

## EMC TEST REPORT For FCC



Test Report No. : CTK01-F182

Date of Issue : December 26, 2001

Model/Type No: : NE-1202W

Kind of Product : NeonHome-LAN Sub

Applicant : NEONGATE INC.

Applicant Address : Yooil B/D 4F, 411-14, Dogok-dong, Gangnam-gu, Seoul, Korea.

Manufacturer : NEONGATE INC.

Manufacturer Address : Yooil B/D 4F, 411-14, Dogok-dong, Gangnam-gu, Seoul, Korea.

Contact Person : Mr. J. H. Lee

Telephone : +82-2-576-9730 (Int. : 236)

Received Date : December 15, 2001

Test period : Start: Dec. 16, 2001 End: Dec. 22, 2001

Test Results : ☒ In Compliance ☐ Not in Compliance

The test results presented in this report relate only to the object tested.

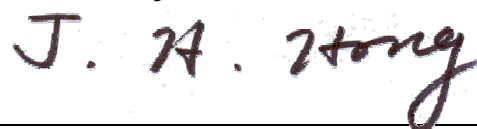
CERTiTEK Standards Laboratory Co., Ltd. is accredited by Korea Laboratory Accreditation Scheme (KOLAS) which signed the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the above test item(s) and test method(s).

Tested by



Michael Jang  
EMC Test Engineer  
Date: December 26, 2001

Reviewed by



James Hong  
EMC Technical Manager  
Date: December 26, 2001

## REPORT REVISION HISTORY

Date	Revision	Page No
Dec. 26, 2001	(CTK01-F182) Issued	All

*This report shall not be reproduced except in full, without the written approval of CERTiTEK Standards Laboratory Co., Ltd. This document may be altered or revised by CERTiTEK Standards Laboratory Co., Ltd. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by CERTiTEK Standards Laboratory Co., Ltd. will constitute fraud and shall nullify the document.*

## TABLE OF CONTENTS

1.0 General Product Description .....	4
1.0 General Product Description .....	4
1.1 Model Differences .....	4
1.2 Device Modifications .....	4
1.3 EUT Configuration(s) .....	5
1.4 Test Software .....	5
1.5 EUT Operating Mode(s) .....	5
1.6 Calibration Details of Equipment Used for Measurement.....	6
1.7 Test Facility .....	6
1.8 Measurement Procedure .....	6
1.9 Laboratory Accreditations and Listings .....	7
2.0 Emissions Test Regulations.....	8
2.1 Conducted Voltage Emissions .....	9
2.2 Radiated Electric Field Emissions.....	10
Configurations.....	11
APPENDIX A - TEST DATA.....	12
Conducted Voltage Emissions (Quasi-Peak reading).....	12
Radiated Electric Field Emissions (Quasi-Peak reading) .....	14

## 1.0 General Product Description

The product is a device for NeonHome-LAN subscribers. And it is a NeonHome-LAN Ethernet switch device, which is connected with PC through Ethernet (RJ-45) to provide Internet access at 1.2 Mbps.

### 1.0.1 Tested Equipment

- ☒ Unless otherwise indicated, all tests were conducted on Model NE-1202W.
- ☐ Tests performed on Model \_\_\_\_\_ were considered to be representative of Model(s) \_\_\_\_\_.
- ☒ Class II Permissive Change  
NE-1202 changed external material from plastic to metal (EZI) only, without any other changes.  
\* NE-1202 model's report No. : CTK01-F114.

### 1.0.2 Equipment Size, Mobility and Identification

Dimensions: 80 by 132 by 25 ☒ mm ☐ in  
Mobility: ☐ Hand-Held ☒ Table-top ☐ Floor-standing  
Serial No.: Not Applicable

### 1.0.3 Electrical Ratings

Input: 1. EUT - 5 VDC, 800 mA  
2. Adaptor - 100-240VAC, 0.25A, 50/60Hz  
Output: 1. EUT - Not applicable  
2. Adaptor - 5 VDC, 800 mA

### 1.0.4 Test Voltage & Frequency (Using the Adaptor)

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage: 120VAC  
Frequency: 60Hz

### 1.0.5 Clock & Other Frequencies Utilized

20 MHz & 25MHz

## 1.1 Model Differences

Not applicable

## 1.2 Device Modifications

The following modifications were necessary for compliance:

Not applicable

### 1.3 EUT Configuration(s)

See Appendix A for individual test set-up configuration(s). The following peripheral devices and/or interface cables were connected during the measurement:

☒ Peripheral Devices

Device	Manufacturer	Model No.	Serial No.	FCC ID or DoC
PC	Hewlett Packard	DTPC-17	SG01501776	DOC
Monitor	Hewlett Packard	D2813	TW61100109	DOC
MOUSE (Serial type)	Microsoft	BASM1	4475951-20000	DOC
MOUSE (PS/2 type)	PANWEST	Cyber Beetle	PM1F184045737	DOC
MOUSE (USB type)	PANWEST	Cyber Beetle	PM1F154000055	DOC
MOUSE (USB type)	PANWEST	Cyber Beetle	PM1F144009945	DOC
KEYBOARD	World Com Mart	KB120	-	D840902 MIC
Game Pad	Microsoft	Sidewinder game pad	03426853	C3KMGP1
HEADSET	CAMAC	CMK-C3	-	-
PRINTER	Hewlett Packard	C4530A	US7A91703J	DOC
Telephone	-	-	-	-

☒ Cable Description

#	Description	Ferrited	Length (m)	Other Details
1	AC Power, Unshielded	No	1.8	Connect to AC Power from PC
2	AC Power, Unshielded	No	1.8	Connect to AC Power from Monitor
3	AC Power, Unshielded	No	1.8	Connect to AC Power from printer
4	Monitor cable, Shielded	Yes	1.8	Connect to PC
5	Printer cable, Shielded	No	1.8	Connect to PC
6	Telephone line, Unshielded	No	2.0	-
7	Game Pad cable, Unshielded	No	2.0	-
8	Headset cable, Unshielded	No	2.0	-
9	Keyboard cable, Shielded	No	2.0	PS/2 Type
10	Mouse cable, Shielded	No	2.0	USB Type
11	Mouse cable, Shielded	No	2.0	USB Type
12	Mouse cable, Shielded	No	2.0	Serial Type
13	Mouse cable, Shielded	No	2.0	PS/2 Type
14	Line in cable, Unshielded	No	2.0	-
15	Corporate cable, Unshielded	No	2.0	Connected to corporate line
16	LAN cable, Unshielded	No	1.5	Connect to PC
17	DC output cable, Unshielded	No	1.8	-
18	AC Power, Unshielded	-	-	Direct plug-in

n/a = not available

### 1.4 Test Software

☒ Pinging

☐ \_\_\_\_\_

### 1.5 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

☐ Test program (H-Pattern)

☐ Standby

☒ Practice operation

☐ Test program (color bar)

☐ Test program (customer specific)

## 1.6 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

## 1.7 Test Facility

The measurement facility is located at 386-1, Ho-Dong, Yongin-City, Kyungki-Do, Korea 449-100. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

## 1.8 Measurement Procedure

Preliminary AC power line conducted emissions tests were performed shielded room. To find worst mode, several typical mode and typical cable position were tested. Final AC power line conducted emissions test was performed shielded room. (location is same as Preliminary test)





Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

Preliminary radiated emissions test were performed anechoic chamber (Distance of antenna and EUT was 3 m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.

Final radiated emissions test was performed Open Area Test Site. Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

\* Measurement procedures was In accordance with ANSI C63.4-1992 7.2.3, 7.2.4, 8.3.1.1, 8.3.1.2

## 1.9 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 and 10 meter Open Area Test Sites to perform FCC Part 15/18 measurements.	 93250
JAPAN	VCCI	10 meter Open Area Test Site and one conducted site.	 R-948, C-986
KOREA	MIC	10 meter Open Area Test Site and EMS (ESD, RS, EFT/Burst, Surge)	 No. 51, KR0025
International	KOLAS	EMC	 NO. 119

## 2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

☐ EN 50081-1 /1992

☐ EN 55011 /1998

☐ Group 1

☐ Group 2

☐ Class A

☐ Class B

☐ EN 55013 /A12:1994

☐ EN 55014 /1987

☐ Household appliances and similar

☐ Portable tools

☐ Semiconductor devices

☐ EN 55014 /A2:1990

☐ EN 55014 /1993

☐ Household appliances and similar

☐ Portable tools

☐ Semiconductor devices

☐ EN 55015 /1987

☐ EN 55015 /A1:1990

☐ EN 55015 /1993

☐ EN 55022 /A1:1995

☐ Class A

☐ Class B

☐ EN 55022 /1998

☐ Class A

☐ Class B

☐ EN 61000-3-2 /1995 (EN 60555 Part 2 /4.87)

☐ EN 61000-3-3 /1995 (EN 60555 Part 3 /4.87)

☐ BS

☐ VCCI V-3/99.05 : 1999

☐ Class A

☐ Class B

☒ FCC Part 15 SUBPART B

☐ Class A

☒ Class B

☐ AS 3548 (1992)

☐ Class A

☐ Class B

☐ CISPR 11 (1990)

☐ Group 1

☐ Group 2

☐ Class A

☐ Class B

☐ CISPR 22 (1993)

☐ Class A

☐ Class B



## 2.1 Conducted Voltage Emissions

### Test Date

December 20, 2001

### Test Location

EMI-CE: Shielded Room

### Test Instruments

<input checked="" type="checkbox"/> Field Strength Meter	Rohde Schwarz	ESHS30	828144/002
--	---------------	--------	------------

### Test Accessories

<input type="checkbox"/> LISN	EMCO	3825/2	9206-1971
<input checked="" type="checkbox"/> LISN	EMCO	3825/2	9409-2246
<input checked="" type="checkbox"/> LISN	EMCO	3825/2	9607-2574
<input checked="" type="checkbox"/> Control PC	HP	Vectra 500	SG72000192

### Frequency Range of Measurement

☐ 150 kHz to 30 MHz  
☒ 450 kHz to 30 MHz  
☐ \_\_\_\_\_

### Instrument Settings

IF Band Width: 9 kHz

### Test Results

The requirements are:

<input checked="" type="checkbox"/> MET	minimum margin is 8.9 dB $\mu$ V at 5.19 MHz
<input type="checkbox"/> NOT MET	limit exceeded by maximum of ____ dB $\mu$ V at ____ MHz
<input type="checkbox"/> NOT APPLICABLE	

### Remarks

See Appendix A for test data.

## 2.2 Radiated Electric Field Emissions

### Test Date

December 22, 2001

### Test Location

- ☐ EMI-OATS: Testing was performed at a test distance of 10 m  
☒ EMI-OATS: Testing was performed at a test distance of 3 m

### Test Instruments

☒ Field Strength Meter      Rohde Schwarz      ESVS30      826638/008

### Test Accessories

<input checked="" type="checkbox"/> ULTRA Broadband Antenna	R & S	HL562	361324/014
<input type="checkbox"/> Biconical Antenna	Schwarzbeck	BBA9106	41-00201
<input type="checkbox"/> Biconical Antenna	EMCO	3110B	9607-2564
<input type="checkbox"/> Log-periodic Antenna	EMCO	3146	9607-4567

### Frequency Range of Measurement

30 MHz to 1 GHz

### Instrument Settings

IF Band Width: 120 kHz

### Test Results

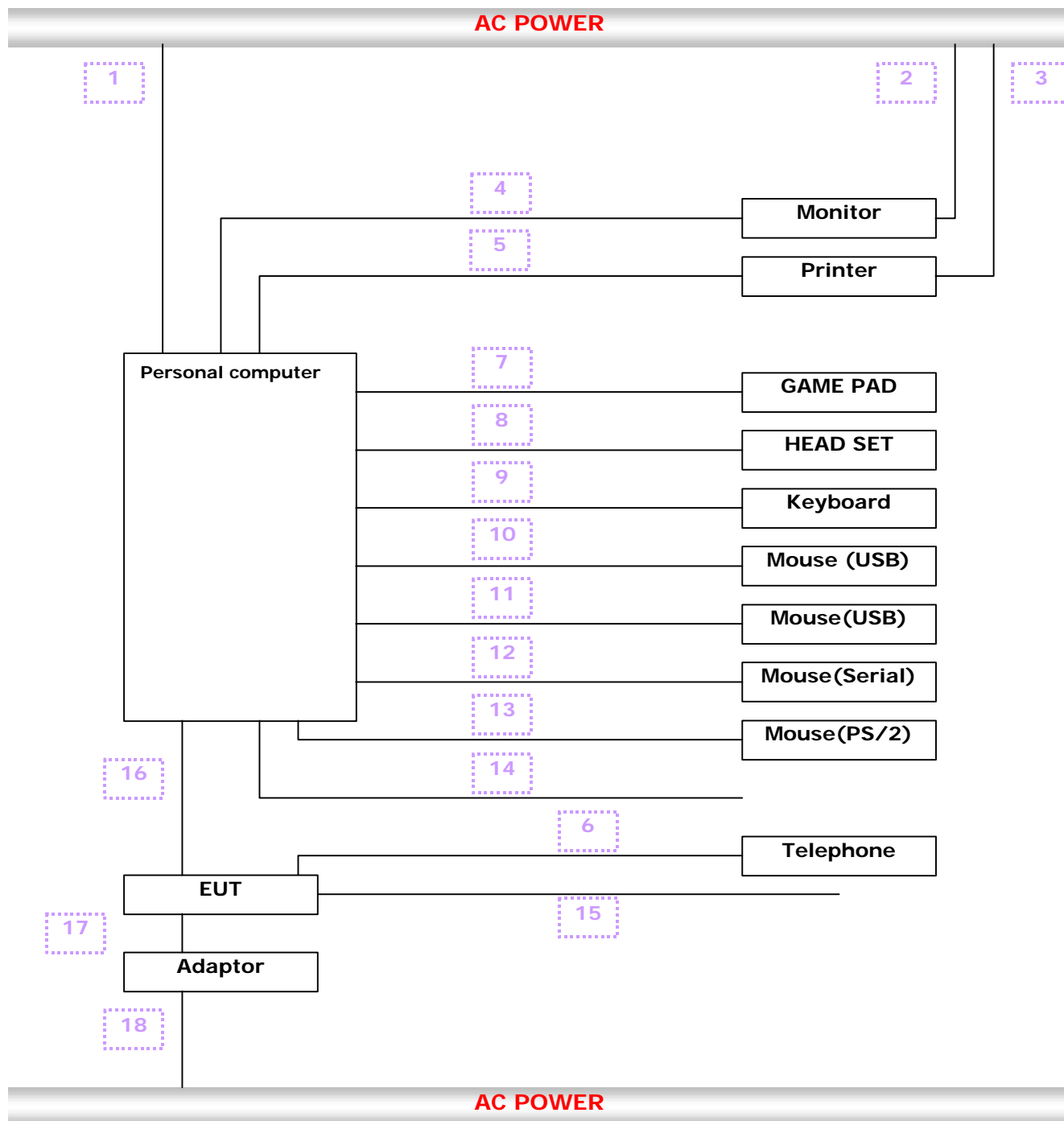
The requirements are:

- ☒ MET      minimum margin is 3.0 dB ( $\mu\text{V/m}$ ) at 32.00 MHz  
☐ NOT MET      limit exceeded by maximum of \_\_\_\_ dB( $\mu\text{V/m}$ ) at \_\_\_\_ MHz  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data

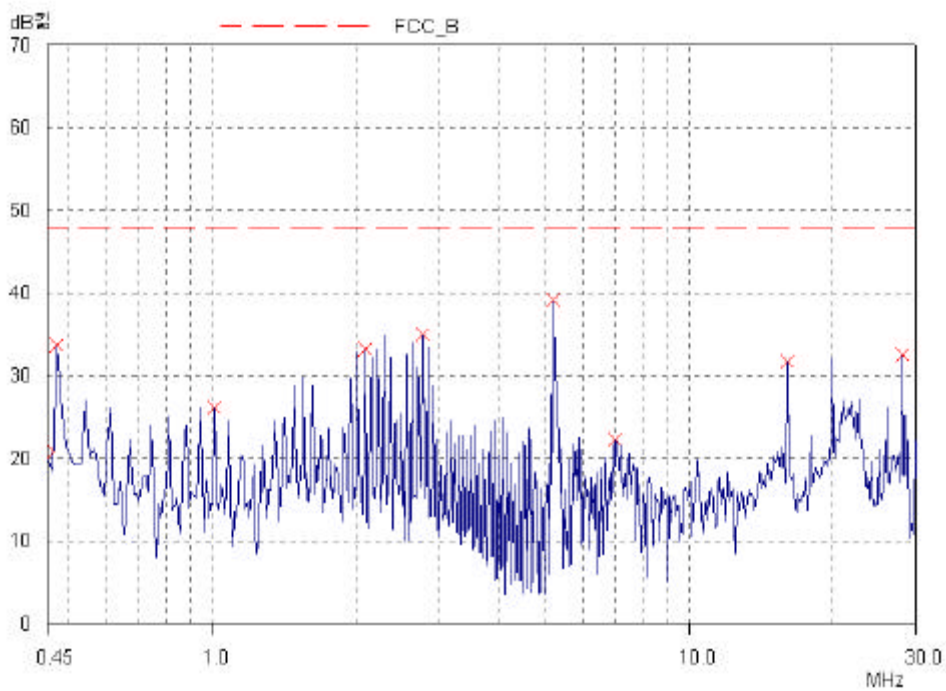
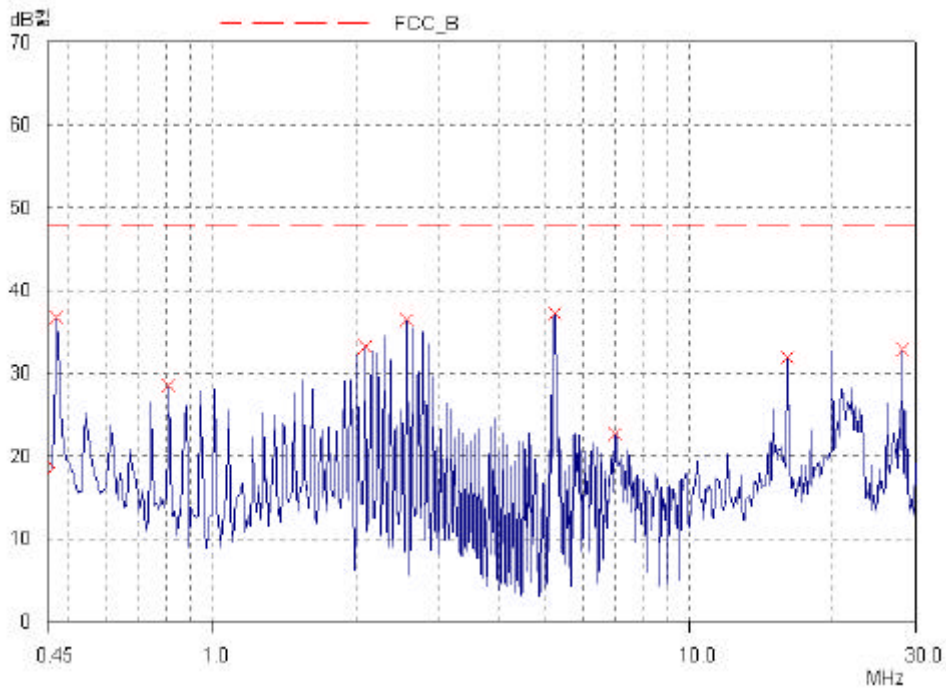
## Configuration



## APPENDIX A – TEST DATA

### Conducted Voltage Emissions (Quasi-Peak reading)

Frequency  [MHz]	Correction Factor		Line	Quasi-peak				Average			
				Limit	Reading	Result	Margin	Limit	Reading	Result	Margin
	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dB]
0.47	0.7	0.1	L	48.0	35.9	36.7	11.3				
2.09	0.3	0.1	L	48.0	32.7	33.1	14.9				
2.56	0.3	0.1	L	48.0	36.0	36.4	11.7				
2.76	0.3	0.1	N	48.0	34.5	34.9	13.1				
5.19	0.3	0.1	N	48.0	38.7	39.1	8.9				
5.22	0.3	0.1	L	48.0	36.8	37.2	10.8				
16.00	0.4	0.2	L	48.0	31.3	31.9	16.1				
27.99	0.7	0.4	L	48.0	31.8	32.9	15.1				



## Radiated Electric Field Emissions (Quasi-Peak reading)

Frequency [MHz]	Reading [dBuV/m]	Pol.	Height [m]	Correction Factor		Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
				Antenna	Cable			
32.00	18.8	V	1.0	17.80	0.40	40.0	37.00	3.00
119.80	25.3	H	3.8	9.70	1.10	43.5	36.09	7.41
140.00	22.3	H	3.5	8.00	1.30	43.5	31.58	11.92
160.30	23.1	H	3.8	7.30	1.60	43.5	31.99	11.51
200.10	28.9	H	3.5	7.20	1.60	43.5	37.65	5.85
580.00	21.7	V	1.2	16.80	3.60	46.0	42.14	3.86
620.00	20.3	H	3.5	17.30	3.70	46.0	41.26	4.74
661.00	18.6	V	1.2	18.30	3.80	46.0	40.73	5.27