

**Exhibit B**

**Test Report**

# Test Report Certification

## Best Laboratory Co., Ltd.

No. 336, Ba Lian Rd., Sec. 1, Hsi Chih City, Taipei Hsien, Taiwan, R.O.C.  
Tel: 886-2-2646-2899 Fax: 886-2-2646-2870

Applicant : Universal Access Technology Inc.

Address : 2F, No.5, Alley 22, Lane 513, Jui Kuang Rd.,  
Nei Hu, Taipei City, Taiwan, R.O.C. 114

Equipment : ADSL Router / Bridge

TCB IC : PGCAR-5153

Model No. : AR-5153; AB-5153; AR-5151; AB-5151;  
AR-5150; AB-5150; AR-5155; AB-5155;

Device's Class : Class B Device

Measurement Standard : FCC Part 15

Measurement Procedure : ANSI C63.4-1992

Operating Voltage : 110VAC, 0.6A, 60Hz / 9VDC, 2.0A

Test Result : **Compliance** (Detail showed in the test report)

Sample Received : Jan 09, 2001


Test Date : Jan 09, 2001

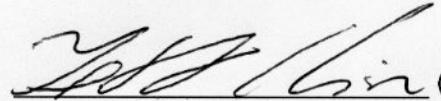
Report Number : RE-U01-FC-165

Test Firm : No. 336, Ba Lian Rd., Sec. 1,  
Hsi Chih City, Taipei Hsien, Taiwan, R.O.C.

Remark:

- (1) The test report is only relating to the sample tested
- (2) The test report shall not be reproduced except in full, without the written approval of Best Laboratory Co., Ltd.
- (3) The test report must not be used by the client to claim product endorsement by NVLAP or any agency of the US Government.
- (4) The test result of this report are traceable to the national or international standards.

Prepared :   
ANN HUNG

Approved :  ( Title: Quality Department Manager )  
JEFF CHIU

Date Issued : 

# Contain

- 1 General Information**
  - 1.1 EUT Description.....3
  - 1.2 Test System Detail.....4
  - 1.3 Tested Configuration.....6
  - 1.4 EUT Exercise Software.....7
  - 1.5 Test Performed.....7
- 2 Conducted Emission Measurement**
  - 2.1 Test Equipment List.....8
  - 2.2 Test Set-Up.....8
  - 2.3 Limit .....8
  - 2.4 Test Procedure.....9
  - 2.5 Test Specification.....9
  - 2.6 Test Result.....9
- 3 Radiated Emission Measurement**
  - 3.1 Test Equipment List.....10
  - 3.2 Test Set-Up.....10
  - 3.3 Limit.....11
  - 3.4 Test Procedure.....11
  - 3.5 Test Specification.....11
  - 3.6 Test Result.....11
- 4 Modification List**
- 5 Appendix**
  - Appendix A: Summary of Test Result.....14
  - Appendix B: The Photograph of measurement.....18

# 1. General Information

## 1.1 EUT Description

Applicant : Universal Access Technology Inc.

Address : 2F, No.5, Alley 22, Lane 513, Jui Kuang Rd.,  
Nei Hu, Taipei City, Taiwan, R.O.C. 114

Equipment : ADSL Router / Bridge

TCB IC : PGCAR-5153

Model No. : AR-5153; AB-5153; AR-5151; AB-5151;  
AR-5150; AB-5150; AR-5155; AB-5155;

Device's Class : Class B Device

Kind of Product : Engineer Sample

Condition of EUT : Good

Operation Voltage : 110VAC, 0.6A, 60Hz / 9VDC, 2.0A

Output Ports : Power Jack : connected with a power adapter which power cable is 1.75 meters long, non-shielded, no ferrite bead, which another end is connected with the AC power source.

Line Jack : connected with one RJ-11 cable which is 20 meters long, non-shielded, no ferrite bead, to the CO Emulator located in far-end.

Phone Jack : connected with a RJ-11 cable that is 1.8 meters long, non-shielded, non ferrite bead, to a telephone set.

LAN Port : via a RJ-45 cable that is 3 meters long, non-shielded, no ferrite bead, to a LAN card installed in one PC located in near-end.

9-pin D-Sub Jack: connected with an RS-232 cable which data cable is 1.8 meter long, shielded, no ferrite bead, to the serial port of PC.

**\*\*\* Remark:**

- 1. According to requirement from applicant, only the model: AR-5153 tested, when the measurement and the test was performed.**
- 2. According to the requirement from the applicant, the USB port will not connects with any devices. The applicant points out that the USB port will not be existed in mass production of this model: AR-5153.**

## 2.1 Test System Detail

**PC : Compaq**  
Model No. : PD1090  
Serial No. : 6B09FR83A0CS  
FCC ID : DoC Approval  
BSMI : 3892D435  
Power Type : 100~127/200~240VAC, 60/50Hz, 4/2A, Switching  
Power Cord : 180cm long, non-shielded, no ferrite bead.

**Monitor : Viewsonic**  
Model No. : VCDT321496-1D  
Serial No. : HR94500066  
FCC ID : DoC Approval  
BSMI : 3882A702  
Power Type : 100-240VAC, 50/60Hz, 1.5A, Switching  
Power Cord : 180cm long, non-shielded, no ferrite bead.  
Data Cable : 120cm long, shielded, with ferrite bead  
Backshell : Metal  
Connected Port: VGA Port

**Keyboard : HP (Pavilion)**  
Model No. : SK-2506  
Serial No. : C0006002889  
FCC ID : DoC Approval  
BSMI : 3882A375  
Power Type : By PC  
Data Cable : 180cm long, shielded, no ferrite bead  
Backshell : Metal  
Connected Port: PS/2 Keyboard Port

**Mouse : AT Tech**  
Model No : OK-520  
Serial No. : 990707032  
FCC ID : DoC Approval  
BSMI : 3872B356  
Power Type : By PC  
Data Cable : 120cm long, non-shielded, no ferrite bead  
Backshell : Metal  
Connected Port: PS/2 Mouse Port

**Printer : Epson**  
Model No. : P950  
Serial No. : BW9Y113923  
FCC ID : DoC Approval  
BSMI : 3872P001  
Power Type : 220VAC, 50Hz, 0.4A  
Power Core : 165cm long, non-shielded, no ferrite bead  
Data Cable : 120cm long, shielded, no ferrite bead  
Backshell : Metal  
Connected Port: Parallel Port

**USB Mouse : Logitech**

Model No. : M-BB48  
Serial No. : LZE92250126; LZE92250247  
FCC ID : DoC Approval  
BSMI : 4872A221  
Power Type : By PC  
Data Cable : 120cm long, non-shielded, no ferrite bead  
Backshell : Metal  
Connected Port: USB Port

**Walkman : KOKA**

Model No. : KW-250  
Serial No. : N/A  
FCC ID : DoC Approval  
Power Type : 9VDC  
Data Cable : 120cm long, shielded, no ferrite bead  
Backshell : Metal  
Connected Port: Line-in Port

**Earphone set : KOKA**

Model No. : MS-321  
Serial No. : N/A  
FCC ID : DoC Approval  
Data Cable : 145cm long, non-shielded, no ferrite bead  
Backshell : Metal  
Connected Port: Spk. & Mic. Port

**Joystick : RockFire**

Model No. : QF-707  
Serial No. : N / A  
FCC ID : DoC Approval  
BSMI : N / A  
Power Type : By PC  
Data Cable : 120cm long, shielded, no ferrite bead  
Backshell : Metal  
Connected Port: Joystick Port

**Telephone Set: U-Tech**

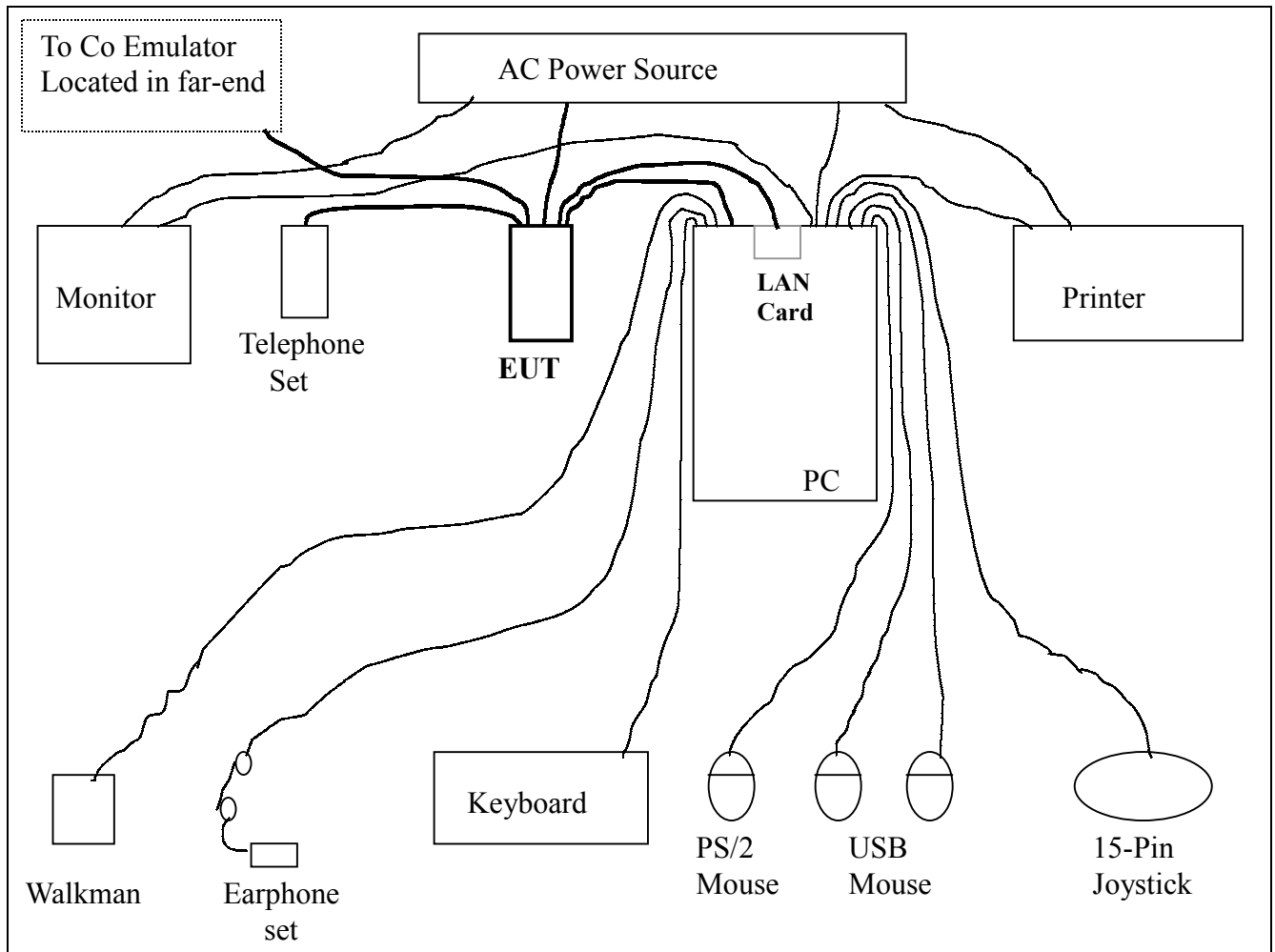
Model No. : UT-7105  
Serial No. : 008301  
Backshell : Metal  
Connected Port: Phone Port

## 2.2 EUT Configuration

- (1) The power jack of EUT is connected with the AC power source via a power adapter.
- (2) The phone jack of EUT is connected with one telephone set.
- (3) The line jack of EUT is connected with the line #1 jack of CO Emulator located in far-end, which line #2 jack is connected with another external modem.
- (4) The 9-pin D-sub connector of EUT is connected with the serial port of PC via one RS-232 cable.
- (5) The LAN port of EUT is connected with one LAN card installed in one PC located in near-end via one RJ-45 cable.

(\*\*\*PS: Please refers to the Photograph\*\*\*)

### Drawing of Configuration



## 2.3 EUT Exercise Software

The testing software is provided by the applicant.

The testing software is designed to exercise the EUT in a manner similar to a typical use. The testing software will link a LAN card to transmit data, via the RJ-45 jack and force the LAN port to communicate with the LINE port. The LAN card will be continuous to receive the data that transmitted from the CO Emulator, and transmit the data to the CO Emulator. The CO Emulator will be continuous to receive the data that transmitted from LAN card, and transmit the data to the LAN card. So, the LAN card will be receiving and transmitting the data continuous and simultaneous. The traffic and transmitting package is limited by the software. The software will enable all functions of EUT.

## 2.4 Test Performed

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver which bandwidth is set at 9KHz.

Radiated emissions were investigated over the frequency range from 30MHz to 1000MHz using a receiver which bandwidth is set at 120KHz. Radiated measurement was performed at distance that from an antenna to EUT is 3 meters.

The testing result of pretest was shown out that the “Receiving / Transmitting” mode is worse than the “Standby” mode. So, the final measurement was made on the “Receiving / Transmitting” mode.



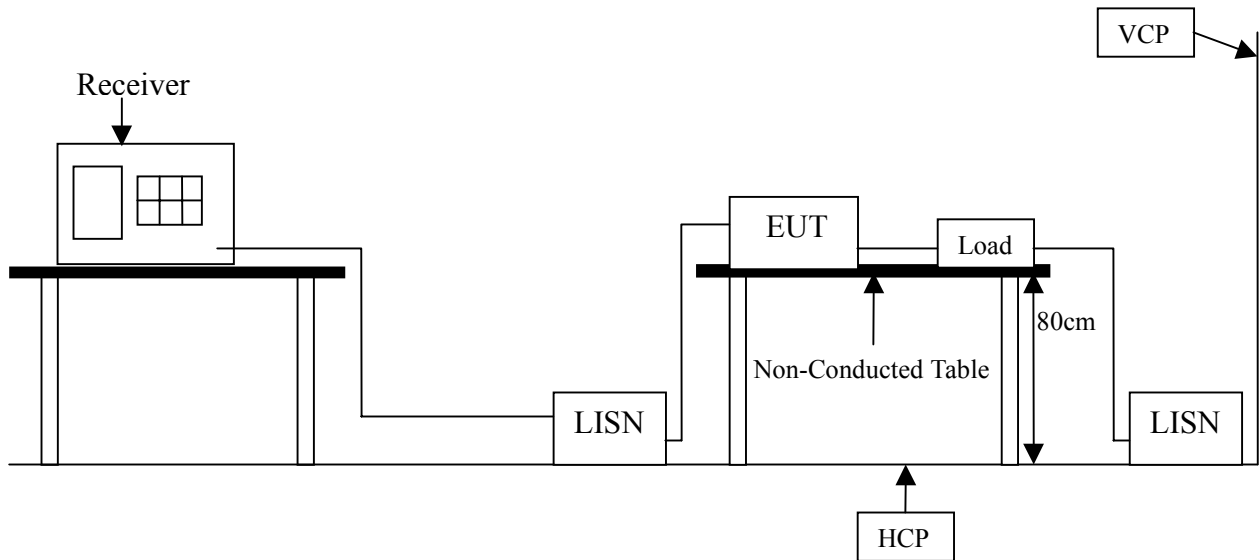
## 2 Conducted Emission Measurement

### 2.1 Test Equipment

No.	Instrument	Manufacture	Model	Serial No.	Last Calibrate
1.	LISN (EUT)	Rolf Heine	NNB-2/16Z	99084	Dec. 14, 1999
2.	LISN (AXE)	Rolf Heine	NNB-2/16Z	99086	Dec. 14, 1999
3.	EMI Receiver	Rohde & Schwarz	ESI 7	830154/001	Nov. 22, 1999
4.	50Ω Terminator	Amphenol	46650-51	N/A	Mar. 10, 2000
5.	RF Cable	Belden	M17/158	MIL-C-17	Jan. 20, 2000

Remark: All equipment upon which need to calibrated are with calibration period of 1 year.

### 2.2 Test Set-Up



### 2.3 Limit

CISPR 22

Frequency MHz	Limit (dBμV)			
	Class A		Class B	
	QP	Avg.	QP	Avg.
0.15 ~ 0.50	79	66	66 ~ 56	56 ~ 46
0.50 ~ 5.0	73	60	56	46
5.0 ~ 30.0	73	60	60	50

FCC Part 15

Frequency MHz	Limit (dBμV)	
	Class A	Class B
	QP	QP
0.50 ~ 1.705	60	48.0
1.705 ~ 30	69.5	48.0

Remark: In the above table, the tighter limit applies at the band edges.

## **2.4 Test Procedure**

The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). It provides a 50 ohm / 50  $\mu$ H coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm / 50  $\mu$ H coupling impedance with 50 ohm termination. (Please refers to the block diagram of the test setup and photograph.)

Both sides of AC line are checked for the maximum conducted emission interference. In order to find the maximum emissions, the relating positions of equipment and all of the interference cables must be changed according to ANSI C63.4-1992 regulation: The measurement procedure on conducted emission interference.

The resolution bandwidth of the field strength meter ( Rohde & Schwarz ) is set at 9KHz.

## **3.5 Test Specification**

According to the ANSI C63.4-1992

## **2.6 Test Result**

The emissions that come from the EUT were below the specified limits. The worst case of conducted emissions measurement are shown in the appendix A. The acceptance criterion was met and the EUT has pass the measurement.

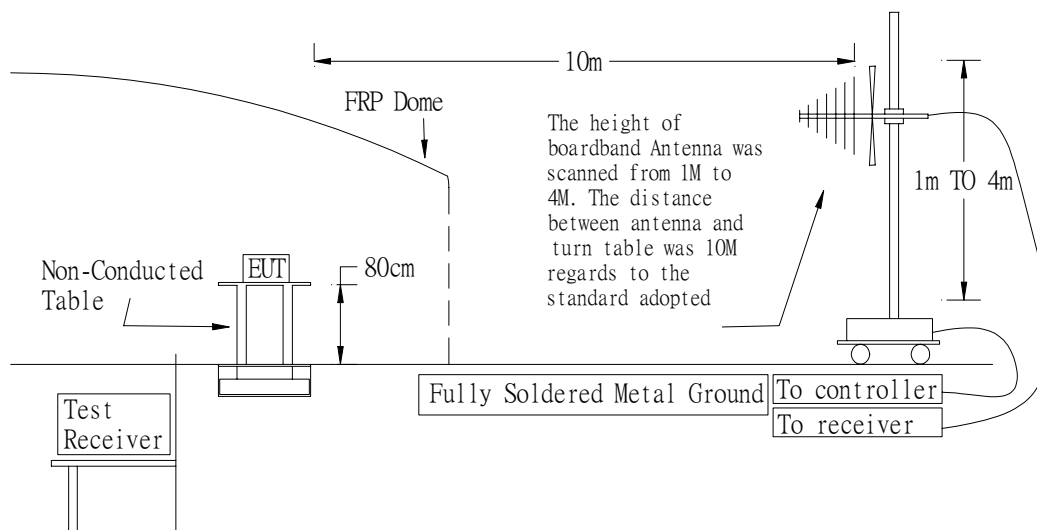
## 4. Radiated Emission Measurement

### 3.1 Test Equipment List

No.	Instrument	Manufacture	Model	Serial No.	Last Calibrate
1.	Antenna	Mess-Elektronik	VULB 9160	9160-3078	Jan. 19, 2000
2.	EMI Receiver	Rohde & Schwarz	ESI 7	830154/001	Nov. 22, 1999
3.	RF Cable	Adventest	AD-N-CA-01	2000-0220	Apr. 01, 2000
4.	OATS	Bestlab	N/A	OATS#1	Mat 30, 2000

Remark: All equipment upon which need to calibrated are with calibration period of 1 year.

### 3.2 Test Setup



### 3.3 Limit

CISPR 22

Frequency MHz	Class A		Class B	
	Distance (Meter)	Limit (dBμV)	Distance (Meter)	Limit (dBμV)
30 ~ 230	10	40	10	30
230 ~ 1000	10	47	10	37

FCC Part 15

Frequency MHz	Class A		Class B	
	Distance (Meter)	Limit (dBμV)	Distance (Meter)	Limit (dBμV)
30 ~ 88	10	39	3	40
88 ~ 216	10	43.5	3	43.5
216 ~ 960	10	46.5	3	46
960 Above	10	49.5	3	54

Remark: In the above table, the tighter limit applies at the band edges

### 3.4 Test Procedure

The EUT and its simulators are placed on turn table, non-ducted and wooden, which is 0.8 meter above ground. The turn table rotates 360 degree to determine the position of the maximum emission level. The EUT was positioned such that distance from antenna to the EUT is 3 meters. The antenna is moved up and down between 1 meter to 4 meter to receive the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interference cables must be manipulated according to ANSI C63.4-1992 regulation: the test procedure of the radiated emission measurement.

The bandwidth set on the field strength is 120KHz when the frequency range is below 1GHz

### 3.5 Test Specification

According to ANSI C63.4-1992

### 3.6 Test Result

The emissions that come from the EUT was below the specified limits. The worst case of conducted emissions measurement are shown in the appendix A. The acceptance criterion was met and the EUT has pass the measurement.

## **12 Modification List for EMC Complying Test**

The modification is solely made by the applicant

## **6 Appendix**

Appendix A: Summary of Test Result

Appendix B: The test photograph of EUT

Appendix C: The Detail Photograph of EUT

## Appendix A: Summary of Test Result

The test result in the emission and immunity were performed according to the requirement of measurement standard and procedures. Best Laboratory is assumed full responsibility for the accuracy and completeness of these measurements. The Test data of the emissions and immunity are listed as the appendix data.

All these tests are were carried out with the EUT in normal operation, which was defined as:

**\*\*\*\*\* EMC Test Result: The EUT has been pass the all measurements. \*\*\*\*\***

The uncertainty is calculated in accordance with NAMAS NIS 81, the total uncertainty for this test is as follows:

⇒ Emission Test

- \* Uncertainty in the Conducted Emission Test: <±2.0dB
- \* Uncertainty in the Field Strength measurement: <±4.0dB

### Conducted Emission Test

Date Measurement Performed: Jan 08, 2001  
 EUT : ADSL Router / Bridge  
 Testing Model : AR-5153  
 Testing Mode : Receiving / Transmitting  
 Temperature : 19°C  
 Humidity : 68%RH

**Line 1:**

Frequency (KHz)	Corrected Amplitude (dBμV/m)			Limit (dBμV/m)		Margin dB
	Peak	QP	Avg.	QP	Avg.	
665.9500	32.05	***	***	48.00	***	-15.95
1650.0000	37.73	***	***	48.00	***	-10.27
1850.0000	40.11	***	***	48.00	***	-7.89
4290.0000	34.45	***	***	48.00	***	-13.55
8800.0000	33.31	***	***	48.00	***	-14.69
24000.0000	29.90	***	***	48.00	***	-18.10
***						

**Line 2:**

Frequency (KHz)	Corrected Amplitude (dBμV/m)			Limit (dBμV/m)		Margin dB
	Peak	QP	Avg.	QP	Avg.	
1485.0000	36.07	***	***	48.00	***	-11.93
1510.0000	36.04	***	***	48.00	***	-11.96
1605.0000	37.19	***	***	48.00	***	-10.81
1925.0000	36.86	***	***	48.00	***	-11.14
4915.0000	36.52	***	***	48.00	***	-11.48
8464.0000	32.77	***	***	48.00	***	-15.23
***						

\*\*\* Remark: The above corrected amplitude are all under the average limit. \*\*\*



## Field Strength Measurement

Date Measurement Performed: Jan 09, 2001  
 EUT : ADSL Router / Bridge  
 Testing Mode : AR-5153  
 Testing Mode : Receiving / Transmitting  
 Polarity : Vertical  
 Temperature : 26°C  
 Humidity : 68%RH

Frequency (MHz)	Reading Amplitude (dBμV/m)	Table Degree (°)	Antenna Height (Meter)	Correction Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
35.332	17.97	7	1.00	11.20	29.16	40.00	-10.84
48.000	15.89	261	1.00	11.99	27.88	40.00	-12.12
70.660	28.14	46	1.00	9.64	37.78	40.00	-2.22
110.597	21.34	318	4.00	10.72	32.07	43.50	-11.43
141.332	26.86	335	4.00	12.73	39.59	43.50	-3.91
176.650	28.46	204	1.00	12.03	40.49	43.50	-3.01
317.970	26.73	280	2.00	14.22	40.95	46.00	-5.05
***							

Remark:

1. The “ Correction Factor “ contains antenna factor, cable loss.
2. The formula of “ Corrected Amplitude “ is as follow”  
 Reading Amplitude + Correction Factor = Corrected Amplitude.

## Field Strength Measurement

Date Measurement Performed: Jan 09, 2001  
 EUT : ADSL Router / Bridge  
 Testing Mode : AR-5153  
 Testing Mode : Receiving / Transmitting  
 Polarity : Horizontal  
 Temperature : 25°C  
 Humidity : 54%RH

Frequency (MHz)	Reading Amplitude (dBμV/m)	Table Degree (°)	Antenna Height (Meter)	Correction Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
35.330	21.81	5	1.00	11.20	33.01	40.00	-6.99
141.318	27.40	313	3.00	12.73	40.13	43.50	-2.87
247.296	25.94	323	1.00	12.02	37.97	46.00	-8.03
317.965	29.93	272	1.00	14.22	44.15	46.00	-1.85
441.603	21.91	185	1.00	17.28	39.19	46.00	-6.81
***							

Remark:  
 1. The “ Correction Factor “ contains antenna factor, cable loss.  
 2. The formula of “ Corrected Amplitude “ is as follow”  
 Reading Amplitude + Correction Factor = Corrected Amplitude.

## **Appendix B: The Test Photograph of EUT**