

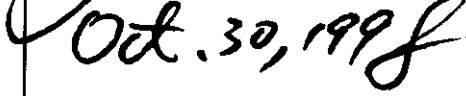


***EXHIBIT B***

***Test Report***

Report No.	A5015816	
Specifications	FCC Part 15.109(g), CISPR 22	
Test Method	ANSI C63.4 1992	
Applicant Address	12F-3, NO. 333, SEC. 1, GUAN-FU RD., HSIN-CHU, TAIWAN, R.O.C.	
Applicant	AboCom Systems, Inc.	
Items tested	10/100 Fast Ethernet & 56k Fax Modem Multifunction PC Card	
Model No.	LF560TX (Sample #A50815)	
Results	As detailed within this report	
Sample received date	09/15/98 (month / day / year )	
Prepared by		project engineer
Authorized by		Vice General Manager (Jacob Lin )
Issue date		(month / day / year )
Modifications	None	
Tested by	Training Research Co., Ltd.	
Office at	2F, No. 571, Chung Hsiao E. Road, Sec.7, Taipei, Taiwan	
Open site at	No. 5-3, Lane 21, Yen Chiu Yuan Rd., Sec. 4, Taipei, Taiwan	

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- (2) **This report must not be used by the client to claim product endorsement by NVLAP or any agency of U.S. Government.**

★ FCC ID:MQ4LF560TX

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## ***Chapter 1 Introduction***

### ***Description of EUT :***

This 10/100 Fast Ethernet & 56K Fax/modem Multifunction PC Card is a data communication device. It is designed to be connected with a notebook via the standard phone line and 10/100 Fast Ethernet, and enables you to successfully access to the servers on 10/100 Fast Ethernet LAN and makes your data equipment available to transmit and receive data via the public telephone network.

### ***Connections of EUT:***

- (1) Put the EUT into a Notebook's PCMCIA socket.
- (2) Connects the 56K Fax/Modem Port of the EUT to PABX which is located remotely via a 15-pin detachable connector.
- (3) Connects the 10/100 Fast Ethernet Port of the EUT to HUB which is located remotely via a 15-pin detachable connector.

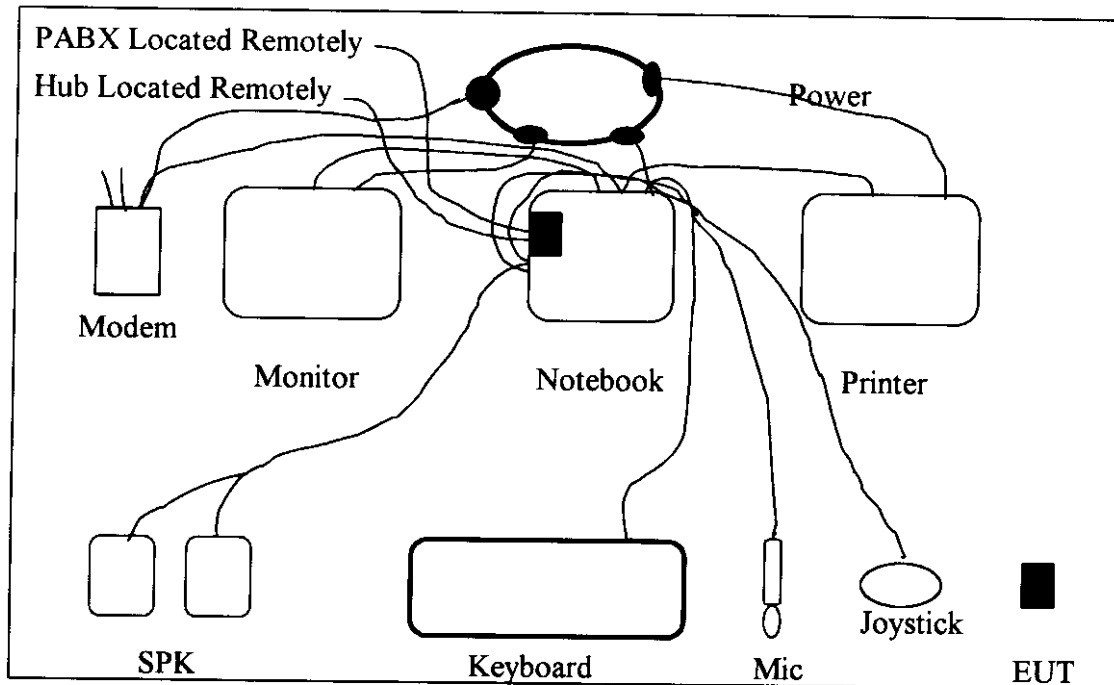
### ***Test method :***

Pretest was found that the emission of operating mode is worse than standby mode. So, The final test is made at the operating mode.

During testing, the EUT was operated at "server" mode-for 10/100 Fast Ethernet and "transmitting" and "receiving" mode-for 56K Fax/Modem simultaneously.

While testing, the transmitting rate was set to "AUTO" which means it transmitted the test file depending on the line condition, normally the operating rate is the highest speed. The test placement as the photographs showed is the worst case emission placed. (If the emission is close to the ambient, the resolution BW and view resolution will be reduced and the data will be recorded by detection of maximum hold peak mode.)

***The testing configuration of test setup is showing in the next page.***

**Configuration of test setup****Connections :****PC :**

- \* Serial port --- External Modem
  - \* Printer port --- a Printer
  - \* Monitor port --- a monitor
  - \* PCMCIA socket --- EUT
  - \* Keyboard/Mouse Port --- a Keyboard
  - \* Mic port --- a Microphone
  - \* SPK Port --- a Speaker
  - \* USB Port --- a USB Joystick
  - \* Floppy Port --- a External Floppy
- (Each port on Notebook is connected with suitable device)

**EUT :**

- \*Connector 1--- via 15 m RJ11(6-pin) cable to PABX located remotely
- \*Connector 2 --- via 20m RJ-45 cable to the HUB located remotely.

**REMARK:**

- \* Two ferrite cores (King Core Electronics Inc., SFT-25SS) were bounded on two data cables of EUT.

**List of support equipment**

**Conducted (Radiated) test:**

**Notebook** : **HITACHI**  
**Model** : PC-5NU01-YA7LA (DoC Approved)  
**Serial No.** : 389  
**Power type** : 110~120 / 220~240 VAC, Switching  
**Power cord** : non-Shielded, 1.2m long ,Plastic ,no ferrite core

**Floppy** : **HITACHI**  
**Data cable** : Shielded, with Ferrite core, 15cm

**Monitor** : **HP**  
**Model No.** : D2084(D2813)  
**Serial No.** : KR4397004(TW63803597)  
**FCC ID** : CSYSC-428VSP(A3KM043)  
**Power type** : 110~120 / 220~240 VAC, Switching  
**Power cord** : Non-Shielded, 3m long ,no ferrite core  
**Data cable** : Shielded, 1.8m long ,with ferrite core

**Keyboard** : **HP**  
**Model No.** : C3757 #ABO (C3346A #ABO)  
**Serial No.** : C3757-60423(C3346-60231)  
**FCC ID** : CIGE03614  
**Power type** : By PC  
**Data cable** : Shielded, 1.8m long ,with ferrite core

**Printer** : **EPSON**  
**Model No.** : P78PA(P70RA)  
**Serial No.** : 0EE0014030(10010386)  
**FCC ID** : BKM9A8P70RA  
**Power type** : 230VAC,  
**Power cord** : Non-shielded, 2m long, no ferrite core  
**Data cable** : Shielded,1.84m long ,no ferrite core (1.7m)

**Modem** : **ACEEX**  
Model No. : XDM-9624  
FCC ID : IFAXDM-9624  
Power type : 230VAC, 50HZ/ 9VAC, 1A  
Power cord : Non-shielded, 1.9m long, no ferrite cord  
Data cable : RS232, Shielded, 1.2m long, no ferrite core  
RJ11C x 2, 7' long non-shielded, no ferrite core

**PABX** : **King Design**  
Model No. : KD8705-A  
Serial No. : GV101101186  
Power type : 230 VAC 50/60Hz  
Power cord : Non - Shielded

**Microphone** : **KOKA**  
Model : DM-515  
Power type : Dynamic  
Data cable : non-Shielded, 3m

**Speaker** : **J-S**  
Model : J-006  
Data cable : non-Shielded, 1.2 m

**USB Joystick** : **Rockfire**  
Data cable : non-Shielded, 1.2 m  
Model : QF-30 (DoC Approved)

## *Chapter 2 Conducted emission test*

### *Test condition and setup:*

All the equipment is placed and setup according to the EN 55022.

The EUT is assembled on a wooden table which is 80 cm high, is placed 40 cm from the back-wall which is a vertical conducting plane. One LISN is for EUT, the other LISN is for support equipment. They are all placed on the conductive ground. The EUT's LISN connect a line switch box for selecting L1 or L2, then connect to a preamplifier and spectrum.

The spectrum scans from 150KHz to 30MHz. Conducted emission levels are detected at max. peak mode. But if the max. peak mode failed or over average limit, it will be measured by average detection mode.

While testing, there is the worst-emission plot printed at peak detection mode, and there are more than 6 highest emissions relative to limit recorded. The plot is kept as the original data, not included in test report.

### *List of test Instrument :*

<u>Instrument Name</u>	<u>Model No.</u>	<u>Brand</u>	<u>Serial No.</u>	<u>Calibration Date</u>	
				<u>Last time</u>	<u>Next time</u>
Spectrum analyzer	8591EM	H P	3619A00821	10/06/97	10/06/98
LISN (EUT)	3825/2	EMCO	9411-2284	05/15/98	05/15/99
Preamplifier	8447F	H P	2944A03706	05/13/98	05/15/99
Line switch box	AC1-003	TRC	-----	05/15/98	05/15/99
Line selector	AC1-002	TRC	-----	05/15/98	05/15/99

The level of confidence of 95% ,the uncertainty of measurement of conducted emission is  $\pm 2.4$  dB .

### *Test Result : Pass (Appendix A)*



### Chapter 3 Radiated emission test

**Test condition and setup :**

**Pretest :** Prior to the final test (OATS test) ,the EUT is placed in a shielded enclosure ,GTEM, and scan from 30MHz to 1GHz. This is done to ensure the radiation exactly emits form the EUT.

**Final test :** Final radiation measurements is made on a **10 – meter, open-field** test site. The EUT is placed on a nonconductive table which is 0.8 m height, the top surface is 1.0 x 1.5 meter. All the placement is according to EN 55022.

The spectrum is examined from 30 MHz to 1000 MHz measured by HP spectrum.

The EMCO whole range Antenna is used to measure frequency from 30 MHz to 1GHz. The final test is used the spectrum HP 8594EM .

Measure more than six top marked frequencies generated form pretest by computer step by step at each frequency. The EUT is rotated 360 degrees, and antenna is raised and lowered from 1 to 4 meters to find the maximum emission levels. The antenna is used with both horizontal and vertical polarization.

Appropriated preamplifier which is made by TRC is used for improving sensitivity and precautions is taken to avoid overloading .The spectrum analyzer’s 6dB bandwidth is set to 120 K Hz , and the EUT is measured at quasi-peak mode.

If the emission is close to the frequency band of ambient, the data will be rechecked by the tester and the corrected data will be written in the test data sheet. If the emission is just within the ambient ,the data from GTEM will be taken as the final data.

**List of test Instrument :**

Instrument name	Model No.	Brand	Serial No.	Calibration Date	
				Last	Next
Spectrum analyzer	8568B	H P	3004A18617	05/15/98	05/15/99
Quasi-peak Adapter	85650A	H P	2521A00984	05/15/98	05/15/99
RF Pre-selector	85685A	H P	2947A01011	05/15/98	05/15/99
Spectrum analyzer	8594EM	H P	3619A00198	08/13/98	08/13/99
Antenna(30M-2G Hz)	3142	EMCO	9610-1094	10/30/97	10/30/98
Open test side (Antenna ,Amplify, cable calibrated together )				05/15/98	05/15/99

The level of confidence of 95% ,the uncertainty of measurement of radiated emission is  $\pm 4.96$  dB .

**Test Result : Pass (Appendix B)**

**Appendix A**

**Conducted Emission Test Result :**

Testing room : Temperature : 26 ° C Humidity : 59 % RH

**Line 1**

<b>Frequency (MHz)</b>	<b>Amplitude (dBuV)</b>	<b>Limit (dBuV/m)</b>	<b>Margin (dB)</b>
0.172	44.43	55.37	-10.94
0.178	50.17	55.20	-5.13
0.267	41.57	52.66	-11.09
4.110	35.19	46.00	-10.81
17.950	40.37	50.00	-9.63
20.960	40.68	50.00	-9.32
23.200	42.05	50.00	-7.95
24.470	45.37	50.00	-4.63
26.570	43.47	50.00	-6.53
27.090	44.37	50.00	-5.63

**Line 2**

<b>Frequency (MHz)</b>	<b>Amplitude (dBuV)</b>	<b>Limit (dBuV)</b>	<b>Margin (dB)</b>
0.179	50.14	55.17	-5.03
17.950	41.18	50.00	-8.82
20.260	40.40	50.00	-9.60
21.560	39.98	50.00	-10.02
22.610	39.11	50.00	-10.89
23.050	42.66	50.00	-7.34
24.300	47.79	50.00	-2.21
25.870	44.85	50.00	-5.15
26.570	46.56	50.00	-3.44
27.090	45.57	50.00	-4.43

\* The reading amplitudes are all under average limit.

**Appendix B**

**Radiated Emission Test Result :(Horizontal)**

Test Conditions:

Testing room : Temperature : 22° C Humidity : 66 % RH

Testing site : Temperature : 28° C Humidity : 78% RH

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class B limit	Margin
MHz	dBuV	m	degree	dB/m	dBuV/m	dBuV/m	dB

50.002	38.12	3.02	175	-22.94	15.18	30.00	-14.82
147.460	48.61	3.02	318	-24.10	24.51	30.00	-5.49
150.000	45.40	1.00	78	-23.88	21.52	30.00	-8.48
250.000	48.18	3.02	292	-18.67	29.51	37.00	-7.49
349.990	46.33	3.02	22	-14.14	32.19	37.00	-4.81
399.990	45.15	3.02	278	-12.77	32.38	37.00	-4.62
***							

Note:

1. Margin = Amplitude - limit, *if margin is minus means under limit.*
  2. Corrected Amplitude = Reading Amplitude + Correction Factors
  3. Correction factor = Antenna factor + ( Cable Loss - Amplitude gain)
- (For example : 30MHz correction factor = 15.5 + (-15.26) = 0.24 dB/m)

**Radiated Emission Test Result :(Vertical)**

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class B limit	Margin
MHz	dBuV	M	degree	dB/m	dBuV/m	dBuV/m	dB

50.000	47.20	3.02	67	-22.94	24.26	30.00	-5.74
147.460	51.98	1.00	181	-24.10	27.88	30.00	-2.12
150.000	51.83	1.00	293	-23.88	27.95	30.00	-2.05
176.940	49.58	1.00	157	-21.91	27.67	30.00	-2.33
250.000	49.66	1.00	29	-18.67	30.99	37.00	-6.01
349.990	47.02	3.02	141	-14.14	32.88	37.00	-4.12
399.99	45.95	1.00	199	-12.77	33.18	37.00	-3.82
***							

**Final statement:**

***This test report, measurements made by TRC are traceable to the NIST.***