

# FCC TEST REPORT

for

CISPR PUB. 22 Class B

Equipment : USB Ethernet Adapter

Model No. : URE450T, USB10T, TU-10T

FCC ID : MQ4USB10TA

Filing Type : Original Grant

Applicant : **AboCom Systems, Inc.**  
1F, No. 21, R&D Road II, Science-Based Industrial Park,  
Hsin-Chu, Taiwan, R.O.C

- The test result refers exclusively to the test presented test model / sample.
- Without the written authorization of the test lab., the Test Report may not be copied.
- **Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by NVLAP or any agency of U.S. government.**

***SPORTON International Inc.***

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

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## CERTIFICATE OF COMPLIANCE

for

### CISPR PUB. 22 Class B

Equipment : USB Ethernet Adapter  
Model No. : URE450T, USB10T, TU-10T  
FCC ID : MQ4USB10TA  
Applicant : **AboCom Systems, Inc.**  
1F, No. 21, R&D Road II, Science-Based Industrial Park,  
Hsin-Chu, Taiwan, R.O.C

#### I **HEREBY** CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 - 1992** and the energy emitted by this equipment was **passed CISPR PUB. 22** both radiated and conducted emission class B limits. Testing was carried out on Apr. 16, 1999 at **SPORTON International Inc.** LAB. in Lin Kou.

  
Lenore Chang  
President

**SPORTON International Inc.**

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

## **1. General Description of Equipment under Test**

### **1.1. Applicant**

AboCom Systems, Inc.  
1F, No. 21, R&D Road II,  
Science-Based Industrial Park,  
Hsin-Chu, Taiwan, R.O.C

### **1.2. Manufacturer**

Same as 1.1.

### **1.3. Basic Description of Equipment under Test**

Equipment : USB Ethernet Adapter  
Model No. : URE450T, USB10T, TU-10T  
FCC ID : MQ4USB10TA  
Trade Name : AboCom, Linksys, TRENDware  
UTP cable : Non-Shielded, 10 m  
USB cable : Shielded, 1.4 m  
Power Supply Type : from PC

### **1.4. Feature of Equipment under Test**

- Standards: IEEE 802.3 10BaseT
- Transfer Rate: 8Mbps Half Duplex
- Ports: 1 RJ-45, 1 USB B-Type Female
- LDE Indicators: Link, Transmit/ Receive
- Buffer: 32K
- Dimensions: 2.7" x2" x1"
- Weight: 0.1 lb
- Cabling:
  - Hub-To-Station, UTP Category 3 or 5 (100m)
- Enviromental:
  - Operating Temperature 0°C to 40°C (32°F to 104°F)
  - Storage Temperature : -20°C to 70°C (-4°F to 158°F)
  - Operating Humidity 10% to 85%non-condensing
  - Storage Humidity : 5% to 90% non-condensing

## **2. Test Configuration of Equipment under Test**

### **2.1. Test Manner**

- a. The HP Monitor, PRIMAX PS/2 Mouse, HP Printer, ACEEX Modem, DELL PS/2 Keyboard and EUT were connected to the FIC PC for EMI test.
- b. Frequency range investigated: conduction 150 KHz to 30 MHz, radiation 30 MHz to 1,000 MHz.

### **2.2. Description of Test System**

#### **Support Unit 1. -- Personal Computer (FIC)**

FCC ID	: N/A
Model No.	: P2L97
Power Supply Type	: Switching
Power Cord	: Non-Shielded
Serial No.	: SP0006
Data Cable	: Shielded, 360 degree via metal backshells
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

#### **Support Unit 2. -- Monitor (HP)**

FCC ID	: ACJ93312116
Model No.	: D2807A
Power Supply Type	: Switching
Power Cord	: Non-Shielded
Serial No.	: SP0053
Data Cable	: Shielded, 360 degree via metal backshells, 1.7m

#### **Support Unit 3. -- PS/2 Mouse (PRIMAX)**

FCC ID	: EMJMUSJQ
Model No.	: MUS9J
Serial No.	: SP0045
Data Cable	: Shielded, 360 degree via metal backshells, 1.7m

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### Support Unit 4. -- Printer (HP)

FCC ID : B94C2642X  
Model No. : Desk Jet 400  
Power Supply Type : Linear  
Power Cord : Non-Shielded  
Serial No. : SP0015  
Data Cable : Shielded, 1.35m

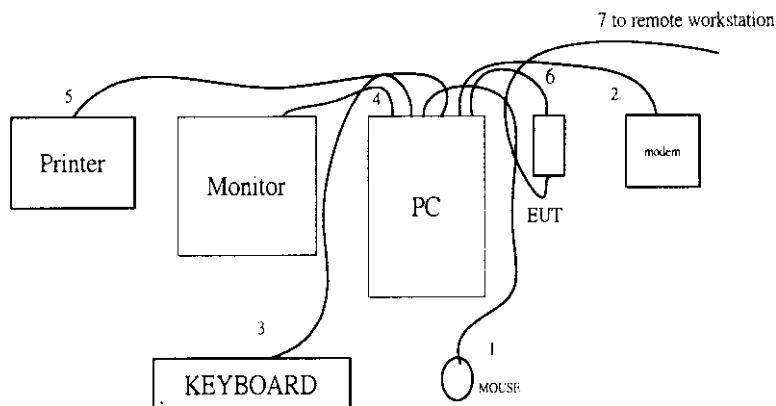
### Support Unit 5. -- Modem (ACEEX)

FCC ID : IFAXDM1414  
Model No. : DM1414  
Power Supply Type : Linear  
Power Cord : Non-Shielded  
Serial No. : SP0025  
Data Cable : Shielded, 360 degree via metal backshells, 1.15m

### Support Unit 6. -- PS/2 Keyboard (DELL)

FCC ID : GYUM92SK  
Model No. : AT101(DE8M)  
Serial No. : SP0054  
Data Cable : Shielded, 360 degree via metal backshells, 1.9m

### 2.3. Connection Diagram of Test System



1. The I/O cable is connected from PC to the support unit 3.
2. The I/O cable is connected from PC to the support unit 5.
3. The I/O cable is connected from PC to the support unit 6.
4. The I/O cable is connected from PC to the support unit 2.
5. The I/O cable is connected from PC to the support unit 4.
6. The I/O cable is connected from PC to the EUT.
7. The TP cable is connected from EUT to the remote workstation.

### **3. Test Software**

An executive program, EMITEST.EXE under WIN 98, which generates a complete line of continuously repeating " H" pattern was used as the test software.

The program was executed as follows :

- a. Turn on the power of all equipment.
- b. The PC reads the test program from the floppy disk drive and runs it.
- c. The PC sends " H" messages to the monitor, and the monitor displays " H" patterns on the screen.
- d. The PC sends " H" messages to the printer, then the printer prints them on the paper.
- e. The PC sends " H" messages to the modem.
- f. The PC sends " H" messages to the internal Hard Disk, and the Hard Disk reads and writes the message.
- g. Repeat the steps from b to f.

At the same time, A.bat under Win 98 was used as the test software.



## **4. General Information of Test**

### **4.1. Test Facility**

This test was carried out by SPORTON International Inc. in an openarea test site.

Openarea Test Site Location : No. 30-2, Lin 6, Diing-Fwu Tsuen, Lin-Kou-Hsiang,  
Taipei Hsien, Taiwan, R.O.C.

TEL : 886-2-2601-1640

FAX : 886-2-2601-1695

### **4.2. Standard for Methods of Measurement**

ANSI C63.4-1992

### **4.3. Test in Compliance with**

CISPR PUB. 22 Class B

### **4.4. Frequency Range Investigated**

- a. Conduction: from 150 kHz to 30 MHz
- b. Radiation : from 30 MHz to 1,000 MHz

### **4.5. Test Distance**

The test distance of radiated emission from antenna to EUT is 10 M.

## **5. Test of Conducted Powerline**

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 115 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-1992 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 5.3. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

### **5.1. Major Measuring Instruments**

Test Receiver	HP 8591EM
Attenuation	0 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
Step MHz	0.007 MHz
IF Bandwidth	9 kHz

**5.2. Test Procedures**

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. All the support units are connect to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- i. If the emission level of the EUT in peak mode was 6 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 6 dB margin will be retested one by one using the quasi-peak method and reported.



**5.4. Test Result of AC Powerline Conducted Emission**

- Frequency Range of Test : from 0.15 MHz to 30 MHz
- Temperature : 20°C
- Relative Humidity : 60 %
- Test Date : Apr. 16, 1999

The Conducted Emission test was passed at minimum margin

**NEUTRAL 0.196 MHz / 44.40 dBuV.**

Freq. (MHz)	Line or Neutral	Meter Reading				Limits				Margin	
		Q.P. (dBuV)	A.V. (dBuV)	Q.P. (uV)	A.V. (uV)	Q.P. (dBuV)	A.V. (dBuV)	Q.P. (uV)	A.V. (uV)	Q.P. (dB)	A.V. (dB)
0.399	L	35.20	33.50	57.54	47.32	57.87	47.87	782.91	247.58	-22.67	-14.37
0.547	L	35.00	33.40	56.23	46.77	56.00	46.00	630.96	199.53	-21.00	-12.60
24.624	L	38.90	26.30	88.10	20.65	60.00	50.00	1000.00	316.23	-21.10	-23.70
0.196	N	44.40	43.80	165.96	154.88	63.79	53.79	1546.47	489.04	-19.39	-9.99
0.400	N	36.40	34.30	66.07	51.88	57.85	47.85	781.03	246.98	-21.45	-13.55
0.547	N	35.90	33.80	62.37	48.98	56.00	46.00	630.96	199.53	-20.10	-12.20

Test Engineer : Alex WU  
ALEX WU

## **6. Test of Radiated Emission**

Radiated emissions from 30 MHz to 1,000 MHz were measured with a bandwidth of 120 kHz according to the methods defines in ANSI C63.4-1992. The EUT was placed on a nonmetallic stand in the open-field site, 0.8 meter above the ground plane, as shown in section 6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

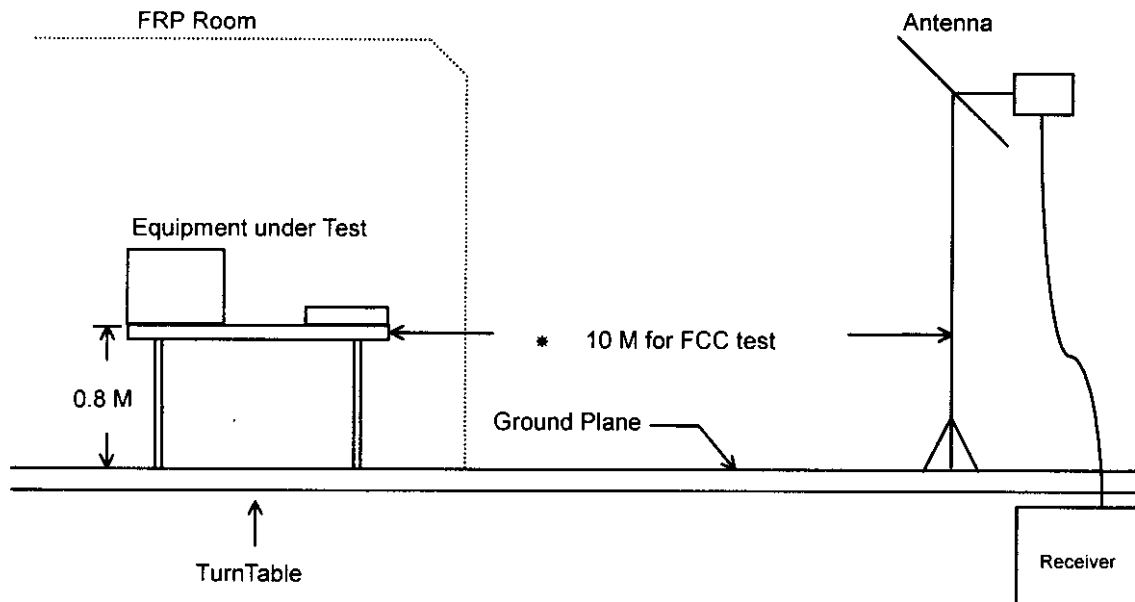
### **6.1. Major Measuring Instruments**

Amplifier	(HP 87405A)
Attenuation	0 dB
RF Gain	25 dB
Signal Input	10 MHz to 3 GHz
Spectrum Analyzer	(HP 8560E)
Attenuation	0 dB
Start Frequency	30 MHz
Stop Frequency	1,000 MHz
Resolution Bandwidth	1 MHz
Video Bandwidth	1 MHz
Signal Input	30 Hz to 2.9 GHz
Test Receiver	(R&S ESCS30)
Resolution Bandwidth	120 KHz
Frequency Band	9 KHz to 2.75 GHz
Quasi-Peak Detector	ON for Quasi-Peak Mode OFF for Peak Mode

**6.2. Test Procedures**

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 10 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 6 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 6 dB margin will be repeated one by one using the quasi-peak method and reported.

### 6.3. Typical Test Setup Layout of Radiated Emission





#### 6.4. Test Result of Radiated Emission

- Frequency Range of Test : from 30 MHz to 1,000 MHz
- Test Distance : 10 M
- Temperature : 18°C
- Relative Humidity : 79 %
- Test Date : Jan. 28, 1999
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Antenna Factor + Cable Loss + Reading = Emission

The Radiated Emission test was passed at minimum margin

48.002 MHz / 25.70 dBuV (VERTICAL) Antenna Height 1 Meter, Turntable Degree 341 °.

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits		Emission (dBuV/m)	Level (uV/m)	Margin (dB)
					(dBuV/m)	(uV/m)			
48.020	H	8.70	1.53	14.40	30.00	31.62	24.63	17.04	-5.37
240.800	H	10.90	3.52	15.80	37.00	70.79	30.22	32.43	-6.78
48.002	V	8.70	1.53	15.47	30.00	31.62	25.70	19.28	-4.30
144.070	V	10.38	2.75	10.60	30.00	31.62	23.73	15.36	-6.27
167.870	V	8.66	2.95	13.00	30.00	31.62	24.61	17.00	-5.39
228.000	V	9.32	3.50	11.39	30.00	31.62	24.21	16.24	-5.79

Test Engineer:

PETER WANG

## 7. Antenna Factor &amp; Cable Loss

Frequency ( MHz )	Antenna Factor ( dB )	Cable Loss ( dB )
30	18.1	1.3
35	15.2	1.4
40	12.6	1.4
45	9.9	1.5
50	7.5	1.6
55	5.8	1.6
60	5.0	1.7
65	4.8	1.8
70	5.1	2.0
75	5.7	2.0
80	6.7	2.0
85	7.8	2.2
90	8.8	2.2
95	9.3	2.3
100	10.0	2.3
110	11.2	2.4
120	11.3	2.5
130	11.3	2.6
140	10.7	2.7
150	9.9	2.8
160	9.3	2.8
170	8.5	3.0
180	8.4	3.1
190	8.2	3.2
200	8.3	3.4
220	8.4	3.5
240	10.9	3.5
260	13.0	3.3
280	12.4	3.5
300	12.8	4.1
320	13.3	4.0
340	13.8	4.3
360	14.4	4.5
380	15.0	4.4
400	15.5	4.4
450	16.2	5.3
500	17.4	5.5
550	19.1	5.7
600	18.4	5.7
650	18.9	5.9
700	18.9	6.5
750	19.7	6.4
800	19.7	6.6
850	20.4	7.4
900	20.5	7.5
950	20.9	8.2
1000	21.2	8.2

## 8. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver (site 1)	HP	8591EM	3536A00673	9 KHz – 1.8 GHz	Aug. 27, 1998	Conduction
LISN (site 1)	EMCO	3850/2	9510-1035	50 ohm / 50 uH	Oct. 23, 1998	Conduction
LISN (site 1)	KYORITSU	KNW-47	8-693-10	50 ohm / 50 uH	Oct. 23, 1998	Conduction
EMI Filter (site 1)	CORCOM	MRI-2030	N/A	480 VAC / 30 A	N/A	Conduction
Amplifier (Site 1)	HP	87405A	3207A01437	10MHz –3.0GHz	Jun. 26, 1998	Radiation
Spectrum Analyzer (site 1)	HP	8560E	3728A03186	30Hz – 2.9GHz	Sep. 18, 1998	Radiation
Receiver (Site 1)	R&S	ESCS30	70-213-4258	9KHz - 2.75GHz	Dec. 18, 1998	Radiation
Bilog Antenna (Site 1)	CHASE	CBL6112A	2442	30MHz -2GHz	Jul. 22, 1998	Radiation
Half-wave dipole antenna (site 1)	EMCO	3121C	9705-1285	28 M - 1GHz	May 19, 1998	Radiation
Turn Table (site 1)	EMCO	1060-1.211	9507-1805	0 ~ 360 degree	N/A	Radiation
Antenna Mast (site 1)	EMCO	2075	9806-2160	1 m - 4 m	N/A	Radiation



SPORTON LAB

Certificate No: D7O0701

# CERTIFICATE OF COMPLIANCE

Authorized under Declaration of Conformity  
according to

47 CFR, Part 2 and Part 15 of the FCC Rules

Equipment Under Test : PERSONAL COMPUTER

Model No. : P2L97

Applicant : FIRST INTERNATIONAL COMPUTER INC.

6F, Formosa Plastics Rear Building 201,

Tung Hwa N. Rd., Taipei, Taiwan, R.O.C.



CERTIFY THAT:

THE MEASUREMENTS SHOWN IN THIS TEST REPORT WERE MADE IN  
ACCORDANCE WITH THE PROCEDURES GIVEN IN ANSI C63.4-1992 AND THE  
ENERGY EMITTED BY THIS EQUIPMENT WAS PASSED BOTH RADIATED AND  
CONDUCTED EMISSIONS CLASS B LIMITS. THE TESTING WAS COMPLETED ON SEP. 02,  
1997 AT SPORTON INTERNATIONAL INC. LAB IN NEI HWU.

W. L. Huang

GENERAL MANAGER

## 6.5. Photographs of Radiated Emission Test Configuration

- The photographs show the configuration that generates the maximum emission.

**FRONT VIEW**



**REAR VIEW**

