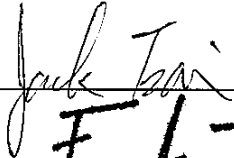



***EXHIBIT B***

***Test Report***

Report No.	C0915217
Specifications Test Method	FCC Part 15, Class B ANSI C63.4 1992
Applicant address	16F, No. 75 Hsin Tai Wu RD., Sec. 1 Bldg #A Hsi-Chih, Taipei Hsien, Taiwan
Applicant	CIS TECHNOLOGY INC.
Items tested Model No.	Centillium Optimizer USB ADSL Modem WS-AD15USE (Sample # C09217)
Results Sample received date	<b>Compliance</b> (As detailed within this report) 01/18/2000 (month / day / year)
Prepared by	 project engineer
Authorized by	 General Manager (Frank Tsai)
Issue date	Feb. 19, 2000 (month / day / year)
<b>Modifications</b>	<b>Appendix C</b>
Tested by	Training Research Co., Ltd.
Office at	2, Lane 194, Huan-Ho Street, Hsichih, Taipei Hsien 221, Taiwan
Open site at	No. 15, Lane 530, Pa-Lian RD., Sec. 1, Hsichih City, Taipei Hsien, Taiwan, R.O.C.

**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: L4OWSAD15USE

Report No.: C0915217, Optimizer USB ADSL Modem, FCC Part 15, Class B

Test date: 02/16/2000, Training Research Co., Ltd., TEL: 886-2-26935155, Fax: 886-2-26934440

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## ***Chapter 1 Introduction***

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

This ADSL modem is a data communication device. It is designed to connect with the USB port of personal computer and makes your data equipment available to transmit and receive data via the public telephone network.

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

- (1) The USB port of EUT is connected with the USB A port of PC.
- (2) The line jack of EUT is connected with a line cable to the ADSL simulator located remotely.
- (3) The phone jack of EUT is connected with a telephone set.

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

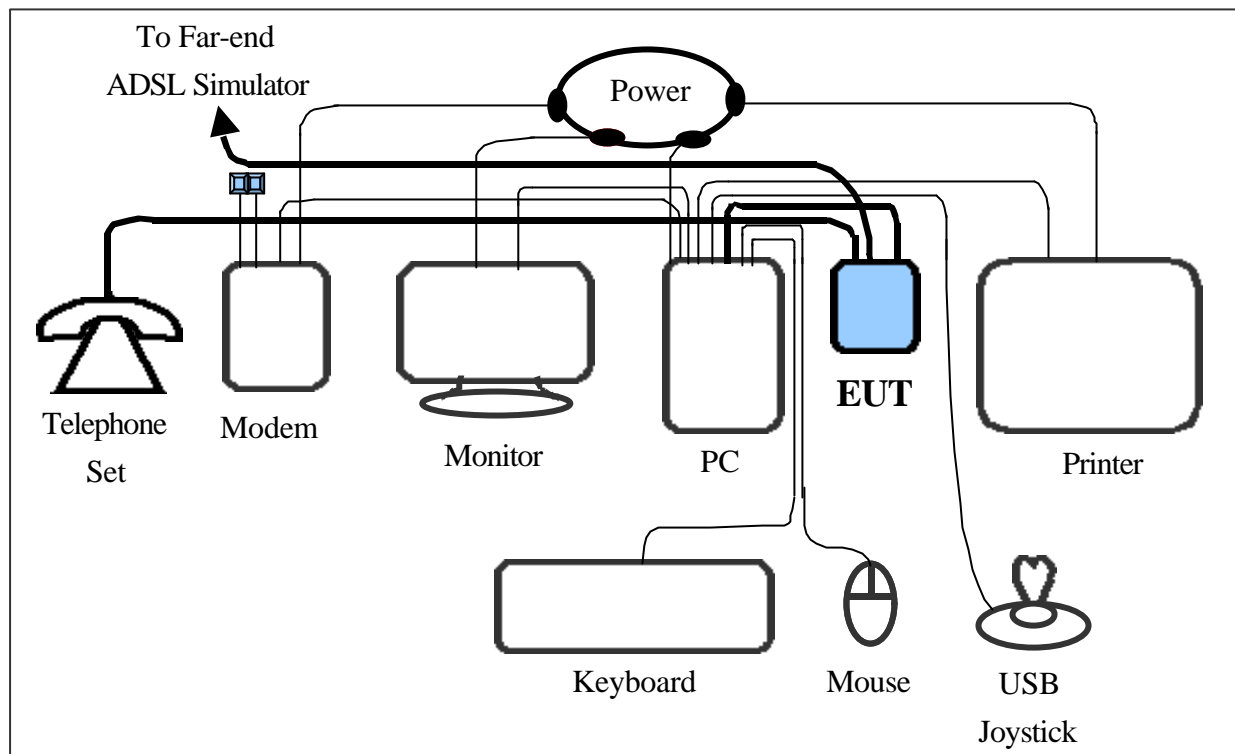
Pretest was found that the emission of operating mode is worse than standby mode. So, The final test is made at the operating mode.

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 port --- via a 76cm shielded RS-232 cable to an external modem
  - \*Printer port --- a printer with 1.2m length data cable
  - \*Keyboard port --- a keyboard with 1m length data cable
  - \*Mouse port --- a mouse with 1m length data cable
  - \*Monitor port --- a monitor with 0.7m long of data cable
  - \*USB port A --- **EUT**
  - \*USB port B --- a joystick with 1.5m long, shielded and no ferrite bead data cable
- (Each port on PC is connected with suitable device)

- EUT :**
- \*Line Jack --- via a 15m long, non-shielded, no ferrite bead, RJ14C cable to the ADSL simulator located remotely
  - \*Phone Jack --- via a 1.8m long, non-shielded, no ferrite bead, RJ14C cable to the telephone set
  - \*USB Port --- via a 1.8m long, shielded, no ferrite bead, USB cable to the USB A port of PC

**List of support equipment**

**Conducted (Radiated) test:**

**PC** : **HP Brio 85xx 6/350**  
Model No. : VE6/350 SERIES 8  
Serial No. : SG91801432 (SG91002329)  
FCC ID : N/A (DOC Approved)  
檢磁 : 3872H013  
Power type : 100 ~ 230VAC / 50 ~ 60Hz, 5A, Switching  
Power cord : Non-shielded, 2.33m long, Plastic, No ferrite core

**Monitor** : **HP 15' Color Monitor**  
Model No. : D2827A  
Serial No.: KR91161719 (KR91161717)  
FCC ID : C5F7NFCMC1518X  
檢磁 : 3872B039  
Power type : 110 ~ 240 VAC / 50 ~ 60 Hz, Switching  
Power cord : Shielded, 1.83m long, No ferrite core  
Data cable : Shielded, 1.46m long, with two ferrite cores

**Keyboard** : **HP**  
Model No. : SK-2501K  
Serial No. : MR80700789 (M990308909)  
FCC ID : GYUR38SK  
檢磁 : 3862A621  
Power type : By PC  
Data cable : Shielded, 1.73m long, with ferrite core

**Mouse** : **HP**  
Model No. : M-S34  
Serial No.: LZB90714106 (LZB90714122)  
FCC ID : DZL211029  
檢磁 : 4862A011  
Power type : By PC  
Power cord : Non-shielded, 1.88m long, No ferrite core

**Printer : HP**  
Model No. : C2642A  
Serial No.: SG69A196GV  
FCC ID : B94C2642X  
Power type : 230 VAC, 50Hz  
Power cord : Non-shielded, 2m long, no ferrite core  
Data cable : Shielded, 1.84m long, no ferrite core

**Modem : ACEEX**  
Model No. : XDM-56V14  
FCC ID : IFAXDM-56V14  
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

**USB Joystick : Padix**  
Model No. : QF-606U  
Serial No.: N/A  
FCC ID : DOC Approval  
Power Type : By PC  
Power Cable : Shielded, 1.8m long, Plastic hoods, No ferrite bead

**Telephone : HUSTON**  
Model No. : 4782  
Serial No.: N/A  
Power type : Powered by PSTN  
Data Cable : non-shielded, 1.8m long, no ferrite bead

**ADSL Simulator : CENTILLIUM COPPER LIFT CO.**  
Model No. : CT-L21SC08  
Serial No. : N/A  
Power Type : 110 VAC 50Hz  
Power Cable : non-shielded, 1.8m long, no ferrite bead

## **Chapter 2 Conducted emission test**

### **Test condition and setup:**

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 that 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 450KHz to 30 MHz. 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:**

<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	3710A00198	01/12/00	01/12/01
LISN (EUT)	3825/2	EMCO	9411-2284	05/15/99	05/15/00
LISN (Support E.)	AC3-001	TRC	-----	05/15/99	05/15/00
Preamplifier	AC3-002	TRC	-----	05/15/99	05/15/00
Line switch box	AC3-003	TRC	-----	05/15/99	05/15/00

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

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



*Conducted Test Placement: (Photographs)*



### **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 **3 - meter**, open-field test site. The EUT is placed on a nonconductive table, which is 0.8m 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 meters to find the maximum emission levels. The antenna is used with both horizontal and vertical polarization.

Appropriated preamplifier that is made by TRC is used for improving sensitivity and precaution 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 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 shield room 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 time</u>	<u>Next time</u>
Spectrum analyzer	8594EM	H P	3710A00279	06/22/99	06/22/00
Spectrum analyzer	8594EM	H P	3710A00198	01/12/00	01/12/01
Antenna (30M-1.5G Hz)	VULB 9160	M.E.	3063	01/18/00	01/18/01
Antenna (30M-2G Hz)	3141	EMCO	9711-1076	05/15/99	05/15/00
RF Pre-selector	AC4-001	TRC	-----	05/15/99	05/15/00
Open test side (Antenna, Amplify, cable calibrated together)				05/15/90	05/15/00

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

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

*Radiated Test Placement: (Photographs)*



### Appendix A

#### Conducted Emission Test Result:

Testing room:            Temperature : 21 ° C            Humidity : 62 % RH

**Line 1**

Frequency (KHz)	READING AMPLITUDE			LIMIT		Margin (dB)
	Peak (dBmV/m)	Quasi- Peak (dBmV/m)	Average (dBmV/m)	Quasi- Peak (dBmV/m)	Average (dBmV/m)	
496.00	38.11	***.**	***.**	48.00	***.**	-9.89
1127.00	35.86	***.**	***.**	48.00	***.**	-12.14
15380.00	37.10	***.**	***.**	48.00	***.**	-10.90
15820.00	38.60	***.**	***.**	48.00	***.**	-9.40
16690.00	40.44	***.**	***.**	48.00	***.**	-7.56
17350.00	40.89	***.**	***.**	48.00	***.**	-7.11
17950.00	41.90	***.**	***.**	48.00	***.**	-6.10
19620.00	37.58	***.**	***.**	48.00	***.**	-10.42
20510.00	35.92	***.**	***.**	48.00	***.**	-12.08
21410.00	36.72	***.**	***.**	48.00	***.**	-11.28

**Line 2**

Frequency (KHz)	READING AMPLITUDE			LIMIT		Margin (dB)
	Peak (dBmV/m)	Quasi- Peak (dBmV/m)	Average (dBmV/m)	Quasi- Peak (dBmV/m)	Average (dBmV/m)	
496.00	40.48	***.**	***.**	48.00	***.**	-7.52
1257.00	36.11	***.**	***.**	48.00	***.**	-11.89
16040.00	37.59	***.**	***.**	48.00	***.**	-10.41
16590.00	38.33	***.**	***.**	48.00	***.**	-9.67
17240.00	39.94	***.**	***.**	48.00	***.**	-8.06
17820.00	37.91	***.**	***.**	48.00	***.**	-10.09
20000.00	36.29	***.**	***.**	48.00	***.**	-11.71
21410.00	36.74	***.**	***.**	48.00	***.**	-11.26
23050.00	36.31	***.**	***.**	48.00	***.**	-11.69
27260.00	38.19	***.**	***.**	48.00	***.**	-9.81

\* The reading amplitudes are all under average limit.

## Appendix B

### Radiated Emission Test Result: (Horizontal)

Test Conditions:

Testing room : Temperature : 21 ° C                      Humidity : 55 % RH

Testing site : Temperature : 19 ° C                      Humidity : 56 % 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

216.063	55.80	2.51	286	-24.37	31.43	46.00	-14.57
258.341	55.77	0.99	132	-22.32	33.45	46.00	-12.55
287.051	56.94	0.99	260	-20.96	35.98	46.00	-10.02
315.760	59.19	0.99	98	-20.42	38.77	46.00	-7.23
373.167	57.01	0.99	233	-18.80	38.21	46.00	-7.79
459.276	50.07	0.99	92	-15.88	34.19	46.00	-11.81
861.133	56.14	0.99	341	-21.14	35.00	46.00	-11.00
918.537	52.33	0.99	6	-20.06	32.27	46.00	-13.73
***							

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)***

<b>Frequency</b>	<b>Reading Amplitude</b>	<b>Ant. Height</b>	<b>Table</b>	<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B Limit</b>	<b>Margin</b>
MHz	dBµV	m	degree	dB/m	dBµV/m	dBµV/m	dB

143.525	48.53	0.99	318	-20.79	27.74	43.50	-15.76
251.221	51.47	0.99	137	-22.63	28.84	46.00	-17.16
273.438	48.98	0.99	328	-21.76	27.22	46.00	-18.78
***							

***Final statement:***

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

**Appendix C**

**List of Modifications:**

1. Connect bypass capacitors 27 PF to pin2, pin3 of P5 jack.
2. Connect FB520 (ACM321611B520) behind to fuse.
3. A6 / A7 must connect ground completely around the margin.

**Please refer to the photograph of EUT**

**Statement of Applicant:**

I acknowledge that the modifications made to the EUT for compliance during testing will be incorporated into mass production units.

**Mfg.: CIS TECHNOLOGY INC.**

By: Alan Yeh Mr.

**Date: Feb. 18, 2000**

*Signature*

*Printed*

**Title: Manager**