

WUB1900
IEEE 802.11b/g/n USB Adapter (Bandwidth 20/40MHz)
User's Manual

1. Introduction

The **WUB1900** USB Dongle Adapter (hereafter called USB Dongle adapter), compliant with IEEE 802.11b/g, is a high-efficiency wireless adapter for wireless networking at home, in office, or in public places. This USB Dongle adapter connects directly to any USB-ready desktop/notebook computers, so that you can share files, printers, and high-speed access to the Internet over your existing wireless network easily, without disassembling your computer.

The WUB1900 USB Dongle Adapter has a data rate of up to 160Mbps, and can auto-negotiate to 54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2, 1Mbps to be compatible with any IEEE 802.11b/g device.

The WUB1900 USB Dongle Adapter is compatible with Windows 98SE/ME/2000/XP and can be used in either **Ad-hoc mode** (computer-to-computer, without a wireless router) or **Infrastructure mode** (computer-to-wireless router, a wireless router is required).

1.1 Features

- Connects at a 160Mbps via USB 2.0, up to 13 times faster than a WiFi-b
- Compact size for greater flexibility
- Also compatible with USB 1.1 desktop and notebook computers
- Plug-and-Play Compatible with windows XP (32/64bit),Vista
- Security : WEP 64/128 bits TKIP/802.11i compliant AES –CCMP encryption WPA-PSK,WPA2-PSK,802.1x,EAP-TLS,EAP-TTLS,PEAP-TL,PEAP(EAP-GTC),PEAP(EAP-MSCHAPv2),Jumpstar2.0
- Support WPA/WPA2-Personal, WPA/WPA2-Enterprise
- QoS :WMM
- Support WPS
- Support Hardware Push Button for WPS
- Support 802.11 d , 802.11h
- Support DFS1.0 and 2.0
- Support WHQL
- RTS & Fragment Threshold support
- WOL(Wake On WLan) Support

Advance Feature

- Roaming
- Japan Mid Band
- WoW and Dual Core support
- 802.11 adhoc
- ACU (for XP only)

1.2 Package Contents

Before you begin the installation, please check the items of your package. The package should include the following items:

- One WUB1900
- One Quick Installation Guide
- One Driver & Utility CD (with User's Manual)
- USB Cable

If any of the above items is missing, contact your supplier as soon as possible.

2. Installation Procedures

This chapter describes the instructions that guide you through the proper installation of your WUB1900 for the Windows 98SE/ME/2000 /XP/VISTA operating systems.

The complete installation of the WUB1900 consists of the following steps

STEP 1 : Insert the provided Driver and Utility CD into your CD drive.

STEP 2 : Click **Install Driver** from the Setup menu.

STEP 3 : When the welcome screen appears, click **Next**.

STEP 4 : Click **Next** to accept the default destination folder for the software or click **Browse** to manually select a different destination folder.

STEP 5 : For Windows XP, click **Continue Anyway** at the Windows Logo Compatibility screen.

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

STEP 7 : Remove the Driver & Utility CD from your CD drive and then restart your computer.

Before Installation

In addition to the items shipped with the client adapter, you will also need the following in order to install the adapter:

Windows XP/Vista CD-ROM. (original Windows installation CD-ROM or diskettes)

Driver Installation for Windows

This section describes the installation procedures of the WUB1900 driver for the Windows XP/Vista operating systems.

Note: Before you start the installation, you are advised to keep the Windows CD-ROM in case you might need certain system files.

2.1 Install Driver & Utility Software

Note1: Before installing the utility software, **DO NOT** insert the USB adapter into your computer. If the adapter is inserted already, Windows will detect the adapter and request for a driver. Click **Cancel** to quit the wizard and remove the adapter from your computer.

Note2: If you have installed the USB adapter driver & utility already, please uninstall the old version first.

Step 1 Insert the provided Driver and Utility CD into your CD drive.

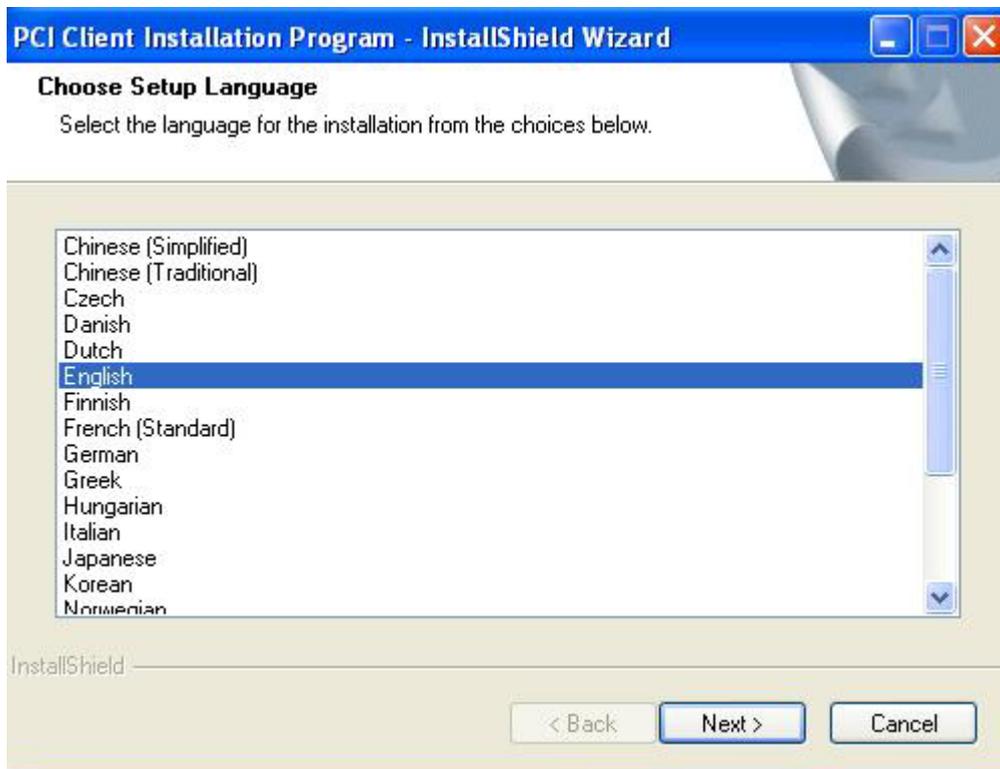
Step 2 Click **Install Driver & Utility** from the Setup menu.



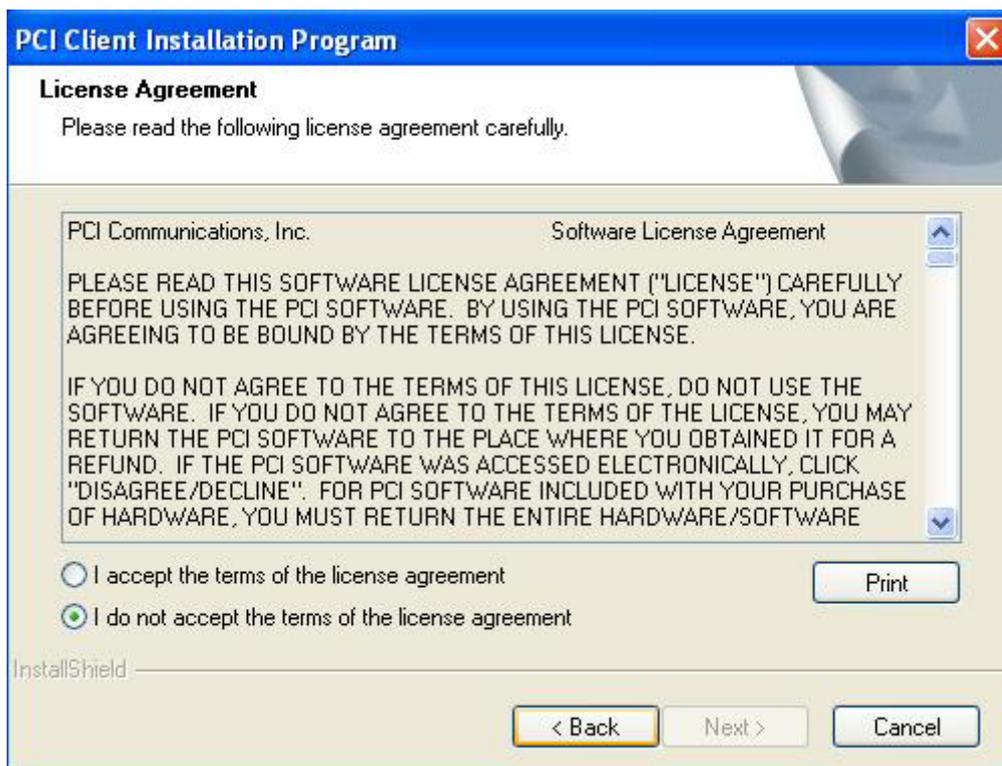
Note: If the Setup menu does not appear automatically, go to **Start, Run**, type **D:\autorun.exe** (where **D** is the letter of your CD drive) and click **OK**.

2.2 Install Utility Software

Step 1 When the welcome screen appears, select the language you want ,then click **Next**.



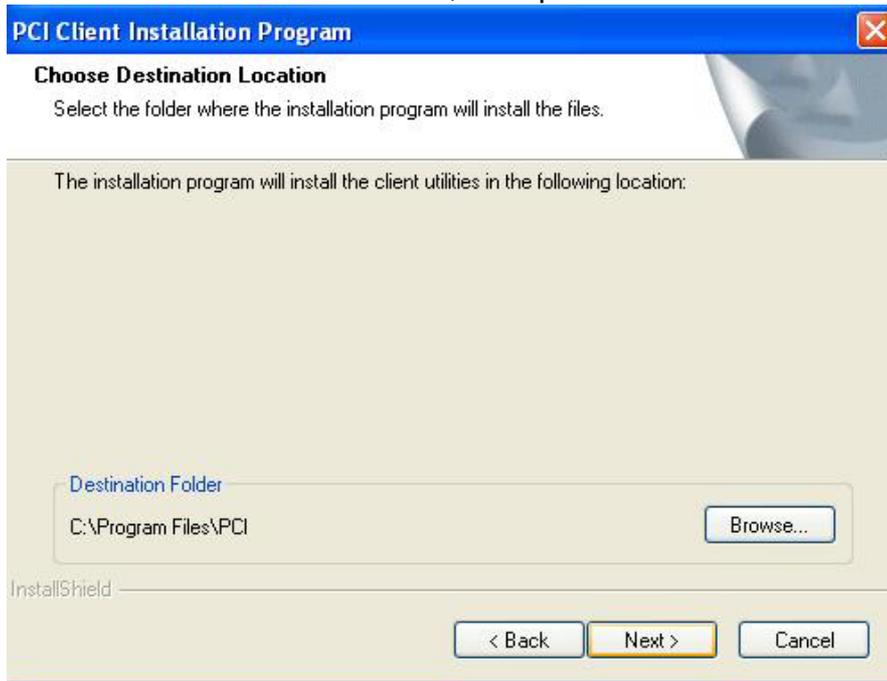
Step 2 Select "I accept the terms of the license agreement", then click **Next**



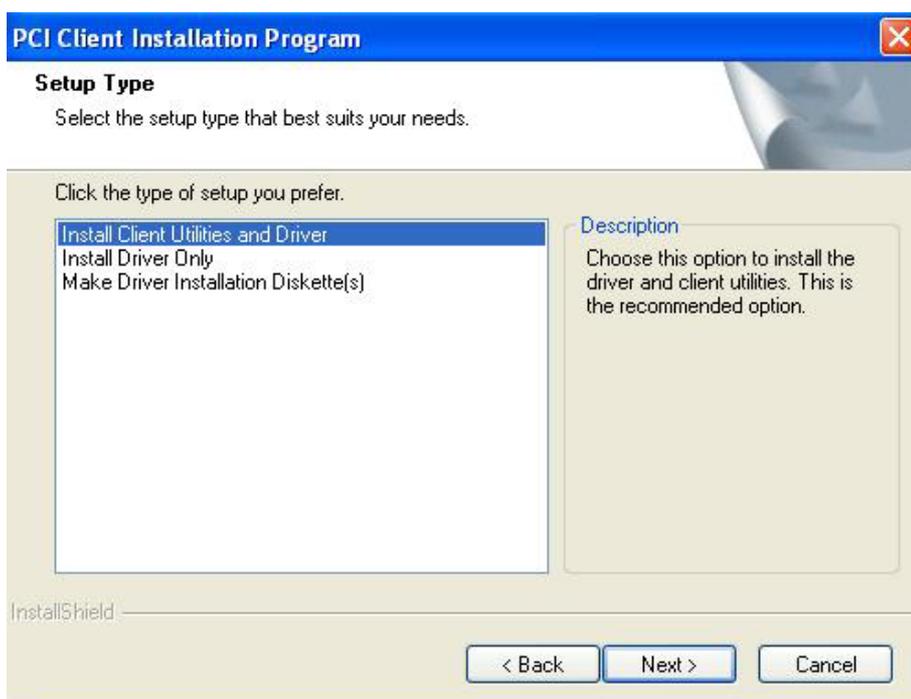
Step 3 Please insert USB dongle while this screen appears, then press “OK”



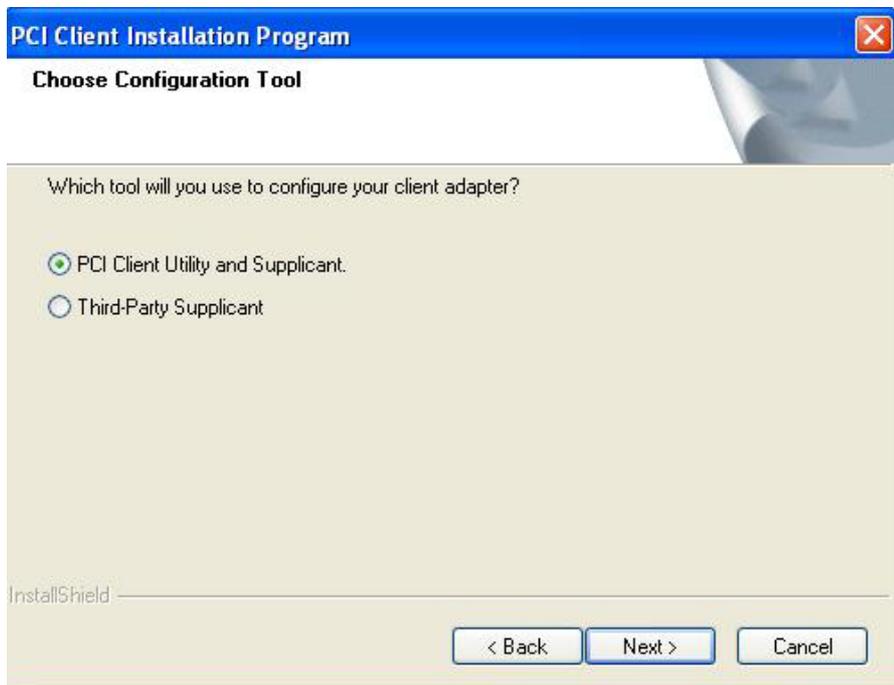
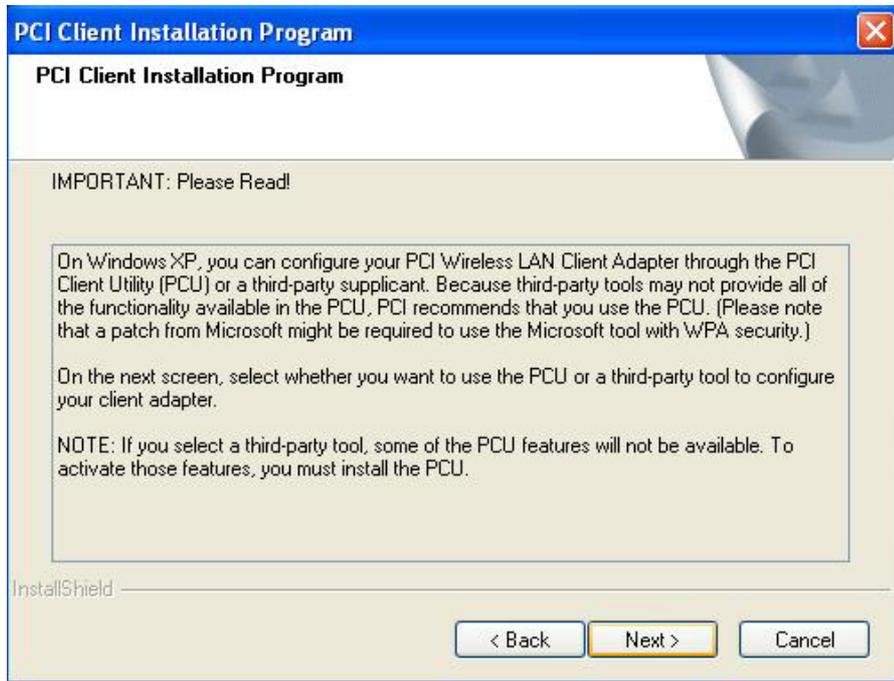
Step 4 Choose the Destination Folder, then press **Next**



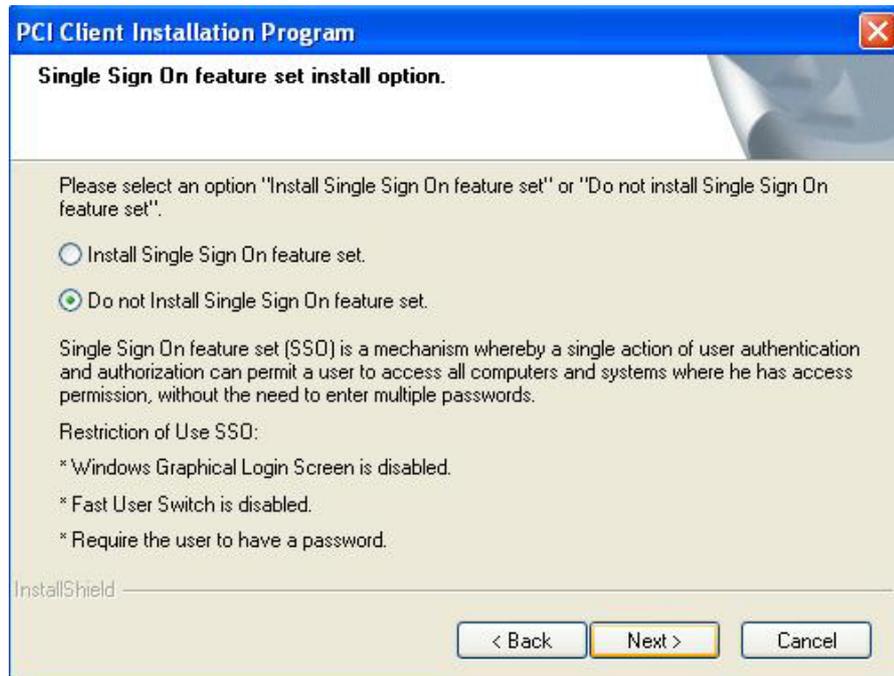
Step 5 Click **Next** to accept the default destination folder for the software or click **Browse** to manually select a different destination folder.



Step 6 Click **Next**, then choose PCI Client Utility (PCU), then Press **Next**

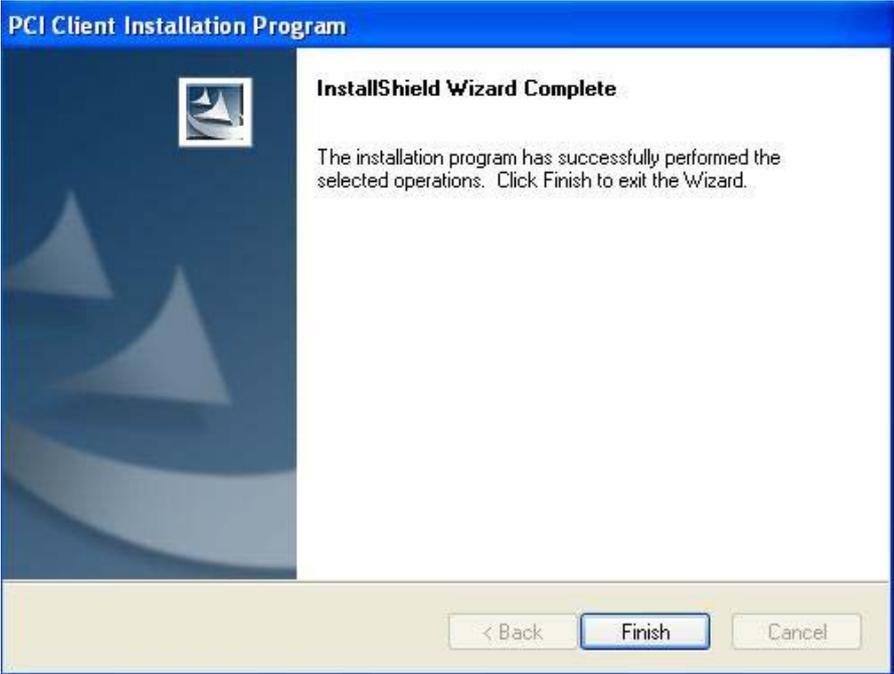


Step 7 You can choose **Single Sign On** feature or not while you install the utility ,then press **Next**



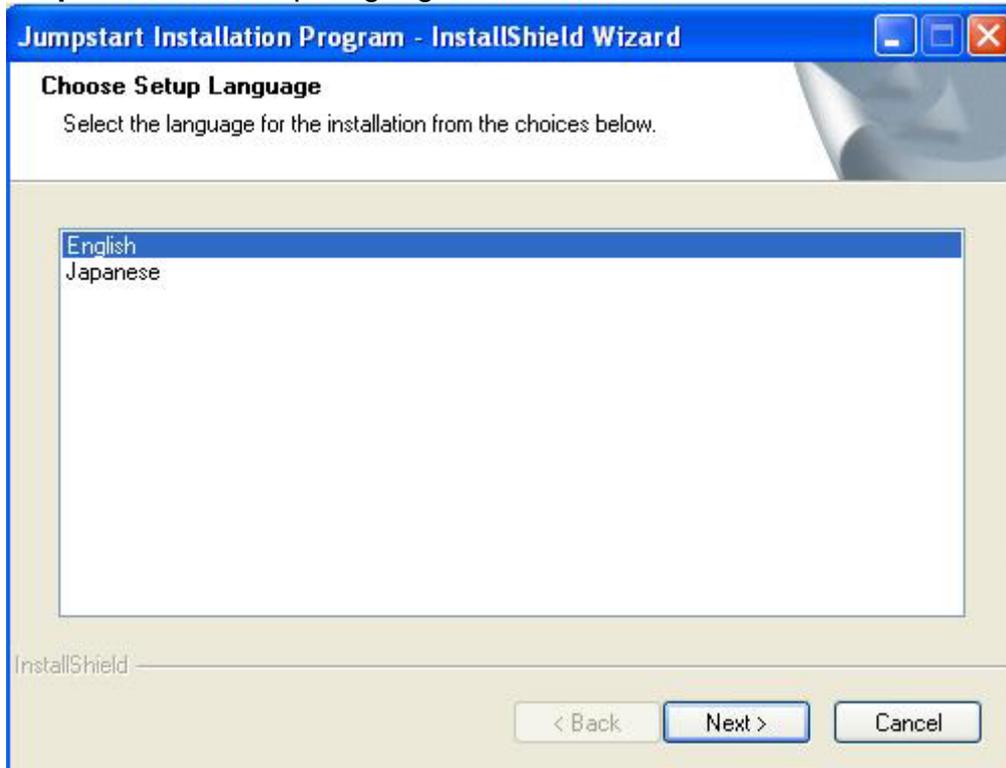
Step 8 Click **Continue Anyway** at the Windows Logo Compatibility screen. Then finish utility installation.



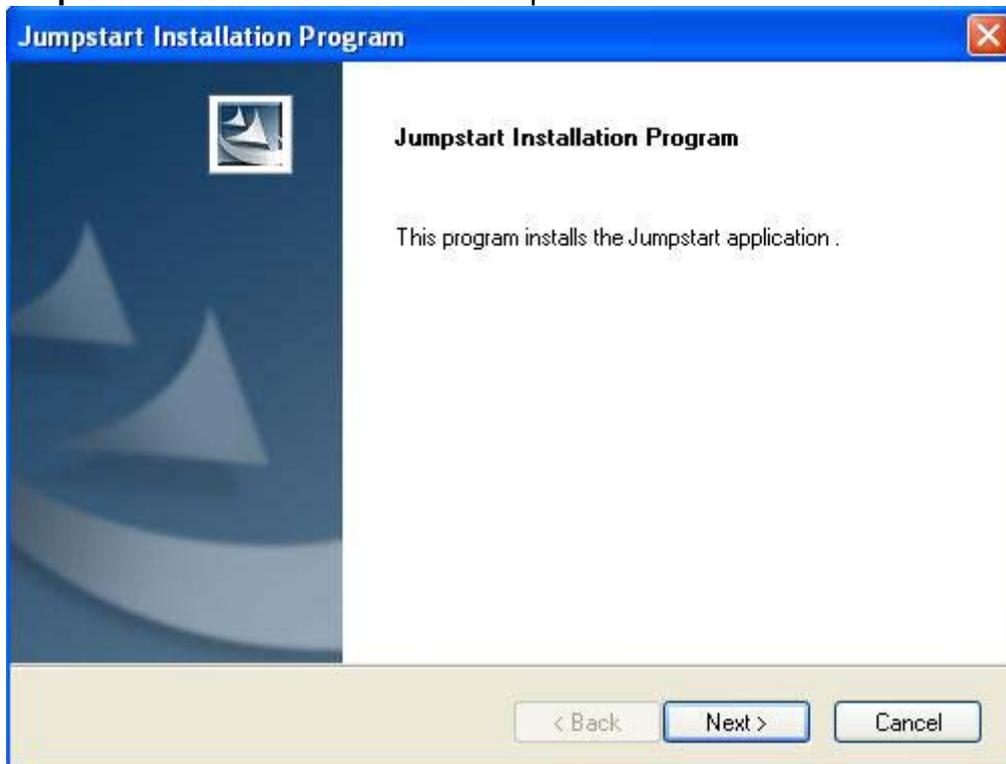


2.3 Install WPS

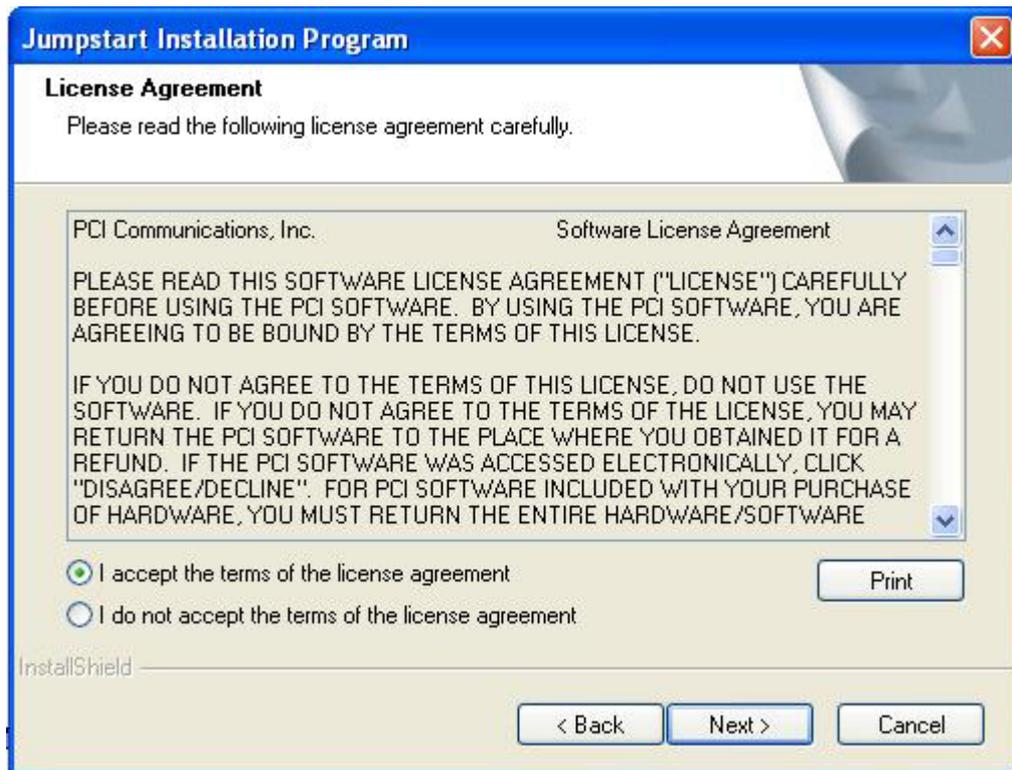
Step 1 Choose setup language.



Step 2 Click **Next** to start install Jumpstart.



Step 3 Select "I accept the terms of the license agreement" ,then click **Next**

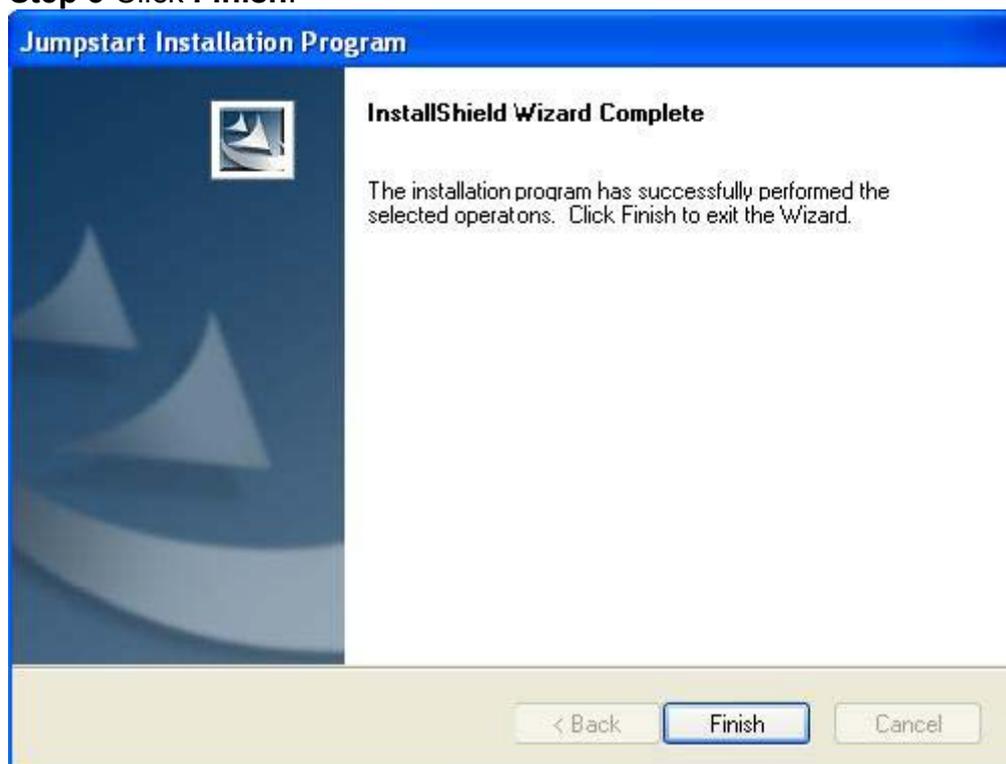


Step 4 Click **Continue Anyway** at the Windows Logo Compatibility screen. Then finish utility installation.



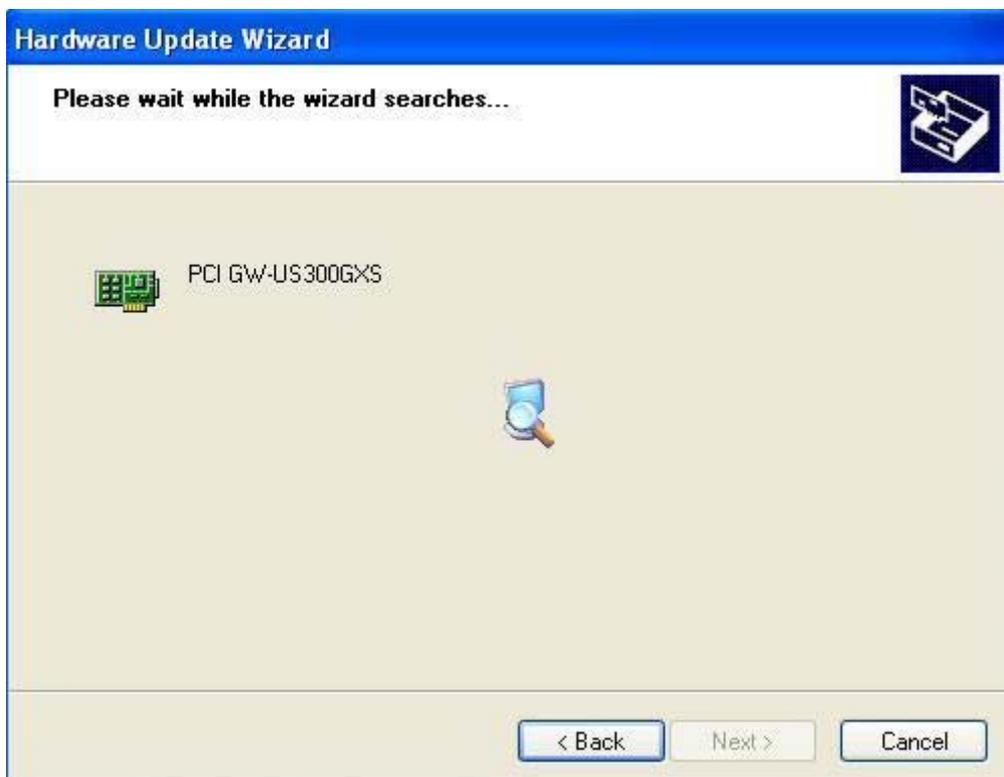


Step 3 Click Finish.



2.3 Install Driver for Win XP / Vista

Step 1 Choose install the software automatically (Recommended) ,then press **Next**



Step 2 Click **Continue Anyway** at the Windows Logo Compatibility screen. Then finish utility installation.



Step 3 Click **Finish**. Restart the computer if you are prompted to do so.

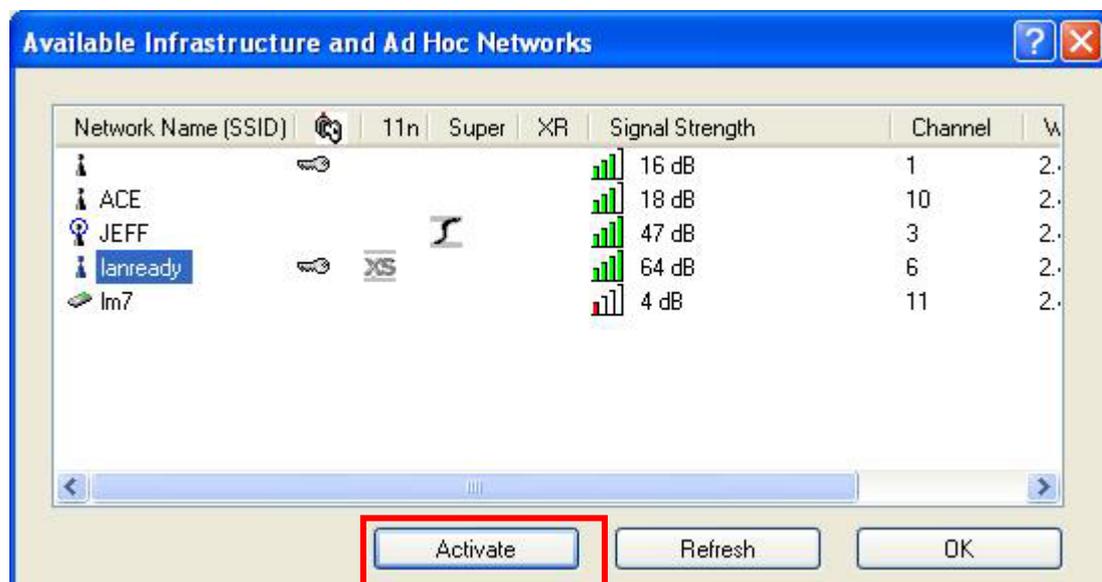
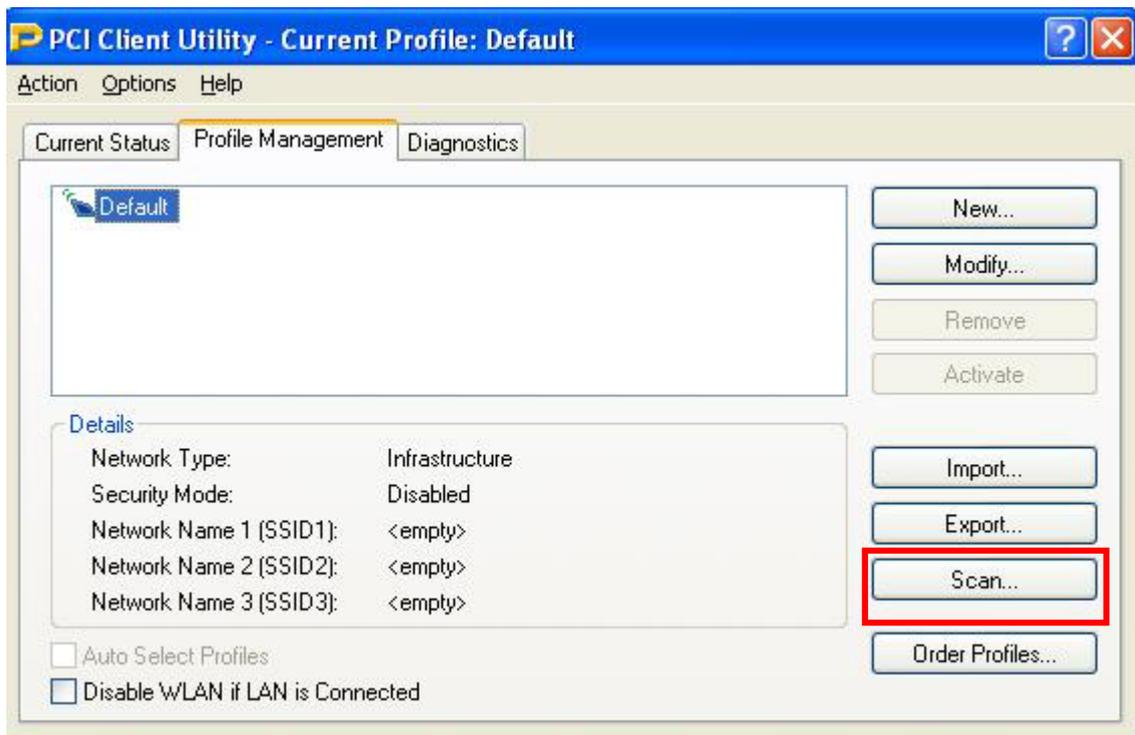


3. Configuring USB Adapter as a Wireless Client

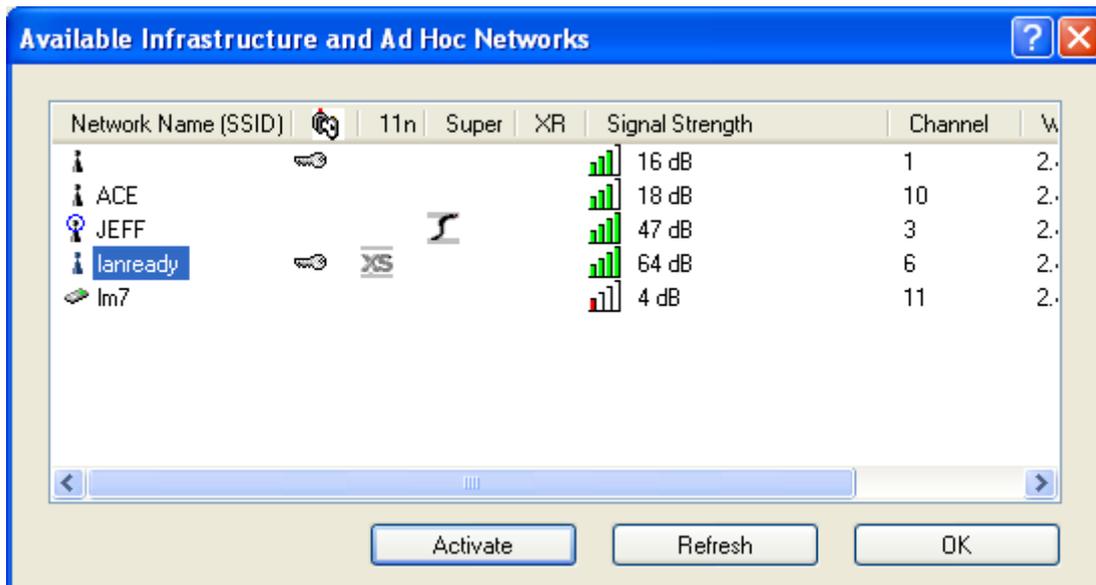
The USB adapter can be set to either **Station** or **Access Point** Mode from the **Mode** drop-down menu. **Station** mode is the default selection and should be selected if you want to connect to a wireless router/access point or conduct peer-to-peer networking.

To open the utility, go to Start, **(All) Programs, Atheros/Atheros Client Utility**.

Step 1 In **Profile Management**, Select the **Scan** of your wireless router/access point from the Available Network list and click on the **Activate** button.



Step 2 Verify that the adapter has adequate **Signal Strength**.



Network Name(SSID): Lists all the available wireless router/access point in your area. You can click on the **Refresh** button to update the list.

11n: Displays the network information if this available wireless router/access point supports 11n.

Super: Displays the network information if this available wireless router/access point support Super mode.

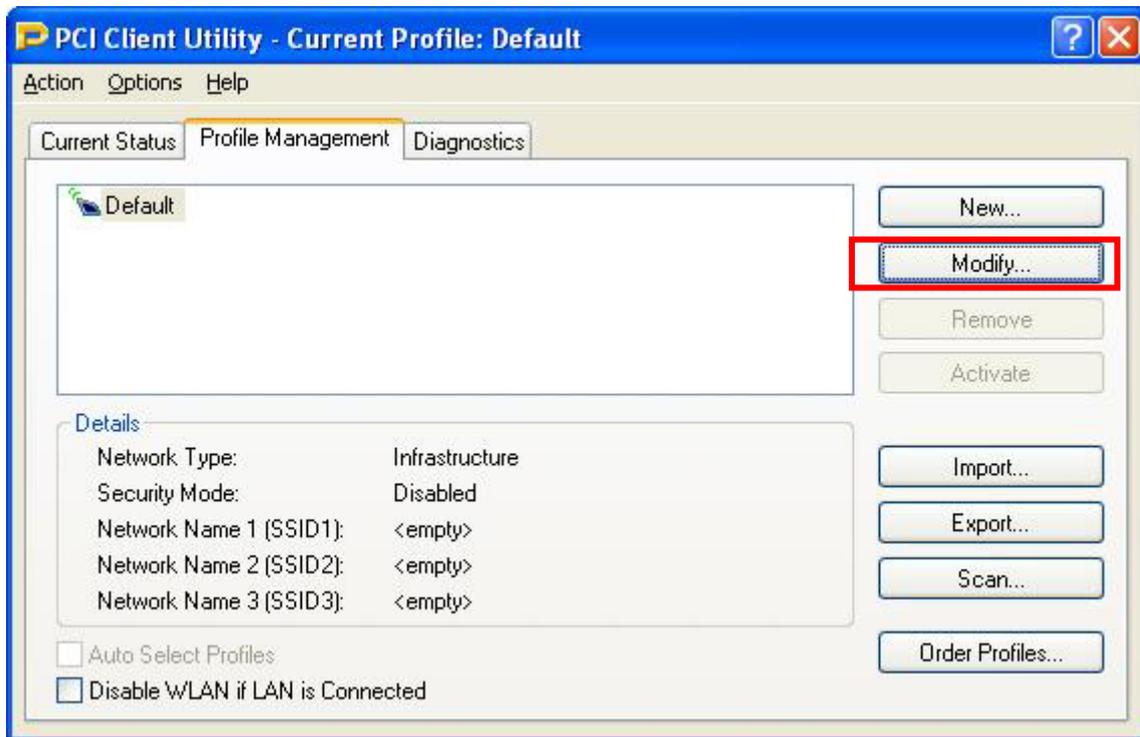
XR: Displays the network information if this available wireless router/access point support XR mode..

Signal Strength: Displays the current link quality.

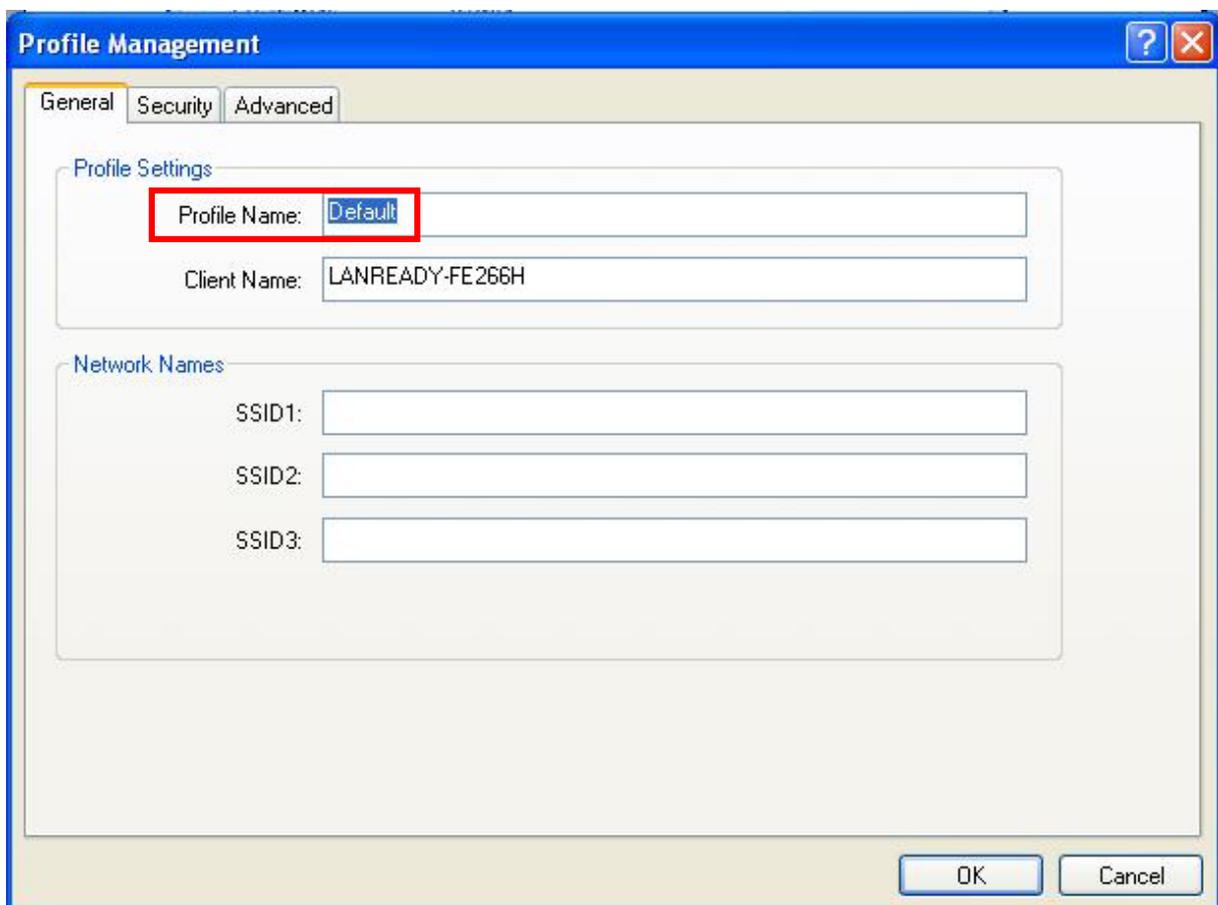
Wireless Mode: Displays the wireless network information of the wireless router/access point

3.1 Configuring Profile Settings

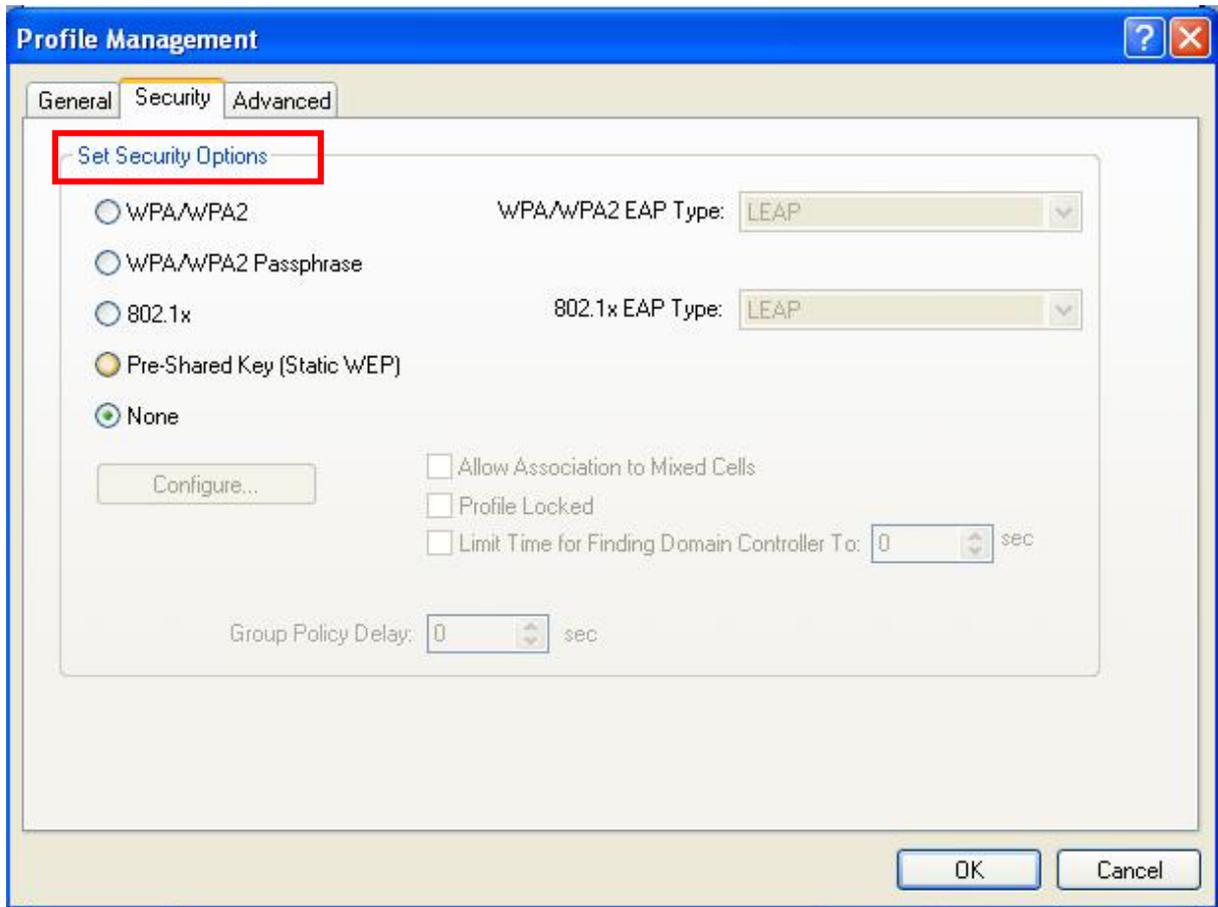
Click **Modify** to configure the adapter's **General** ,**Security** and **Advanced Setting**



Input the adapter's **Profile Name**

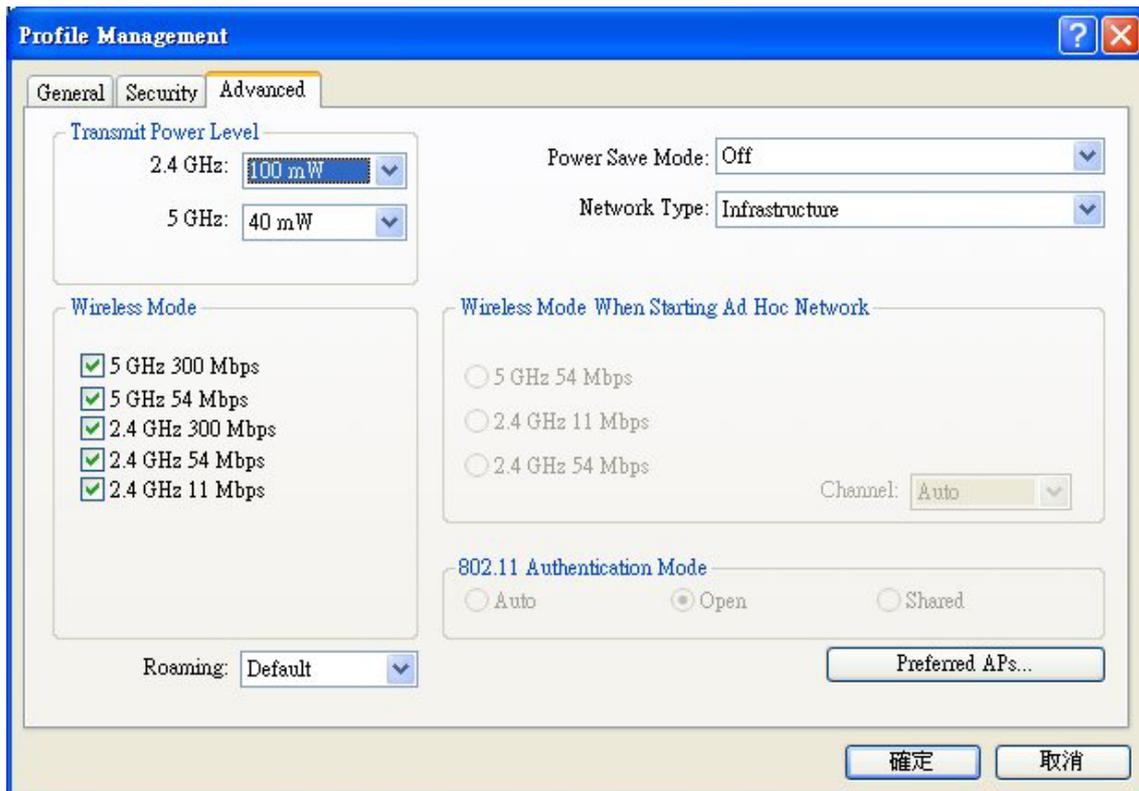


Select Security Options



Verify Transmit Power Level and Wireless Mode

Notice : All configurations for 2.4GHz were based on 2.4GHz(802.11bgn) RF chipset .Otherwise it can't work.



Transmit Power Level: This setting is for USB adapter power transmitting
2.4GHz: 1,2,3,4,5,6,7,8,9,10,20,32,50,63,100mW

5GHz : No function on this product.

Power Save Mode:

Off: provides the best signal throughput but least power save.

Normal: provides average power save and throughput.

Maximum: provides the best power save but least throughput.

Network Type: Choose from **Infrastructure** (for connecting to a wireless router/access point) or **Ad-Hoc** (for computer-to-computer networking, bypassing the wireless router/access point).

Wireless Mode

Include **2.4GHz 300Mbps /2.4GHz 54Mbps /2.4GHz 11Mbps**

Wireless Mode When Starting Ad Hoc Network

Support **2.4GHz 300Mbps /2.4GHz 11Mbps/2.4GHz 54Mbps**

Roaming:

Support **Low/Very Low/Normal/High/Very High**

Preferred APs

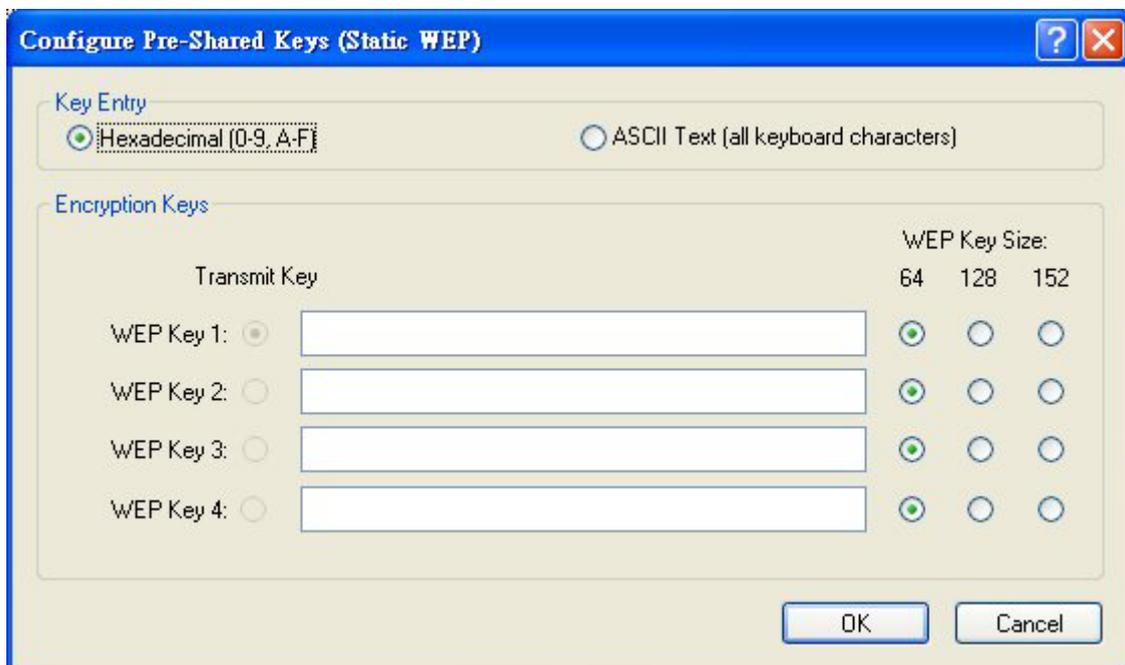
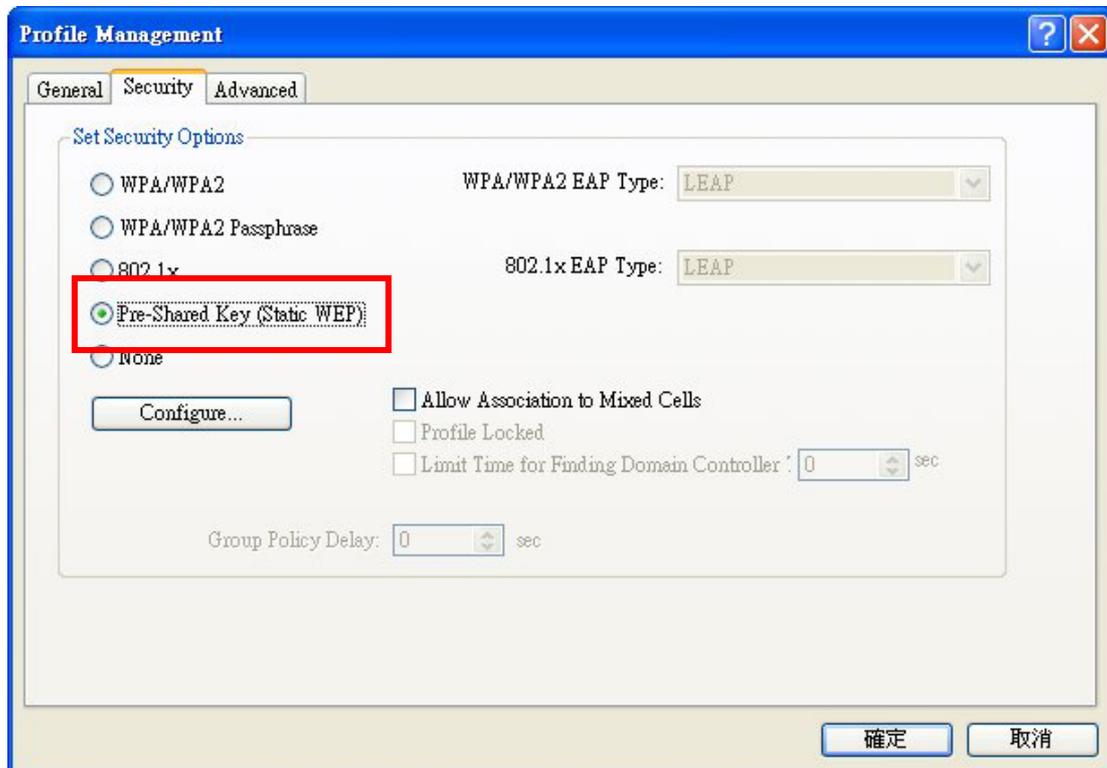
You can assign Preferred APs by MAC address. Maximum up to 4 APs.

Click **Apply** to save the changes.

3.2 Configuring Encryption Security

3.2.1 Pre-shared Key(Static WEP)

Select **Pre-shared Key(Static WEP)** then click configure to do the WEP settings.



Key Entry: Select either Hexadecimal (0-9, A-F) or ASCII (any number or letter).

Transmit Key: Select which of the four Key Value you want to use.

WEP Key Size: Select the appropriate encryption key length.

Note the following rules when entering Key values:

- **64-bit** key length requires **10** Hexadecimal characters (0-9, A-F) or **5** ASCII characters (any number or letter).
- **128-bit** key length requires **24** Hexadecimal characters (0-9, A-F) or **13** ASCII characters (any number or letter).
- **152-bit** key length requires **32** Hexadecimal characters (0-9, A-F) or **16** ASCII characters (any number of letter).

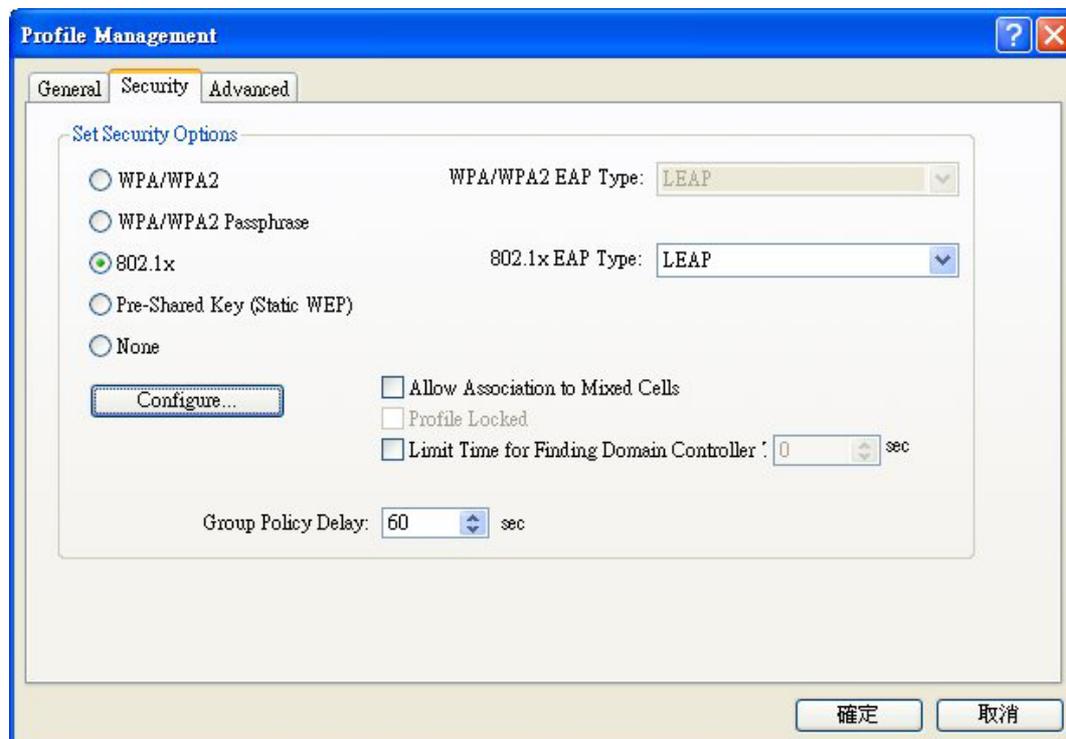
And then click **OK** to save the settings.

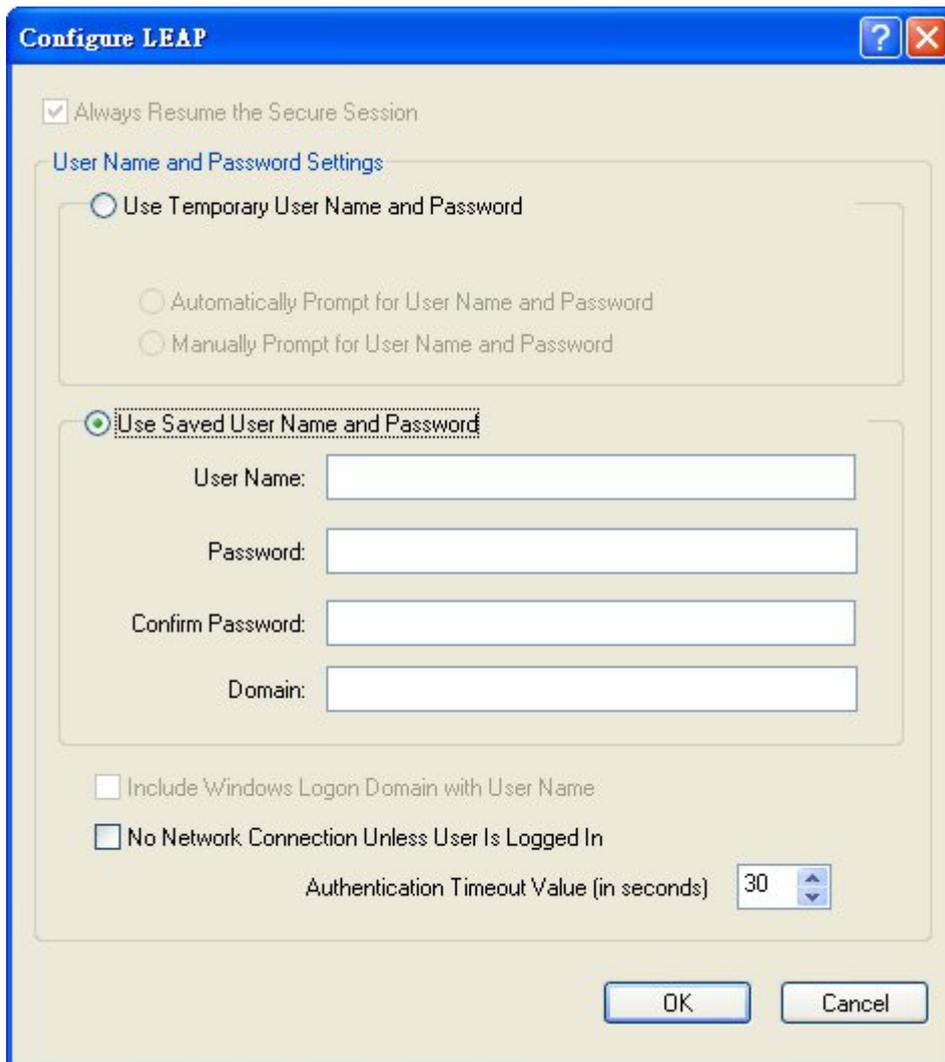
Note: The WEP Key settings must be identical to the WEP settings of the wireless router/access point you wish to connect to.

After you have applied the changes, return to the utility's main screen and select the wireless router/access point you wish to connect to.

If you want to use WPA encryption, click on **Change** in the General Connection Setting.

3.2.2 802.1x

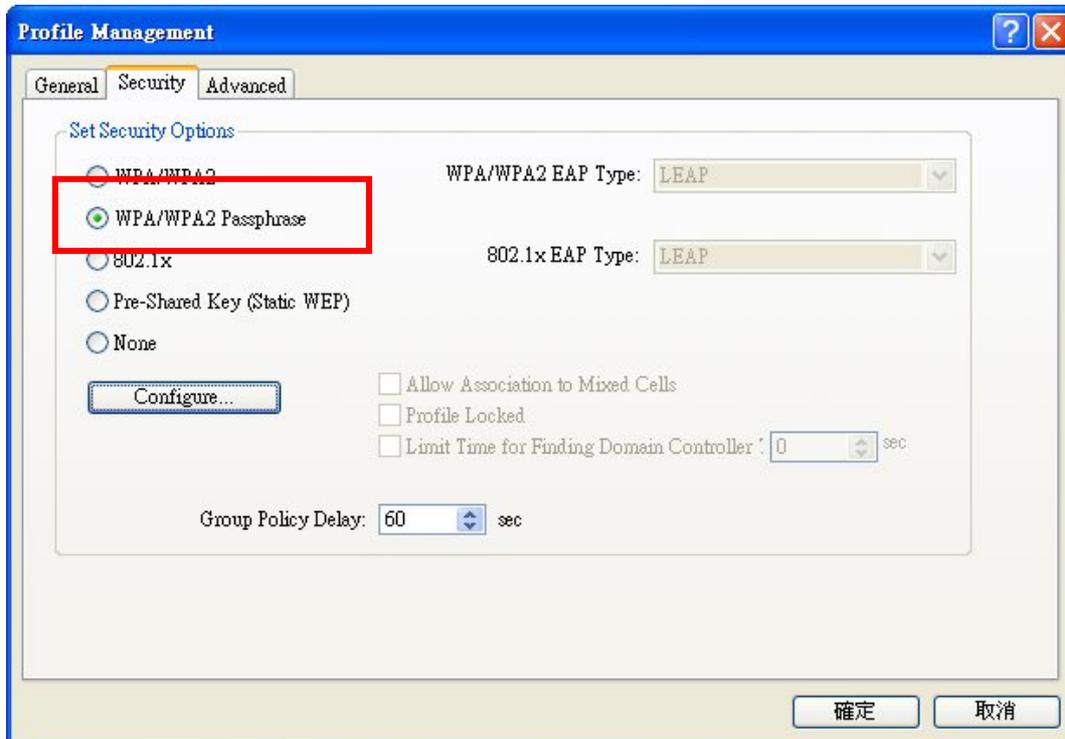




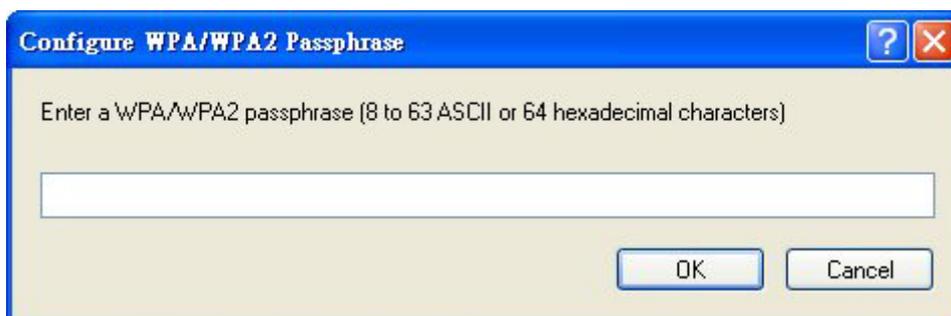
1. After associating with a wireless access point, the client sends an EAP-start message. begins a series of message exchanges to authenticate the client.
2. The access point replies with an EAP-request identity message.
3. The client sends an EAP-response packet containing the identity to the authentication
4. The authentication server uses a specific authentication algorithm to verify the client's this could be through the use of digital certificates or other EAP authentication
5. The authentication server will either send an accept or reject message to the access
6. The access point sends an EAP-success packet (or reject packet) to the client.

3.2.3 WPA/WPA2 Passphrase

WPA/WPA2 Passphrase offers two encryption methods, TKIP and AES, with dynamic encryption keys. Select TKIP or AES for encryption. Then enter a Pre-shared Key that is 8-63 characters in length. You must enter the same security settings used on your network.



Encryption - Select the type of algorithm you want to use, TKIP or AES, from the *Encryption* drop-down menu.



Click the **OK** button to continue or the Cancel button to back to the previous screen.

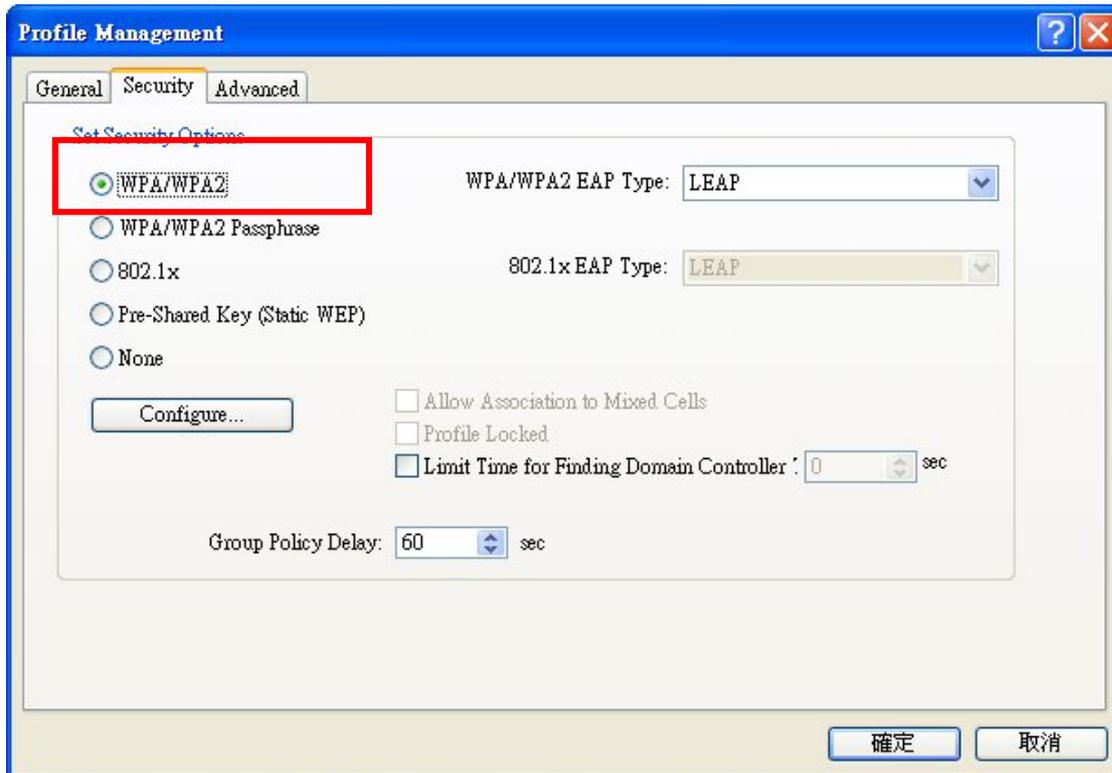
3.2.4 WPA/WPA2

WPA/WPA2 features WPA security used in coordination with a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.)

WPA/WPA2 offers several authentication methods,

EAP-TLS/EAP-TTLS/PEAP/LEAP/EAP-FAST/EAP-SIM, as well as two encryption methods, TKIP and AES, with dynamic encryption keys. You must enter the same security settings used on your network. Authentication - Select the

authentication method your network is using EAP-TLS or PEAP.EAP-TTLS



EAP-TTLS

If you selected **EAP-TTLS**, enter the login name of your wireless network in the *Login Name* field. Enter the name of the authentication server in the *Server Name* field (this is optional). From the *Certificate* drop-down menu, select the certificate you have installed to authenticate on your wireless network. Select the type of encryption with TKIP or AES

Click the **Apply** button to continue or the Back button to return to the previous screen.

PEAP

If you selected PEAP, enter the login name of your wireless network in the *Login Name* field. Enter the password of your wireless network in the *Password* field. Enter the name of the authentication server in the *Server Name* field (this is optional). From the *Certificate* drop-down menu, select the certificate you have installed to authenticate you on your wireless network; if you want to use any certificate, keep the default setting, Trust Any. Then select the authentication method used inside the PEAP tunnel. Select the type of encryption with TKIP or AES

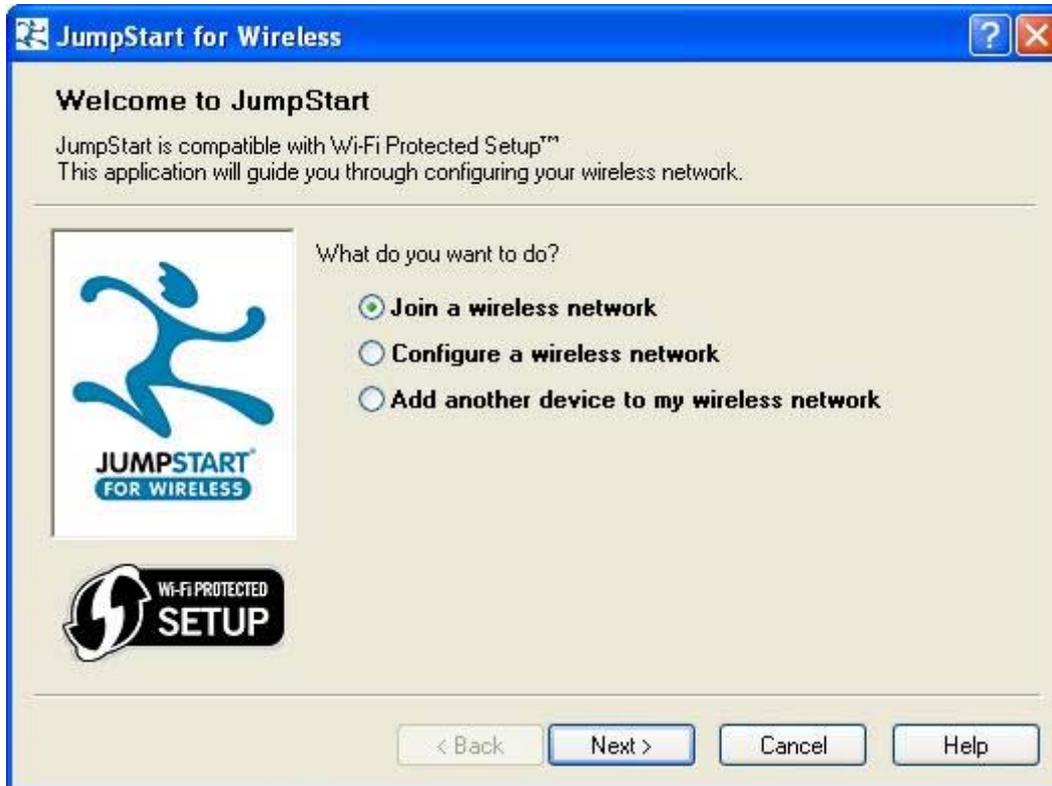
Click the **Apply** button to continue or the Back button to return to the previous screen

LEAP

Light Extensible Authentication Protocol (LEAP) is a proprietary 802.1x EAP method developed by Cisco for use on wireless networks that use Cisco 802.11 wireless devices. It features dynamic per user per session WEP keys.

3.3 WPS JUMPSTART RUN

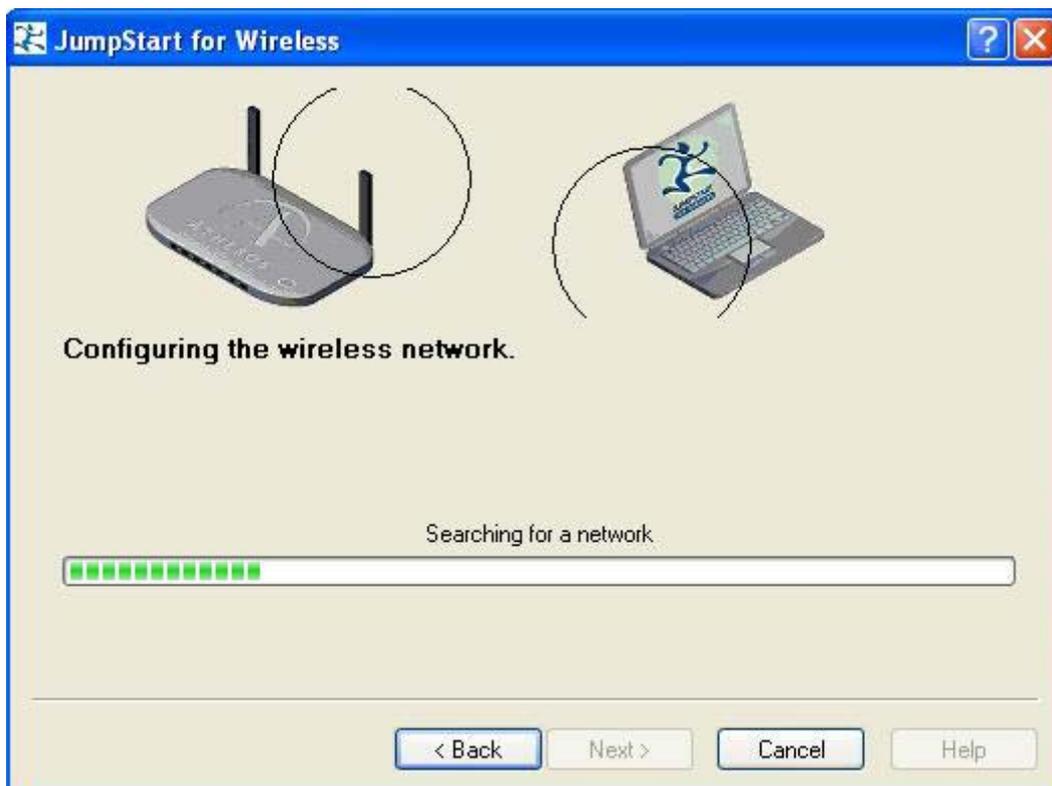
Select Join a wireless network, then push **Next** button.



Select **Push the button on my access**, at same time you need to push that button. Then push **Next** button.



The device will search access point and connect it.



PCI Client Utility - Current Profile: Default [?] [X]

Action Options Help

Current Status Profile Management Diagnostics

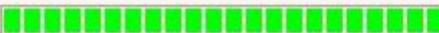
Profile Name: Default

Link Status: Associated Network Type: Infrastructure

Wireless Mode: 2.4 GHz 54 Mbps Control Channel: 3
Extension Channel:

Server Based Authentication: None Data Encryption: None

IP Address: 192.168.0.106

Signal Strength:  Excellent

4. Appendix

4.1 Specifications

【WUB1900】 Electrical Specifications	
Interface	USB 2.0 Standard, USB 1.1 Compliant
Standards Conformance	IEEE802.11 / 802.11b / 802.11g/ 802.11n (draft 2.0 compliance) ARIB STD-T66 compliant
Data Transfer Rate / Modulation Method	IEEE 802.11b mode: DSSS (1, 2, 5.5 and 11 Mbps) IEEE 802.11g mode: OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mbps) draft 802.11n Standard-20 MHz Channel mode: OFDM (6.5, 7.2, 13, 14.4, 14.44, 19.5, 21.7, 26, 28.89, 28.9, 39, 43.3, 43.33 52, 57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67, 104, 115.56, 117, 130, 144.44 Mbps) draft 802.11n Wide-40 MHz Channel mode: OFDM (13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180, 216, 240, 243, 270, 300 Mbps)
Access Method	Infrastructure Mode, Ad-Hoc Mode (802.11 Ad-Hoc), Roaming
Security	WEP64/128/152bit,TKIP,AES-CCMP,WPA-PSK,WPA2-PSK,802.1x, , EAP-TLS,EAP-TTLS,PEAP(EAP-GTC),PEAP(EAP-MSCHAPv2), WPS(Jumpstar2.0)
Quality of Service (QoS)	802.11e , WMM
International Regulation	802.11d
Frequency Range	2.4 to 2.4835GHz
Wireless Medium	OFDM & DSSS (with Barker coding and CCK for backward compatibility with 802.11b)
Media Access Protocol	CSMA / CA
Operating Channels	1~11 (U.S. & Canada), 1~13 (channel availability depends on local regulations)
Transmit Power Settings	18dBm (IEEE802.11g/n) / 12.5dBm (IEEE802.11b) 20dBm (IEEE802.11g/n 20) / 15dBm (IEEE802.11 g/n 40)
Receiver Sensitivity	1 Mbps : -88dBm 2 Mbps : -83dBm 5.5 Mbps : -79dBm 11 Mbps : -70dBm 12 Mbps : -76dBm 24 Mbps : -71dBm 36 Mbps : -67dBm 54 Mbps : -62dBm
Internal	Built-in PCB 0dBi Antenna

Antenna Type	
LED Indicators	Power / Link
Power Consumption	-Power Save mode = 95mA -Stand by mode = 2mA -Transmit mode = 450mA -Receive Mode = 100mA
Operating systems	Windows XP, Windows Vista
Environmental & Mechanical Characteristics	
Operating Temperature	32 °F ~ 131 °F (0 °C ~ 50 °C)
Storage Temperature	-13 °F ~ 158 °F (-20 °C ~ 70 °C)
Operating Humidity	10% to 80% Non-Condensing
Storage Humidity	5% to 90% Non-Condensing

5.1 Troubleshooting

1. My computer does not recognize the WUB1900 USB Network Adapter.

Make sure that the Wireless-N USB Network Adapter is properly inserted into the USB port.

2. The WUB1900 USB Network Adapter does not work properly.

Reinsert the Wireless-N USB Network Adapter into the PC's USB port.

3. I cannot communicate with the other computers linked via Ethernet in the Infrastructure configuration.

Make sure that the notebook or desktop is powered on.

Make sure that the WUB1900 USB Network Adapter is configured with the same Wireless Network Name(SSID) and wireless security settings in your network.

5.2 Troubleshooting-B

1. The LED is off.

Make sure the device is inserted properly. Otherwise contact your local dealer for more information.

2. The LED is always on not blinking.

Make sure that you have installed the driver from attached CD-ROM. Otherwise contact your local dealer for more information.

3. The LED is blinking but the device icon does not appear in your icon tray.

Make sure that you have installed the Utility from the attached CD-ROM.

4. The device is linking, but cannot share files with others.

Make sure the file and printer sharing function is enabled. You could enable the function by checking the icon of **My Computer / Control Panel / Network / file and printer sharing** I want to be able to give others to access to my files.

5. Slow or erratic performance.

Try changing the channel of the communicating group or moving your device closer to the communicating device.

6. Cannot find the utility icon in the task bar after plugged in the device.

You could enable the function by clicking the icon of **Start All Programs Wireless LAN Utility WUB1900 Utility**.

6.1 Glossary

IEEE 802.11 Standard

The IEEE 802.11 Wireless LAN standards subcommittee, which is formulating a standard for the industry.

Access Point

An internetworking device that seamlessly connects wired and wireless networks together.

Ad Hoc

An Ad Hoc wireless LAN is a group of computers, each with a WLAN adapter, connected as an independent wireless LAN. Ad Hoc wireless LAN is applicable at a departmental scale for a branch or SOHO operation.

BSSID

A specific Ad Hoc LAN is called a Basic Service Set (BSS). Computers in a BSS must be configured with the same BSSID.

DHCP

Dynamic Host Configuration Protocol, method in which IP addresses are assigned by server dynamically to clients on the network. DHCP is used for Dynamic IP Addressing and requires a dedicated DHCP server on the network.

Direct Sequence Spread Spectrum

This is the method the wireless cards use to transmit data over the frequency spectrum. The other method is frequency hopping. Direct sequence spreads the data over one frequency range (channel) while frequency hopping jumps from one narrow frequency band to another many times per second.

ESSID

An Infrastructure configuration could also support roaming capability for mobile workers. More than one BSS can be configured as an Extended Service Set (ESS). Users within an ESS could roam freely between BSSs while served as a continuous connection to the network wireless stations and Access Points within an ESS must be configured with the same ESSID and the same radio channel.¹⁴

Ethernet

Ethernet is a 10/100Mbps network that runs over dedicated home/office wiring. Users must be wired to the network at all times to gain access.

Gateway

A gateway is a hardware and software device that connects two dissimilar systems, such as a LAN and a mainframe. In Internet terminology, a gateway is another name for a router. Generally a gateway is used as a funnel for all traffic to the Internet.

IEEE

Institute of Electrical and Electronics Engineers.

Infrastructure

An integrated wireless and wired LAN is called an Infrastructure configuration. Infrastructure is applicable to enterprise scale for wireless access to central database, or wireless application for mobile workers.

ISM Band

The FCC and their counterparts outside of the U.S. have set aside bandwidth for unlicensed use in the so-called ISM (Industrial, Scientific and Medical) band. Spectrum in the vicinity of 2.4 GHz, in particular, is being made available worldwide. This presents a truly revolutionary opportunity to place convenient high-speed wireless capabilities in the hands of users around the globe.

Local Area Network (LAN)

A LAN is a group of computers, each equipped with the appropriate network adapter card connected by cable/air, that share applications, data, and peripherals. All connections are made via cable or wireless media, but a LAN does not use telephone services. It typically spans a single building or campus.

Network

A network is a system of computers that is connected. Data, files, and messages can be transmitted over this network. Networks may be local or wide area networks.

Protocol

A protocol is a standardized set of rules that specify how a conversation is to take place, including the format, timing, sequencing and/ or error checking.

Roaming

In an infrastructure network, this is when a wireless PC moves out of range of the previously connected access point and connects to a newly connected access point. Throughout the network environment where access point is deployed, PCs can always be connected regardless of where they are located or roam.

SSID

A Network ID unique to a network. Only clients and Access Points that share the same SSID are able to communicate with each other. This string is case-sensitive.

Simple Network Management Protocol (SNMP)

Simple Network Management Protocol is the network management protocol of TCP/IP. In SNMP, agents-which can be hardware as well as software-monitor the activity in the various devices on the network and report to the network console workstation. Control information about each device is maintained in a structure known as a management information block.

Static IP Addressing

A method of assigning IP addresses to clients on the network. In networks with Static IP address, the network administrator manually assigns an IP address to each computer. Once a Static IP address is assigned, a computer uses the same IP address every time it reboots and logs on to the network, unless it is manually changed.

Transmission Control Protocol / Internet Protocol (TCP/IP)

TCP/IP is the protocol suite developed by the Advanced Research Projects Agency

(ARPA). It is widely used in corporate Internet works, because of its superior design for WANs. TCP governs how packet is sequenced for transmission the network. The term [TCP/IP] is often used generically to refer to the entire suite of related protocols 16.

Transmit / Receive

The wireless throughput in Bytes per second averaged over two seconds.

Wide Area Network (WAN)

A WAN consists of multiple LANs that are tied together via telephone services and / or fiber optic cabling. WANs may span a city, a state, a country, or even the world.

Wireless LAN (WLAN)

A wireless LAN does not use cable to transmit signals, but rather uses radio or infrared to transmit packets through the air. Radio Frequency (RF) and infrared are the commonly used types of wireless transmission. Most wireless LANs use spread spectrum technology. It offers limited bandwidth, usually under 54Mbps, and users share the bandwidth with other devices in the spectrum; however, users can operate a spread spectrum device without licensing from the Federal Communications Commission (FCC).

6.5 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 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.

Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment. The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution of the connecting cables and equipment other than manufacturer specified. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. Manufacturer and its authorized resellers or

distributors will assume no liability for any damage or violation of government regulations arising from failing to comply with these guidelines.

FCC RF Radiation Exposure Statement: This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

Your device contains a low power transmitter. When device is transmitted it sends out Radio Frequency (RF) signal.

" declare that WUB1900 (IEEE802.11 b/g/n USB Dongle) is limited in CH1~CH11 by specified firmware controlled in USA."

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the 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.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

根據交通部 低功率管理辦法 規定：

第十二條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。