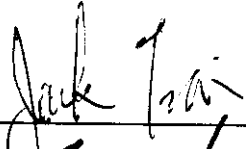
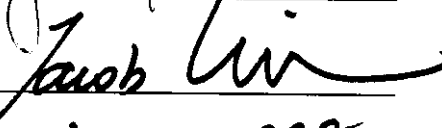
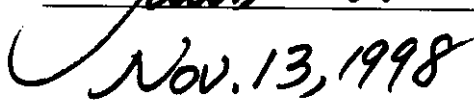


EXHIBIT B

Test Report

Report No.	T4415907
Specifications	FCC Part 15.109(g), CISPR 22
Test Method	ANSI C63.4 1992
Applicant	4F, No. 171, Sung-Teh Road, Taipei, Taiwan, R.O.C.
Applicant	TURBOCOMM TECH. INC.
Items tested	Hub Router with serial interface
Model No.	RT-400 (Sample # T44907)
Results	As detailed within this report
Sample received data	10/12/1998 (month / day / year)
Prepared by	 project engineer
Authorized by	 Vice General Manager (Jacob Lin)
Issue date	 Nov. 13, 1998 (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

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.**
- (3) **This report is also against AS/NZS 3548.**

★ FCC ID: N7ZRT-400

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Chapter 1 Introduction

Description of EUT :

This Hub Router with serial interface is a data transmission / receiving facility. It is designed to connected with PC or compatible computer via a serial cable and connected to lan card by UTP cable makes your data equipment available to transmit and receive data via the EUT. This was done in order to insure that maximum emission levels were attained.

Connections of EUT :

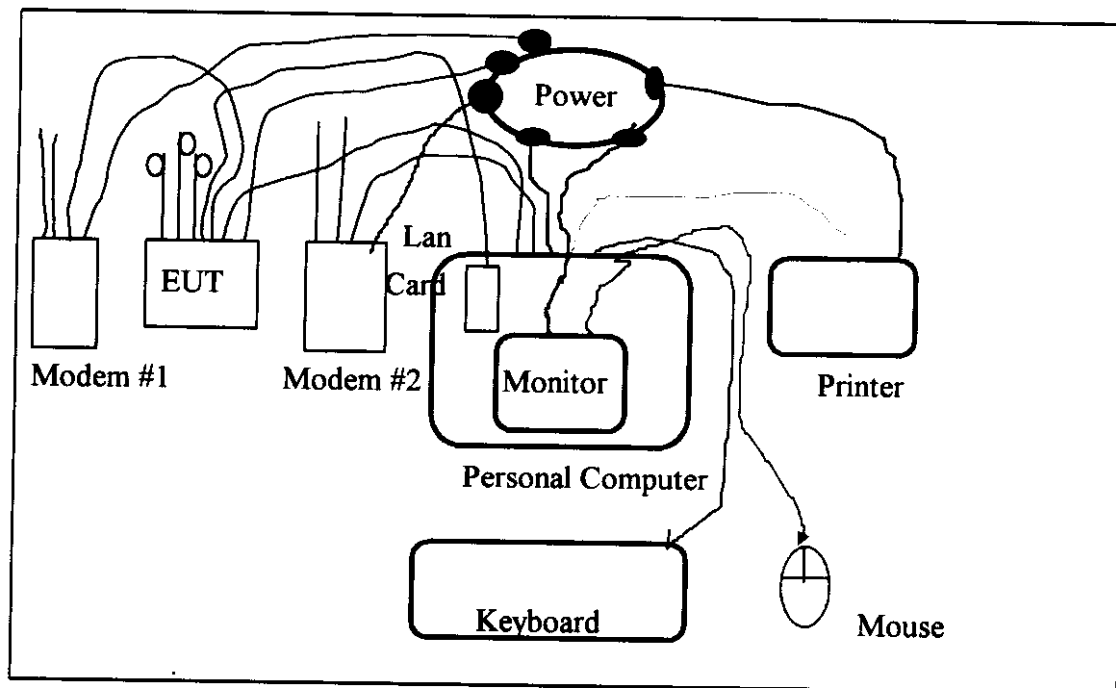
- (1) Connect the serial port A of EUT to serial port A of PC via a serial cable.
- (2) Connect the serial port B of EUT to a modem via a serial cable
- (3) Connect the RJ45 jack of EUT to lan card of PC via a UTP cable
- (4) Other RJ45 jacks of EUT connected terminators.

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. 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 --- EUT
 - *Serial B port --- a Modem #2
 - *Printer port --- a Printer
 - *Keyboard port --- a Keyboard
 - *Mouse port --- a Mouse
 - *Monitor port --- a monitor
- (Each port on PC is connected with suitable device)

EUT:

- *Serial port A --- via 3 m shielded cable connected to PC
- *Serial port B --- via 3 m shielded cable connected to modem #1
- *RJ45 jack --- via a 1 m UTP cable to lan card installed in the PC
- *Other RJ45 jacks --- via 1 m UTP cable terminateds

List of support equipment

Conducted (Radiated) test:

PC : HP
Model : Vectra VE2
Serial No. : SG61803151(SG61802786)
FCC ID : HCJVECTRAVL5
Power type : AC 120 VAC ,switching
Power cord : non-Shielded, 1.7m long ,Plastic ,no ferrite core

Monitor : HP (ACER)
Model No. : D2084(1555)
Serial No. : KR4397004(917160230583004368P5C431)
FCC ID : CSYSC-428VSP(JVP7254E)
Power type : 120VAC ,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 : 120VAC
Power cord : Non-shielded, 2m long, no ferrite core
Data cable : Shielded,1.84m long ,no ferrite core (1.7m)

Modem #1 : CIS Technology Inc.
Model No. : WS-5614EDH (Doc Approved)
Power type : 120VAC
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

Modem #2 : ACEEX
Model No. : XDM-9624
FCC ID : IFAXDM-9624
Power type : 120VAC
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
Model No. : C3751B
Serial No. : LCA52707170
FCC ID : DZL210582
Power type : Powered by PC
Power Cable : Non – Shielded. 5.5' long, Plastic hoods, No ferrite bead

Lane Card : CIS Technology Inc.
Model No. : WS- E200(Doc Approved)
Serial No. : N/A
Power type : Powered by PC
Power Cable : Non – Shielded. 1 m long, Plastic hoods, No ferrite bead

Chapter 2 Conducted emission test

Test condition and set up :

All the equipment is placed and setup according to the ANSI C63.4 - 1992. 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 a 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	8594EM	H P	3710A01203	10/22/97	10/22/98
LISN (EUT)	3825/2	EMCO	9411-2284	05/15/98	05/15/99
LISN (Support E.)	3825/2	EMCO	9210-2007	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 ± 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, 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 ANSI C63.4 - 1992.

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 analyzer.

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 meter 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 tester will recheck the data and the corrected data will be written in the test data sheet. If the emission is just within the ambient, the data from shielded room will be taken as the final data.

List of test Instrument :

Instrument name	Model No.	Brand	Serial No.	<u>Calibration Date</u>	
				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	8591A	H P	2919A00263	01/07/98	01/07/99
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 : 27° C Humidity : 67 % RH

Line 1

<i>Frequency (KHz)</i>	<i>Amplitude (dBuV)</i>	<i>Limit (dBuV/m)</i>	<i>Margin (dB)</i>
349.00	36.21	50.31	-14.10
366.00	35.52	49.83	-14.31
383.00	35.95	49.34	-13.39
403.00	35.13	48.77	-13.64
438.00	35.17	47.77	-12.60
470.00	33.94	46.86	-12.92
493.00	32.33	46.20	-13.87
508.00	31.09	46.00	-14.91
521.00	30.99	46.00	-15.01
6300.00	36.79	50.00	-13.21

Line 2

<i>Frequency (KHz)</i>	<i>Amplitude (dBuV)</i>	<i>Limit (dBuV)</i>	<i>Margin (dB)</i>
150.00	39.39	56.00	-16.61
157.00	39.49	55.80	-16.31
161.00	39.42	55.69	-16.27
168.00	38.40	55.49	-17.09
192.00	38.00	54.80	-16.80
223.00	37.18	53.91	-16.73
318.00	33.92	51.20	-17.28
378.00	32.44	49.49	-17.05
436.00	30.42	47.83	-17.41
6300.00	36.67	50.00	-13.33

* The reading amplitudes are all under average limit.

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

Test Conditions:

Testing room : Temperature : 22° C

Humidity : 67 % RH

Testing site : Temperature : 28° C

Humidity : 80 % 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

44.290	38.40	3.02	68	-21.29	17.11	30.00	-12.89
60.000	40.42	3.02	316	-24.65	15.77	30.00	-14.23
120.010	51.87	3.02	276	-23.96	27.91	30.00	-2.09
123.640	38.81	3.02	58	-24.45	14.36	30.00	-15.64
130.560	46.87	3.02	260	-25.28	21.59	30.00	-8.41
131.010	46.58	3.02	105	-25.25	21.33	30.00	-8.67
142.810	51.98	3.02	237	-24.50	27.48	30.00	-2.52
150.010	48.29	1.00	110	-23.70	24.59	30.00	-5.41
157.000	38.45	3.02	297	-23.21	15.24	30.00	-14.76
174.080	47.28	3.02	22	-21.98	25.30	30.00	-4.70
319.990	48.99	3.02	222	-15.28	33.71	37.00	-3.29

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

44.290	43.78	1.00	172	-21.29	22.49	30.00	-7.51
60.000	47.21	1.00	53	-24.65	22.56	30.00	-7.44
120.010	44.41	1.00	43	-23.96	20.45	30.00	-9.55
123.640	43.90	1.00	225	-24.45	19.45	30.00	-10.55
130.560	43.00	1.00	47	-25.28	17.72	30.00	-12.28
131.010	45.10	1.00	270	-25.25	19.85	30.00	-10.15
142.810	47.04	1.00	60	-24.50	22.54	30.00	-7.46
150.010	51.60	1.00	217	-23.70	27.90	30.00	-2.10
157.000	40.31	1.00	298	-23.21	17.10	30.00	-12.90
174.080	41.67	1.00	159	-21.98	16.69	30.00	-10.31
319.990	45.97	1.00	162	-15.28	30.69	37.00	-6.31