachable, 1.80m
Note	:	After evaluation, the D-Sub cable#1 was used in the test for it will cause the maximum emission.

Remark:

The EUT is a Network Monitor which input/output ports as follows:

- | | |
|----------------------------|---|
| (1) One D-Sub Port | : Connected with PC |
| (2) One X-PORT | : Connected with PC (X550 Port on the PCI Card) |
| (3) One PS/2 Keyboard Port | : Connected with Keyboard |
| (4) One PS/2 Mouse Port | : Connected with Mouse |

- (5) One Earphone Port : Connected with Earphone
- (6) One AC In Port : Connected with Power

2.2 Peripherals

2.2.1 PC

Manufacturer : HP
Model Number : dx6120MT
Serial Number : CNG53004J2
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 #1

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 Keyboard #2

Manufacturer : Logitech
Model Number : Y-SAM64
Serial Number : SY807UK
Data Cable : Shielded, Undetachable, 1.8m
Certificate : CE/EMC, FCC DoC, C-Tick, BSMI

2.2.5 Mouse #1

Manufacturer : Microsoft
Model Number : RT2300
Serial Number : 6965712071551
Data Cable : Shielded, Undetachable, 1.85m.
Certificate : FCC DoC, VCCI, CE/EMC, MIC, GS

2.2.6 Mouse #2

Manufacturer : HP
Model Number : SBF96
Serial Number : 417441-001
Data Cable : Shielded, Undetachable, 1.85m.
Certificate : FCC DoC, VCCI, CE/EMC, C-Tick, BSMI

2.2.7 Modem

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

2.2.8 Earphone

Manufacturer : SONY
Model Number : MDR-E808
Serial Number : 1808030805305063
Data Cable : Unshielded, Undetachable, 2.0m

2.2.9 X550 PCI Card (installed in the PC)

Manufacturer : NComputing Inc.
Model Number : X550 PCI Card (500-0035)
Serial Number : X550K8AB2 10009133
Certificate : FCC DoC, CE/EMC

2.3 Description of Test Facility

Site Description (Semi-Anechoic 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 = 1.26 dB
Radiated Emission Expanded Uncertainty : U = 3.02 dB

3 CONDUCTED EMISSION TEST

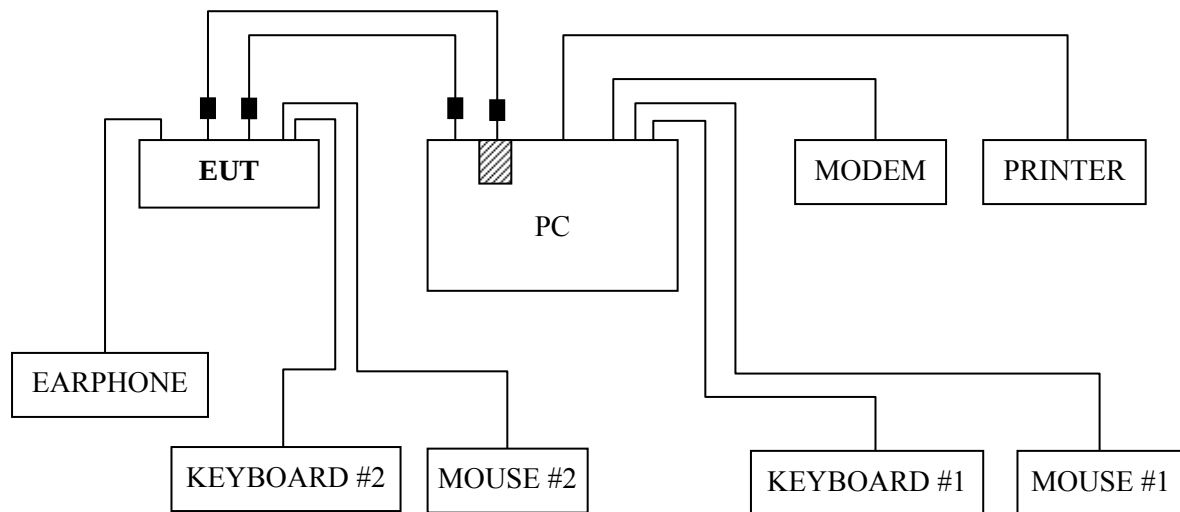
3.1.1 Test Equipment

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	Nov 21, 2009	Nov 21, 2010
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Apr 02, 2009	Apr 02, 2010
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Apr 02, 2009	Apr 02, 2010
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Sep 19, 2009	Mar 19, 2010
5.	50 Ω Terminator	Anritsu	BNC	001	Apr 02, 2009	Apr 02, 2010
6.	Software	Audix	E3	SET00200 9804M592	--	--

3.2 Block Diagram of Test Setup

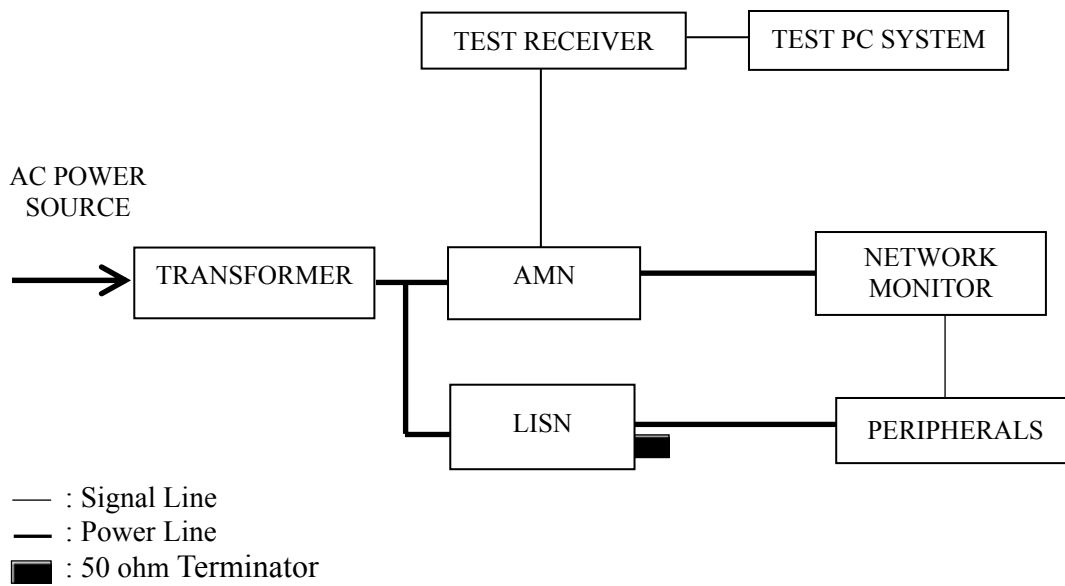
3.2.1 EUT & Peripherals



■ : Ferrite core

▨ : X550 PCI Card

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 & X-PORT Input).

3.5.5 In X- PORT mode, PC system played music and sent audio signal to EUT through the X- PORT of EUT.

3.5.6 Repeat above procedure from 3.5.3 to 3.5.5 for difference test mode.

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
D-Sub 640*480@60Hz
D-Sub 1024*768@60Hz
D-Sub 1280*1024@75Hz
X-PORT 800*600@72Hz
X-PORT 1024*768@60Hz
X-PORT 1440*900@60Hz

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 640*480@60Hz	P12
D-Sub 1024*768@60Hz	P13
D-Sub 1280*1024@75Hz	P14
X-PORT 800*600@72Hz	P15
X-PORT 1024*768@60Hz	P16
X-PORT 1440*900@60Hz	P17

NOTE 1 – The **bold test mode** listed above means the worst test mode.

NOTE 2 – Factor = Cable Loss + LISN Factor.

NOTE 3 – Emission Level = Meter Reading + Factor.

NOTE 4 – “QP” means “Quasi-Peak” values, “AV” means “Average” values.

NOTE 5 – The worst case is for X-PORT 1024*768@60Hz test mode. The worst emission is detected at 16.055 MHz (Quasi-Peak value) with corrected signal level of 49.28 dB (μV) (limit is 60.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : Network Monitor Temperature : 18°C

Model No. : N1942HET Humidity : 48%RH

Serial No. : 002NDPH19760 Date of Test : Mar 15, 2010

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

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.199	43.66	0.25	43.91	63.67	19.76	QP
	0.393	35.29	0.43	35.72	57.99	22.27	
	0.914	30.18	0.48	30.66	56.00	25.34	
	2.033	33.01	0.54	33.55	56.00	22.45	
	7.687	38.55	0.70	39.25	60.00	20.75	
	16.398	39.49	0.96	40.45	60.00	19.55	
	0.199	36.67	0.25	36.92	53.67	16.75	AV
	0.393	32.62	0.43	33.05	47.99	14.94	
	0.914	25.38	0.48	25.86	46.00	20.14	
	2.033	25.40	0.54	25.94	46.00	20.06	
	7.687	17.40	0.70	18.10	50.00	31.90	
	16.398	16.15	0.96	17.11	50.00	32.89	
Neutral	0.162	41.73	0.21	41.94	65.34	23.40	QP
	0.325	32.27	0.34	32.61	59.57	26.96	
	0.716	29.41	0.46	29.87	56.00	26.13	
	4.269	33.96	0.62	34.58	56.00	21.42	
	6.056	43.21	0.67	43.88	60.00	16.12	
	16.398	43.32	0.93	44.25	60.00	15.75	
	0.162	29.30	0.21	29.51	55.34	25.83	AV
	0.325	19.79	0.34	20.13	49.57	29.44	
	0.716	27.07	0.46	27.53	46.00	18.47	
	4.269	18.38	0.62	19.00	46.00	27.00	
	6.056	21.70	0.67	22.37	50.00	27.63	
	16.398	19.37	0.93	20.30	50.00	29.70	

TEST ENGINEER: TED ZHU

EUT : Network Monitor Temperature : 18°C

Model No. : N1942HET Humidity : 48%RH

Serial No. : 002NDPH19760 Date of Test : Mar 15, 2010

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

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	43.24	0.24	43.48	65.91	22.43	QP
	0.325	34.30	0.37	34.67	59.57	24.90	
	0.914	30.69	0.48	31.17	56.00	24.83	
	4.269	35.21	0.62	35.83	56.00	20.17	
	7.687	40.44	0.70	41.14	60.00	18.86	
	16.398	42.27	0.96	43.23	60.00	16.77	
	0.152	17.50	0.24	17.74	55.91	38.17	AV
	0.325	27.95	0.37	28.32	49.57	21.25	
	0.914	26.50	0.48	26.98	46.00	19.02	
	4.269	14.43	0.62	15.05	46.00	30.95	
	7.687	16.57	0.70	17.27	50.00	32.73	
	16.398	14.70	0.96	15.66	50.00	34.34	
Neutral	0.153	44.95	0.21	45.16	65.82	20.66	QP
	0.393	30.08	0.40	30.48	57.99	27.51	
	0.716	29.58	0.46	30.04	56.00	25.96	
	4.269	35.12	0.62	35.74	56.00	20.26	
	6.056	40.75	0.67	41.42	60.00	18.58	
	16.398	41.08	0.93	42.01	60.00	17.99	
	0.153	10.32	0.21	10.53	55.82	45.29	AV
	0.393	26.32	0.40	26.72	47.99	21.27	
	0.716	27.02	0.46	27.48	46.00	18.52	
	4.269	17.46	0.62	18.08	46.00	27.92	
	6.056	16.36	0.67	17.03	50.00	32.97	
	16.398	14.73	0.93	15.66	50.00	34.34	

TEST ENGINEER: TED ZHU

EUT : Network Monitor Temperature : 18°C

Model No. : N1942HET Humidity : 48%RH

Serial No. : 002NDPH19760 Date of Test : Mar 15, 2010

Test Mode : D-Sub 1280*1024@75Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	42.97	0.24	43.21	65.91	22.70	QP
	0.393	35.27	0.43	35.70	57.99	22.29	
	0.914	30.53	0.48	31.01	56.00	24.99	
	4.269	35.34	0.62	35.96	56.00	20.04	
	6.056	42.90	0.66	43.56	60.00	16.44	
	16.398	41.21	0.96	42.17	60.00	17.83	
	0.152	16.09	0.24	16.33	55.91	39.58	AV
	0.393	31.60	0.43	32.03	47.99	15.96	
	0.914	25.23	0.48	25.71	46.00	20.29	
	4.269	16.76	0.62	17.38	46.00	28.62	
	6.056	18.05	0.66	18.71	50.00	31.29	
	16.398	18.83	0.96	19.79	50.00	30.21	
Neutral	0.156	42.42	0.21	42.63	65.65	23.02	QP
	0.325	29.85	0.34	30.19	59.57	29.38	
	0.716	27.67	0.46	28.13	56.00	27.87	
	4.269	34.75	0.62	35.37	56.00	20.63	
	6.056	41.05	0.67	41.72	60.00	18.28	
	16.398	39.25	0.93	40.18	60.00	19.82	
	0.156	13.28	0.21	13.49	55.65	42.16	AV
	0.325	19.71	0.34	20.05	49.57	29.52	
	0.716	26.31	0.46	26.77	46.00	19.23	
	4.269	13.98	0.62	14.60	46.00	31.40	
	6.056	16.53	0.67	17.20	50.00	32.80	
	16.398	13.64	0.93	14.57	50.00	35.43	

TEST ENGINEER: TED ZHU

EUT : Network Monitor Temperature : 18°C

Model No. : N1942HET Humidity : 48%RH

Serial No. : 002NDPH19760 Date of Test : Mar 15, 2010

Test Mode : X-PORT 800*600@72Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	43.64	0.24	43.88	66.00	22.12	QP
	0.329	34.31	0.38	34.69	59.49	24.80	
	0.788	31.88	0.47	32.35	56.00	23.65	
	3.985	38.15	0.61	38.76	56.00	17.24	
	6.805	39.35	0.68	40.03	60.00	19.97	
	16.055	48.30	0.95	49.25	60.00	10.75	
	0.150	27.12	0.24	27.36	56.00	28.64	AV
	0.329	29.77	0.38	30.15	49.49	19.34	
	0.788	28.15	0.47	28.62	46.00	17.38	
	3.985	20.67	0.61	21.28	46.00	24.72	
	6.805	22.06	0.68	22.74	50.00	27.26	
	16.055	28.60	0.95	29.55	50.00	20.45	
Neutral	0.156	44.36	0.21	44.57	65.65	21.08	QP
	0.329	31.05	0.35	31.40	59.49	28.09	
	0.853	26.70	0.47	27.17	56.00	28.83	
	3.985	37.18	0.62	37.80	56.00	18.20	
	8.412	36.22	0.72	36.94	60.00	23.06	
	16.055	48.14	0.91	49.05	60.00	10.95	
	0.156	18.71	0.21	18.92	55.65	36.73	AV
	0.329	21.76	0.35	22.11	49.49	27.38	
	0.853	23.63	0.47	24.10	46.00	21.90	
	3.985	16.35	0.62	16.97	46.00	29.03	
	8.412	18.96	0.72	19.68	50.00	30.32	
	16.055	28.39	0.91	29.30	50.00	20.70	

TEST ENGINEER: TED ZHU

EUT : Network Monitor Temperature : 18°C

Model No. : N1942HET Humidity : 48%RH

Serial No. : 002NDPH19760 Date of Test : Mar 15, 2010

Test Mode : X-PORT 1024*768@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.151	42.24	0.24	42.48	65.94	23.46	QP
	0.200	43.44	0.26	43.70	63.62	19.92	
	0.788	32.77	0.47	33.24	56.00	22.76	
	3.985	38.02	0.61	38.63	56.00	17.37	
	6.056	39.64	0.66	40.30	60.00	19.70	
	16.055	48.33	0.95	49.28	60.00	10.72	
	0.151	23.06	0.24	23.30	55.94	32.64	AV
	0.200	36.90	0.26	37.16	53.62	16.46	
	0.788	28.15	0.47	28.62	46.00	17.38	
	3.985	14.22	0.61	14.83	46.00	31.17	
	6.056	15.49	0.66	16.15	50.00	33.85	
	16.055	28.64	0.95	29.59	50.00	20.41	
Neutral	0.150	41.44	0.21	41.65	65.99	24.34	QP
	0.200	40.75	0.24	40.99	63.62	22.63	
	0.853	27.41	0.47	27.88	56.00	28.12	
	3.985	36.98	0.62	37.60	56.00	18.40	
	8.412	35.46	0.72	36.18	60.00	23.82	
	16.055	48.20	0.91	49.11	60.00	10.89	
	0.150	16.41	0.21	16.62	55.99	39.37	AV
	0.200	32.52	0.24	32.76	53.62	20.86	
	0.853	26.20	0.47	26.67	46.00	19.33	
	3.985	13.61	0.62	14.23	46.00	31.77	
	8.412	22.07	0.72	22.79	50.00	27.21	
	16.055	28.13	0.91	29.04	50.00	20.96	

TEST ENGINEER: TED ZHU

EUT : Network Monitor Temperature : 18°C

Model No. : N1942HET Humidity : 48%RH

Serial No. : 002NDPH19760 Date of Test : Mar 15, 2010

Test Mode : X-PORT 1440*900@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	43.64	0.24	43.88	66.00	22.12	QP
	0.329	34.31	0.38	34.69	59.49	24.80	
	0.788	31.88	0.47	32.35	56.00	23.65	
	3.985	38.15	0.61	38.76	56.00	17.24	
	6.805	39.35	0.68	40.03	60.00	19.97	
	16.055	48.30	0.95	49.25	60.00	10.75	
	0.150	27.12	0.24	27.36	56.00	28.64	AV
	0.329	29.77	0.38	30.15	49.49	19.34	
	0.788	28.15	0.47	28.62	46.00	17.38	
	3.985	20.67	0.61	21.28	46.00	24.72	
	6.805	22.06	0.68	22.74	50.00	27.26	
	16.055	28.60	0.95	29.55	50.00	20.45	
Neutral	0.150	42.28	0.21	42.49	65.99	23.50	QP
	0.202	41.66	0.24	41.90	63.54	21.64	
	0.853	28.68	0.47	29.15	56.00	26.85	
	3.985	39.12	0.62	39.74	56.00	16.26	
	8.412	37.38	0.72	38.10	60.00	21.90	
	16.055	48.21	0.91	49.12	60.00	10.88	
	0.150	21.91	0.21	22.12	55.99	33.87	AV
	0.202	26.77	0.24	27.01	53.54	26.53	
	0.853	25.62	0.47	26.09	46.00	19.91	
	3.985	16.17	0.62	16.79	46.00	29.21	
	8.412	17.83	0.72	18.55	50.00	31.45	
	16.055	28.52	0.91	29.43	50.00	20.57	

TEST ENGINEER: TED ZHU

4 RADIATED EMISSION TEST

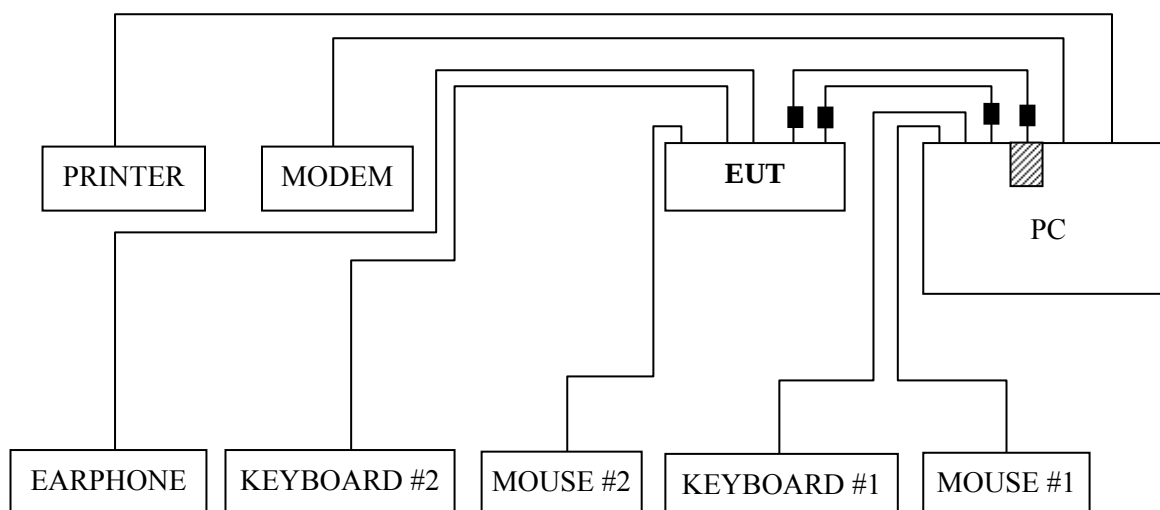
4.1 Test Equipment

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 07, 2010	Mar 07, 2011
2.	Preamplifier	Agilent	8447D	2944A10548	Sep 19, 2009	Mar 19, 2010
3.	Preamplifier	HP	8449B	3008A00864	May 19, 2009	May 19, 2010
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 14, 2008	May 14, 2010
5.	Spectrum	Agilent	E7405A	MY45106600	May 19, 2009	May 19, 2010
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

4.2 Block Diagram of Test Setup

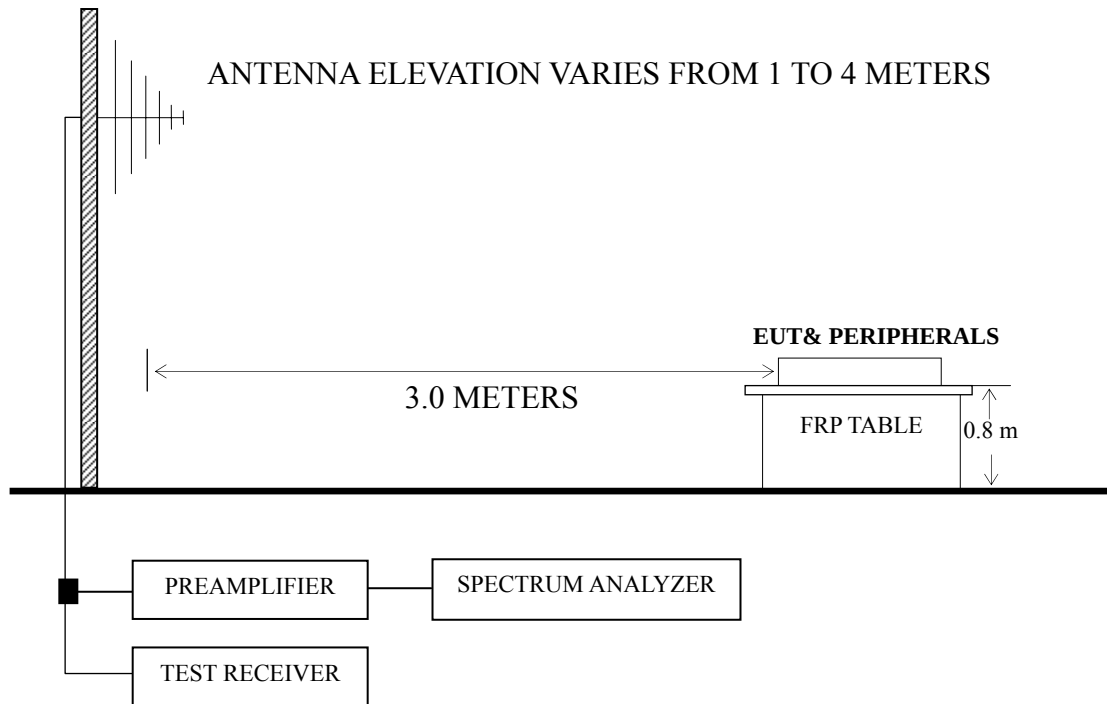
4.2.1 EUT and Peripherals



■ : Ferrite core

▨ : X550 PCI Card

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 below or equal to 1GHz and Average value detector above 1GHz.

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 below 1GHz and The Spectrum Agilent E7405A was set at 1MHz above 1GHz.

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 D-Sub 1280*1024@75Hz & X-PORT 1440*900@60Hz 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 640*480@60Hz	P22
D-Sub 1024*768@60Hz	P23
D-Sub 1280*1024@75Hz	P24
X-PORT 800*600@72Hz	P25
X-PORT 1024*768@60Hz	P26
X-PORT 1440*900@60Hz	P27

NOTE 1 – The **bold test mode** listed above means the worst test mode.

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

NOTE 3 – Emission Level = Antenna Factor + Cable Loss – Preamp Factor + Meter Reading.(> 1GHz)

NOTE 4 – The emission levels that are 20dB below the official limit are not reported.

NOTE 5 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

NOTE 6 – All reading are Quasi-Peak values below or equal to 1GHz and Peak values above 1GHz. For measurements above 1 GHz, the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.

NOTE 7 – The worst case is for X-PORT 1440*900@60Hz test mode. The worst emission at horizontal polarization was detected at 866.140 MHz with corrected signal level of 41.42 dB (μV/m) (limit is 46.00dB (μV/m)), when the antenna was 1.00 m height and the turntable was at 330°. The worst emission at vertical polarization was detected at 766.230 MHz with corrected signal level of 41.33 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was 1.00 m height and the turntable was at 15°.

EUT : Network Monitor Temperature : 22°C

Model No. : N1942HET Humidity : 60%RH

Serial No. : 002NDPH19760 Date of Test : Mar 16, 2010

Test Mode : D-Sub 640*480@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	89.170	18.80	9.24	0.99	29.03	43.50	14.47
	100.810	18.69	11.57	1.06	31.32	43.50	12.18
	122.150	24.56	12.91	1.14	38.61	43.50	4.89
	224.970	25.59	11.89	1.52	39.00	46.00	7.00
	387.930	15.16	16.24	1.97	33.37	46.00	12.63
	781.750	16.60	20.52	2.86	39.98	46.00	6.02
Vertical	54.250	24.84	7.92	0.79	33.55	40.00	6.45
	80.440	15.74	7.85	0.94	24.53	40.00	15.47
	171.620	23.78	10.15	1.32	35.25	43.50	8.25
	235.640	22.76	12.36	1.56	36.68	46.00	9.32
	287.050	21.29	13.68	1.72	36.69	46.00	9.31
	796.300	14.32	20.67	2.88	37.87	46.00	8.13

TEST ENGINEER: RAVEN JIN

EUT : Network Monitor Temperature : 22°C

Model No. : N1942HET Humidity : 60%RH

Serial No. : 002NDPH19760 Date of Test : Mar 16, 2010

Test Mode : D-Sub 1024*768@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	54.250	21.82	7.92	0.79	30.53	40.00	9.47
	132.820	16.85	12.40	1.18	30.43	43.50	13.07
	215.270	24.75	11.39	1.49	37.63	43.50	5.87
	233.700	23.51	12.28	1.56	37.35	46.00	8.65
	333.610	18.19	14.86	1.84	34.89	46.00	11.11
	763.320	12.99	20.36	2.82	36.17	46.00	9.83
Vertical	54.250	26.61	7.92	0.79	35.32	40.00	4.68
	132.820	21.09	12.40	1.18	34.67	43.50	8.83
	198.780	25.39	10.64	1.42	37.45	43.50	6.05
	232.730	23.49	12.24	1.55	37.28	46.00	8.72
	282.200	21.87	13.59	1.71	37.17	46.00	8.83
	870.990	13.20	21.42	2.97	37.59	46.00	8.41

TEST ENGINEER: RAVEN JIN

EUT : Network Monitor Temperature : 22°C

Model No. : N1942HET Humidity : 60%RH

Serial No. : 002NDPH19760 Date of Test : Mar 16, 2010

Test Mode : D-Sub 1280*1024@75Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	71.710	20.88	6.69	0.89	--	28.46	40.00	11.54	QP
	107.600	16.94	12.10	1.08	--	30.12	43.50	13.38	
	144.460	20.13	11.76	1.21	--	33.10	43.50	10.40	
	213.330	25.15	11.30	1.47	--	37.92	43.50	5.58	
	331.670	17.46	14.78	1.84	--	34.08	46.00	11.92	
	870.990	11.53	21.42	2.97	--	35.92	46.00	10.08	
	1083.000	41.78	22.98	3.91	34.11	34.56	74.00	39.44	PK
	1144.000	42.65	23.39	4.08	34.11	36.01	74.00	37.99	
	1262.000	45.93	24.19	4.33	34.12	40.33	74.00	33.67	
	1406.000	40.50	25.24	4.62	34.14	36.22	74.00	37.78	
	1571.000	41.51	26.26	4.94	34.16	38.55	74.00	35.45	
	1750.000	39.00	26.78	5.30	34.18	36.90	74.00	37.10	
Vertical	54.250	25.85	7.92	0.79	--	34.56	40.00	5.44	QP
	71.710	22.16	6.69	0.89	--	29.74	40.00	10.26	
	171.620	23.33	10.15	1.32	--	34.80	43.50	8.70	
	232.730	21.17	12.24	1.55	--	34.96	46.00	11.04	
	279.290	19.75	13.52	1.70	--	34.97	46.00	11.03	
	866.140	13.06	21.39	2.97	--	37.42	46.00	8.58	
	1126.000	49.46	23.27	4.03	34.11	42.65	74.00	31.35	PK
	1177.000	46.09	23.59	4.15	34.12	39.71	74.00	34.29	
	1383.000	45.34	25.09	4.57	34.14	40.86	74.00	33.14	
	1538.000	43.84	26.04	4.87	34.16	40.59	74.00	33.41	
	1629.000	48.07	26.47	5.05	34.16	45.43	74.00	28.57	
	1846.000	44.15	27.17	5.45	34.19	42.58	74.00	31.42	

TEST ENGINEER: RAVEN JIN

EUT : Network Monitor Temperature : 22°C

Model No. : N1942HET Humidity : 60%RH

Serial No. : 002NDPH19760 Date of Test : Mar 16, 2010

Test Mode : X-PORT 800*600@72Hz

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	71.710	21.23	6.69	0.89	28.81	40.00	11.19
	152.220	20.03	11.09	1.24	32.36	43.50	11.14
	204.600	26.11	10.89	1.44	38.44	43.50	5.06
	224.970	26.59	11.89	1.52	40.00	46.00	6.00
	265.710	20.51	13.22	1.65	35.38	46.00	10.62
	796.300	16.81	20.67	2.88	40.36	46.00	5.64
Vertical	54.250	23.84	7.92	0.79	32.55	40.00	7.45
	99.840	23.04	11.42	1.05	35.51	43.50	7.99
	118.270	22.30	12.91	1.13	36.34	43.50	7.16
	143.490	24.93	11.81	1.21	37.95	43.50	5.55
	235.640	23.76	12.36	1.56	37.68	46.00	8.32
	796.300	17.32	20.67	2.88	40.87	46.00	5.13

TEST ENGINEER: RAVEN JIN

EUT : Network Monitor Temperature : 22°C

Model No. : N1942HET Humidity : 60%RH

Serial No. : 002NDPH19760 Date of Test : Mar 16, 2010

Test Mode : X-PORT 1024*768@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	54.250	20.82	7.92	0.79	29.53	40.00	10.47
	89.170	23.46	9.24	0.99	33.69	43.50	9.81
	205.570	23.83	10.93	1.45	36.21	43.50	7.29
	333.610	21.19	14.86	1.84	37.89	46.00	8.11
	446.130	17.58	17.17	2.11	36.86	46.00	9.14
	763.320	17.99	20.36	2.82	41.17	46.00	4.83
Vertical	54.250	25.71	7.92	0.79	34.42	40.00	5.58
	99.840	22.97	11.42	1.05	35.44	43.50	8.06
	198.780	23.39	10.64	1.42	35.45	43.50	8.05
	232.730	25.49	12.24	1.55	39.28	46.00	6.72
	289.960	21.73	13.73	1.72	37.18	46.00	8.82
	763.320	14.84	20.36	2.82	38.02	46.00	7.98

TEST ENGINEER: RAVEN JIN

EUT : Network Monitor Temperature : 22°C

Model No. : N1942HET Humidity : 60%RH

Serial No. : 002NDPH19760 Date of Test : Mar 16, 2010

Test Mode : X-PORT 1440*900@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	54.250	24.85	7.92	0.79	--	33.56	40.00	6.44	QP
	132.820	20.49	12.40	1.18	--	34.07	43.50	9.43	
	286.080	19.03	13.66	1.72	--	34.41	46.00	11.59	
	457.770	19.06	17.35	2.15	--	38.56	46.00	7.44	
	766.230	16.68	20.40	2.82	--	39.90	46.00	6.10	
	866.140	17.06	21.39	2.97	--	41.42	46.00	4.58	
	1083.000	43.78	22.98	3.91	34.11	36.56	74.00	37.44	PK
	1142.000	42.91	23.39	4.07	34.11	36.26	74.00	37.74	
	1262.000	43.93	24.19	4.33	34.12	38.33	74.00	35.67	
	1427.000	40.82	25.38	4.66	34.14	36.72	74.00	37.28	
	1598.000	39.93	26.40	4.99	34.16	37.16	74.00	36.84	
	1664.000	38.58	26.56	5.12	34.17	36.09	74.00	37.91	
Vertical	71.710	24.88	6.69	0.89	--	32.46	40.00	7.54	QP
	90.140	23.75	9.40	1.00	--	34.15	43.50	9.35	
	107.600	21.94	12.10	1.08	--	35.12	43.50	8.38	
	213.330	25.15	11.30	1.47	--	37.92	43.50	5.58	
	383.080	18.21	16.13	1.96	--	36.30	46.00	9.70	
	766.230	18.11	20.40	2.82	--	41.33	46.00	4.67	
	1126.000	41.46	23.27	4.03	34.11	34.65	74.00	39.35	PK
	1255.000	43.05	24.14	4.31	34.12	37.38	74.00	36.62	
	1421.000	40.72	25.34	4.65	34.14	36.57	74.00	37.43	
	1629.000	42.07	26.47	5.05	34.16	39.43	74.00	34.57	
	1752.000	42.80	26.78	5.30	34.18	40.70	74.00	33.30	
	1954.000	38.00	27.81	5.56	34.20	37.17	74.00	36.83	

TEST ENGINEER: RAVEN JIN

5 DEVIATION TO TEST SPECIFICATIONS

None.

6 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Specifications (mm)	Manufacturer	Location
Ferrite core	6210VH0004A	31*34	FEELUX / HAIAN	See External Photo Figure 8-1
Ferrite core	6210VH0001A	25*32.5	FEELUX	See External Photo Figure 8-2
Aluminum foil	T-308	50*30	DAEHUNG SUBSIDIARY MATERIALS.	See Internal Photo Figure 12

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)