CardBus / PCI Adapter

11G WIRELESS Network Adapter User's Manual

Production component

This WIRELESS production should contain the following items:

- 1. One piece of CardBus or PCI adapter 11G WIRELESS LAN Card
- 2. One piece of CD which contain drivers, user's manual, and utility

Quick Installation

- 1. Insert the product's CD into CD-ROM.
- 2. Exit all application programs and insert the 11G WIRELESS adapter into the PCMCIA on notebook or PCI slot on desktop.
- 3. Following "Found New Hardware Wizard" window to install driver step by step.
- 4. Install the WIRELESS adapter utility
- 5. Configure your WIRELESS adapter for connecting to a WIRELESS network.

FCC Information

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. Federal Communications Commission (FCC) Statement.

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 generates, 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 measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

FCC RF Radiation Exposure Statement:

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

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Chapter 1 Terminology Introduction

This chapter will introduce terminology about IEEE802.11 what referred by this manual. And in this character we will explain terminology according to IEEE802.11 Std.

• Ad-Hoc Network(Peer to Peer)

A network composed solely of stations within mutual communication range of each other via the WIRELESS medium(WM). An Ad Hoc network is typically created in a spontaneous manner. The principal distinguishing characteristic of an ad hoc network is limited temporal and spatial extent. These limitations allow the act of creating and dissolving the ad hoc network to be sufficiently straightforward and convenient so as to be achievable by nontechnical users of the network facilities; i.e., no specialized "technical skills" are required and little or no investment of time or additional resources is required beyond the stations that are to participate in the ad hoc network. The term ad hoc is often used as slang to refer to an independent basic service set(IBSS).

• Infrastructure Network

The infrastructure includes the distribution system medium (DSM), access point(AP), and portal entities. It is also the logical location of distribution and integration service functions of an extended service set(ESS). An infrastructure contains one or more APs and zero or more portals in addition to the distribution system(DS).

Basic Service Set(BSS)

A set of stations controlled by a single coordination function.

BSSID
 Basic service set identifier

• Station service(SS)

The set of services that support transport of medium access control(MAC) service data units(MSDUs) between stations within a basic service set(BSS)

• SSID

Station service identifier

Association

The service used to establish access point/station(AP/STA) mapping and enable STA invocation of the distribution system services(DSSs).

• Authentication

The service used to establish the identify of one station as a member of the set of stations authorized to associate with another station.

• Channel

an instance of medium use for the purpose of passing protocol data units(PDUs) that may be used simultaneously, in the same volume of space, with other instances of medium use(no other channels) by other instances of the same physical layer(PHY), with an acceptably low frame error ratio due to mutual interference. Some PHYs provide only one channel, whereas others provide multiple channels. Examples of channel types are shown in the following tables

Single channel	n-channel
Narrowband radio-frequency(RF) channel	Frequency division multiplexed channels
Baseband infrared	Direct sequence spread spectrum(DSSS) with
	code division multiple access

• Wired equivalent privacy(WEP)

The optional cryptographic confidentiality algorithm specified by IEEE 802.11 used to provide data confidentiality that is subjectively equivalent to the confidentiality of a wired local area network(LAN) medium that does not employ cryptographic techniques to enhance privacy.

Chapter 2 System Requirements

Before installing the adapter and related sof `tware, make sure the computer system meets the minimum requirements described below.

2-1 Hardware

The adapter can be installed in any recent-model IBM-type microcomputer with a PCMCIA on notebook or PCI slot on desktop which support CardBus or PCI interface. The Cardbus adapter is a Type II CardBus card, and can be installed in a Type II or Type III CardBus slot.

2-2 Software

The drivers included with the adapter allow the adapter to be used in Microsoft Windows 98, ME, 2000, and XP.

Chapter 3 Install Driver for Windows Series

This section describes the installation of the 11G WIRELESS LAN Card driver for the Windows98/ME/2000 and Windows XP operating systems. The installation procedures for Windows XP refer to 3-1 Set up WIRELESS LAN Card for Windows XP; for Windows 2000 please see 3-2 Set up WIRELESS LAN Card for Windows 2000; for Windows 98/ME refer to 3-4 Set up WIRELESS LAN Card for Windows 98/ME.

3-1 Set up WIRELESS LAN Card for Windows XP

Step 1: After inserting the WIRELESS LAN Card into the PCMCIA on notebook or PCI slot desktop, the Windows will auto-detect the WIRELESS LAN Card and a "Found New Hardware Wizard" window will show up. Select "Install from a list or specific location (Advanced)" to install the driver.



Step 2: Insert the Product CD-ROM into the CD-ROM drive. Select "**Search removable media** [floppy, CD-ROM...]" check box and click on Next to install the driver.

Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations. Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
 Search removable media (floppy, CD-ROM) Include this location in the search: C:\Documents and Settings\Owner\Desktop\11G D V
Don't search. I will choose the driver to install. Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
<pre></pre>

Step 3: The windows will find "**Ralink RT2500 Wireless LAN Card**" and start copying corresponding files into the system. Click on **Next** to continue.

Found New	/Hardware Wizard			
Please #	vait while the wizard	installs the softwa	are	D
E	Ralink RT2500 Wirel	ess LAN Cari		
	\geq	Ø	Þ	
			Back Next >	Cancel

Step 4: Click **Finish** to complete the installation.



Step 6: Right click "**My Computer**" from **Start**, select **Properties**, go to the **Hardware** tab and click the **Device Manager** button to see if any error icon appears next to the **Network Adapter/WIRELESS LAN Card**. If exist no error, your **Ralink RT2500 Wireless LAN Card** is working well.



3-2 Set up WIRELESS LAN Card for Windows 2000

Step 1: After inserting the WIRELESS LAN Card into the PCMCIA on notebook or PCI slot on desktop, Windows will auto-detect the WIRELESS LAN Card.



Step 2: A "Found New Hardware Wizard" window shows up. Click Next to proceed.

Found New Hardware Wizard	
	Welcome to the Found New Hardware Wizard This wizard helps you install a device driver for a hardware device.
	< Besk Newt> Cancel

Step 3: Select "Search for a suitable driver for my device (recommended)".

Found New Hardware Wizard
Install Hardware Device Drivers A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
Network Controller
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click. Next.
What do you want the wizard to do?
(* [Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back Next > Cancel

Step 4: Insert the Product CD-ROM into the CD-ROM drive. Specify the location where the driver is placed. Click on **Next** to install the driver.

Found New Hardware Wizard
Locate Driver Files Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
<u>Specify a location</u>
Microsoft Windows Update
< <u>B</u> ack <u>N</u> ext > Cancel

Step 5: The windows will find "**Network Controller**". Click on **Next** to continue.

Found New Hardware Wizard
Driver Files Search Results The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
Windows found a driver for this device. To install the driver Windows found, click Next.
d:\11g amit driver packetage\prismnic.inf
< <u>B</u> ack Next> Cancel

Step 6: Click **Finish** to complete the installation.

Found New Hardware Wizard	
	Completing the Found New Hardware Wizard Image: Wireless LAN Card Image: Wireless LAN Card Image: Wireless has finished installing the software for this device.
	To close this wizard, click Finish.
	< Back Finish Cancel

Step 7: Open **Control Panel/System/Device Manager**, and check **Network Adapters** to see if any error icon appears. If no error, your **Ralink RT2500 Wireless LAN Card** is working well.



3-3 Set up WIRELESS LAN Card for Windows 98/ ME

Step 1: After inserting the WIRELESS LAN Card into the PCMCIA on notebook or PCI slot on desktop, Windows will auto-detect new hardware and will display an "Add New Hardware Wizard" window. Click Next to continue.



Step 2: Select "Search for the best driver for your device (Recommended)" and click Next.

	What do you want Windows to do?
	 Search for the best driver for your device. (Recommended).
	Display a list of all the drivers in a specific location, so you can select the driver you want.
~	

Step 3: Insert the Product CD-ROM into the CD-ROM drive. Select the "**CD-ROM drive**" check box and click on **Next** to install the driver.

CD-ROM drive Microsoft Windows Update Specify a Jocation: C:\WINDOWS\Desktop Browse		Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
Specify a location: C:\WINDOWS\Desktop Browse		CD-ROM drive
Browse		Specify a location: C:\WINDOWS\Desktop
	~	Browse

Step 4: The Windows will find "Ralink RT2500 Wireless LAN Card". Click Next to continue.



Step 5: Once the ^{\square} Please insert the disk labeled 'Windows 98 Second Edition CD-ROM/ME CD-ROM', and then click OK $_{\square}$ window appears, inset enter the path corresponding to the appropriate drives and click **OK**. Usually these files can be found at C:\Windows or C:\Windows\system.



Step 6: Click Finish to complete the software installation.



Step 7: Restart the computer.

Jystem .	
?	To finish setting up your new hardware, you must restart your computer.
	Do you want to restart your computer now?
	Yes No

Step 8: Open **Control Panel/System/Device Manager**, and check **Network Adapters** to see if any error icon appears next to the IEEE 802.11 WIRELESS LAN Card. If no error, your **Ralink RT2500 Wireless LAN Card** is working well.

System Pr	operties						? ×
General	Device Ma	anager H.	ardware	Profiles	Perforr	mance	
💽 Vie	w devices t	y <u>t</u> ype	O Vi	ew dev	ices by <u>c</u>	onnectio	n 🛛
	CDROM CDROM Disk drive Display ac Floppy dis Hard disk Hard disk Keyboard Keyboard Monitors Nouse Network a Dial-L Dial-L Dial-L Dial-L Cher dev PCMCIA s	s Japters k controllers evices adapters lp Adapter ad PnP Ser k RT2500 fices socket	ial Port (Wireless	*PNPO! LAN C	510) ard		
P <u>r</u> o	operties	Refre	sh	B	emove		Pri <u>n</u> t
					0	К	Cancel

3-4 Uninstall the WIRELESS LAN Card

If you do not need the WIRELESS connectivity of your WIRELESS LAN Card, it is advised that you uninstall the card from its slot as described below:

1. Open Control Panel/System/Device Manager, and check Network Adapters

System	n Restore	Automa	fic Updates	Remote
General	Compl	uter Name	Hardware	Advanced
Add Han	dware Wizard			
X	The Add Hard	ware Wizard h	elps you install hard	ware.
			<u> </u>	
			Add Hardwa	re Wizard
Device N	lanager			
2	The Device M on your compu- properties of a	lanagerlists all uter, Use the D ny device.	the hardware devic evice Manager to c	es installed hange the
B Y	The Device M on your compu- properties of a Driver S	lanagerlists all uter. Use the D ny device. Signing	the hardware devic evice Manager to c Device M	es installed hange fhe anager
Hardwar	The Device M on your compu- properties of a Driver S	lanagerlistz all uter. Use the D ny device. Signing	the hardware devic evice Manager to o	es installed hange fhe anager
Hardwar	The Device M on your compu- properties of a Driver S e Profiles Hardware profi different hardware	lanagerlists all uter. Use the D ny device. Signing lies provide a v vane configuration	the handware device evice Manager to c Device M vay for you to set up ans.	es installed hange the anager
Hardwar	The Device M on your compu- properties of a Driver S e Profiles Hardware profi different hardw	anager lists all uter. Use the D ny device. Signing lies provide a v ware configuration	the hardware device evice Manager to c Device M Agy for you to set up ons. Hardware	es installed hange the anager o and store Profiles

2. In the list of Network adapters components, click right to select "Ralink RT2500 Wireless LAN Card".

🚇 Device Manager	
File Action View Help	
+	
AMIT AMIT	

3. Choose Uninstall.

You will be asked for confirmation and instructed to reboot the computer in operation system Microsoft Win98 and WinME.

Chapter 4 Configure the WIRELESS Lan Adapter

This chapter will show you how to configure your WIRELESS Lan adapter by using utility in the Product CD Package under Windows series Operation System

4-1 Install Utility

1. Put the CD Package into you CD-Rom, and the install program will autorun the frame as follows, choose *Utility Setup* and finish the install process step by step.



2. After finishing the install process, you can execute the utility as follows



3. You will see the utility icon after you executing program **twlan** if your WIRELESS Adapter is alive



4-2 Configure WIRELESS Lan Adapter for Windows XP

After installing **Ralink RT2500 Wireless LAN Card**, the Windows XP will display a "WIRELESS Network Connection" message.



Click on the message and the "*Automatic WIRELESS Network Configuration*" will then appear automatically and allow users to connect to an available WIRELESS infrastructure network (Access Point), shown as follows. You may click the **Advanced** button to make advanced configuration for the WIRELESS LAN Card, shown as below.

	Connect to Wireless Network
	The following network(s) are available. To access a network, select it from the list, and then click Connect.
	Available networks:
	👗 tidy-amit 💽
	👗 dale 🔤
Choose one	1 USB8022
suitable server	This network requires the use of a network key (WEP). To access this network, type the key, and then click Connect.
	Network key:
	If you are having difficulty connecting to a network, click Advanced.
	Advanced Connect Cancel

In order to reconfigure you WIRELESS connection, you can deal as follow procedure

1.click left the network icon.



2. Click **Properties** to continue

T Wireless Network Conn	ection 4 Status 👘 😰 🔀
General Support	
Connection	
Status:	Connected
Duration:	00:10:04
Speed:	11.0 Mbps
Signal Strength:	₹ ∎010
Activity Sent -	- 2 - Received
Packets:	20 0
Properties Disable	
	Close

3. Click **WIRELESS Networks** to reconfigure the WIRELESS network connection.

L. Wirel	ess Network Con	nection 4 P	operties	? 🛛
General	Wireless Networks	Authentication	Advanced	
🗹 Use	Windows to configure	e ny wireless n	etwork settings	
-Avail To ci	able networks: onnect to an available	network, click	Configure.	
1	default		Configu	re
1	Hama			51
9	mason3		Refres	h
Autor	natically connect to a v. mason3	vailable networf	ks in the order lis	ted p
i	nason3 fidy-amit		Move u Move do	P Wn
Learn	Add Remo about <u>setting up wirel</u> assion.	ve Prop	ertie: Advar	nced
			OK C	Cancel

4. If you need a key(WEP) to connect the WIRELESS network, you should keyin the key that supported by the WIRELESS network router or access point

👍 Wireless Network Con	nection 4 Pro	perties 🛛 <table-cell> 🔀</table-cell>
General Wireless Networks	Authentication	Advanced
Use Windows to configur	e my wireless net	work settings
Available networks:		
To connect to an available	network, click C	onfigure.
🛔 default	^	Configure
i wawa		
💡 mason3	~	Hefresh
Preferred networks: Automatically connect to an below	vailable networks	in the order listed
💡 mason3		Move up
i bdy-amit		Move down
Add Remo	ve Proper	ties
Learn about setting up wirel configuration.	less network	Advanced
		K Cancel

Wireless Network Prope	erties ? 🔀							
Network name (SSID):	mason3							
Wireless network key (WEP)								
This network requires a key for the following:								
🔽 Data encryption (WE	P enabled)							
Network Authenticati	ion (Shared mode)							
Network key:								
Key format:	Hexadecimal digits 🛛 👻							
Key length:	104 bits (26 digits) 🛛 👻							
Key index (advanced):	0							
The key is provided for me automatically								
This is a computer-to-computer (ad hoc) network; wireless access points are not used								
(OK Cancel							

Note: Under the Windows XP, it is recommend to use the "*Automatic WIRELESS Network Configuration*" to configure your 11G WIRELESS LAN Card. The WIRELESS LAN Utility comes with the WIRELESS LAN Card is not support the Windows XP.

4-3 Configure WIRELESS LAN Adapter for Windows 98/ME/2000 by

utility

1. click the utility icon, and you will see the application interface as step 2.



2. main configure window show as follows, in order to connect an access point to communicate with other station, double click any SSID of access pint. The icon will show in the side of SSID if connect successful. You can also click the button "ADD PROFILE" to save current configure to Profile page.

Configuration Utility - Rt2500

Profile	Link Status	Site Survey Statistics	Advance	About	١
---------	-------------	------------------------	---------	-------	---

SSID	BSSID	Sig	C	Encry	Authent	Network T
DI-624	00-80-C8-14-68	. 63%	3	WEP	Unknown	Infrastruct
amit01	00-05-01-81-5B	. 42%	6	WEP	Unknown	Infrastruct
🥳 default	00-50-12-34-56	57%	6	Not Use	Unknown	Infrastruct
<						>
Connected <> d	lefault	RESCAN	r I	CONNE		TITORY OF

After you push the bottom " ADD PROFILE ", you will see the information about the connection. You can give name to this connection for a convenient connect.

Add Profile	X
Profile Name PROF1 SSID default]
System Configuration Authentication & Security	
Power Saving Mode	_
CAM (Constantly Awake Mode) Power Saving Mode	
CAM when AC Power	
Network Type Infrastructure	
11B Preamble Type Auto 💌	
RTS Threshold 0 2312	
Fragment Threshold 256	
<u>C</u> ANCEL	

The profile will save in the "Profile" page.

🛛 Conf	iguration	Utility - Rt2500					
Profile	Link Stat	us Site Survey S	tatistics A	dvance About	1		
Prof	iles List —						_
Pro	ofile	SSID	Channel	Authentication	Encryption	Network Type	
	PROF1	default	Auto	Open System	Not Use	Infrastructure	
1						>	
				1	1		
	<u>A</u> DD	<u></u> <u>D</u> EI	JETE	<u>E</u> DIT		ACTIVATE	
L							

3. After you configure your connection, the related information will show in the "Link Status" page as follows

🙍 Configuration Utility - Rt2500 🛛 🛛 🚺			
Profile Link Status Site Survey	Statistics Advance About		
Status :	default <> 00-50-12-34-56-79		
Current Channel :	6 <> 2437000 KHz		
Current Tx Rate :	36 Mbps		
Throughput (KBits/sec) :	Tx 0.1 Rx 18.4		
Link Quality :	Good 90%		
Signal Strength :	Normal 50% 🔽 dBm format		

You can change Signal Strength in dBm format.

🖥 Configuration Utility - Rt2500				
Profile Link Status Site Survey	Statistics Advance About			
Status :	default <> 00-50-12-34-56-79			
Current Channel :	6 <> 2437000 KHz			
Current Tx Rate :	36 Mbps			
Throughput (KBits/sec) :	Tx 0.0 Rx 26.7			
	Good 88%			
Link Quality :				
	Normal -69 dBm 🔽 dBm format			
Signal Strength :				

4. If the access point requests the client to authenticate or associate, double click the access point in the "Site Survey" page. And you should configure the related information here.

Authentication & Security		X
Authentication Type: WPA Pre-Shared Key:	Open	Encryption Type: WEP
WEP Key Key# <u>1</u> Hexadecin Key# <u>2</u> Hexadecin Key# <u>3</u> Hexadecin Key# <u>4</u> Hexadecin	nal 💌 nal 💌 nal 💌	1234567890
<u>O</u> k	:	CANCEL

5. "Statistics" page show wireless LAN card's state of Transmit and Receive.

Configuration Utility - Rt2500		
Profile Link Status Site Survey Statistics Advance A	1bout	
Transmit Statistics		
Frames Transmitted Successfully	=	116
Frames Transmitted Successfully Without Retry	=	107
Frames Transmitted Successfully After Retry(s)	=	9
Frames Fail To Receive ACK After All Retries	=	6
RTS Frames Successfully Receive CTS	=	0
RTS Frames Fail To Receive CTS	=	0
Receive Statistics		
Frames Received Successfully	=	49
Frames Received With CRC Error	=	38
Frames Dropped Due To Out-of-Resource	=	0
Duplicate Frames Received	=	0
		RESET COUNTERS

6. "About" page shows utility version、 driver version and MAC Address.

🔄 Confi	iguration Util	ity - Rt2500				×
Profile	Link Status	Site Survey Sta	atistics Advance About			
	_CopyRight-					
	(c) Copyright 2002, Ralink Technology, Inc. All rights reserved.					
	Configuratio	n Utility - Rt250	0			
	Version :	1.3.0.0	Date :	02-19-2004		
	NIC Driver					
	Version :	2.2.1.0	Date :	02-17-2004		
	Mac Address					
	Phy_Addre	ss: 08-00-28-3	32-00-00			

FCC Caution

- 1. The 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.
 - (2)This device must accept any interference received, including interference that may cause undesired operation.
- **2.** This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
- **3.** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.