# Wireless LAN Card

Wireless PC Card (CardBus)
 Wireless Mini PCI Adapter
 Wireless PCI Adapter

IEEE 802.11b/g

# **User Manual**

Rev. 1.0 May 2004

# FCC Information to User



# **FCC** Caution

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

# FCC Guidelines for Human Exposure

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device and its antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

# **Regulatory Compliance Information**

This section includes user requirements for operating this product in accordance with National laws for usage of radio spectrum and operation of radio devices. Failure of the end-user to comply with the applicable requirements may result in unlawful operation and adverse action against the end-user by the applicable National regulatory authority.

# FCC Requirements for Operation in the United States

### **Radio Frequency Interference Warnings & Instructions**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following methods: 1 User Manual for the Wireless LAN Card

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment into an electrical outlet on a circuit different from that which the radio receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

Modifications made to the product could void the user's right to operate the equipment.

# **Europe - EU Declaration of Conformity**



This device is a 2.4 GHz low power RF device intended for home and office use in EU and EFTA member states. In some EU / EFTA member states some restrictions may apply. Please contact local spectrum management authorities for further details before putting this device into operation.

Note: CE certificate is not applied for module.

# **R&TTE Compliance Statement**

This equipment complies with all the requirements of DIRECTIVE 1999/5/CE OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of March 9, 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE). The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8, 2000.

# Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

# **Requirements For Operation in the European Community** Countries of Operation and Conditions of Use in the European Community

The user should run the utility program provided with this product to check the current channel of operation and confirm that the device is operating in conformance with the spectrum usage rules for European Community countries as described in this section. This device is intended to be operated in all countries of the European Community.

# **Operation Using 2.4 GHz Channels in France**

The following radio channel usage limitations apply in France.

The radio spectrum regulator in France, Autorité de regulation des telecommunications (ART), enforces the following rules with respect to use of 2.4GHz spectrum in various locations in

France. Please check ART's web site for latest requirements for use of the 2.4GHz band in France: http://www.art-telecom.fr/eng/index.htm.

When operating in the following metropolitan regions (départements) in France, this device may be operated under the following conditions:

• Indoors using any channel in the 2.4-2.4835 GHz band (Channels 1-13)

• Outdoors using channels in the 2.4-2.454 GHz band (Channels 1-7)

When operating outside of the following regions (départements) in France such as Guadeloupe, Martinique, St Pierre et Miquelon, Mayotte, this product can be operated under the following conditions:

• Indoors using any channel in the 2.4-2.4835 GHz band (Channels 1-13)

• Outdoors using any channel in the 2.4-2.4835 GHz band (Channels 1-13)

When operating outside of the following regions (départements) in France such as Réunion and Guyana, this product can be operated under the following conditions:

• Indoors using any channel in the 2.4-2.4835 GHz band (Channels 1-13)

• Outdoors using channels in the 2.420-2.4835 GHz band (Channels 3-13)

Please refer to the ART web site for further details.

Metropolitan Regions:

| 01 | Ain             | 36 | Indre               | 69 | Rhône                 |
|----|-----------------|----|---------------------|----|-----------------------|
| 02 | Aisne           | 37 | Indre et Loire      | 70 | Haute Saône           |
| 03 | Allier          | 39 | Jura                | 71 | Saône et Loire        |
| 05 | Hautes Alpes    | 41 | Loir et Cher        | 72 | Sarthe                |
| 08 | Ardennes        | 42 | Loire               | 75 | Paris                 |
| 09 | Ariège          | 45 | Loiret              | 77 | Seine et Marne        |
| 10 | Aube            | 50 | Manche              | 78 | Yvelines              |
| 11 | Aude            | 54 | Meurthe et Moselle  | 79 | Deux Sèvres           |
| 12 | Aveyron         | 55 | Meuse               | 82 | Tarn et Garonne       |
| 16 | Charente        | 57 | Moselle             | 84 | Vaucluse              |
| 19 | Corrèze         | 58 | Nièvre              | 86 | Vienne                |
| 2A | Corse Sud       | 59 | Nord                | 88 | Vosges                |
| 2B | Haute Corse     | 60 | Oise                | 89 | Yonne                 |
| 21 | Côte d'Or       | б1 | Orne                | 90 | Territoire de Belfort |
| 24 | Dordogne        | 63 | Puy de Dôme         | 91 | Essonne               |
| 25 | Doubs           | 64 | Pyrénées Atlantique | 92 | Hauts de Seine        |
| 26 | Drôme           | 65 | Hautes Pyrénées     | 93 | Seine St Denis        |
| 27 | Eure            | 66 | Pyrénées Orientales | 94 | Val de Marne          |
| 32 | Gers            | 67 | Bas Rhin            |    |                       |
| 35 | Ille et Vilaine | 68 | Haut Rhin           |    |                       |

# **Table of Contents**

| Chapter 1 | Introduction  | .6  |
|-----------|---|-----|
|           | 1.1 Preface   | .6  |
|           | 1.2 Key Features                                      | .6  |
|           | 1.3 Kit Contents                                      | .6  |
|           | 1.4 System Requirements                               | .6  |
|           | 1.5 LED Definition                                    | .6  |
|           | 1.6 Two Basic Operating Modes                         | .7  |
|           | 1.7 Location and Range                                | .7  |
| Chapter 2 | Basic Installation                                    | . 8 |
|           | 2.1 Install the Wireless LAN Card                     | . 8 |
|           | 2.2 Install the Driver and Software Utility           | . 8 |
|           | 2.3 Uninstall the Driver and Software Utility         | 11  |
| Chapter 3 | Quick Start to Join in an Open Wireless Network       | 14  |
| Chapter 4 | Software Utility - WLAN Configuration Utility         | 16  |
|           | 4.1 Overview  | 16  |
|           | 4.2 Profiles Tab                                      | 16  |
|           | 4.2.1 Profiles List Section                           | 16  |
|           | 4.2.2 Buttons   | 17  |
|           | 4.2.3 Icon  | 17  |
|           | 4.3 Link Status Tab                                   | 17  |
|           | 4.4 Site Survey Tab                                   | 18  |
|           | 4.4.1 Site Section                                    | 18  |
|           | 4.4.2 Buttons   | 18  |
|           | 4.4.3 lcons   | 18  |
|           | 4.5 Statistics Tab                                    | 19  |
|           | 4.5.1 Transmit Statistics Section                     | 19  |
|           | 4.5.2 Receive Statistics Section                      | 19  |
|           | 4.5.3 Button  | 19  |
|           | 4.6 Advance Tab                                       | 20  |
|           | 4.6.1 Drop Menu Section                               | 20  |
|           | 4.6.2 Checkbox Section                                | 20  |
|           | 4.6.3 Icons & Buttons Section                         | 20  |
|           | 4.7 About Tab   | 21  |
|           | 4.8 Add Profile                                       | 21  |
|           | 4.8.1 Configuration Tab                               | 22  |
|           | 4.8.2 Authentication & Security Tab                   | 23  |
| Chapter 5 | Configuration   | 26  |
|           | 5.1 Connect to an Access Point in Infrastructure Mode | 26  |
|           | 5.2 Connect to an Ad Hoc Station                      | 28  |
|           | 5.3 Start a New Ad Hoc Wireless Network               | 29  |
|           | 5.4 Start a New Infrastructure Wireless Network       | 31  |
|           | 4 User Manual for the Wireless LAN Card               | 1   |

| Chapter 6 | Activate the Software AP Function                    |    |
|-----------|--|----|
|           | 6.1 Introduction                                     |    |
|           | 6.2 Bridge Connections                               |    |
| Chapter 7 | Software Utility - WLAN SoftAP Configuration Utility | 34 |
|           | 7.1 Overview   | 34 |
|           | 7.2 Config Tab                                       | 35 |
|           | 7.2.1 Config Tab                                     | 35 |
|           | 7.2.2 Security Button                                |    |
|           | 7.3 Access Control Tab                               |    |
|           | 7.4 WDS Tab  |    |
|           | 7.5 MAC Table Tab                                    |    |
|           | 7.6 Event Log Tab                                    |    |
|           | 7.7 Statistics Tab                                   |    |
|           | 7.7.1 Transmit Statistics Section                    | 41 |
|           | 7.7.2 Receive Statistics Section                     | 41 |
|           | 7.7.3 Button   | 41 |
|           | 7.8 About Tab  | 41 |
| Chapter 8 | Troubleshooting                                      |    |

## 1.1 Preface

The Wireless LAN Card frees you from traditional Ethernet wiring and helps you connect to an existing wireless network for sharing your broadband cable or DSL Internet access. It is designed for computers running Microsoft® Windows® 98SE, ME, 2000 and XP operating systems. Its auto-sensing capability allows high packet transfer at up to 54 Mbps for maximum throughput or dynamic range shifting to lower speeds due to distance or operating limitations in an environment with a lot of electromagnetic interference. The power saving capability eliminates from wasting power especially in Laptop PC. This card complies with 2.4GHz IEEE 802.11b/g standards and can protect data integrity with enterprise-level WPA security. With the additional software AP function, you can easily convert your PC into an Access Point virtually. You can setup this card as a Client Station or an Access Point via a powerful WLAN management software utility stored in the packaged CD. This accommodating dual-functionality makes it your best choice to cooperate with a PC with no cabling hassle.

## **1.2 Key Features**

- Operate at 2.4GHz unlicensed frequency with data transmission rate up to 54Mbps
- IEEE standards support: IEEE 802.11b, 802.11g
- Advanced security features including WEP, WPA and WPA2
- · 32-bit CardBus / Mini PCI type IIIB / 32-bit PCI Rev. 2.2 interface
- · Full-featured WLAN management software utility
- Compatible with Windows 98SE, ME, 2000 and XP

# 1.3 Kit Contents

- Wireless LAN Card (PC Card (CardBus) / Mini PCI Adapter / PCI Adapter)
- · Set-up CD with user manual & software utility

# **1.4 System Requirements**

A computer must be at least equipped with the following requirements:

- available PC Card slot / Mini PCI slot / PCI slot
- CD-ROM drive
- Microsoft® Windows® 98SE, ME, 2000 or XP operating system
- Pentium® II 450MHz or faster processor
- 64 Mbytes RAM
- 50 Mbytes free hard disk space

# 1.5 LED Definition

Ready: lit when the card is plugged in and ready to transmit or receive

• Link/Act: lit when the card is wirelessly connected; flash when it is transmitting or receiving Note: Mini PCI Adapter has no LED indicators; PCI Adapter only has Link/Act LED.

User Manual for the Wireless LAN Card

# 1.6 Two Basic Operating Modes

This card can be operated in the following two basic modes:

- 1. Infrastructure Mode: An 802.11 networking framework in which devices and computers communicate with each other by first going through an Access Point (AP). For example, this mode is used when computers in a house connect to an AP that is attached to a router that lets multiple computers share a single Cable or DSL broadband Internet connection.
- 2. Ad Hoc Mode: An 802.11 networking framework in which devices or computers communicate directly with each other, without the use of an AP. For example, Ad Hoc Mode is used when two Windows computers are configured with file and print sharing enabled and you want to exchange files directly between them.

Both of these configuration options are available with this card and are instructed in this user manual.



# 1.7 Location and Range

Computers can connect over wireless networks indoors at a range that vary significantly based on the physical location of the computer with this card. For best results, avoid potential sources of interference, such as: large metal surfaces, microwaves ovens or 2.4GHz cordless phones. In general, wireless devices can communicate through walls. However, if the walls are constructed with concrete, or have metal, or metal mesh, the effective range will decrease between the devices.

# 2.1 Install the Wireless LAN Card

- 1. Make sure this card is firmly installed in your PC.
- 2. Turn on your PC and log in the operating system.

# 2.2 Install the Driver and Software Utility

1. Insert the packaged CD into your CD-ROM drive. The CD will automatically start to install the driver and utility into your PC.



2. Click Yes to proceed the WLAN Utility installation.



3. The utility shortcut will appear on your desktop.



4. For Windows XP users, you will be asked to select the software utility installed or the Windows XP Wireless Zero Configuration. This manual instructs the former.



5. The installation completes after a little while. You will see this card's system tray icon on the lower right portion of the Windows task bar.



10

User Manual for the Wireless LAN Card

## 2.3 Uninstall the Driver and Software Utility

1. Open Control Panel.



2. Double click Add or Remove Programs.



3. Select the Change or Remove Programs, and select the Wireless LAN Card from the list.

| a 🐻 Add or R                                | move Programs                         |   |                      |               |
|---|---------------------------------------|---|----------------------|---------------|
| B   | Currently installed programs:         |   | Sort by: Name        | ~             |
| C <u>h</u> ange or<br>Remove                | BIIntel(R) Extreme Graphics Driver    |   | Size                 | 2.16MB        |
| Programs                                    | SoundMAX                              | rivers                                  | Size                 | 12.48MB       |
| Add <u>N</u> ew<br>Programs                 | 15 Windows XP Hotrix (SP2) Q815485    |   | Size                 | <u>1.51MB</u> |
| Add/Remove<br><u>W</u> indows<br>Components | To change this program or remove it f | rom your computer, click Change/Remove. | Change               | /Remove       |
| Set Program<br>Access and                   |                                       |   |                      |               |
| Defaults                                    |                                       |   |                      |               |
|   |                                       |   |                      |               |
|   |                                       |   |                      |               |
|   |                                       |   | Add or Remove Progra | ims           |
| start                                       | 🍟 2-3-2 - Paint 🧊 🔂 Control I         | Panel 🐻 Add or Remove Pro               | igs                  | 10:45         |

#### 4. Click the Change/Remove button.

|  | Currently installed programs:  |   | Sort by: Name | ~             |
|--|--|---|---------------|---------------|
| C <u>h</u> ange or<br>Remove   | 🕞 Intel(R) Extreme Graphics Driver   |   | Size          | 2.16MB        |
| Programs   | Intel(R) PRO Network Adapters and Drive     SoundMAX     Windows XP Hotfix (SP2) Q815485 | rs  | Size          | 12,48MB       |
| Add <u>N</u> ew<br>Programs  | 명 Wireless LAN Card  |   | Size          | <u>1.51MB</u> |
| Add/Remove<br>Windows<br>Components<br>Components<br>Set Program<br>Access and<br>Defaults | To change this program or remove it from   | your computer, click Change/Remove.<br>ninstall driver, please wait | Change        | /Remove       |
|  |  |   |               |               |

5. Select Yes, I want to restart my computer now., and then click Finish.

| CLED   |                                 | 2010 09.   | Name   | ×             |
|--|---------------------------------|--|--------|---------------|
| C <u>h</u> ange or<br>Remove<br>Programs       | Intel(R) Extreme Graphics Drive | er   | Size   | 2.16MB        |
| <b>*</b>                                       |                                 | InstallShield Wizard Complete  | Size   | 12,48MB       |
| Add <u>N</u> ew<br>Programs                    |                                 | The InstallShield Wizard has successfully installed %P. Before<br>you can use the program, you must restart your computer. | Size   | <u>1.51MB</u> |
| Add/Remove<br><u>Windows</u>                   |                                 | Yes, I want to restart my computer now.  | Change | /Remove       |
|  |                                 | C No, I will restart my computer later.  |        |               |
| Set Pr <u>o</u> gram<br>Access and<br>Defaults |                                 | Remove any disks from their drives, and then click Finish to<br>complete setup.  |        |               |
| Del duits                                      |                                 |  |        |               |
|  |                                 | < Back Finish Cancel   |        |               |
|  |                                 |  | _      |               |

# Chapter 3 Quick Start to Join in a Wireless Network

1. Double click the *card's system tray icon* to open the software utility – WLAN Configuration Utility.



2. Click the Site Survey tab.

| ſ                     | WI AN Configura                 | tion Utility                 |       |     | 250   |         |                |       |
|-----------------------|---------------------------------|------------------------------|-------|-----|-------|---------|----------------|-------|
|                       | Profile   Link Status           | Site Survey Statistics       | Adva  | nce | About |         |                | 1     |
| -                     | SSID                            | BSSID                        | Sig   | C   | Encry | Authent | Network T      |       |
|                       |                                 | 00-0C-55-00-84               | 50%   | 2   | None  | Unknown | Infrastruct    | Sec   |
| 1000                  | 3Com                            | 00-08-AC-E7-C                | 18%   | 4   | None  | Unknown | Infrastruct    |       |
|                       | conexant                        | 00-0A-E9-00-37               | 39%   | 6   | None  | Unknown | Infrastruct    |       |
|                       | ddddd                           | 00-07-40-DA-AD               | 10    | 11  | None  | Unknown | Infrastruct    |       |
|                       | USR5450                         | 00-C0-49-A9-76               | 10    | 11  | None  | Unknown | Infrastruct    |       |
| -                     |                                 |                              |       |     |       |         |                | -     |
|                       |                                 |                              |       |     |       |         |                | -     |
|                       |                                 |                              |       |     |       |         |                |       |
|                       | Connected <> co                 | pnexant                      | Resca | n   | Conr  | iect    | Add to Profile |       |
|                       | 17                              |                              |       |     |       | ОК      | Help           |       |
| and the second second |                                 |                              |       | _   |       |         |                |       |
|                       | All states of the second states | Colora and the second second |       |     |       |         |                | Recyc |

User Manual for the Wireless LAN Card

3. This card will auto-select the best wireless network to connect. You can also select one network with strongest signal and no security, and click the *Connect* button. A Connected icon will appear when the card is linked to the selected network.

|   | WLAN Configura        | tion Utility                 |          |        |             |                 |                    |              |
|---|-----------------------|------------------------------|----------|--------|-------------|-----------------|--------------------|--------------|
|   | Profile   Link Status | Site Survey Statistics       | Adva     | ance   | About       |                 |                    | - Angel      |
| -   | SSID                  | BSSID                        | Sig      | C      | Encry       | Authent         | Network T          |              |
| and the second se |                       | 00-0C-55-00-8A               | 50%      | 2      | None        | Unknown         | Infrastruct        |              |
| 1000  | 3Com                  | 00-08-AC-E7-C                | 18%      | 4      | None        | Unknown         | Infrastruct        | Con .        |
|   | 🚽 駴 conexant          | 00-0A-E9-00-37               | 39%      | 6      | None        | Unknown         | Infrastruct        | 1            |
| 5   | ddddd                 | 00-07-40-DA-AD               | 10       | 11     | None        | Unknown         | Infrastruct        | 10 C 100     |
| $\land$   | USR5450               | 00-C0-49-A9-76               | 10       | 11     | None        | Unknown         | Infrastruct        |              |
|   |                       |                              |          |        |             |                 |                    |              |
|   |                       |                              |          |        |             |                 |                    | -            |
|   |                       |                              |          |        | 1           | 1               |                    |              |
|   |                       | onexant                      | Resca    | n      | Con         | nect .          | Add to Profile     |              |
|   |                       |                              |          |        |             | OK              | Help               | C. States in |
| and the second second   | atter sectors and the | and the second second second | 120 Cast | 9.1.17 | STATISTICS. | and a statement | the sheet find the |              |

4. Refer to <u>Chapter 5 Configuration</u> for more configuration details.

# Chapter 4 Software Utility - WLAN Configuration Utility

#### 4.1 Overview

- <u>Profiles</u>: A set of preset system parameters, or "snapshots", of the available APs within a wireless network. You can record these "snapshots". After this card is connected to an AP, you can save the system parameters as these specific profiles. It significantly minimizes access time to the same wireless network while this card is initializing.
- <u>Link Status</u>: A status screen that tells you information of this card and link condition of the current network.
- <u>Site Survey</u>: Initiate a survey of the current available wireless networks and display these APs, the Ad Hoc stations, and their associated information.
- <u>Statistics</u>: Monitor the card's current traffic activity when connected to a wireless network.
- <u>Advance</u>: Configure advanced operation parameters and display extra options. Note that some options are not supported currently.
- <u>About</u>: Hardware information of this card and its software elements.

## 4.2 Profiles Tab

|   | WLAN Configu         | uration Utilit | у            |                |            |                |                   |
|---|----------------------|----------------|--------------|----------------|------------|----------------|-------------------|
|   | Profile   Link Statu | s Site Survey  | Statistics A | dvance   About |            |                |                   |
| -   | Profile Name         | SSID           | Channel      | Authentication | Encruption | Network Tupe   |                   |
| and the second se | PB0F1                | CISCO          | Auto         | Open           | None       | Infrastructure | 250               |
| 1000  | PB0F2                | DUNK           | Auto         | Open           | None       | Infrastructure | 200               |
|   | PB0F3                | 3COM           | Auto         | Open           | None       | Infrastructure | A CONTRACTOR      |
|   | PB0F4                | USB            | Auto         | Open           | None       | Infrastructure | 1000              |
|   | PROF5                | conexant       | Auto         | Open           | None       | Infrastructure | and the second    |
|   |                      |                |              |                |            |                |                   |
|   |                      |                |              |                |            |                |                   |
|   |                      |                |              |                |            |                |                   |
|   |                      |                |              |                |            |                |                   |
|   |                      |                |              |                |            |                | Statio Land       |
|   | <                    |                |              |                |            | >              |                   |
|   | Add                  |                | Delete       | Edit           |            | Activate       |                   |
|   |                      |                |              |                |            |                |                   |
|   |                      |                |              |                | OK         | Help           | the second second |

#### 4.2.1 Profiles List Section

- <u>Profile Name</u>: List all profiles you named.
- <u>SSID</u>: The specific name of each AP or Ad Hoc station in your profiles.
- <u>Channel</u>: Current channel adopted by this network.
- <u>Authentication</u>: The authentication type adopted by each AP or Ad Hoc station.

- <u>Encryption</u>: The encryption type adopted by each AP or Ad Hoc station.
- <u>Network Type</u>: Infrastructure mode or Ad Hoc mode.

#### 4.2.2 Buttons

- <u>Add</u>: Define a new profile. Refer to <u>4.8 Profile</u>.
- <u>Delete</u>: Delete a profile.
- Edit: Alter an existing profile.
- <u>Activate</u>: Connect the card to the selected network.

#### 4.2.3 Icon

- <u>V</u> <u>Connected</u>: Connection built with this specified network.
- <u>M</u> <u>Disconnected</u>: Fail to build connection with this specified network.

#### 4.3 Link Status Tab

| PaCopfig25   | S. M.         | (d)             |             |                 | 1                |         | 2    |      |   |            |
|--------------|---------------|-----------------|-------------|-----------------|------------------|---------|------|------|---|------------|
| Katonigzon ( | -             |                 |             |                 |                  |         |      |      |   | d-chill    |
|              | Profile       | N Configure     | site Survey | y<br>Statistics | Advance Abo      | ut I    |      |      |   | 2          |
|              |               | Status :        |             | conexan         | t <> 00-0A-E9-00 | )-37-AC |      |      |   |            |
|              |               | Current Chann   | el :        | 6 <> 24         | 37000 KHz        |         |      |      |   |            |
|              | le le         | Link Speed (M   | bps):       | ΤX              | 11.0             | RX      | 11.0 |      |   |            |
|              |               | Throughtput (k  | (bps) :     | ΤX              | 0.0              | RX      | 5.7  |      |   | 5          |
|              |               | Link Quality :  |             | Good            | 81%              |         |      |      | - | <b>1</b>   |
|              |               | Signal Strengtl | n:          | Good            | 37%              | ⊢ dB    | m    |      |   |            |
|              |               | Noise Level :   |             | Low             | 36%              |         |      |      |   |            |
|              |               |                 |             |                 |                  |         | эк   | Help |   | 2          |
|              |               |                 |             |                 |                  |         |      |      | R | ecycle Bin |
| 🛃 start      | 🦉 4-4 - Paint |                 |             |                 |                  |         |      | 1    |   | 1:52 AM    |

- <u>Status</u>: SSID and BSSID of the currently connected network.
- <u>Current Channel</u>: Current channel and its corresponding frequency.
- <u>Link Speed (Mbps)</u>: The data transfer speed adopted by this network (measured in Mbits per second).
- <u>Throughput (Kbps)</u>: Current transmit rate (TX) and receive rate (RX) (measured in Kbits per second).
- <u>Link Quality</u>: Throughput Level where 100% equals the maximum connection quality.
- <u>Signal Strength</u>: The receive signal strength level. Check the <u>dBm</u> checkbox to display in

dBm format.

• <u>Noise Level</u>: Current interference level where 0% equals the best connection quality.

# 4.4 Site Survey Tab

| WI AN Confi  | ouration Utility     |               |        | 200          |           |                   |   |
|--|----------------------|---------------|--------|--------------|-----------|-------------------|---|
| Profile   Link Sta   | atus Site Survey Sta | atistics Adva | ance   | About        |           |                   |   |
| SSID   | BSSID                | Sig           | C      | Encry        | Authent   | Network T         |   |
|  | 00-00-55-00-         | 8A 50%        | 2      | None         | Unknown   | Infrastruct       | 0.7   |
| 3Com   | 00-0B-AC-E7          | -C 18%        | 4      | None         | Unknown   | Infrastruct       |   |
| 😽 conexan  | t 00-0A-E9-00        | 37 39%        | 6      | None         | Unknown   | Infrastruct       |   |
| ddddd  | 00-07-40-DA          | -AD 10        | 11     | None         | Unknown   | Infrastruct       |   |
| USR545   | 0 00-C0-49-A9        | -76 10        | 11     | None         | Unknown   | Infrastruct       |   |
|  |                      |               |        |              |           |                   |   |
|  |                      |               |        |              |           |                   |   |
|  |                      |               |        |              |           |                   |   |
| Connected <  | > conexant           | Resca         | n      | Con          | nect .    | Add to Profile    |   |
|  |                      |               |        |              | 04        |                   |   |
| and the second   |                      |               |        |              | UK        |                   |   |
| and the second sec | - Minnester William  | Anter Second  | n siar | STILL TO NO. | and Moets | the second second | and the state of the |

### 4.4.1 Site Section

- <u>SSID</u>: The name of each AP or Ad Hoc station.
- <u>BSSID</u>: The MAC address of SSID.
- <u>Signal</u>: Indicate each associated network's link quality measured in percentage.
- <u>Channel</u>: Current channel adopted by this network.
- <u>Encryption</u>: The encryption type adopted by each AP or Ad Hoc station.
- <u>Authentication</u>: The authentication type adopted by each AP or Ad Hoc station.
- <u>Network Type</u>: Infrastructure mode or Ad Hoc mode.

### 4.4.2 Buttons

- <u>Rescan</u>: Update associated networks.
- <u>Connect</u>: Connect to the selected network.
- <u>Add Profile</u>: Save the selected network connection status into a profile. Refer to <u>4.8 Add</u> <u>Profile</u>.

#### 4.4.3 Icons

<u>Connected</u>: Connection built with this specified network. A status bar on the left-bottom side of the window will show the connected SSID.

# 4.5 Statistics Tab

|                       | A Real Contraction                                 | Sec.    | 2 Carel                               | C. T. alar   |
|-----------------------|--|---------|---------------------------------------|--|
| RaConfig25.           |  |         | 1 × 12                                |  |
| 5 - E - S             | WI AN Configuration Utility                        | 22-12-1 |                                       |  |
|                       | Profile Link Status Site Survey Statistics Advance | About   |                                       | A second   |
| ×                     | ← Transmit Statistics                              |         |                                       |  |
|                       | Frames Transmitted Successfully                    | -       | 135                                   | and the second |
| 1                     | Frames Transmitted Successfully without Retry      | =       | 131                                   | Sec. 199   |
|                       | Frames Transmitted Successfully after Retry        | =       | 4                                     | the second s   |
|                       | Frames Fail to Receive ACK After all Retries       | =       | 1                                     | and the second   |
|                       | RTS Frames Successfully Receive CTS                | =       | 0                                     | and the second   |
|                       | RTS Frames Fail to Receive CTS                     | =       | 0                                     |  |
|                       | Receive Statistics                                 |         |                                       | - and a second   |
|                       | Frames Received Successfully                       | =       | 7                                     |  |
| ments. a              | Frames Received with CRC Error                     | =       | 1                                     | And and and and and and  |
|                       | Frames Dropped due to Out-of-Resource              | =       | 0                                     |  |
|                       | Duplicate Frames Received                          | =       | 0                                     |  |
|                       |  |         | Reset Counter                         |  |
|                       |  |         |                                       |  |
| Bar Maria Carl Street |  |         |                                       |  |
| C MORE PARTY          |  |         | ····································· | Recycle Bin  |
|                       |  |         | Contraction (                         |  |
| 🛃 start               | 🦉 4-6 - Paint                                      |         |                                       | 🛪 🔄 💽 1:52 AM  |

#### 4.5.1 Transmit Statistics Section

- <u>Frames Transmitted Successfully</u>: The number of successfully transmitted frames.
- <u>Frames Transmitted Successfully without Retry</u>: The number of successfully transmitted frames without any retry.
- <u>Frames Transmitted Successfully after Retry</u>: The number of successfully transmitted frames with one or more retries.
- <u>Frames Fail to Receive ACK After all Retries</u>: The number of unsuccessfully transmitted frame with many retries.
- <u>RTS Frames Successfully Receive CTS</u>: The number of successfully received the CTS (Clear To Send) response after this card sends out the RTS (Request To Send) message.
- <u>RTS Frames Fail to Receive CTS</u>: The number of unsuccessfully received the CTS response after this card sends out the RTS message.

#### 4.5.2 Receive Statistics Section

- <u>Frames Received Successfully</u>: The number of successfully received frames.
- <u>Frames Received with CRC Error</u>: The number of received frames with CRC (Cyclical Redundancy Checking) error.

19

- Frames Dropped due to Out-of-Resource: The number of dropped frames.
- <u>Duplicate Frames Received</u>: The number of duplicate frames.

#### 4.5.3 Button

• <u>Reset Counters</u>: Restart the displayed statistics.

## 4.6 Advance Tab

| RaConfig25          | a tra                     |                                     | No.                              | 14    |          |                |
|---------------------|---------------------------|-------------------------------------|----------------------------------|-------|----------|----------------|
|                     |                           |                                     | A Sector                         |       | ALC: N   | Margaret .     |
|                     | 🖉 WLAN Configurat         | ion Utility                         |                                  |       |          |                |
| 1.1                 | Profile   Link Status   S | ite Survey Statistics               | Advance About                    |       |          | and and the    |
|                     | Wireless mode             | 802.11b/g mix                       | •                                |       |          | 1000           |
|                     | Ad Hoc mode               | 802.11b only                        | •                                |       |          |                |
|                     | Tx BURST                  |                                     | 802.11b/g Protection             | Auto  | •        | and the second |
|                     |                           |                                     | Tx Rate                          | Auto  | -        |                |
| en in saint she     | Tx turbo rate             |                                     |                                  |       |          |                |
|                     | 🔽 Use short slot tir      | ne                                  |                                  |       |          |                |
|                     | Turn off I                | RF                                  |                                  | Apply |          |                |
|                     |                           |                                     | [                                |       | teln     |                |
| Statistical and and |                           | and the second states of the second | Construction of the owner of the |       | ·        | 3              |
|                     |                           |                                     |                                  |       |          | Recycle Bin    |
| 🛃 start             | 🦉 4-7 - Paint             |                                     |                                  |       | <b>1</b> | 1:52 AM        |

#### 4.6.1 Drop Menu Section

- <u>Wireless mode</u>: Choose 802.11b only mode or 802.11b/g mix mode.
- <u>Ad Hoc mode:</u> When starting Ad Hoc network, you can specify 802.11b only mode or 802.11b/g mix mode.
- <u>802.11b/g Protection</u>: 802.11b uses CCK modulation and 802.11g uses CCK–compatible OFDM modulation. Enable this to prevent the data collision in the concurrent 802.11b/g network. Auto (auto-detect) selection is recommended.
- <u>Tx Rate</u>: The selected link rate.

#### 4.6.2 Checkbox Section

- <u>Tx BURST</u>: Check to enable the card to transmit more data in a frame interval.
- <u>Tx turbo rate</u>: Enhance the data rate transmitted up to 72/100Mbps. This checkbox is currently disabled.
- <u>Use Short Slot Time</u>: Enhance the data rate with Short Slot Time mechanism. This checkbox is currently disabled.

#### 4.6.3 Icons & Buttons Section

- **Radio On**: Enable radio transmission.
- **Radio Off:** Disable radio transmission.
- <u>Apply</u>: Confirm your settings.

# 4.7 About Tab

| RaConfig25  |             | 6.2                     |                 |               | 14                |      | A. Same       |
|-------------|-------------|-------------------------|-----------------|---------------|-------------------|------|---------------|
|             |             | N C                     | 1124            |               |                   |      | a second      |
|             | Profile     | Link Status   Site Surv | ey   Statistics | Advance Abou  | t                 |      | 1             |
|             |             | Utility Version :       | 2.0.1.3         | Date :        | 04-21-2004        |      |               |
|             |             | Driver Version :        | 2.2.2.0         | Date :        | 03-14-2004        |      | -             |
|             |             | EEPROM Version :        | 1.1             | MAC Address : | 00-40-D1-00-01-01 |      |               |
|             |             |                         |                 |               | OK                | Help | Recycle Bin   |
| 🛃 start 🛛 🙀 | 4-5 - Paint |                         |                 |               |                   | 2    | 👫 😹 🚬 1:51 AM |

21

- <u>Utility Version</u>: Version and released date of this card's utility.
- <u>Driver Version</u>: Version and released date of this card's driver.
- <u>EEPROM Version</u>: Version of this card's firmware.
- <u>MAC Address</u>: MAC address of this card.

# 4.8 Add Profile

- <u>Profile Name</u>: Assign a name to this profile.
- <u>SSID</u>: Name of the network you want to connect.

#### 4.8.1 Configuration Tab

| RaConfig25 |  |
|------------|--|
|            | Add Profile  |
| 1          | Configuration Authentacion and Security  |
|            | Power Saving Mode  CAM (Constantly Awake Mode)  Duse Constantly Awake Mode when AC Power is used   |
|            | Network Type     Infrastructure     T× Power     100 %       Preamble     Auto     Image: Comparison of the second |
|            | □ RTS Threshold     0     1     2312     2312       □ Fragment Threshold     256     1     2312     2312   |
|            | OK Cancel Apply Help 🤯<br>Recycle Bin  |
| 🐉 start    | 👹 4-2 - Paint 🗾 😥 🕅 🔀 🚬 1:53 AM  |

- <u>Profile Name</u>: Specify a name for this profile.
- <u>SSID</u>: Specify a network name identified in the wireless network.
- <u>Power Saving Mode</u>: Select one power save scheme from <u>CAM (Constantly Awake Mode</u>) (No power save option adopted by the card.) and <u>Power Saving Mode</u> (Power Save option adopted by the card). Check <u>Use Constantly Awake Mode when AC Power is used</u> as long as your PC uses external power supply. This setting will affect the battery life of the host of the card.
- <u>Network Type</u>: Select Infrastructure mode or Ad Hoc mode adopted by this network.
- <u>TX Power</u>: Select the transmit power of this card. 100% is recommended.
- <u>Preamble</u>: Select the length of the CRC block for communication between the AP and this card. Make sure to select the appropriate preamble type the same as AP's. High network traffic areas should use the shorter preamble type. Auto (follow AP's preamble type) selection is recommended. This field is supported only in Infrastructure mode and currently disabled.
- <u>RTS Threshold</u>: Designed to prevent the Hidden Node issue, a problem happens in the wireless network when two wireless adapters served by the same AP can't communicate each other or have collision. Normally, the value of RTS Threshold is needless to change. The default value is 2312.
- <u>Fragment Threshold</u>: Enable to increase the transmission efficiency by split mechanism. The default value is 2312.

#### 4.8.2 Authentication & Security Tab

| RaConfig25 |   |
|------------|---|
|            |   |
|            | Configuration Authentacion and Security   Authenticaion Type : None   Encryption : WEP   WPA Pre-Shared Key :   Wep Key   Key#1   Hex   Key#3   Hex   Key#4 |
| ti start   | OK Cancel Apply Help<br>Recycle Bin<br>¥ 4-8-1 - Paint<br>1:54.AM   |

- Authentication Type: Select the Authentication type adopted by the network. These types include None, Open, Shared, WPA and WPA-PSK.
- <u>802.1X Setting</u>: This button is enabled when you choose Open/Shared/WPA authentication types. Below table lists all different authentication types that you can use. Each type requires unique certificate or ID/password. You may need to consult the network administrator about the 802.1X settings adopted by the wireless network.

| 802.11 Auth<br>Type | 802.1x Auth Type  | Tunnel Auth   | с  | C + A     | С + В     | C + A + B | A            | A+B          |
|---------------------|-------------------|---------------|----|-----------|-----------|-----------|--------------|--------------|
| OPEN                | PEAP              | MSCHAP v2     | ок | ок        | ок        | ок        |              | /            |
|                     |                   | TLS/Smartcard | /  | ок        | /         | ок        | $\backslash$ | /            |
|                     |                   | Token Card    | ок | ок        | ок        | ок        | /            | /            |
|                     | TLS/Smartcard     | No option     | /  | $\square$ |           |           | ок           | ок           |
|                     | TTLS              | CHAP          | ок | ок        | ок        | ок        | $\backslash$ | /            |
|                     | _                 | MS-CHAP       | ок | ок        | ок        | ок        |              | /            |
|                     |                   | MS-CHAP v2    | ок | ок        | ок        | ок        | /            | /            |
|                     |                   | PAP           | ок | ок        | ок        | ок        |              | /            |
|                     |                   | EAP-MD5       | ок | ок        | ок        | ок        |              | /            |
|                     | LEAP              | No option     | ок |           |           |           | $\backslash$ | /            |
|                     | MD5               | No option     | ок |           |           |           | /            | /            |
| Shared <sup>1</sup> | PEAP              | MSCHAP v2     | ок | ок        | ок        | ок        |              | /            |
|                     |                   | TLS/Smartcard |    | ок        | /         | ок        | /            | /            |
|                     |                   | Token Card    | ок | ок        | ок        | ок        | /            | /            |
|                     | TLS/Smartcard     | No option     |    |           |           |           | ок           | ок           |
| TTLS                | CHAP              | ок            | ок | ок        | ок        |           | /            |              |
|                     | MS-CHAP           | ок            | ок | ок        | ок        |           | /            |              |
|                     |                   | MS-CHAP v2    | ок | ок        | ок        | ок        |              | /            |
|                     |                   | PAP           | ок | ок        | ок        | ок        |              | /            |
|                     |                   | EAP-MD5       | ок | ок        | ок        | ок        |              | /            |
|                     | LEAP              | No option     | ок |           | $\square$ |           |              | /            |
|                     | MD5               | No option     | ок |           | $\square$ |           |              | /            |
| WPA                 | PEAP              | MSCHAP v2     | ок | ок        | ок        | ок        |              | /            |
|                     |                   | TLS/Smartcard |    | ок        |           | ок        | $\square$    | $\square$    |
|                     |                   | Token Card    | ок | ок        | ок        | ок        |              | /            |
|                     | TLS/Smartcard     | No option     |    |           |           |           | ок           | ок           |
|                     | TTLS              | CHAP          | ок | ок        | ок        | ок        | /            | /            |
|                     |                   | MS-CHAP       | ок | ок        | ок        | ок        | $\backslash$ | /            |
|                     |                   | MS-CHAP v2    | ок | ок        | ок        | ок        |              | /            |
|                     |                   | PAP           | ок | ок        | ок        | ок        |              | /            |
|                     |                   | EAP-MD5       | ок | ок        | ок        | ок        |              | $\backslash$ |
|                     | LEAP              | No option     | ок |           |           |           |              | /            |
| WPA-PSK             | Passphrase key on | у             |    |           |           |           |              | /            |

#### A: Use client certificate B: Use server certificate C: Type User/Password

- <u>Encryption</u>: Select the Encryption type adopted by the network. These types include None, WEP, TKIP and AES.
- <u>WPA Pre-Shared Key</u>: Input the key when using WPA-PSK authentication.
- <u>WEP Key</u>: Define up to four keys as follows:
  - Hex 
     40bits : 10 hexadecimal letters
  - Hex 104bits : 32 hexadecimal letters

- ASCII 40bits : 5 ASCII letters
- ASCII、104bits: 16 ASCII letters

# 5.1 Connect to an Access Point in Infrastructure Mode

- 1. Refer to Chapter 3 Quick Start to Join in a Wireless Network to proceed step 1 ~ 2.
- 2. Select an AP that is in Infrastructure Mode and click the *Connect* button.

| P               | WLAN Configurati<br>rofile   Link Status Si | on Utility<br>te Survey Statistics | Adva   | nce | About |         | ×              | at.                |
|-----------------|---|------------------------------------|--------|-----|-------|---------|----------------|--------------------|
| Sec. 1          | SSID  | BSSID                              | Sia    | 0   | Encry | Authent | Network T      |                    |
|                 | test1                                       | 66-80-30-2E-E.6-                   | 10     | 3   | WEP   | Unknown | Ad Hoc         |                    |
| 100 C           | orinoco: ap600g                             | 00-20-A6-4F-4D-                    | 10     | 11  | WEP   | Unknown | Infrastruct    | 22                 |
|                 | 3Com  | 00-08-AC-E7-C                      | 37%    | 4   | None  | Unknown | Infrastruct    |                    |
|                 | conexant                                    | 00-0A-E9-05-19                     | 10     | 6   | None  | Unknown | Infrastruct    | 100                |
|                 | AP  | 00-0C-55-00-8A                     | 89%    | 6   | None  | Unknown | Infrastruct    | and the second     |
|                 | AP7×B                                       | 00-0A-E9-00-2F                     | 76%    | 6   | None  | Unknown | Infrastruct    |                    |
| -               |   |                                    |        |     |       |         |                | Mar and a          |
| -united the     |   |                                    |        |     |       |         |                | at a               |
|                 |   |                                    |        |     |       |         |                | Contraction of the |
|                 |   |                                    |        |     |       |         |                | Selvisa.           |
|                 | Disconnected                                |                                    | Rescar | n   | Con   | nect /  | Add to Profile |                    |
|                 | 1   |                                    |        |     |       |         |                | -                  |
| e a golding the |   |                                    |        |     |       | OK      | Help           |                    |

3. You may need to input security key when the selected AP is adopting wireless security algorithm such as WEP, WPA, etc.

| RaConfig25 | in hade                                | , ,                  |             | X          |        |                |              |
|------------|--|----------------------|-------------|------------|--------|----------------|--------------|
|            | Authentication & Secur                 | ity                  |             |            |        |                |              |
| 1.84       | Authentication Typ                     | e:                   | Open        | . 💌        |        | 802.1X Setting | 100          |
| -          | Encryption Type:                       |                      | WEP         |            |        | •              |              |
|            | WPA Pre-Shared K<br>WEP Key<br>ⓒ Key#1 | iey:<br>Hexadeci     | mal 💌       | 0123456789 |        |                |              |
|            | ○ Key#2 ○ Key#3                        | Hexadeci<br>Hexadeci | imal 💌      |            |        |                |              |
|            | ○ Key#4                                | Hexadeci             | imal 💌      |            | CANCEL | 1              |              |
|            |  |                      |             |            | CANCEL |                | Recycle Bin  |
| 🐮 start    |  |                      | an of start |            |        |                | 🖹 📘 11:44 AM |

4. If the security key matches, a Connected icon will appear.

| F   | Profile   Link Status | Site Survey Statistics          | Adva      | nce    | About        |                    |                            |  |     |
|---|-----------------------|---------------------------------|-----------|--------|--------------|--------------------|----------------------------|--|-----|
| Charles and the second  | SSID                  | BSSID                           | Sig       | C      | Encry        | Authent            | Network T                  | Ť  |     |
| and the second se | test1                 | 66-80-30-2F-E6                  | 10        | 3      | WEP          | Unknown            | Ad Hoc                     | 961                                      |     |
| and the second se | orinoco:ap600         | g 00-20-A6-4F-4D                | 10        | 11     | WEP          | Unknown            | Infrastruct                |  |     |
| 5   | 3Com<br>conexant      | 00-0B-AC-E7-C<br>00-0A-E9-05-19 | 37%<br>10 | 4<br>6 | None<br>None | Unknown<br>Unknown | Infrastruct<br>Infrastruct |  |     |
|   | AP                    | 00-0C-55-00-8A                  | 89%       | 6      | None         | Unknown            | Infrastruct                | 1. | 0   |
|   | AP7XB                 | 00-0A-E9-00-2F                  | 76%       | 6      | None         | Unknown            | Infrastruct                |  |     |
|   |                       |                                 |           |        |              |                    |                            |  | •   |
| - THE WAR SHOW IN   |                       |                                 |           |        |              |                    |                            | extension of                             |     |
|   | 1                     |                                 |           |        |              |                    |                            | and the second second                    | 100 |
|   |                       |                                 |           |        |              |                    |                            | Statistics.                              |     |
| The second second   | 1                     |                                 |           |        |              |                    |                            |  |     |
|   | Connected <> ori      | noco:ap600g                     | Resca     | n      | Con          | nect .             | Add to Profile             |  |     |
|   | 17                    |                                 |           |        |              |                    |                            |  |     |
|   |                       |                                 |           |        |              | OK                 | Help                       | Contrast of the                          |     |

## 5.2 Connect to an Ad Hoc Station

- 1. Refer to Chapter 3 Quick Start to Join in an Open Wireless Network to proceed step 1 ~ 2.
- 2. Select a station that is in Ad Hoc mode and click the *Connect* button.

| Contraction of the second seco | VLAN Configuration | on Utility<br>e Survey Statistics | Adva   | nce   | About ] |           |                | at         |
|--|--------------------|-----------------------------------|--------|-------|---------|-----------|----------------|------------|
| han I  |                    |                                   |        | line. | 122     | for a 2 a |                |            |
|  | SSID               | BSSID                             | Sig    | C     | Encry   | Authent   | Network T      |            |
| and the second se  | crippes; apE00g    | 00.20 AC 4E 4D                    | 10     | 11    | V/EP    | Unknown   | Infrastruct    |            |
| and the second se  | 3Com               | 00-20-20-20-40-40-                | 20%    | 4     | None    | Unknown   | Infrastruct    |            |
|  |                    | 00-00-AC-E7-C                     | 65%    | 6     | None    | Unknown   | Infrastruct    | -          |
|  | conexant           | 00-04-E9-05-19-                   | 10     | 6     | None    | Unknown   | Infrastruct    | The second |
|  | AP                 | 00-0C-55-00-8A                    | 91%    | 6     | None    | Unknown   | Infrastruct    |            |
|  |                    |                                   |        |       |         |           |                |            |
|  |                    |                                   |        |       |         |           |                |            |
| and the second   |                    |                                   |        |       |         |           |                | 100        |
|  |                    |                                   |        |       |         |           |                |            |
|  |                    |                                   |        |       |         |           |                |            |
|  |                    |                                   |        |       |         |           |                |            |
|  |                    |                                   |        |       |         |           |                |            |
| ATT SALES  | Disconnected       |                                   | Bescar |       | Con     | nect      | Add to Profile |            |
|  | 1                  | 2                                 |        |       |         |           |                |            |
| -  |                    |                                   |        |       |         |           |                |            |
| es politik pirks   |                    |                                   |        |       |         | OK        | Help           |            |
|  |                    |                                   |        |       |         | ОК        | Help           |            |

3. You will need to input the security key when the selected station is adopting wireless security algorithm such as WEP, WPA-PSK, etc.

| Authenticatio | n & Security    |          |            |        |                | ×        |
|---------------|-----------------|----------|------------|--------|----------------|----------|
| Authentic     | ation Type:     | Open     |            |        | 802.1X Setting |          |
| Encryptio     | n Type:         | WEP      |            |        |                |          |
| WPA Pre-      | Shared Key:     |          |            |        |                |          |
| WEP Ke        | y<br>ey#1 Hexad | ecimal 💌 | 9876543210 |        |                | 20.2     |
| ск            | ey#2 Hexad      | ecimal 💌 |            |        |                |          |
| ск            | ey#3 Hexad      | ecimal 💌 |            |        |                | 10       |
| СК            | ey#4 Hexad      | ecimal 💌 |            |        |                |          |
|               |                 | ок       |            | CANCEL | ]              | ALC: NO. |
|               |                 |          |            |        |                |          |

User Manual for the Wireless LAN Card

4. If the security key matches, a Connected icon will appear.

|                                       | 1.3.1                       |  |               |     |               |               | 1                       | -                  | Ser        | -              |        |
|---------------------------------------|-----------------------------|--|---------------|-----|---------------|---------------|-------------------------|--------------------|------------|----------------|--------|
| RaConfig25                            |                             |  |               |     |               |               |                         | -                  |            | 1              |        |
|                                       |                             |  |               |     |               |               |                         | 10.42              | 100        | 100            | 1      |
|                                       |                             |  |               |     | 25048         |               |                         |                    |            | 5-215          | 2018   |
|                                       | <b>WLAN Configuration</b>   | on Utility   |               |     |               |               |                         |                    | 1.00       |                | 1      |
|                                       |                             |  |               |     |               |               |                         |                    |            |                |        |
| Pr                                    | ofile   Link Status Sit     | e Survey Statistics  | Adva          | nce | About         |               |                         |                    | 100        | Links          | -      |
| and the second second                 |                             |  |               |     |               |               |                         |                    |            | 1000           |        |
|                                       | SSID                        | BSSID  | Sig           | C   | Encry         | Authent       | Network T               | T                  |            | and the second |        |
|                                       | test1                       | 66-80-30-2F-E6   | 10            | 3   | WEP           | Unknown       | Ad Hoc                  |                    |            |                |        |
| 57                                    | orinoco:ap600g              | 00-20-A6-4F-4D   | 10            | 11  | WEP           | Unknown       | Infrastruct             |                    | Con and    |                | 1      |
|                                       | 3Com                        | 00-08-AC-E7-C  | 39%           | 4   | None          | Unknown       | Infrastruct             |                    | 1.         |                | 1      |
| V                                     | AP7XR                       | 00-0A-E9-00-2F   | 65%           | 6   | None          | Unknown       | Infrastruct             |                    | 1912 M     | 1.000          |        |
|                                       | conexant                    | 00-0A-E9-05-19   | 10            | 6   | None          | Unknown       | Infrastruct             |                    |            | 1000           |        |
|                                       | AP                          | 00-0C-55-00-8A   | 91%           | 6   | None          | Unknown       | Infrastruct             |                    |            |                |        |
|                                       |                             |  |               |     |               |               |                         |                    |            |                |        |
| and the second second second          |                             |  |               |     |               |               |                         |                    | 10.000     | 1              | The    |
| The strange strange                   |                             |  |               |     |               |               |                         |                    | and a      |                |        |
| and the second second second          |                             |  |               |     |               |               |                         |                    | a constant | Provente       | -      |
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| start                                 |                             |  |               |     |               |               |                         | 3 8                |            | 11:45          | AM     |

## 5.3 Start a New Ad Hoc Wireless Network

1. Refer to <u>4.8 Profile</u> to define a new profile.

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|------------|--|--|--|---|---|--|
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| N Confiel  | ration Utility   |  |  |   |   |  |
| Link Statu | s   Site Survey   SI                                       | tatistics A  | dvance About   | 6   |   | -  |
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| ofile Name | SSID   | Channel  | Authentication   | Encryption  | Network Type  |  |
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|            | N Configu<br>  Link Statu<br>ile List<br>ofile Name<br>Add | N Configuration Utility<br>Link Status   Site Survey   Si<br>ile List<br>ofile Name   SSID<br>Add   0<br>Add 0 | N Configuration Utility         Link Status       Site Survey         Ide List         ofile Name       SSID         Channel         Ide List         ofile Name       SSID         Channel         Ide List         ofile Name       SSID         Channel         Ide List         ofile Name       SSID         Ide List         ofile Name       SID         Ide List       Ide List         ofile Name       SID         Ide List       Ide List         ofile Name       SID         Ide List       Ide List         Ide List | N Configuration Utility         Link Status       Site Survey       Statistics       Advance       About         ile List | N Configuration Utility         Link Status       Site Survey       Statistics       Advance       About         ile List | V Configuration Utility         Link Status       Site Survey       Statistics       Advance       About         ile List         ofile Name       SSID       Channel       Authentication       Encryption       Network Type         Add       Delete       Edit       Activate         DK       Hel   |

2. Assign a Profile Name and its SSID and select *Ad Hoc* network type.

|  | dd Drofilo             |                      |               |                 |      |        |
|--|------------------------|----------------------|---------------|-----------------|------|--------|
|  | Configuration Authenta | cion and Security    |               |                 |      | at and |
| Sec. 1   | Profile Name Pf        | ROF1                 | SSID test     | 1               | -    |        |
|  | - Power Saving Mode -  |                      |               |                 |      |        |
|  | CAM (Constant)         | y Awake Mode)        | C Power Sav   | ing Mode        |      |        |
|  | Use Constantly         | Awake Mode when AC F | Power is used |                 |      | and a  |
|  | Network Type           | Ad Hoc 💌             | ] TX Power    | 100 %           | • •  | -      |
|  | Preamble               | Auto                 | ]             |                 |      |        |
|  | F RTS Threshold        | 0 '                  | 5             | 2312 2312 Chanr | nel  |        |
|  | Fragment Thresh        | old 256 ·            | S.            | 2312 2312 1     | •    |        |
|  |                        |                      |               |                 |      |        |
| and the set of the set |                        | OK.                  | Cancel        | Apoly           | Help |        |
|  |                        |                      |               |                 |      | 2      |

3. You can use WEP security algorithm and to do so, you will need to define at least a set of 40/104bits security key.

|   | dd Profile                 |              |            |          |        |                   |
|---|----------------------------|--------------|------------|----------|--------|-------------------|
|   | Configuration Authentacion | and Security |            |          | 1      | and all           |
| - | Authenticaion Type :       | None         |            | 802.1× 5 | etting |                   |
|   | Encryption :               | WEP          |            |          | -      |                   |
|   | WPA Pre-Shared Key :       |              |            |          |        | -                 |
|   |                            | •            | 9876543210 |          |        |                   |
| - | C Key#2 Hex                | •            |            |          |        | -                 |
|   | C Key#3 Hex                | •            |            |          |        | - Contraction     |
|   | C Key#4 Hex                | •            |            |          |        |                   |
|   |                            |              |            |          |        |                   |
|   |                            |              |            |          |        |                   |
|   |                            | 0            | K Cancel   | Apply    | Help   | the second second |

4. Select this profile and click Activate. A new Ad Hoc wireless network starts now.

|                         | Called I           |                         |            |                |             | 4            |   | 44 (15)          |
|-------------------------|--------------------|-------------------------|------------|----------------|-------------|--------------|---|------------------|
| RaConfig25              |                    |                         |            |                |             |              | Stark in                                  |                  |
|                         |                    |                         |            |                |             |              |   | Switch !!        |
|                         | WLAN Configu       | ration Utility          |            |                |             |              |   |                  |
| P                       | rofile Link Status | s   Site Survey   St    | atistics A | dvance About   |             |              | 1   | C. Carlos        |
|                         | Profile List       |                         |            |                |             |              |   | Sec. 1           |
| -                       | Profile Name       | SSID                    | Channel    | Authentication | Encryption  | Network Type |   |                  |
|                         | PROF1              | test1                   | N          | Open           | WEP         | Ad Hoc       |   |                  |
|                         |                    |                         |            |                |             |              |   | 1.11-            |
|                         |                    |                         |            |                |             |              | -   | all and a second |
|                         |                    |                         |            |                |             |              |   | a state of the   |
| ML-                     |                    |                         |            |                |             |              |   | 1000             |
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|                         | Add                | De                      | lete       | Edit           | 1           | Activate     |   |                  |
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| Start                   |                    |                         |            |                |             |              | 20 11 12 12 12 12 12 12 12 12 12 12 12 12 |                  |

#### **5.4 Start a New Infrastructure Wireless Network**

- 1. Select Start -> All Programs -> Wireless LAN Card and click Client SoftAP Selection in the Quick Launch area of the start menu.
- 2. Select *SoftAP* and click *OK*. You'll be asked to configure a Bridge first. Refer to <u>Chapter 6</u> <u>Activate the Software AP Function</u> for detailed information.
- 3. You will be asked to configure a profile first. Click OK.
- 4. Assign a SSID and click *Apply*. You can start a new Infrastructure wireless network if at least one station is connected with this card.

# Chapter 6 Activate the Software AP Function

#### **6.1 Introduction**

This card enables the Software AP function that gives you an option to use this card as an AP. Additional WLAN SoftAP Configuration Utility facilitates the AP configuration as well as switches the card easily between a Client station and an AP. Before you start the Software AP function of this card, you must set a Bridge in your PC first. A Bridge can be set by the combination of your Ethernet network adapter and this Wireless LAN Card. This can be done in Windows XP since XP supports the Bridge Connections yet other operating systems don't.

### 6.2 Bridge Connections

1. Make sure that your PC has equipped with an Ethernet network adapter that works well. Double click the *network icon* on your system tray.



2. Make sure that either the Ethernet network adapter or the Wireless LAN Card is not disabled. Select both and click *Bridge Connections*.



3. A new Network Bridge will appear after a while.

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# Chapter 7 Software Utility - WLAN SoftAP Configuration Utility

#### 7.1 Overview

| onfig   Access Contro | ol   WDS   Mac Table   E | vent Log   Statistics   About                |
|-----------------------|--------------------------|--|
| Wireless Mode         | 802.11 B/G mixed 💌       | TX Rate Auto 💌 Channel 1 💌                   |
| SSID                  | AP                       | USE MAC ADDRESS SECURITY                     |
| 11B/G Protection      | Auto                     | F Enable TX Burst                            |
| 11B TX Preamble       | Long                     | ☐ Use Turbo rate (72/100Mbps) when applicabl |
| Beacon Period (ms)    | 50                       | ☐ No forwarding among wireless clients       |
| RTS Threshold         | 2347                     | ☐ Hide SSID                                  |
| Fragment Threshold    | 2346                     | Use Short Slot Time when applicable          |
|                       |                          | DEFAULT APPLY                                |

 <u>Config</u>: Configure operation parameters and display extra options. Note that some options are not supported currently.

- <u>Access Control</u>: Control Client stations' access rights to this card.
- <u>WDS</u>: Enable to wirelessly connect other APs to extend current wireless network.
- <u>MAC Table</u>: Show the MAC address of each connected station.
- <u>Event Log</u>: Record the card's current traffic information.
- <u>Statistics</u>: Monitor the card's current traffic activity.
- <u>About</u>: Hardware information of this card and its software elements.

# 7.2 Config Tab

| onfig Access Contr | ol   WDS   Mac Table   E | vent Log Statistics About                   |
|--------------------|--------------------------|---|
| Wireless Mode      | 802.11 B/G mixed 💌       | TX Rate Auto 💌 Channel 1 💌                  |
| SSID               | AP                       | USE MAC ADDRESS SECURITY                    |
| 11B/G Protection   | Auto                     | Enable TX Burst                             |
| 11B TX Preamble    | Long                     | ☐ Use Turbo rate (72/100Mbps) when applicab |
| Beacon Period (ms) | 50                       | □ No forwarding among wireless clients      |
| RTS Threshold      | 2347                     | F Hide SSID                                 |
| Fragment Threshold | 2346                     | Use Short Slot Time when applicable         |
|                    |                          | DEFAULT APPLY                               |

#### 7.2.1 Config Tab

- <u>Wireless Mode</u>: Select 802.11b mode or 802.11b/g mix mode.
- <u>TX Rate</u>: Specify the data transfer rate. In 802.11b mode, the rate varies from 1 11Mbps; in 802.11b/g mix mode, the rate varies from 1 54Mbps.
- <u>Channel</u>: Specify the channel.
- <u>SSID</u>: The specific name of this card in the wireless network.
- <u>Use MAC Address</u>: Click to use the MAC address of this card to be the SSID.
- <u>Security</u>: Specify the security settings. Refer to <u>7.2.2 Security Button</u>.
- <u>802.11b/g Protection</u>: 802.11b uses CCK modulation and 802.11g uses CCK–compatible OFDM modulation. Enable this to prevent the data collision in the concurrent 802.11b/g network. Auto (auto-detect) selection is recommended.
- <u>802.11b TX Preamble</u>: Select the length of the CRC block for communication between this card and other stations. High network traffic areas should use the shorter preamble type.
- <u>Beacon Period (ms)</u>: Define the duration between beacon packets.
- <u>RTS Threshold</u>: Designed to prevent the Hidden Node issue, a problem happens in the wireless network when two wireless adapters served by the same AP can't communicate each other or have collision.
- <u>Fragment Threshold</u>: Increase the transmission efficiency by split mechanism.
- <u>Transmit Power</u>: Select the transmit power options including Lowest, 25, 50, 75, 100(default). High transmit power allows the card to have better data transfer quality.
- Enable TX Burst: Check to enable the card to transmit more data in a frame interval.
- <u>Use Turbo rate (72/100Mbps) when applicable</u>: Enhance the data rate transmitted up to 72/100Mbps. This checkbox is currently disabled.

- <u>No forwarding among wireless clients</u>: Click to define a client's data only transferred by AP and can't communication other clients to prevent packets from looping among wireless clients.
- <u>Hide SSID</u>: Click to hide the SSID from broadcasting in a wireless network.
- <u>Use Short Slot Time when applicable</u>: Click to enhance the maximum transmit power.
- <u>Auto Channel Selection at next boot</u>: Click to select the best channel at next boot.
- <u>Default</u>: Reset all settings.
- <u>Apply</u>: Apply to new settings.

#### 7.2.2 Security Button

| Addrendeadon Ty | /pe:  <br>r  | Open   | Enc    | ryption Type: | None | - |
|-----------------|--------------|--|--------|---------------|------|---|
| wPA Pre-Shared  | Key:         |  | - T    |               |      |   |
| WPA Group Rek   | ey Interval: | 60 105   | econds |               |      |   |
|                 |              |  |        |               |      |   |
| -WEP Key        |              |  |        |               |      | _ |
|                 | Hesadecir    | nal 🝸  |        |               |      |   |
| C Key#2         | Hexadecir    | nal 💌  | [      |               |      | _ |
| C Keu#3         | Hexadecir    | nal 👻  |        |               |      | - |
| Contraction of  |              |  |        |               |      | _ |
|                 |              | here and her |        |               |      |   |

- <u>Authentication Type</u>: Define an authentication type of a new wireless network.
- <u>Encryption Type</u>: Define an encryption type of a new wireless network.
- <u>WPA Pre-Shared Key</u>: Input a password varying 8 from 63 characters long when you are using WPA-PSK authentication.
- <u>WPA Group Rekey Interval</u>: Select the time to regenerate a new PSK key.

### 7.3 Access Control Tab

| 😼 Access Point Configuratio                     | n Utility - Rt2500                                  | X                |
|---|---|------------------|
| Config Access Control   WDS                     | Mac Table   Event Log                               | Statistics About |
| Wireless Client Access Control P<br>MAC Address | blicy Disable<br>Disable<br>Allow All<br>Reject All | <u> </u>         |
| D   |   |                  |
| REN   | OVE ALL   |                  |
|   |   | APPLY            |
|   |   | Help             |

- <u>Wireless Client Access Control Policy</u>: Manage wireless client's access to this network.
- MAC Address: Input the MAC address of the wireless client.
- <u>Apply</u>: After finishing your control policy, remember to click this button to apply to your new settings.

## 7.4 WDS Tab

| nfig Access Control                           | WDS   Mac Table                  | Event Log Statistics | About   |
|---|----------------------------------|----------------------|---------|
| WDS<br>WDS control policy<br>WDS Key:         |                                  | C Enable             | Disable |
| MAC Address                                   |                                  | WDS AP List -        |         |
|   | ADD                              |                      |         |
|   | DELETE                           |                      |         |
|   | REMOVE ALL                       |                      |         |
| 1: The same channel<br>required in each AP in | and wep status setting<br>a WDS. | gs are               |         |
| 2. No loop allowed in                         | a WDS.                           |                      | Arrei   |

- <u>WDS control policy</u>: Enable to wirelessly connect other APs to extend a wireless network that results in a so-called WDS (Wireless Distribution System).
- <u>WDS Key</u>: A key used to communicate among all APs in the WDS.
- <u>MAC Address</u>: Input the MAC address of other AP.
- <u>Apply</u>: After finishing your control policy, remember to click this button to apply to your new settings.

## 7.5 MAC Table Tab

| Ig   Access control   WD3 Indo it |     | Statistics   About |  |
|-----------------------------------|-----|--------------------|--|
| IAC ADDRESS                       | AID | POWER SAVING       |  |
|                                   |     |                    |  |
|                                   |     |                    |  |
|                                   |     |                    |  |
|                                   |     |                    |  |
|                                   |     |                    |  |
|                                   |     |                    |  |
|                                   |     |                    |  |
|                                   |     |                    |  |
|                                   |     |                    |  |
|                                   |     |                    |  |
|                                   |     |                    |  |
|                                   |     |                    |  |

- MAC ADDRESS: The MAC address of each associated client.
- <u>AID</u>: The identified code issued to each associated client.
- <u>POWER SAVING</u>: The power saving status of each associated client.

# 7.6 Event Log Tab

| onfig Access Control W | DS   Mac Table Event Log   Statistics   About |  |
|------------------------|---|--|
| Event Time             | MESSAGE                                       |  |
|                        | CLEAR   |  |

- <u>Event Time</u>: The recorded time of every event.
- <u>MESSAGE</u>: The message of every event.

# 7.7 Statistics Tab

| Statistics Abou | at  |
|-----------------|---|
|                 |   |
| .=              | 2915                                      |
| =               | 2082                                      |
| =               | 833                                       |
| =               | 827                                       |
| =               | 0   |
| =               | D   |
|                 |   |
| =               | 27446                                     |
| =               | 608872                                    |
| =               | 0   |
| =               | 0   |
|                 | RESET COUNTERS                            |
|                 | =<br>=<br>=<br>=<br>=<br>=<br>=<br>=<br>= |

#### 7.7.1 Transmit Statistics Section

- <u>Frames Transmitted Successfully</u>: The number of successfully transmitted frames.
- <u>Frames Transmitted Successfully without Retry</u>: The number of successfully transmitted frames without any retry.
- <u>Frames Transmitted Successfully after Retry</u>: The number of successfully transmitted frames with one or more retries.
- <u>Frames Fail to Receive ACK After all Retries</u>: The number of unsuccessfully transmitted frame with many retries.
- <u>RTS Frames Successfully Receive CTS</u>: The number of successfully received the CTS (Clear To Send) response after this card sends out the RTS (Request To Send) message.
- <u>RTS Frames Fail to Receive CTS</u>: The number of unsuccessfully received the CTS response after this card sends out the RTS message.

#### 7.7.2 Receive Statistics Section

- <u>Frames Received Successfully</u>: The number of successfully received frames.
- <u>Frames Received with CRC Error</u>: The number of received frames with CRC (Cyclical Redundancy Checking) error.
- <u>Frames Dropped due to Out-of-Resource</u>: The number of dropped frames.
- <u>Duplicate Frames Received</u>: The number of duplicate frames.

#### 7.7.3 Button

• <u>Reset Counters</u>: Restart the displayed statistics.

### 7.8 About Tab

| onte | Link Status   | Site Survey   Statistic | s   Advance ADOU     | л  <br>]       |  |
|------|---------------|-------------------------|----------------------|----------------|--|
|      | K             | WWW.                    | RALINKTECH.CO        | M              |  |
|      | -CopyRight-   |                         |                      |                |  |
| 2    | (c) Copyrig   | cht 2002, Ralink Tech   | nology, Inc. All rig | ghts reserved. |  |
|      | Configuration | n Utility - Rt2500      |                      | 1              |  |
|      | Version :     | 1.2.0.0                 | Date :               | 11-21-2003     |  |
|      | NIC Driver    |                         |                      |                |  |
|      | Version :     | 1.1.2.0                 | Date :               | 11-21-2003     |  |
|      |               |                         | 29                   |                |  |
|      | Mac Address   |                         | 00                   |                |  |
|      | rny_Addie     | ss. 00-0C-49-29-01      |                      |                |  |
|      |               |                         |                      |                |  |

WLAN SoftAP Configuration Utility: Version and released date of the SoftAP utility.

- <u>NIC Driver</u>: Version and released date of this card's driver.
- <u>MAC Address</u>: MAC address of the card.

# Chapter 8 Troubleshooting

1. Question: The product literature says this Wireless LAN Card can operate at 54 Mbps. Why do I see no more than 11 Mbps speed on my WLAN Configuration Utility status?

Answer: While you are connecting to an 802.11b network, the maximum 802.11b speed is 11Mbps. Moreover, the wireless connection quality between this card and other stations will be limited to the space layout and thus the connection speed can't reach to 54Mbps.

2. Question: I cannot connect to the Access Point or the wireless Router?

Answer: Make sure the same settings such as SSID, Channel and Security on the Wireless LAN Card is the same as those on the Access Point or the wireless Router. Move closer and try again.

3. Question: I can connect to the Access Point, but I cannot connect to other computers on the network or the Internet?

Answer: Check to make sure that the access point is physically connected to the Ethernet network. Make sure that the IP address and the Windows networking parameters are all configured correctly by the connected AP. Restart your cable/DSL modem, router and access point.

4. Question: The product literature says this Wireless LAN Card can operate far to 328 feet (100 meters). Why can't it reach that range when I am using it?

Answer: In optimal condition, this device can reach the maximum range. However, environmental factors such as other electric equipments and layout of building may adversely affect the effective range.

5. Question: How do I know if my Wireless LAN Card has received a valid IP address from my Wireless Router/AP?

Answer: For Windows 98/ME users, click *Start -> Run...*, and type *winipcfg*; for Windows 2K/XP users, click *Start -> Run...*, enter *cmd*, and type *ipconfig*.