Test Report

For

Applicant : **AboCom Systems Inc.**

Equipment Type : **ISDN TA PCMCIA Card**

Model : **TA128**

FCC ID : **MQ4TA128**

Report No. : 994001F

QTK99-F010

Test Report Certification

QuieTek Corporation

No.75-1, Wang-Yeh Valley, Yung-Hsing, Chiung-Lin,
Hsin-Chu County, Taiwan, R.O.C.
Tel : 886-3-592-8858, Fax: 886-3-592-8859
E-Mail : quietek@ms24.hinet.net

Accredited by NIST(NVLAP), VCCI, BSMI, DNV, TUV

Applicant	: AboCom Systems Inc.
Address	: 12F-3, No. 333, Sec 1, Guan-Fu Road Hsin-Chu , Taiwan, R.O.C.
Equipment Type	: ISDN TA PCMCIA Card
Model	: TA128
FCC ID.	: MQ4TA128
Measurement Standard	: CISPR 22/1994
Measurement Procedure	: ANSI C63.4 /1992
Operation Voltage	: 120Vac/60Hz
Classification	: Class B
Test Result	: Complied
Test Date	: April 10, 1999
Report No.	: 994001F

Documented by: Shelly Fun	Test Engineer: Jack Wu	Approved: Kevin Wang
Shelly Fun	Jack Wu	Kevin Wang

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1. General Information

1.1 EUT Description

Applicant	: AboCom Systems Inc.
Address	12F-3. No. 333, Sec 1. Guan-Fu Road Hsin-Chu , Taiwan, R.O.C.
Equipment Type	: ISDN TA PCMCIA Card
Model	: TA128
FCC ID	: MQ4TA128
Operation Voltage	: 120Vac/60Hz
Data Cable	: Non-Shielded, 1.8m

Remark: The data shown in this report reflects the worst-case data for each operation mode.

1.2 Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

1.2.1 Notebook

Model Number	: Think Pad 560X
Manufacturer	: AboCom
Serial Number	: 97-6492R
FCC ID	: DoC
Cable IN(Adapter)	: Shielded, 1.8m
Cable OUT(Adapter)	: Shielded, 1.8m

1.2.2 Monitor

Model Number	: CM752ET-311
Serial Number	: T8F006364
FCC ID	: DoC
Manufacturer	: HITACHI
Data Cable	: Shielded, 1.5m
Power Cord	: Shielded, 1.8m

1.2.3 Mouse

Model Number	: M-S34
Serial Number	: LZB75078465
FCC ID	: DZL211029
Manufacturer	: HP
Data Cable	: Shielded, 1.7m

1.2.4 Modem

Model Number	: 1414
Serial Number	: 980033033
FCC ID	: IFAXDM1414
Manufacturer	: ACEEX
Data Cable	: Shielded,, 1.5m
Power Adapter	:ACCEX, M/N: SCP41-91000A
Cable Output	: Shielded, 1.5m

1.2.5 Printer

Model Number	: C2642A
Serial Number	: MY75N1D2XN
FCC ID	: B94C2642X
Manufacturer	: HP
Data Cabl	: Shielded,, 1.2m
Power Adapter	: NMB, M/N: C2175A
Cable for AC IN	: Non-Shielded, 0.7m
Cable for AC Out	: Non-Shielded, 1.5m

1.2.6 ISDN Switch

Model Number	: ISDN2000A
Manufacturer	: Merge
Serial Number	: A950806423
Power Cord	: Non-Shielded, 1.8m

1.2.7 Video Camera

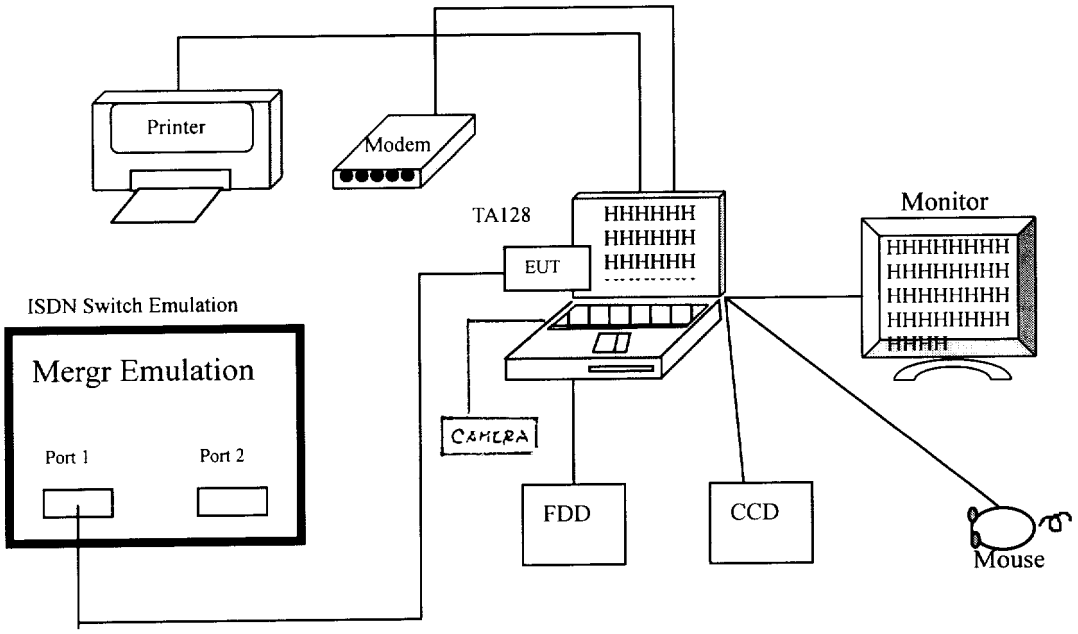
Model Number	: Wcam 3X
Manufacturer	: Mustek
Serial Number	: N/A
FCC ID	: DoC
Data Cable (USB)	: Shielded, 1.5m

1.2.8 FDD

Model Number	: FD-05P
Manufacturer	: AboCom
Serial Number	: N/A
FCC ID	: DoC
Data Cable	: Shielded, 0.2m

QTK99-FD,D
FCC ID: MQ4TA128

1.3 EUT Configuration



1.4 EUT Exercise Software

The EUT exercise program used during conducted testing was designed to exercise the EUT in a manner similar to a typical use. The exercise sequence is listed as below:

1.4.1 Setup the EUT and Merge ISDN switch Emulator as shown on 1.3.

1.4.2 Turn on the power of all equipment.

1.4.3 Setting to Hyper terminal com port TA128-1 and TA-128-2 on Note Book PC.

1.4.4 Key in "at" at TA128-1.

1.4.5 Key in "at", then "at d 551000" at TA128-2.

1.4.6 The "connect" will be shown on the screen then file can be selected and transferred from TA128-1 to TA128-2 through EUT.

1.5 Test performed

Conducted emissions were invested over the frequency range
from **0.15MHz to 30MHz** using a receiver bandwidth of 9kHz.

Radiated emissions were invested over the frequency range
from **30MHz to 1000MHz** using a receiver bandwidth of 120kHz. Radiated testing was performed at an antenna to EUT distance of 10 meters .

1.6 Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description: November 3, 1998 File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Reference 31040/SIT1300F2

September 30, 1998 Accreditation on NVLAP
NVLAP Lab Code: 200347-0

February 23, 1999 Accreditation on DNV
Statement No. : 413-99-LAB11

December 8, 1998 Registration on VCCI
Registration No. for No.2 Shielded Room C-858
Registration No. for No.1 Open Area Test Site R-823
Registration No. for No.2 Open Area Test Site R-835

January 04, 1999 Accreditation on TUV Rheinland
Certificate No.: I9865712-9901

Name of firm : QuieTek Corporation

Site location : No.75-1, Wang-Yeh Valley, Yung-Hsing Tsuen,
Chiung-Lin, Hsin-Chu County, Taiwan, R.O.C.

2. Conducted Emission

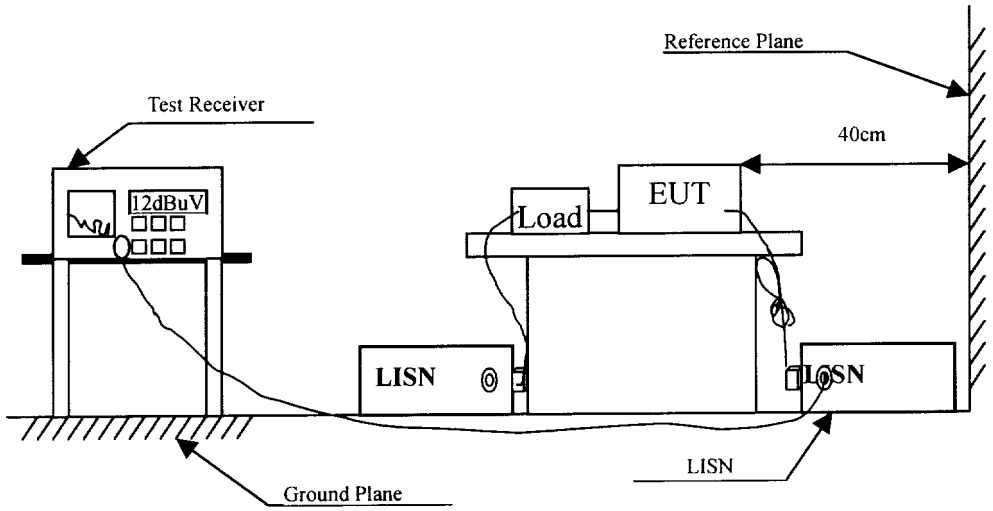
2.1 Test Equipment List

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal..	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 1998	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 1998	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 1998	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	N/A	
5	N0.2 Shielded Room			N/A	

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.2 Test Setup



2.3 Limits

CISPR 22 Limits (dBuV)					FCC Part 15 Subpart B (dBuV)				
Frequency	Class A		Class B		Frequency	Class A		Class B	
MHz	QP	AV	MHz	AV	MHz	uV	dBuV	uV	dBuV
0.15 - 0.50	79	66	66-56	56-46	0.45-1.705	1000	60.0	250	48.0
0.50-5.0	73	60	56	46	1.705-30	3000	69.5	250	48.0
5.0 - 30	73	60	60	50					

Remarks : In the above table, the tighter limit applies at the band edges.

2.4 Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4 /1992 on conducted measurement.

The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9kHz.

2.5 Test Results

The emission from the EUT was below the specified limits. The worst case emissions are shown in Chapter 4. The acceptance criterion was met and the EUT passed the test.

3. Radiated Emission

3.1 Test Equipment

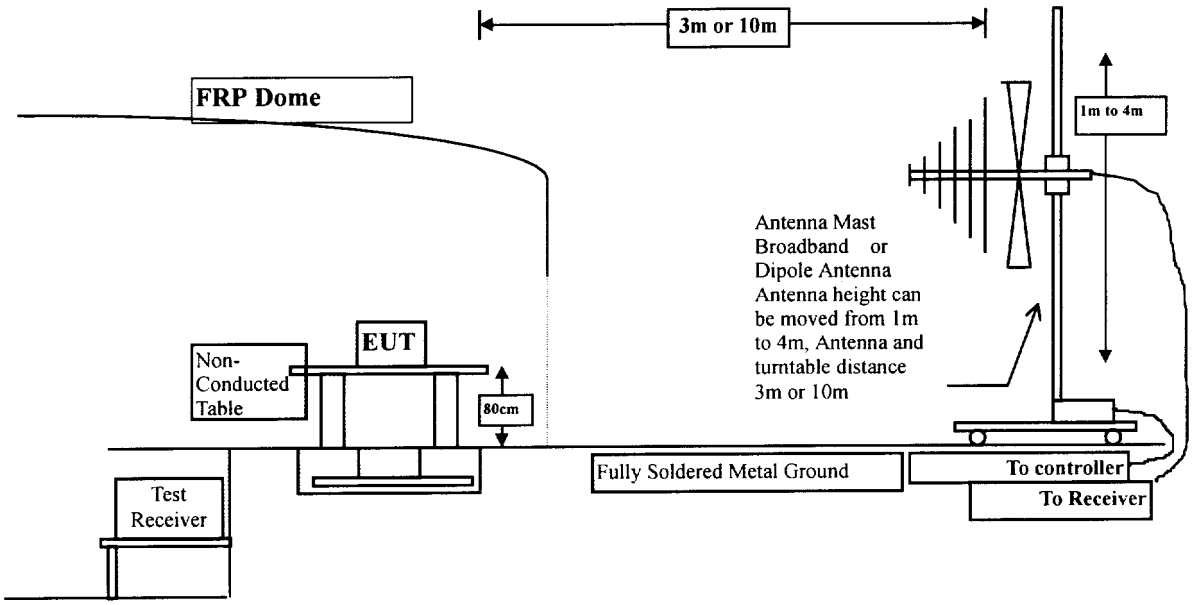
The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 1	X	Test Receiver	R & S	ESCS 30 / 825442/14	May, 1998
		Spectrum Analyzer	Advantest	R3261C / 71720140	May, 1998
		Pre-Amplifier	HP	8447D/3307A01812	May, 1998
	X	Bilog Antenna	Chase	CBL6112B / 12452	Sep.., 1998
	X	Horn Antenna	EM	EM6917 / 103325	May, 1998
SITE # 2	X	Test Receiver	R & S	ESCS 30 / 825442/17	May, 1998
		Spectrum Analyzer	Advantest	R3261C / 71720609	May, 1998
		Pre-Amplifier	HP	8447D/3307A01814	May, 1998
	X	Bilog Antenna	Chase	CBL6112B / 2455	Sep.., 1998
	X	Horn Antenna	EM	EM6917 / 103325	May, 1998

Note: 1. All equipment upon which need to calibrated are with calibration period of 1 year.

2.. Mark "X" test instruments are used to measure the final test results.

3.2 Test Setup



3.3 Limits

CISPR 22 Limits (dBuV)					FCC Part 15 Subpart B (dBuV)				
Frequency	Class A		Class B		Frequency	Class A		Class B	
MHz	Distance (m)	dBuV/m	Distance (m)	dBuV/m		uV	dBuV	uV	dBuV
30 – 230	10	40	10	30	30 – 88	90	39	100	40.0
230 – 1000	10	47	10	37	88 – 216	150	43.5	150	43.5
					216 –960	210	46.5	200	46.0
					960 - 2000	300	49.5	500	54.0

Remark: 1. The tighter limit shall apply at the edge between two frequency bands.

2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. RF Line Voltage (dBuV) = 20 log RF Line Voltage (uV)

3.4 Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 10 meters . The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4 /1992 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30) is 120 kHz.

3.5 Test Results

The emission from the EUT was below the specified limits. The worst case emissions are shown in Chapter 4. The acceptance criterion was met and the EUT passed the test.

4. Summary of Test Results

The test results in the emission were performed according to the requirements of measurement standard and process. QuieTek Corporation is assumed full responsibility for the accuracy and completeness of these measurements. The test data of the emission and immunity are listed as the attached data.

All the tests were carried out with the EUT in normal operation, which was defined as:
Mode 1 : Normal Operation

The EUT passed all the tests.

The uncertainty is calculated in accordance with NAMAS NIS 81, The total uncertainty for this test is as follows:

➢ **Emission Test**

- Uncertainty in the Conducted Emission Test: $< \pm 2.0$ dB
- Uncertainty in the field strength measured: $< \pm 4.0$ dB

CONDUCTED EMISSION DATA

Date of Test	:	Apr. 10, 1999	EUT	:	ISDN TA PCMCIA Card
Test Mode	:	Mode 1	Detect Mode	:	Quasi-Peak & Average

Frequency MHz	Cable Loss dB	LISN Factor dB	Reading Level Line1 dBuV	Measurement Level Line1 dBuV	Limits dBuV
0.154	0.00	0.10	43.75	43.85	65.80
0.210	0.02	0.10	43.84	43.96	63.20
0.315	0.04	0.10	35.01	35.15	59.85
2.598	0.16	0.14	36.41	36.71	56.00
* 2.863	0.17	0.15	39.99	40.30	56.00
12.393	0.30	0.28	36.85	37.43	60.00

Average:

0.154	0.00	0.10	35.40	35.50	55.80
0.210	0.02	0.10	34.00	34.12	53.20
0.315	0.04	0.10	25.60	25.74	49.85
2.598	0.16	0.14	21.70	22.00	46.00
2.863	0.17	0.15	22.70	23.01	46.00
* 12.392	0.30	0.28	31.00	31.58	50.00

Remarks :

1. " * " means that this data is the worst emission level.

CONDUCTED EMISSION DATA

Date of Test	:	Apr. 10, 1999	EUT	:	ISDN TA PCMCIA Card
Test Mode	:	Mode 1	Detect Mode	:	Quasi-Peak & Average

Frequency MHz	Cable Loss dB	LISN Factor dB	Reading Level Line2 dBuV	Measurement Level Line2 dBuV	Limits dBuV
0.154	0.00	0.10	42.44	42.54	65.76
0.213	0.02	0.10	41.93	42.05	63.08
0.261	0.03	0.10	34.21	34.34	61.39
* 2.636	0.16	0.14	37.91	38.21	56.00
5.011	0.20	0.17	33.52	33.89	60.00
12.645	0.30	0.28	37.67	38.26	60.00

Average:

0.154	0.00	0.10	37.30	37.40	55.78
0.213	0.02	0.10	30.90	31.02	53.09
0.261	0.03	0.10	33.20	33.33	51.40
2.635	0.16	0.14	21.90	22.20	46.00
5.010	0.20	0.17	26.70	27.07	50.00
* 12.640	0.30	0.28	32.10	32.69	50.00

Remarks :

1. " * " means that this data is the worst emission level.

Radiated Emission Data

Date of Test : Apr. 10, 1999 EUT : ISDN TA PCMCIA Card

Test Mode : Mode 1

	Freq.	Cable Loss	Probe Factor	PreAMP	Reading Level	Measurement Horizontal	Margin	Limit	Ant	Turn
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m	cm	deg
*	159.730	2.40	10.32	0.00	7.65	20.37	9.63	30.00	401	132
	172.018	2.51	9.43	0.00	1.87	13.81	16.19	30.00	401	148
	184.306	2.64	9.18	0.00	1.25	13.06	16.94	30.00	401	100
	221.170	2.99	9.53	0.00	0.48	13.00	17.00	30.00	401	92
	245.746	3.23	12.21	0.00	3.79	19.24	17.76	37.00	401	149
	331.762	3.92	13.61	0.00	0.03	17.56	19.44	37.00	268	104

Remarks:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. " * ", means this data is the worst emission level.
3. Emission Level = Reading Level + Antenna Factor + Cable loss

Radiated Emission Data

Date of Test : Apr. 10, 1999 EUT : ISDN TA PCMCIA Card

Test Mode : Mode 1

	Freq.	Cable Loss	Probe Factor	PreAMP	Reading Level	Measurement Vertical	Margin	Limit	Ant	Turn
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m	cm	deg
	78.870	1.62	6.53	0.00	10.28	18.43	11.57	30.00	99	120
*	120.017	2.02	11.56	0.00	11.51	25.09	4.91	30.00	99	37
	132.665	2.14	11.35	0.00	9.40	22.89	7.11	30.00	247	168
	139.900	2.21	11.15	0.00	9.18	22.53	7.47	30.00	99	62
	159.600	2.40	10.28	0.00	8.27	20.95	9.05	30.00	99	109
	178.000	2.58	9.18	0.00	12.69	24.45	5.55	30.00	99	162
	184.310	2.64	9.01	0.00	6.03	17.67	12.33	30.00	247	1
	192.712	2.71	8.88	0.00	4.48	16.07	13.93	30.00	247	162
	217.400	2.95	9.16	0.00	10.29	22.40	7.60	30.00	99	39
	237.700	3.15	10.89	0.00	12.40	26.43	10.57	37.00	99	10
	257.715	3.34	13.54	0.00	3.77	20.65	16.35	37.00	99	37
	277.100	3.53	12.68	0.00	4.93	21.14	15.86	37.00	99	61

Remarks:

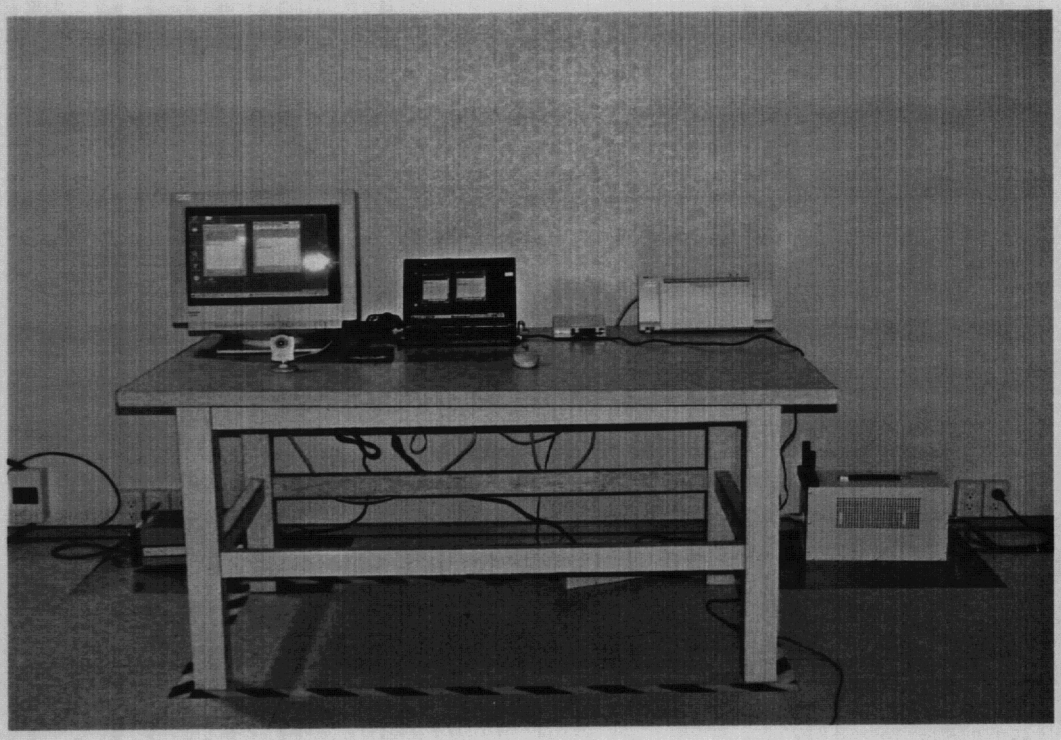
1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. " * ", means this data is the worst emission level.
3. Emission Level = Reading Level + Antenna Factor + Cable loss

5. EMI Reduction Method During Compliance Testing

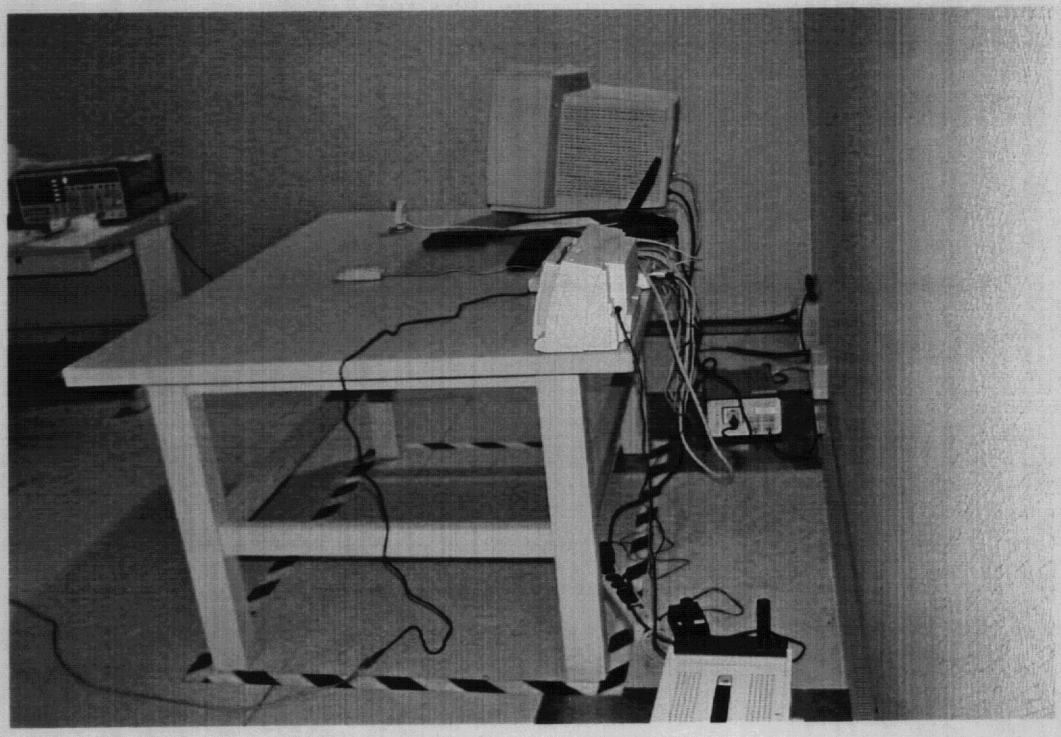
No modification was made during testing.

6. Test Photographs

Front View of Conducted Test (Maximum Testing Configuration)



Back View of Conducted Test (Maximum Testing Configuration)



Front View of Radiated Test (Maximum Testing Configuration)

Back View of Radiated Test (Maximum Testing Configuration)