FCC EVALUATION REPORT FOR CERTIFICATION

EMC TEST REPORT

Korea Standard Technology

Test report No.: KST-FCC0301

Manufacturer's Name : **NETUS Technologeis Co., Ltd**

Manufacturer's Address : **608 A-Dong, Pundang Technopark 150, Yatop-Dong, Pundang-Gu, Seongnam-Shi, Kyunggi-Do, Korea**

EUT's :

FCC ID	:	**Q9CNeobit1012VAII**
Product Name	:	**ADSL Modem**
Model Number(s)	:	**Neobit 1012VA II**
Product Options	:	**N/A**
Category	:	**FCC Part 15 sub. part B Class B Digital Device**

Supplementary Information

The device bearing the brand name and FCC ID specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with measurement procedures specified in ANSI C63.4-1992.

I attest to the accuracy of data and all measurements reported herein were performed by or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Date: 2003.06.12

Tested by: Kim

Kim, Ha-Hyoung

Approved by:

Lee, Woen-woo

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1. Description of Device

1) Kind of equipment:	ADSL Modem
2) FCC ID:	Q9CNeobit1012VAII
3) Model Name:	Neobit 1012VA II
4) Serial No.:	None
5) Type of Sample Tested:	Pre-production
6) High Frequency Used:	25.000MHz 17.280MHz
7) Adapter	Model name: None Manufacturer: Sunlin Electronics Co., Ltd. Serial no: None
8) Power Rating:	1phase AC100-240V, A, 50/60Hz Output: DC , A
9) Tested Power supply:	1phase AC120V, 60Hz
10) Date of Manufacture:	May, 2003
11) Manufacture:	NETUS Technologies Co., Ltd
12) Description of Operating:	Use to hyper-terminal for data transmission
13) Dates of Test:	June 10, 2003
14) Place of Tests:	Korea Standard Technology EMC site
15) Test Report No:	KST-FCC0301

2. Test Facility

The open field test site and conducted measurement facility are used for these testing, where are located following address and drawing. This site was fully described in a report dated November 14, 2002, that was submitted to the FCC.

Korea Standard Technology (KOSTEC Co., Ltd)

Head office:
302 City Bild, 1600-3 Kwanyang-dong, Dongan-gu, Anyang-shi, Kyunggi-do, Korea
Telephone No : 82-31-388-2051
Facsimile No: 82-31-388-2052

Test Lab
:180-254, Annyung-Ri, Taean-Yup, Hwasung-shi, Kyunggi-do, Korea
Telephone No : 82-31-222-4251
Facsimile No: 82-31-222-4252

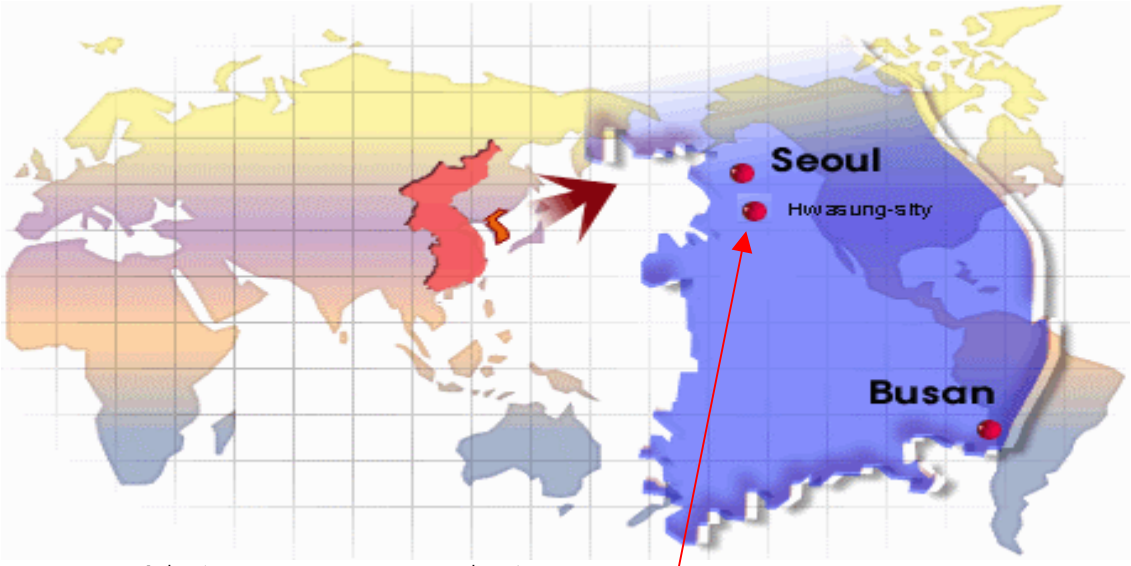
MIC(Ministry of Information and Communication) No: **KR0042**

FCC Filing No. : **525762**

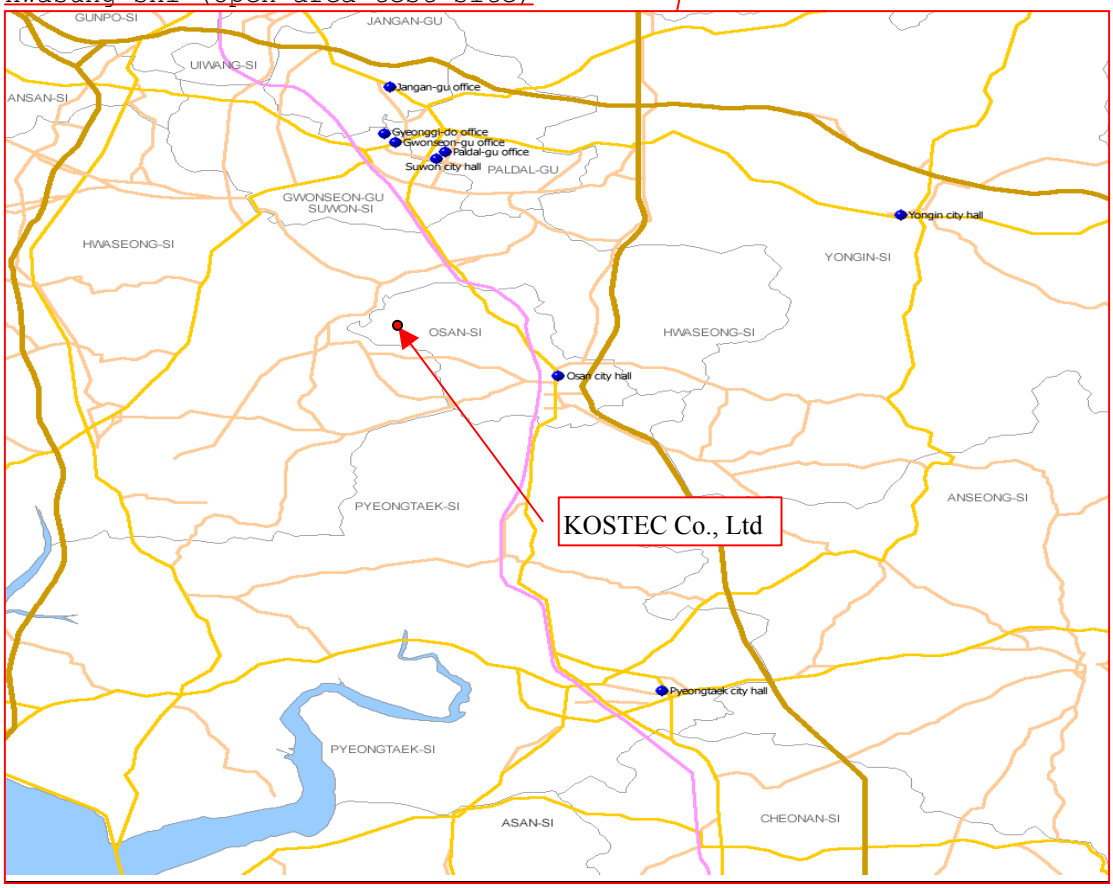
VCCI Membership Number : **2005**

3. MAP

Korea



Hwasung-shi (open area test site)



4. TEST SYSTEM CONFIGURATION

Operation Environment

Ambient	Temperature (° C)	Humidity (%)	Pressure (hPa)
10m Open Area site	24.1	45	1004
Shielded room:	23.5	42	1005

Test site
These testing were performed following locations ;

Shielded room : Conducted Emission,

10m Open Area Site: Radiated Emission

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC.
The factors contributing to uncertainties are test receiver, Cable loss, antenna factor calibration, Antenna directivity, antenna factor variation with height, antenna phase center variation, antenna frequency interpolation, measurement distance variation, ite imperfection, mismatch, and system repeatability.
Based on NIS 80,81, The measurement uncertainty level with a 95% confidence level were applied.

sample calculation

Conducted emission

The field strength is calculated by adding the LISN factor, cable loss from the measured reading.
The sample calculation is as follows:

FS = MR + LF + CL
MR = Meter Reading
LF = LISN Factor
CL = Cable Loss

If MR is 30dB, LISN Factor 1dB, CL 1dB
The result (MR) is
30 + 1 + 1 = 32dBuV

5. Description of E.U.T.

Product Description

Manufactured By:	**NETUS Technologeis Co., Ltd**
Address:	**608 A-Dong, Pundang Technopark 150, Yatop-Dong, Pundang-Gu, Seongnam-Shi, Kyunggi-Do, Korea**
Model:	**Neobit 1012VA II**
Serial Number:	**None**

Description	Manufacturer	Model / Part #	Serial Number
ADSL Modem	NETUS Technologeis Co., Ltd	Neobit 1012VA II	None
Ac/dc adapter	Sunlin Electronics Co.,Ltd.	None	None

EUT Used cables

Cable Type	Shield	Length (m)	Ferrite	Connector	Connection Point 1	Connection Point 2
POWER Line	Yes	1.0	-	DC INLET	Ac/dc adapter	Main power source
UTP	-	3.0	yes	RJ-45	EUT	Hub
UTP	-	1.2	-	RJ-11	EUT	PC
UTP	-	1.2	-	RJ-11	EUT	Telephone

Operating conditions

The operating mode/system were as follows in details:

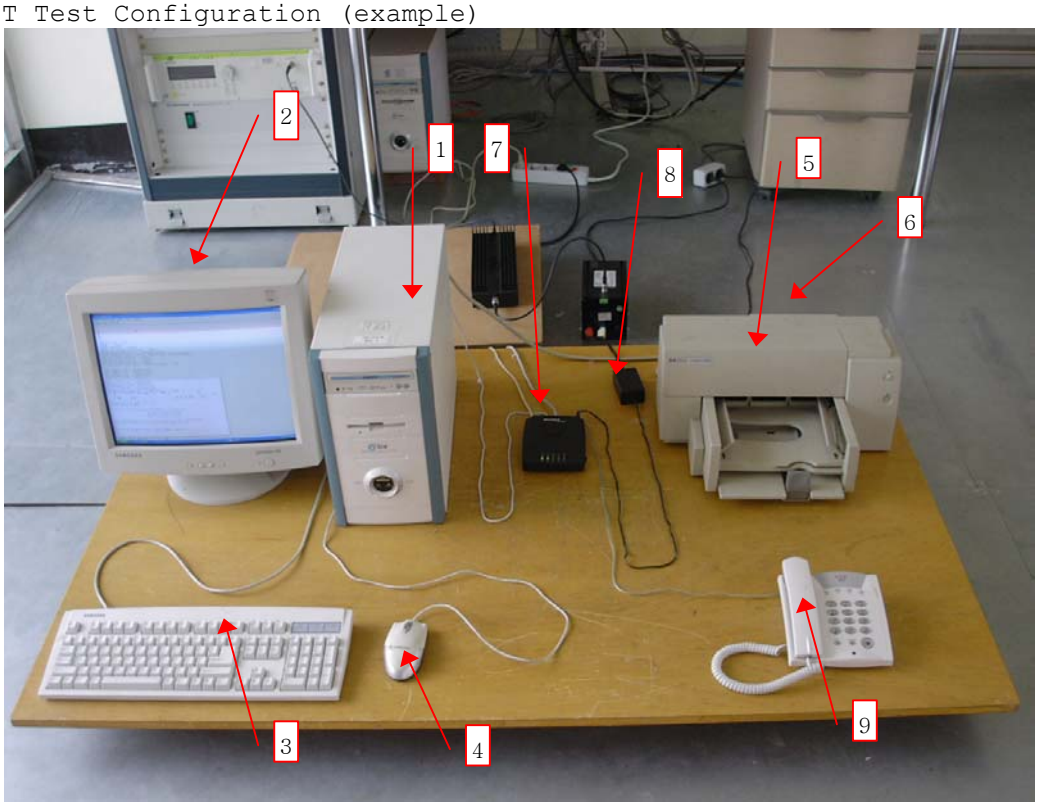
Operating: After Connected personal computer by UTP cable(RJ-11 to RS-232) And connected from E.U.T to Hub by UTP cable(RJ-11), connected from E.U.T to telephone by UTP cable(RJ-11).
And use to hyper-terminal program for data transmission.

Peripherals

No	Description	Manufacturer	Model / Part #	Serial Number
1	Personal computer	none	nice	None
2	MONITOR	Samsung Electronics	PN17LT	P225HVBT600271

3	Keyboard	samsung	SEM-DT35	19063587
4	Mouse	samsung	SMOP5000WX	none
5	Printer	hp	C2644A	SG55M1BORN
6	Ac/dc adapter	Samsung Electronics	YK-30083K	None
7	ADSL Modem	NETUS Technologies Co.,Ltd.	Neobit 1012VA II	None
8	Ac/dc adapter	Sunlin Electronics Co.,Ltd.	None	None
9	Telephone	BBK ELECTRONICS CORP.,LTD	TA318	None

E.U.T Test Configuration (example)



6. Summary of test results

Modification to the E.U.T.

- None

RESULT : **- PASS**

7. TEST RESULTS

7.1 Conducted emission

Measurement procedure

Mains
The measurements were performed in a shielded room. EUT was placed on a non-metallic table height of 0.4m above the reference ground plane. They were folded back and forth forming a bundle 30cm to 40Cm long and were hanged at a 40cm height to the ground plane.
Each EUT power lead, except ground (safety) lead, were individually connected through a LISN to input power source.
Both lines of power cord, hot and neutral, were measured.

Used equipment

Equipment	Model no.	Serial no.	Makers	Next cal date	Used
Test receiver	ESPI3	100109	R&S	2003.03.21	●
L.I.S.N.	ESH2-Z5	100044	R&S	2003.04.25	●
	ESH2-Z5	100147	R&S	2003.04.25	●

measurement uncertainty

Conducted Emission measurement : ± 2.4 (K=2)

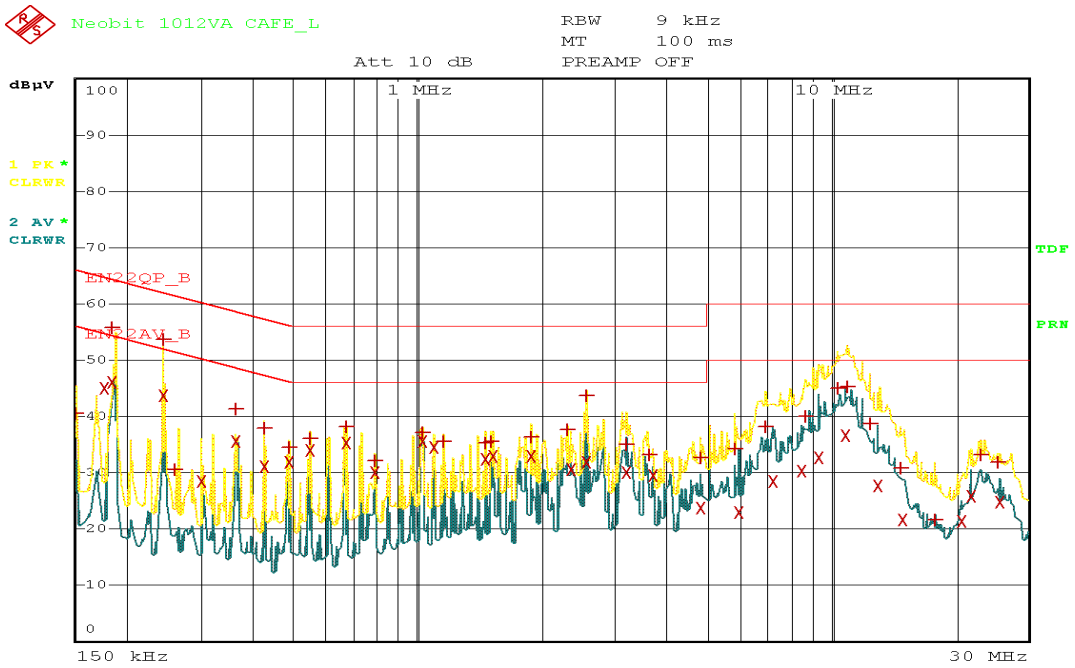
test data

FREQ.	LEVEL(dBμV)		LINE	Loss	LIMIT(dBμV)		MARGIN(dBμV)	
(MHz)	QP	AV	Pol	(dB)	QP	AV	QP	AV
0.186	55.85	46.15	L	0.08	65.57	55.57	9.80	9.50
0.242	53.75	43.81	L	0.29	61.89	51.89	8.43	8.37
0.302	44.03	36.44	N	0.29	59.66	49.66	15.92	13.51
0.666	39.05	37.33	N	0.90	56.00	46.00	17.85	9.57
2.558	43.68	31.82	L	0.57	60.00	50.00	16.89	18.75
8.666	40.09	30.36	L	1.24	60.00	50.00	21.15	20.88
10.914	45.29	36.56	L	1.33	60.00	50.00	16.04	14.77

* Level = test receiver reading value
* Loss = LISN insertion Loss + Cable Loss

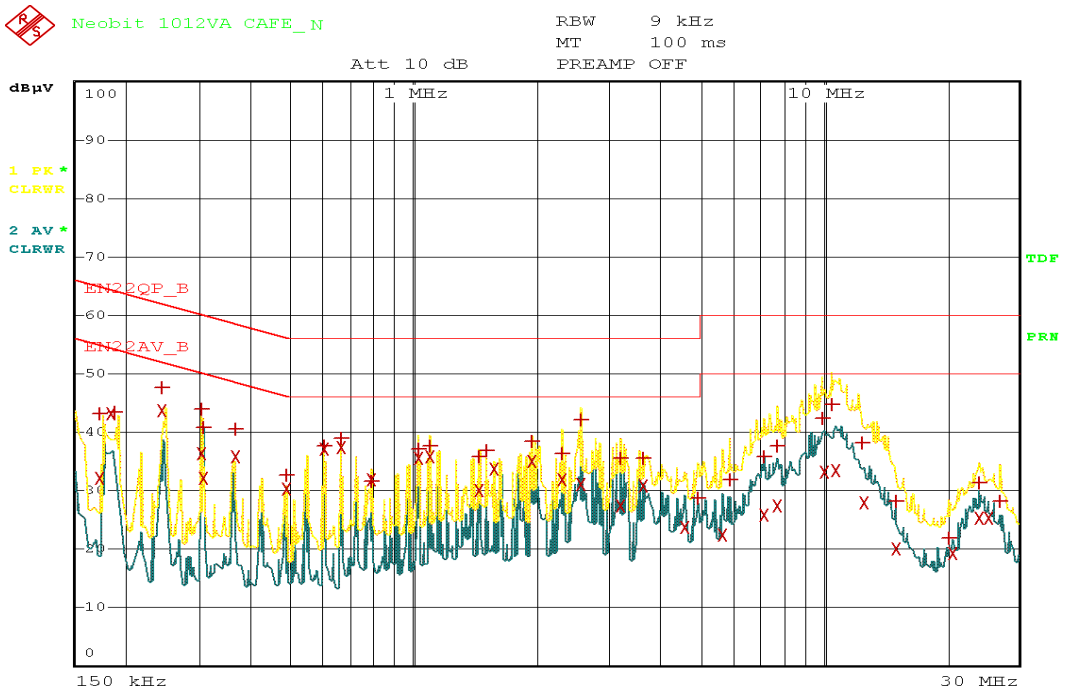
Conducted emission test graph

Line. Live



Date: 10.JUN.2003 12:56:56

Line. Neutral



Date: 10.JUN.2003 13:00:14

7.2 Radiated Emission

Measurement procedure

A pretest was performed at 3m distances in a semi-anechoic chamber for searching correct frequency.
The final test was done at a 10m open area test site with a quasi-peak detector.
EUT was placed on a non-metallic table height of 0.8m above the reference ground plane.
Cables connected to EUT were fixed to cause maximum emission.
Test was made with the antenna positioned in both the horizontal and vertical planes of polarization.
The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

Used equipment

Equipment	Model no.	Serial no.	Makers	Next cal date
Test receiver	ESCS30	100111	R&S	2004.03.17
Ultra broadband antenna	HL562	100075	R&S	2004.03.18
Antenna Mast	AT14	none	Daeil EMC	-
Turn Table	TT15	none	Daeil EMC	-
10m Open area site	none	none	KOSTEC Lab	-
chamber(3m)	none	none	FRANCONIA	-

measurement uncertainty

Radiated Emission measurement :

30-300MHz +3.96dB / -4.04dB
300-1000MHz +3.04dB / -3.00dB

test data

Freq (MHz)	Reading (dBuV/m)	P (H/V)	H (m)	A (.)	Antenna (dB)	Cable Loss (dB)	Result (dBuV/m)	Limit (dB)	Margin (dB)
75.00	11.20	H	3.80	110	7.70	3.00	21.90	40.0	18.10
150.00	17.10	H	2.20	170	7.50	4.20	28.80	43.5	14.70
225.02	11.30	V	1.80	100	8.60	5.00	24.90	46.0	21.10
250.02	18.40	H	2.80	170	9.40	5.70	33.50	46.0	12.50
275.02	14.03	V	2.10	170	10.20	6.17	30.40	46.0	15.60
402.31	9.94	H	1.70	90	13.54	7.42	30.90	46.0	15.10
500.04	8.70	H	1.70	110	15.50	7.60	31.80	46.0	14.20

Reading = Test receiver reading
P= antenna Polarization
H=antenna Height
A=turn table Angle
Antenna = antenna factor
Cable loss = used cable loss
Result = reading + antenna + loss
Margin = Limit - result

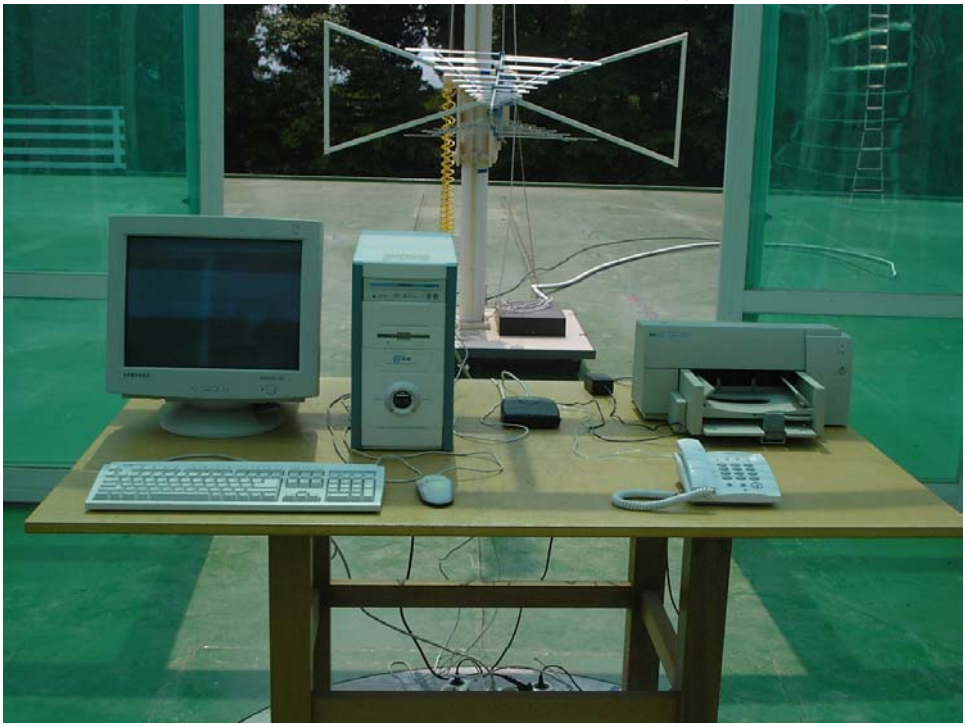
* Receiving Antenna Mode: Horizontal, Vertical
* Test site: 3m Open area site

8. PHOTOGRAPHS

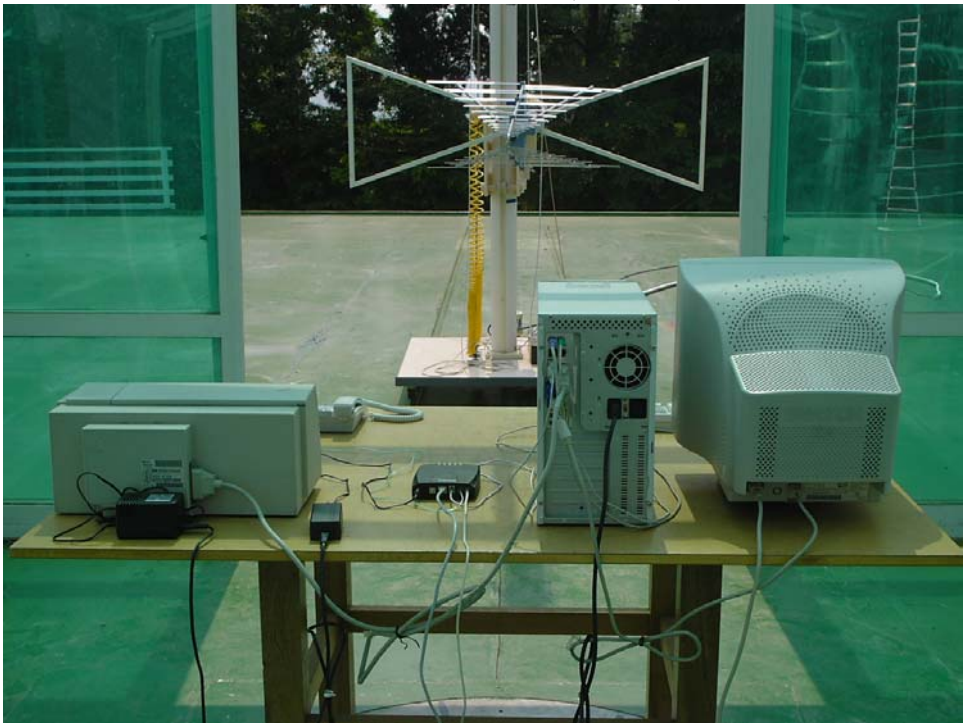
Conducted emission (Front)

Conducted emission (Rear)

Radiated Emission (Front)



Radiated Emission (Rear)

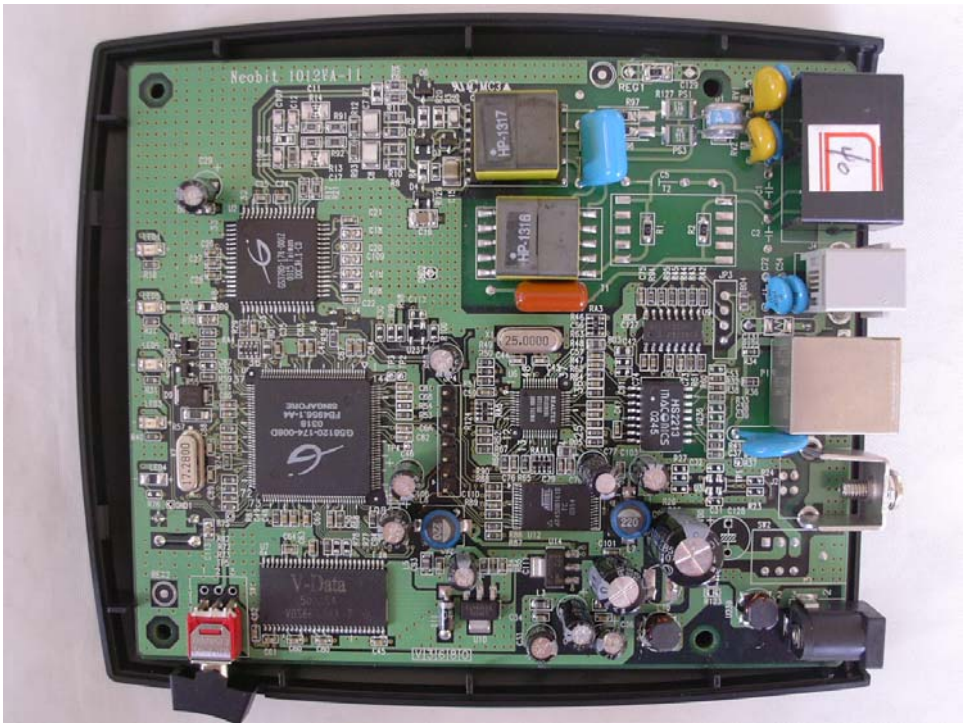


EUT

Front

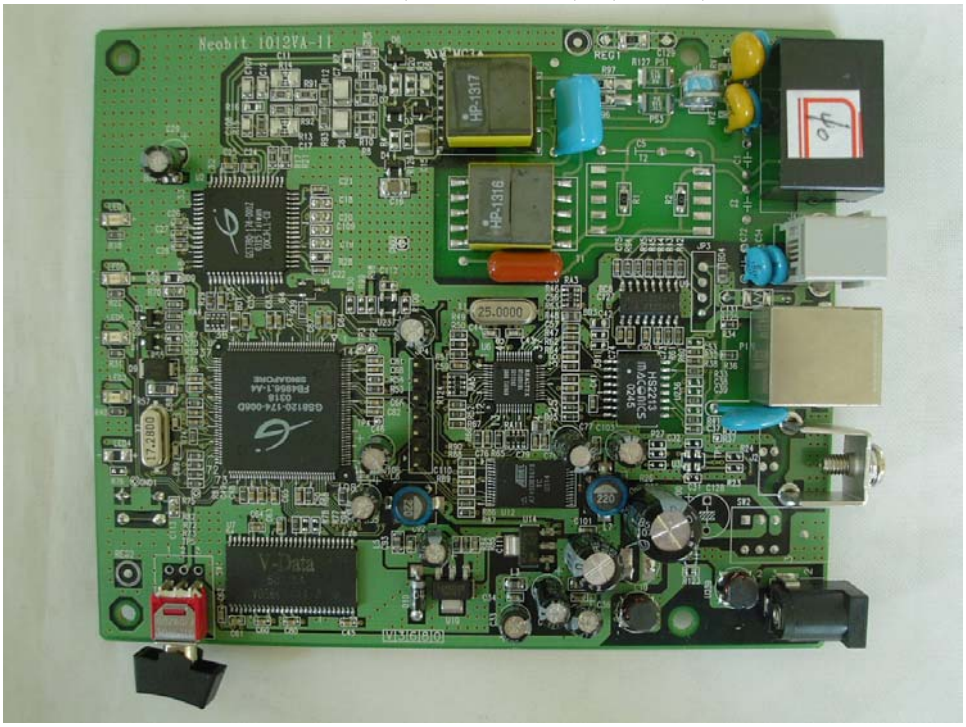
Rear

Inside

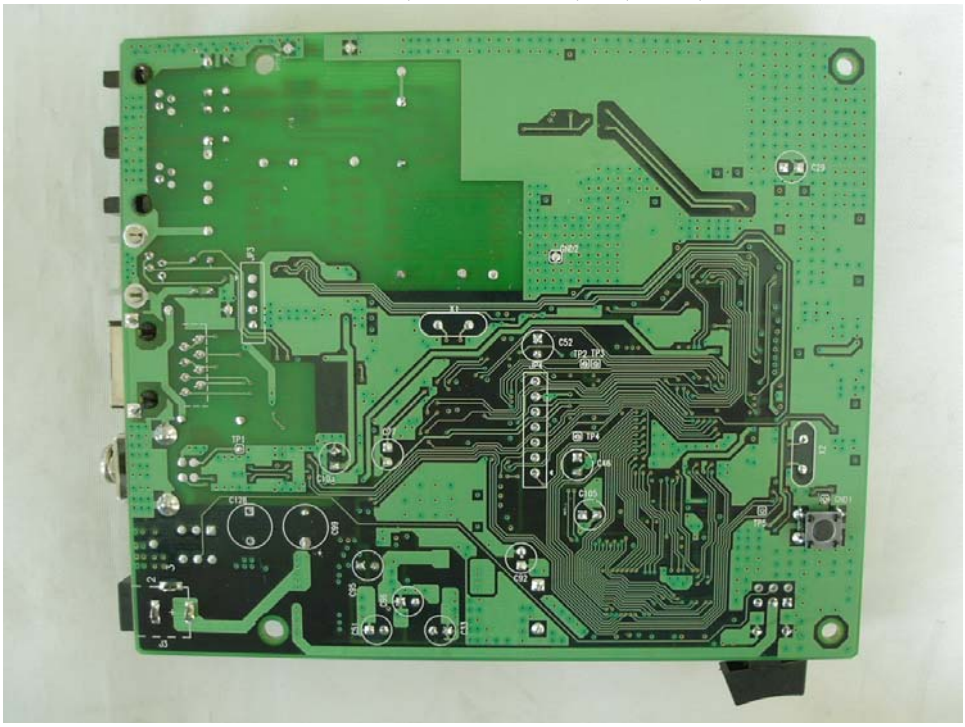


AC/DC adapter

Mainboard(ADSL Modem) (Front)



Mainboard(ADSL Modem) (Rear)



I/O Port veiw

none

Appendix - Sample Label

ADSL MODEM	Made in Korea
Model No: Neobit 1012VA II Power : AC110-240V 5V DC (Adapter) FCC ID: Q9CNeobit1012VAII Manufactured by NETUS Technologies Co., Ltd.	CAUTION II Read User's Manual before using. Do not attempt to service the monitor by yourself. Contact the authorized service center.
THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.	