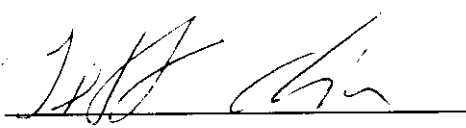
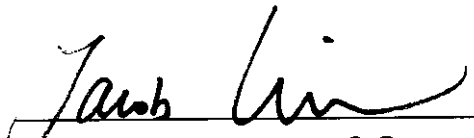


EXHIBIT B

Test Report

Report No.	T4415144
Specifications	FCC Part 15.109(g), Class B
Test Method	ANSI C63.4 1992
Applicant address	4F-2, NO. 171, SUNG-TEH ROAD, TAIPEI, TAIWAN, R.O.C.
Applicant Items tested Model No.	TURBOCOMM TECH. INC. Home Networking PCI Adapter HN-200 (Sample # T44144)
Results Sample received date	Compliance (As detailed within this report) 03/04/1999 (month / day / year)
Prepared by	 project engineer
Authorized by	 Vice General Manager (Jacob Lin)
Issue date	May 10, 1999 (month / day / year)
Modifications	None
Tested by	Training Research Co., Ltd.
Office at	No. 15, Lane 530, Pa-Lian RD., Sec. 1, Hsi-Chih Town, Taipei Hsien, Taiwan, R.O.C.
Open site at	No. 5-3, Lane 21, Yen Chiu Yuan Rd., Sec. 4, Taipei, Taiwan

Conditions of issue:

- (1) **This test report shall not be reproduced except in full, without written approval of TRC. And the test result contained within this report only relate to the sample submitted for testing.**
- (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: N7ZHN-200**

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Chapter 1 Introduction

Description of EUT:

The EUT use existing telephone wiring system to connect computers and devices just simply plug into the RJ-11 wall jack. There is no need for any special splitters, terminators or filters, and there is no need to set up a new wiring system in home. It has following features:

1. Compliant with Home Phoneline Networking Alliance (HomePNA)
2. AMD AM79C978 PCI Home Networking Controller
3. PCI specification revision 2.1 compliance
4. Plug and play compatible
5. Implements full OnNow features
6. Implements Magic Packet mode
7. Supports Advanced Configuration and Power interface9ACPI0 specification.

Connections of EUT:

- (1)Put the EUT into a personal computer's PCI bus and screw it.
- (2)Line #1 jack of EUT connects with a line cable to another home networking PCI adapter installed in another PC located remotely.
- (3)Line #2 jack of EUT connects with a telephone set.

Test method:

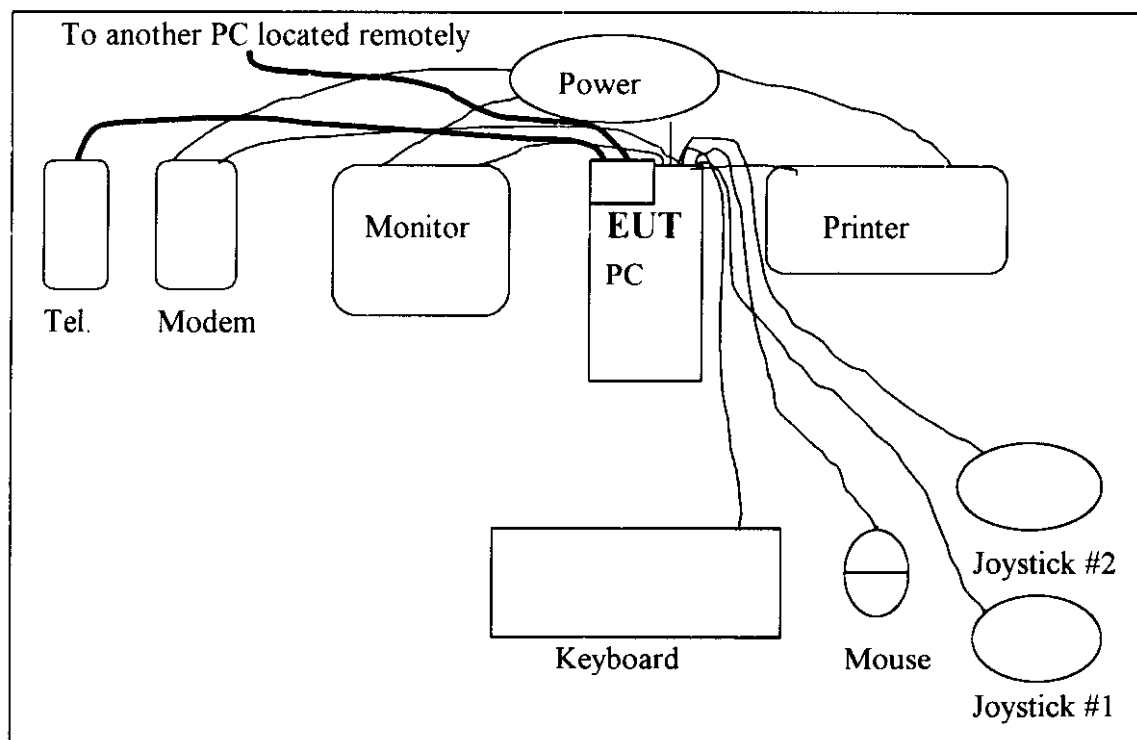
Pretest was found that the emission of operating mode is worse than standby mode. So, The final test is made at the operating mode.

During testing, the EUT was operated at "transmitting" and "receiving" mode simultaneously.

While testing, the transmitting rate was set to "AUTO" which means it transmitted the test file depending on the telephone 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 A port --- a external modem
 - *Serial B port --- a 76 cm shielded RS232 cable
 - *Printer port --- a Printer
 - *Monitor port --- a monitor
 - *Keyboard port --- a Keyboard
 - *Mouse port --- a Mouse
 - *USB ports --- two USB joysticks.
- (Each port on PC is connected with suitable device)

EUT:

- *Line #1 jack --- via 15 m RJ-11 cable to another home networking PCI adapter installed in another PC located remotely.
- *Line #2 jack --- via 1.2m RJ-11 cable to telephone set.

List of support equipment**Conducted (Radiated) test:**

PC : **ACER (HP)**
Model : VKt33t-X30-0637X (VE6/350 SERIES 8)
Serial No. : TV69584 (SG91002329)
FCC ID : Doc Approval (HLZV65X-IDCATX)
Power type : AC 110~120 / 220~240 VAC (AC 100~127 / 200~240 VAC), Switching
Power cord : non-Shielded, 1.7m long, Plastic, no ferrite core

Monitor : **HP (ACER)**
Model No. : D2821 (1555)
Serial No. : TW 73512262 (91716023058320117495C431)
FCC ID : A3KMO64 (JVP7254E)
Power type : AC 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 : **Digital (ACER)**
Model No. : KB-5923 (6311-C4C)
Serial No. : 9S74904837 (9132C0704C87L04379S00000)
FCC ID : E8HKB-5923 (DoC Approval)
Power type : By PC
Data cable : Shielded, 1.8m long, with ferrite core

Printer : **HP (EPSON)**
Model No. : C2642A (P70RA)
Serial No. : SG69A196GV (10010386)
FCC ID : B94C2642X (BKM9A8P70RA)
Power type : 220 VAC, 50Hz
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 : 220VAC, 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

Mouse : **Hewlett Packard Mouse (ACER)**
Model No. : C3751B (M-S42)
Serial No. : LCA52707170 (LZA83604858)
FCC ID : DZL210582 (DZL211106)
Power type : Powered by PC
Power Cable : Non – Shielded. 5.5' long, Plastic hoods, No ferrite bead

Joystick : **Padix**
Model : QF-606U, QF-707U (DoC Approval)
Power Type : By PC

USB Mouse : **Logitech**
Model No. : M-UB48
Serial No. : LZB81900098
FCC ID : DZL211137
Power Type : Powered by PC
Data Cable : Shielded, 1.8m long, Metal Hoods, No ferrite bead

Chapter 2 Conducted emission test

Test condition and setup:

All the equipment is placed and setup according to the CISPR 22.

The EUT is assembled on a wooden table that 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, it will be measured by CISPR's quasi-peak 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:

Calibration Date

<u>Instrument Name</u>	<u>Model No.</u>	<u>Brand</u>	<u>Serial No.</u>	<u>Last time</u>	<u>Next time</u>
Spectrum analyzer	8594EM	H P	3710A00279	01/07/99	01/07/00
LISN (EUT)	3825/2	EMCO	9411-2284	05/15/98	05/15/99
LISN (Support E.)	AC3-001	TRC	-----	05/15/98	05/15/99
Preamplifier	AC3-002	TRC	-----	05/15/98	05/15/99
Line switch box	AC3-003	TRC	-----	05/15/98	05/15/99

The level of confidence of 95%, the uncertainty of measurement of conducted emission is ± 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 anechoic chamber and scan from 30MHz to 1GHz. This is done to ensure the radiation exactly emits form the EUT.

Final test: Final radiation measurement is made on a **10 – meter, open-field** test site. The EUT is placed on a nonconductive table that is 0.8m height, the top surface is 1.0 x 1.5 meter. The placement is according to CISPR 22.

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 8591EM.

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 KHz, 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 anechoic chamber will be taken as the final data.

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</u>	<u>Next</u>
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	8591EM	H P	3710A01203	01/29/99	01/29/00
Antenna (30M-2G Hz)	3142	EMCO	1296	06/10/98	06/10/99
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 ± 4.96 dB .

Test Result: Pass (Appendix B)

Appendix A

Conducted Emission Test Result:

Testing room : Temperature : 23 ° C Humidity : 54 % RH

Line 1

FREQUENCY (KHz)	READING AMPLITUDE			LIMIT		MARGIN (dB)
	Peak (dB μ V/m)	Quasi-peak (dB μ V/m)	Average (dB μ V/m)	Quasi-Peak (dB μ V/m)	Average (dB μ V/m)	
156	42.23	*** **	*** **	65.83	55.83	-13.60
189	40.71	*** **	*** **	64.89	54.89	-14.18
213	40.12	*** **	*** **	64.20	54.20	-14.08
461	34.55	*** **	*** **	57.11	47.11	-12.56
615	36.61	*** **	*** **	56.00	46.00	-9.39
769	36.59	*** **	*** **	56.00	46.00	-9.41
922	33.05	*** **	*** **	56.00	46.00	-12.95
1077	31.50	*** **	*** **	56.00	46.00	-14.50
1382	30.41	*** **	*** **	56.00	46.00	-15.59
6060	36.81	*** **	*** **	60.00	50.00	-13.19

Line 2

FREQUENCY (KHz)	READING AMPLITUDE			LIMIT		MARGIN (dB)
	Peak (dB μ V/m)	Quasi-peak (dB μ V/m)	Average (dB μ V/m)	Quasi-Peak (dB μ V/m)	Average (dB μ V/m)	
155	44.17	*** **	*** **	65.86	55.86	-11.69
189	40.67	*** **	*** **	64.89	54.89	-14.22
215	42.30	*** **	*** **	64.14	54.14	-11.84
306	38.19	*** **	*** **	61.54	51.54	-13.35
461	36.32	*** **	*** **	57.11	47.11	-10.79
538	30.42	*** **	*** **	56.00	46.00	-15.58
615	36.82	*** **	*** **	56.00	46.00	-9.18
773	36.01	*** **	*** **	56.00	46.00	-9.99
922	32.43	*** **	*** **	56.00	46.00	-13.57
6060	35.25	*** **	*** **	60.00	50.00	-14.75

* The reading amplitudes are all under average limit.

Appendix B

Radiated Emission Test Result: (Horizontal)

Test Conditions:

Testing room : Temperature : 23 ° C Humidity : 69 % RH

Testing site : Temperature : 21 ° C Humidity : 83 % RH

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

300.270	37.90	4.00	307	-7.99	29.91	37.00	-7.09
368.240	22.80	1.00	45	-4.57	18.23	37.00	-18.77
500.690	26.50	1.00	129	-0.98	25.52	37.00	-11.48
501.590	30.70	4.00	328	-0.95	29.75	37.00	-7.25
600.430	23.90	4.00	293	1.62	25.52	37.00	-11.48
700.620	25.30	1.00	153	3.73	29.03	37.00	-7.97
703.220	22.70	1.00	353	3.83	26.53	37.00	-10.47

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)

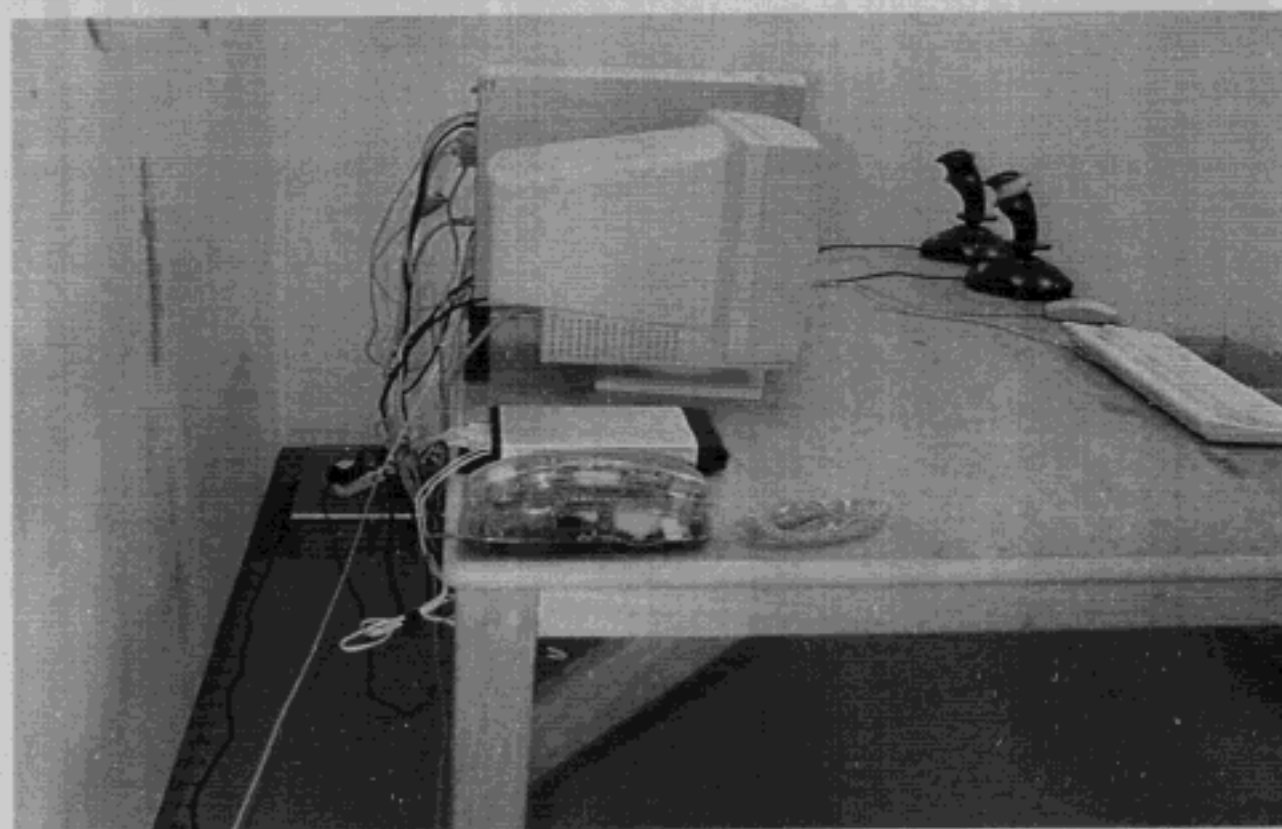
Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class B limit	Margin
MHz	dB μ V	m	degree	dB/m	dB μ V/m	dB μ V/m	dB

30.280	29.00	4.00	127	-7.91	21.09	30.00	-8.91
32.990	29.90	4.00	200	-8.94	20.96	30.000	-9.04
168.070	32.80	4.00	246	-13.70	19.10	30.00	-10.90
301.260	33.00	4.00	204	-7.95	25.05	37.00	-11.95

Final statement:

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

Conducted Test Placement:



Radiated Test Placement: (Photographs)

