# WLAN a/b/g/n USB2.0 Adapter



# **DNUA-81 User Manual**

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### **Copyright Statement**

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### **Federal Communication Commission Interference 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 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 Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices) 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.

### **IMPORTANT NOTE:**

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

This device is going to be operated in 5.15~5.25GHz frequency range, it is restricted in indoor environment only.

### **IMPORTANT NOTE:**

Federal Communication Commission (FCC) Radiation Exposure Statement This EUT is compliance with SAR for general population/uncontrolled exposure limits in ANSI/IEEE C95.1-1999 and had been tested in accordance with the measurement methods and procedures specified in OET Bulletin 65 Supplement C. This equipment should be installed and operated with minimum distance 0.5 cm between the radiator & your body.

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# **1. Introduction**

Thank you for purchasing the WLAN a/b/g/n USB2.0 Adapter that provides the easiest way to wireless networking. This User Manual contains detailed instructions in the operation of this product. Please keep this manual for future reference.

### **System Requirements**

- A laptop PC contains:
  - 32 MB memory or greater
  - 300 MHz processor or higher
- Microsoft<sup>®</sup> Win<sup>™</sup>2000/ME/98 Second Edition/XP

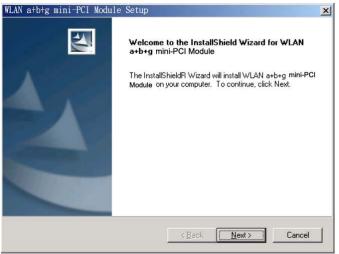
## 2. Driver/Utility Installation / Uninstallation

## 2.1 Installation

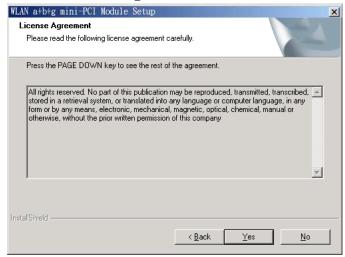
**Note!** The Installation Section in this User Manual describes the first-time installation for Windows. To re-install the driver, please first uninstall the previously installed driver. See Chapter 2.3 "Uninstallation" in this User Manual.

Follow the steps below to complete the driver/utility installation:

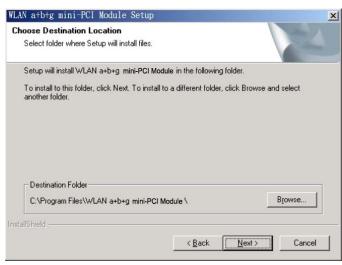
- 1. Insert the Installation Software CD into the CD-Rom Drive.
- 2. Click "Next".



3. Read the License Agreement and click "Yes".



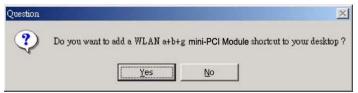
4. Click "Next" to continue or click "Browse" to choose a destination folder.



### 5. Click "Next".



6. Click "Yes" to create a shortcut icon on your desktop.



### 7. Click "Finish".

WLAN a+b+g mini-PCI Modu	le Setup
	InstallShield Wizard Complete Setup has finished installing WLAN a+b+g mini-PCI Module on your computer.
	< Back Finish Cancel

8. You should now see a shortcut icon on your desktop.

## 2.2 Additional Setup Processes

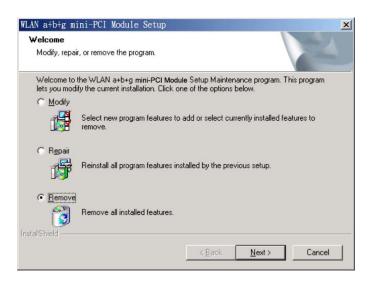
During software installation procedure, each operating system may prompt different specific options:

- 1. **Windows 98SE:** The system will request the original Windows CD during the installation process. When the installation is finished, you'll have to restart your computer.
- 2. Windows Me: Please restart your computer when the installation is finished.
- 3. Windows 2000/XP: Select "Install the software automatically" when the window with this option appears, and then click "Next" to continue installation.

## 2.3 Uninstallation

Note! Before uninstallation, please close all running programs.

- 1. Click <u>Start>Programs>WLAN a+b+g USB2.0 Adapter >UnInstall WLAN a+b+g USB2.0</u> <u>Adapter</u>.
- 2. Choose "Remove". Click "Next".



3. Click "OK" to start Uninstall.



4. Click "Finish". Uninstall is now completed.

WLAN a+b+g mini-PCI Modul	e Setup
	Maintenance Complete InstallShield Wizard has finished performing maintenance operations on WLAN a+b+g mini-PCI Module .
	< Back Finish Cancel

# **3.** Connecting to an Existing Network

1. Double click the shortcut icon of WLAN a+b+g USB2.0 Adapter on the desktop, and the Configuration window appears.

900	= 🕼	Information List Selected Profile Information Configuration Name Network Name	Detail List	
W		<ul> <li>Configuration Name</li> </ul>	Default	
9W			Default	
		<ul> <li>Network Connection</li> </ul>	AP(Infrastructure)	
difv		<ul> <li>Network connection</li> <li>WEP</li> </ul>	Disabled	
,			Disabled	
	E 32			
ete			A D/Infractorista wa)	
alv				
53.2				
	- 10	- Signal Strength	2470	_
hannel	WEP	Signal Strength	Network Connection	
efresh bui	tton to initia	te site surveu process		
		nannel   WEP	ete ete ivelocity ivelocit	ete ete Vitep Signal Strength Network Connection

2. Click on the **Refresh** button Prefresh to list all available networks.

Profile List						
				Information List	Detail List	
T TOILE LIST			ΞÛP	Selected Profile Information	n	
Default		New		<ul> <li>Configuration Name</li> </ul>	Default	
		HUN		<ul> <li>Network Name</li> </ul>		
	17.			<ul> <li>Network Connection</li> </ul>	AP(Infrastructure)	
	1 (B)	Modify	1	= WEP	Disabled	
			0 🧏	Link Information		
		Delete		Network Name	WN	
	Ш.			<ul> <li>Network Connection</li> </ul>	AP(Infrastructure)	
				<ul> <li>Network Connection</li> <li>Security</li> </ul>	AP(Infrastructure) None	
		Apply		<ul> <li>Security</li> <li>Channel</li> </ul>	None 5	
Enable Smal	rt Selection			<ul> <li>Security</li> <li>Channel</li> <li>Transmission Rate</li> </ul>	None 5 1 Mbps	
Enable Smal	rt Selection			<ul> <li>Security</li> <li>Channel</li> </ul>	None 5	
Enable Smai	rt Selection			<ul> <li>Security</li> <li>Channel</li> <li>Transmission Rate</li> </ul>	None 5 1 Mbps	
	t Selection		WEP	<ul> <li>Security</li> <li>Channel</li> <li>Transmission Rate</li> </ul>	None 5 1 Mbps	_
Available Networks		Apply	WEP Enable	<ul> <li>Security</li> <li>Channel</li> <li>Transmission Rate</li> <li>Signal Strength</li> </ul>	None 5 1 Mbps 36%	
Available Networks	Connection Mode	Apply.		Security     Channel     Transmission Rate     Signal Strength     Signal Strength	None 5 1 Mbps 36% Network Connection	_^
Available Networks Network Name	Connection Mode	Apply Channel 6	Enable [	Security     Channel     Transmission Rate     Signal Strength     Signal Strength     G2%	None 5 1 Mbps 36% Network Connection	
Available Networks Network Name NC50	Connection Mode B B	Apply Channel 6 5	Enable [ Disable	Security     Channel     Transmission Rate     Signal Strength     Signal Strength     62%     36%	None 5 1 Mbps 36% Network Connection Infrastucture Infrastucture	

# Note! To automatically connect to the network with the strongest signal, select Enable Smart Selection. Any displays in Profile List.

From the list of "Available Networks", choose one network by double clicking the Network Name. One of the following dialog boxes appears. Click "Yes" to continue.

Connection wizard	Connection wizard	×
Network name (SSID) : WN This is a wireless access point. To access this network, click Yes.	Network name (SSID) : NC60 This is a wireless access point. This network requires the use of a network key (WEP). To access this network, click Yes.	
Yes     Cancel       Don't show this wizard next time.	Yes     Cancel       Don't show this wizard next time.	

4. If the chosen network has security enabled, the **Security** tab displays. Select the security option used by the network. Contact the network administrator for the correct settings.

Set Security		Property		
	Options			
C 1000				
V VVFA	WP	A EAP Type	TLS	<b>*</b>
C WPA-	PSK			
C 802.1	× 802	2.1× EAP Type	TLS	<b>_</b>
C Pre-S	hared Key			
None				
	Configure	1		

5. If selecting **WPA** or **802.1X**, select the EAP type, then click on the **Configure** button to select the certificate.

Select a Certificate	
James [Issued: 2002/10/24]	
<ul> <li>Use Any Certificate Authority</li> </ul>	C Choose a Certificate Authority
CW HKT SecureNet CA SGC Root	Y
.ogin Name	
James	

6. If selecting **WPA-PSK**, click on the **Configure** button to enter the PassPhrase.

fine WPA P	δK				
-WPA-PSI	(				
Ent	er your WPA P	)acenhraca T	'he minimum	length is 8 cl	naractere
	sr your wea e	assprirase. i	ne nii iiniuni	iengin is o cr	

- 7. If selecting **Pre-Shared Key**, click on the **Configure** button to enter the correct Encryption Keys.
  - Key entry method:
  - a.10hex digits: User must enter 10 hexadecimal digits.
    - The hexadecimal define is "0-9" and "A-F".
    - ex: 123456abc
  - b.5 chars: User must enter 5 characters. ex: ab3#@
  - c.13 chars: User must enter 13 characters.
    - ex: ab3#@kf08&kdk
  - d.16 chars: User must enter 16 characters.
    - ex: ab3#@kf08&kdk456

For WEP key, please contact with MIS administrator.

Encryption Keys (H	ex 0-9 A-F)				
		_	Key Le	-	
Unique Key:		64	(40+24)	10 hex digits	-
Shared					
First:		64	(40+24)	10 hex digits	
Second:		64	(40+24)	10 hex digits	
Third:		64	(40+24)	10 hex digits	
Fourth:		64	(40+24)	10 hex digits	
First Key: Column	1, Length 0				

- 8. Click on **OK** (or **Apply** if using the other tabs) when done to save the settings.
- 9. Once connected (the icon 😵 or 😵 in front of the name of the Connected Network), you can check the signal strength from the icon 🗟 in the Windows System Tray.

## Additional Note for Windows XP

In Windows XP, it is recommended that you use the WLAN a+b+g USB2.0 Adapter Configuration Utility. Before using the Utility, please follow the steps below to disable the Windows XP Zero Configuration:

### **Option 1:**

- 1. Double click the shortcut icon to open the Utility.
- From the Windows System Tray, you should see the signal icon. Right-click it and select "Disable Zero-Configuration".



### **Option 2:**

- 1. Go to "Control Panel" and double click "Network Connections".
- 2. Right-click "Wireless Network Connection" of "WLAN a+b+g USB2.0 Adapter", and select "Properties".



3. Select "Wireless Networks" tab, and uncheck the check box of "Use Windows to configure my wireless network settings", and then click "OK".

Available netw	vorks:			
To connect to	an available net	work, click	Configu	ire.
NC60			^	Configure
NC datacom	PM			Refresh
				Move up
				Move down
Add	Remove	Pro	perties	

## 4. Creating an Ad Hoc New Network

**NOTE!** Ad-hoc mode is available only for 802.11b/g. It is not available for 802.11a. This is a client product and do not have radar detection function specified by FCC. The software will not let you to use ad-hoc under 802.11a.

WLAI	PCI Module Configur N Configuration <b>2.11a/b/g</b>		11 21 21 21 21 21 21 21 21 21 21 21 21 2		01010101010001	-
Profile List				Information List	Detail List	
- Profile List			⊡ <b>()</b> .	Selected Profile Information		
Default		New		<ul> <li>Configuration Name</li> </ul>	Default	
		INEW		Network Name		
	1			<ul> <li>Network Connection</li> </ul>	AP(Infrastructure)	
	82	Modify	300	<ul> <li>WEP</li> </ul>	Disabled	
			E 😼	Link Information		
	m	Delete		Network Name	WN	
	<b>Ш</b>			<ul> <li>Network Connection</li> </ul>	AP(Infrastructure)	
		27.17		<ul> <li>Security</li> </ul>	None	
Enable Smart	Polostion	Apply		<ul> <li>Channel</li> </ul>	5	
I Chaple Shian	Selection			<ul> <li>Transmission Rate</li> </ul>	1 Mbps	
				<ul> <li>Signal Strength</li> </ul>	36%	
Available Networks						
Network Name	Connection Mode	Channel	WEP	Signal Strength	Network Connection	ł
👗 NC50	В	6	Enable	62%	Infrastucture	
NC NC				36%	Infrastucture	
👗 NC50	в	2	Enable	31%	Infrastucture	-
👗 NC50	в	4	Enable	30%	Infrastucture	
👗 NC	B	3	Disable	24%	Infrastucture	

2. Select the "Profile Editor" tab.

Profile Items	Content
Configuration Name	Default
Network Name(SSID1)	
Network Name(SSID2)	
Network Name(SSID3)	
Network Connection	Ad Hoc 🔽
Power Saving	AP/Infrastructure)
Wireless Mode	CAd Hoc
Ad Hoc Net Start	802.11a
802.11b Range	Normal Range
Scan Mode	Auto
Transmit Power	Full Power
QoS	Disabled
Country	UNITED_STATES
Country	

- 3. Choose the check box of **Enable Advanced Setting** to edit all settings.
- 4. If joining or creating an Ad-Hoc network, choose **Ad Hoc**.
- Click OK (or Apply if using the other tabs) to save the settings.
   For details of each setting, refer to Modifying a Wireless Network on page 20.
- 6. Click the **Security** tab. If not using security, select **None**.

Set Security		WPA EAP Type	TLS	
C WPA-			1.00	
C 802.1:	¢	802.1× EAP Type	TLS	 Ŧ
C Pre-SI	nared Key			
None				
	Configure			

7. If security is used, select **Pre-Shared Key** and click on the **Configure** button.

8. Enter an encryption key in the **Shared: First** field.

Encryption Keys (H	(,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,,	Key Le	ength	
Unique Key:		64 (40+24)	10 hex digits	•
Shared				
First		64 (40+24)	) 10 hex digits	•
Second:		64 (40+24)	) 10 hex digits	•
Third:		64 (40+24)	) 10 hex digits	-
Fourth:		64 (40+24)	) 10 hex digits	•
First Key: Column	1, Length 0			
J	1, Length 0	04 (40+24)	TO HEX digits	

9. Click **OK** (or **Apply** if using the other tabs) to save the settings. The new **Network Name** is listed in the **Profile List**.

The driver does not allow channel selection in Ad-Hoc mode. Instead, the driver starts with an initial channel then checks channel status. If the channel is busy, the driver automatically uses a different channel.

For details of each setting, please see chapter 5.

# 5. Modifying a Wireless Network

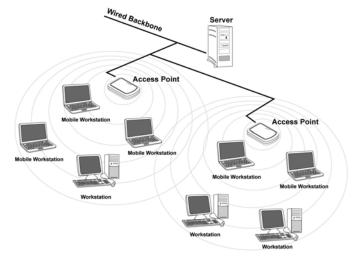
## 5.1 Infrastructure Mode and Ad Hoc Mode

You can set the Wireless Network Adapter to work in either **Infrastructure mode** or **Ad Hoc mode**.

**NOTE!** Ad-hoc mode is available only for 802.11b/g. It is not available for 802.11a. This is a client product and do not have radar detection function specified by FCC. The software will not let you to use ad-hoc under 802.11a.

### Infrastructure Mode

In infrastructure mode, devices communicate with each other by first going through an Access Point (AP). Wireless devices can communicate with each other or can communicate with a wired network. When one AP is connected to wired network and a set of wireless stations, it is referred to as a BSS (Basic Service Set).



### Ad Hoc Mode

Ad-hoc mode is also called "peer-to-peer mode" or "Independent Basic Service Set (IBSS)". In ad hoc mode, devices communicate directly with each other without using an Access Point (AP).

**NOTE!** Ad-hoc mode is available only for 802.11b/g. It is not available for 802.11a. This is a client product and do not have radar detection function specified by FCC. The software will not let you to use ad-hoc under 802.11a.



## 5.2 Modifying a Wireless Network

- 1. Open "WLAN a+b+g USB2.0 Adapter Configuration" by double clicking the shortcut icon on the desktop.
  - **Note!** If there's no network name listed in the "Profile List", click **Refresh** button and double click a Network Name from **Available Networks**. The chosen Network Name is listed in the Profile List.
- 2. From the Profile List, select one Profile and click **Modify** button

						More
Profile List		241		Information List	Detail List	
1234 Default		New Modify	- 17	Selected Profile Informatio Configuration Name Network Name Network Connection WEP Link Information	NC NC AP(Infrastructure) Disabled	
Enable Smar	t Selection	Delete Apply		Network Name     Network Connection     Security     Channel     Transmission Rate     signal Strength	1234 AP(Infrastructure) None 1 1 Mbps 20%	
vailable Networks		Apply		Network Connection     Security     Channel     Transmission Rate     Signal Strength	AP(Infrastructure) None 1 1 Mbps 20%	
wailable Networks	Connection Mode	Apply	VVEP	Network Connection     Security     Channel     Transmission Rate     Signal Strength     Signal Strength	AP(Infrastructure) None 1 1 Mbps 20%	
vailable Networks		Apply	WEP Disable Enable	Network Connection     Security     Channel     Transmission Rate     Signal Strength	AP(Infrastructure) None 1 1 Mbps 20%	
wailable Networks Network Name	Connection Mode	Apply Channel 5	Disable [	Network Connection     Security     Channel     Transmission Rate     Signal Strength     Signal Strength     37%	AP(Infrastructure) None 1 1 Mbps 20%	
Network Name	Connection Mode B B	Apply Channel 5	Disable [ Enable [	Network Connection     Security     Channel     Transmission Rate     Signal Strength     Signal Strength     37%     36%	AP(Infrastructure) None 1 1 Mbps 20% Network Connection Infrastucture Infrastucture	

3. Select **Profile Editor** tab and edit the settings. Click **OK** to save the modifications.

_	figuration Setting ofile Editor Security TC	P/IP Property	×
	Profile Items	Content	
	Configuration Name	Default	
	Network Name(SSID1)		
	Network Name(SSID2)		
	Network Name(SSID3)		
	Network Connection	AP(Infrastructure)	
	Power Saving	Normal	
	Wireless Mode	Auto	
	Ad Hoc Net Start	802.11a	
	802.11b Range	Normal Range	
	Scan Mode	Auto	
	Transmit Power	Full Power	
	QoS	Disabled	
	Country	UNITED_STATES	
	2.4 GHz Preamble	Short and Long	
	Enable Advanced Settin	ig Default	
		OK Cancel Apply	

- Configuration Name: This name identifies the configuration. This name should be unique.
- Network Name (SSID1) (SSID2) (SSID3): The name of the wireless network. This name cannot be longer than 32 characters. If the field is set to be "ANY" or is left blank, your computer will connect to an AP with the best signal strength.
- Network Connection: Specifies the mode of the network. Two options are "Infrastructure" and "Ad Hoc".
- Power Saving: Minimizes power consumption while maintaining network connectivity and high data transfer performance. In Ad Hoc mode, Power Savings function cannot be enabled. The power management options are:
  - Off: PC Card is powered up at all times.
  - Normal: PC Card sleeps less often and stays asleep for a shorter period.
  - Maximum: PC Card sleeps more frequently and stays asleep as much as possible.
- Wireless Mode: Three options are "802.11b", "802.11a", "802.11g", "Super A", "Super G" or "Auto". "Auto" allows the use of either 802.11a, 802.11g or 802.11b mode.
   NOTE! Ad-hoc mode is available only for 802.11b/g. It is not available for 802.11a.

This is a client product and do not have rador detection function specified by FCC. The software will not let you to use ad-hoc under 802.11a.

- Ad Hoc Net Start: Specifies a band to establish an Ad Hoc network if no matching SSID is found. Options available are the following: 802.11b and 802.11g.
   NOTE! Ad-hoc mode is available only for 802.11b/g. It is not available for 802.11a. This is a client product and do not have radar detection function specified by FCC. The software will not let you to use ad-hoc under 802.11a.
- 802.11b Range: Options are Normal Range and Extended Range. This function can let user to determine the transfer range in 802.11b mode. Extended Range can prolong the transfer range with a lower data transmitting rate.
- Scan Mode: Options are Active Scan, Passive Scan and Auto. In Active Scan, the driver sends out the probe request frames from each channel and collects the response frames from the responding. In Passive Scan, the driver scan each requested channel, listening the beacons on each channel.
- **Transmit Power:** This setting allows you to change the output power of the PC Card to increase or decrease the coverage area.
- QoS: Disables or enables the PC Card to cooperate in a network using QoS (Quality of Service).
- 2.4 GHz Preamble: Allows Ad-Hoc compatibility with other 2.4 GHz devices. Two options are Short and Long and Long only. Use Long Only when configuring the client for an 802.11b RoamAbout AP wireless network.

4. Select **Security** tab and choose the security mode.

Note! Check with your Network Administrator for the security features supported by your AP.

0	WPA	WPA EAP Type	TLS	¥
	WPA-PSK			
	802.1x	802.1x EAP Type	TLS	<u>~</u>
	Pre-Shared I	Key		
•	None			
	Configu	ire		

- WPA: Enables the use of WiFi protected Access (WPA). This option requires IT administration.
  - **a)** Select **WPA** to open the WPA EAP drop-down menu. The options includes TLS and PEAP.
  - **b)** Click on the **Configure** button and complete the configuration information in the Define Certificate dialog.
- WPA-PSK: Enables the WPA-Pre Shared Key (PSK). Click on the **Configure** button and complete the configuration information in the WPA Passphrase dialog.
- **802.1x:** Enables 802.1x security. This option requires IT administration.
  - **a)** Select **802.1x** to open the 802.1x EAP drop-down menu. The options include TLS and PEAP.
  - **b)** Click on the **Configure** button and complete the configuration information in the Define Certificate dialog.

- Pre-Shared Key: Enables the use of pre-shared keys that are defined on the AP and the station.
  - a) Select the Pre-Shared Key radio button.
  - **b)** Click on the **Configure** button and complete the configuration information in the Define Certificate dialog.
- **None:** No security.
- 5. Define the Certificate.

James [Issued: 2002/10/24]	Use Any Certificate Authority     C Choose a Certificate Authority     CW HKT SecureNet CA SGC Root     Server/Domain Name Corporate.com ogin Name	Select a Certificate	
CW HKT SecureNet CA SGC Root	CW HKT SecureNet CA SGC Root	James [Issued: 2002/10/24]	
erver/Domain Name Corporate.com ogin Name	erver/Domain Name Corporate.com ogin Name Iames	<ul> <li>Use Any Certificate Authority</li> </ul>	C Choose a Certificate Authority
Corporate.com .ogin Name	Corporate.com ogin Name James	CW HKT SecureNet CA SGC Root	Y
		Corporate.com	
		Corporate.com .ogin Name	

- Select a Certificate: Select the Certificate to Authenticate to the RADIUS server from the drop-down menu.
- Use any Certificate Authority: The Default Setting. Select this radio button to use any Certificate Authority (CA) for authentication.
- **Choose a Certificate Authority:** Select this radio button to choose the desired Certificate Authority for authentication from the drop-down menu.
- Server/Domain Name: The the RADIUS server name or the domain name used for the network access.
- **Login Name:** The username used to log into the server or domain.
- **Define User Information (PEAP)**: Click on the **Define User Information** button and complete the configuration information in the Define User Information dialog.
- 6. If selecting **WPA-PSK**, click on the **Configure** button to enter the PassPhrase. The

PassPhrase must be a minimum of 8 printable ASCII characters. The PassPhrase should be at least 20 characters to make it more difficult for an attacker to decipher the key.

7. If selecting **Pre-Shared Key**, click on the **Configure** button to enter the Encryption Keys.When finished, click **OK**. For WEP key, please contact with MIS administrator.

	Default Encryption Key:	
	Derdalt Eneryption Ney.	
Encryption Keys (H	lex 0-9 A-F)	
		Key Length
Jnique Key:		64 (40+24) 10 hex digits
Shared		
First:		64 (40+24) 10 hex digits 💌
Second:		64 (40+24) 10 hex digits 💌
Third:		64 (40+24) 10 hex digits 💌
Fourth:		64 (40+24) 10 hex digits
First Key: Column	1, Length 0	

- Key Entry Method: Determines the entry method for the key. Hexadecimal (0-9, A-F) or ASCII text (all keyboard characters).
- **Default Encryption Key:** Allows you to choose one encryption key (First, Second, Third, or Fourth) as the transmit key, which encrypts transmissions from the PC Card.
- Unique Key: Defines the per-session encryption key for the current network configuration. Not used in Ad-Hoc mode.
- Shared Keys: Use these fields to enter the wireless network's encryption keys. The keys must be in the correct position (First, Second, Third, or Fourth).
- Key Length: Defines the length of each encryption key.
   o For 40/64 bit (enter 10 digits for hexadecimal or 5 characters for ASCII)
   o For 104/128 bit (Enter 26 digits for hexadecimal or 13 characters for ASCII)

When the length is changed, the number of available characters in the field automatically changes. If a previously entered key is too long, the key is automatically truncated to fit. If the key length is increased again, the key does not update to the previous value.

- 8. Click **OK** to save the settings.
- 9. Select "TCP/IP Property" tab. Enter the settings and click "OK" to save the settings.

rofile Editor Security Setting TCP/IP Pro	perty			
You can get IP settings assigned autor capability. Otherwise, you need to ask appropriate IP settings C Obtain an IP address automatically	your netw			
Use the following IP address				
IP address : Subnet mask :			•	
Default gateway :		8		
C Obtain DNS server address autom	ratically			
┌ ⓒ Usethe following DNS server addr	ress			
Preferred DNS server :		- 24		
Alternate DNS server :		Q.		

- If the network uses DHCP server, choose **Obtain an IP address automatically**.
- If the network does not use DHCP server, choose Use the following IP address to set the relative settings. For the IP configuration information, please contact the network administrator.

## 5.3 Default Settings Windows XP Zero-Configuration

You may also choose the default parameters and directly proceed to Windows XP zero-configuration through the steps below:

- 1. Go to "Control Panel" and open "Network Connections".
- 2. Right-click the Wireless Network Connection of "WLAN a+b+g USB2.0 Adapter", and make sure this connection is **Enabled**.
- 3. Right-click the Wireless Network Connection of "WLAN a+b+g USB2.0 Adapter", and then click "Properties".
- 4. Select "Wireless Networks" tab and select "Use Windows to configure my wireless network settings" check box.
- **Note!** Clear the check box of "Use Windows to configure my wireless network settings" will disable automatic wireless network configuration.

## **Appendix A: FAQ about WLAN**

1. Can I run an application from a remote computer over the wireless network? This will depend on whether or not the application is designed to be used over a network. Consult the application's user guide to determine whether it supports operation over a network.

### 2. Can I play computer games with other members of the wireless network?

Yes, as long as the game supports multiple players over a LAN (local area network). Refer to the game's user guide for more information.

### 3. What is Spread Spectrum?

Spread Spectrum technology is a wideband radio frequency technique developed by the military for use in reliable, secure, mission-critical communications systems. It is designed to trade off bandwidth efficiency for reliability, integrity, and security. In other words, more bandwidth is consumed than in the case of narrowband transmission, but the trade-off produces a signal that is, in effect, louder and thus easier to detect, provided that the receiver knows the parameters of the spread-spectrum signal being broadcast. If a receiver is not tuned to the right frequency, a spread-spectrum signal looks like background noise. There are two main alternatives, Direct Sequence Spread Spectrum (DSSS) and Frequency Hopping Spread Spectrum (FHSS).

### 4. What is DSSS? What is FHSS? And what are their differences?

Frequency-Hopping Spread-Spectrum (FHSS) uses a narrowband carrier that changes frequency in a pattern that is known to both transmitter and receiver. Properly synchronized, the net effect is to maintain a single logical channel. To an unintended receiver, FHSS appears to be short-duration impulse noise. Direct-Sequence Spread-Spectrum (DSSS) generates a redundant bit pattern for each bit to be transmitted. This bit pattern is called a chip (or chipping code). The longer the chip, the greater the probability that the original data can be recovered. Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the radio can recover the original data without the need for retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrowband receivers.

### 5. Would the information be intercepted while transmitting on air?

WLAN features two-fold protection in security. On the hardware side, as with Direct Sequence Spread Spectrum technology, it has the inherent security feature of scrambling. On the software side, WLAN offers the encryption function (WEP) to enhance security and access control.

### 6. What is WEP?

WEP is Wired Equivalent Privacy, a data privacy mechanism based on a 64-bit or 128-bit shared key algorithm, as described in the IEEE 802.11 standard.

#### 7. What is infrastructure mode?

When a wireless network is set to infrastructure mode, the wireless network is configured to communicate with a wired network through a wireless access point.

### 8. What is roaming?

Roaming is the ability of a portable computer user to communicate continuously while moving freely throughout an area greater than that covered by a single access point. Before using the roaming function, the workstation must make sure that it is the same channel number with the access point of dedicated coverage area.

To achieve true seamless connectivity, the wireless LAN must incorporate a number of different functions. Each node and access point, for example, must always acknowledge receipt of each message. Each node must maintain contact with the wireless network even when not actually transmitting data. Achieving these functions simultaneously requires a dynamic RF networking technology that links access points and nodes. In such a system, the user's end node undertakes a search for the best possible access to the system. First, it evaluates such factors as signal strength and quality, as well as the message load currently being carried by each access point and the distance of each access point to the wired backbone. Based on that information, the node next selects the right access point and registers its address. Communications between end node and host computer can then be transmitted up and down the backbone. As the user moves on, the end node's RF transmitter regularly checks the system to determine whether it is in touch with the original access point or whether it should seek a new one. When a node no longer receives acknowledgment from its original access point, it undertakes a new search. Upon finding a new access point, it then re-registers, and the communication process continues.