NETRONIX
振曜科技股份有限公司

Wireless 802.11bg USB Adapter

User's Guide

W420B

FCC Certifications

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.

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 Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. To maintain compliance with FCC RF exposure compliance requirements, please follow operation instruction as documented in this manual.

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

The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.

Europe – EU Declaration of Conformity

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:

- EN 60950-1: 2001
  Safety of Information Technology Equipment
- EN 50392: 2004
  Generic standard to demonstrate the compliance of electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields (0 Hz - 300 GHz)
- EN 300 328 V1.6.1 (2004-11)
  Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive
- EN 301 489-17 V1.2.1 (2002-08) and EN 301 489-1 V1.5.1 (2004-11)
  Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for 2,4 GHz wideband transmission systems and 5 GHz high performance RLAN equipment

This device is a 2.4 GHz wideband transmission system (transceiver), intended for use in all EU member states and EFTA countries, except in France and Italy where restrictive use applies.

In Italy the end-user should apply for a license at the national spectrum authorities in order to obtain authorization to use the device for setting up outdoor radio links and/or for supplying public access to telecommunications and/or network services.

This device may not be used for setting up outdoor radio links in France and in some areas the RF output power may be limited to 10 mW EIRP in the frequency range of 2454 – 2483.5 MHz. For detailed information the end-user should contact the national spectrum authority in France.

CE 0560

Česky [Czech]	*[Jméno výrobce]* tímto prohlašuje, že tento *[typ zařízení]* je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish]	Undertegnede *[fabrikantens navn]* erklærer herved, at følgende

	udstyr *[udstyrets typebetegnelse]* overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
de Deutsch [German]	Hiermit erklärt *[Name des Herstellers]*, dass sich das Gerät *[Gerätetyp]* in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
et Eesti [Estonian]	Käesolevaga kinnitab *[tootja nimi = name of manufacturer]* seadme *[seadme tüüp = type of equipment]* vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
en English	Hereby, *[name of manufacturer]*, declares that this *[type of equipment]* is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
es Español [Spanish]	Por medio de la presente *[nombre del fabricante]* declara que el *[clase de equipo]* cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
el Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ *[name of manufacturer]* ΔΗΛΩΝΕΙ ΟΤΙ *[type of equipment]* ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
fr Français [French]	Par la présente *[nom du fabricant]* déclare que l'appareil *[type d'appareil]* est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
it Italiano [Italian]	Con la presente *[nome del costruttore]* dichiara che questo *[tipo di apparecchio]* è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo *[name of manufacturer / izgatavotāja nosaukums]* deklarē, ka *[type of equipment / iekārtas tips]* atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo *[manufacturer name]* deklaruoja, kad šis *[equipment type]* atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos

	nuostatas.
nl Nederlands [Dutch]	Hierbij verklaart *[naam van de fabrikant]* dat het toestel *[type van toestel]* in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
mt Malti [Maltese]	Hawnhekk, *[isem tal-manifattur]*, jiddikjara li dan *[il-mudel tal-prodott]* jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
hu Magyar [Hungarian]	Alulírott, *[gyártó neve]* nyilatkozom, hogy a *[... típus]* megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
pl Polski [Polish]	Niniejszym *[nazwa producenta]* oświadcza, że *[nazwa wyrobu]* jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
pt Português [Portuguese]	*[Nome do fabricante]* declara que este *[tipo de equipamento]* está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
sl Slovensko [Slovenian]	*[Ime proizvajalca]* izjavlja, da je ta *[tip opreme]* v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak]	*[Meno výrobcu]* týmto vyhlasuje, že *[typ zariadenia]* spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
fi Suomi [Finnish]	*[Valmistaja = manufacturer]* vakuuttaa täten että *[type of equipment = laitteen tyyppimerkintä]* tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
sv Svenska [Swedish]	Härmed intygar *[företag]* att denna *[utrustningstyp]* står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

TABLE OF CONTENTS

Overview

Thank you for purchasing this product. Read this chapter to know about your IEEE 802.11g Wireless USB Adapter.

Unpacking information

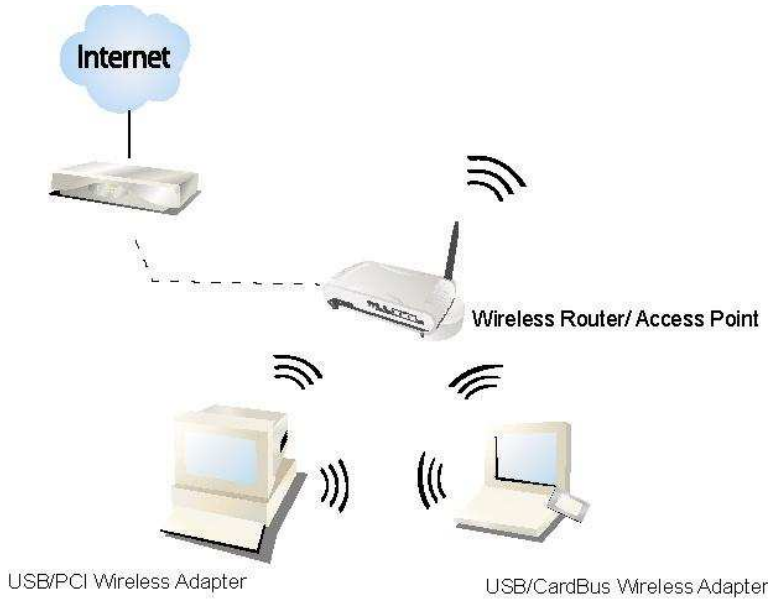
Before getting started, please verify that your package includes the following items:

1. IEEE 802.11g Wireless USB Adapter

2. One Utility/ Manual CD

Introduction to the IEEE 802.11g Wireless USB Adapter

The IEEE 802.11g Wireless USB adapter provides users to launch IEEE 802.11g wireless network at 54 Mbps in the 2.4GHz frequency, which is also compatible with IEEE 802.11b wireless devices at 11Mbps. You can configure this adapter with ad-hoc mode to connect to other 2.4GHz wireless computers or with Infrastructure mode to connect to a wireless AP or router for accessing to Internet. This adapter includes a convenient Utility for scanning available networks and saving preferred networks that users usually connected with. Security encryption can also be configured by this utility.



Key Features

- Complies with IEEE 802.11b/g wireless standard
- Complies with Universal Serial Bus Rev. 1.0, 1.1 and 2.0 specifications.
- High Speed transfer data rate up to 54 Mbps
- Support turbo mode for 72 Mbps data rate
- Support driver for Windows2000, XP 32/64 bit and Vista 32/64 bit
- Supports auto-installation and diagnostic utilities.
- Support wireless data encryption with 64/128-bit WEP, WPA (TKIP with IEEE 802.1x) and AES functions.

Installation Guide

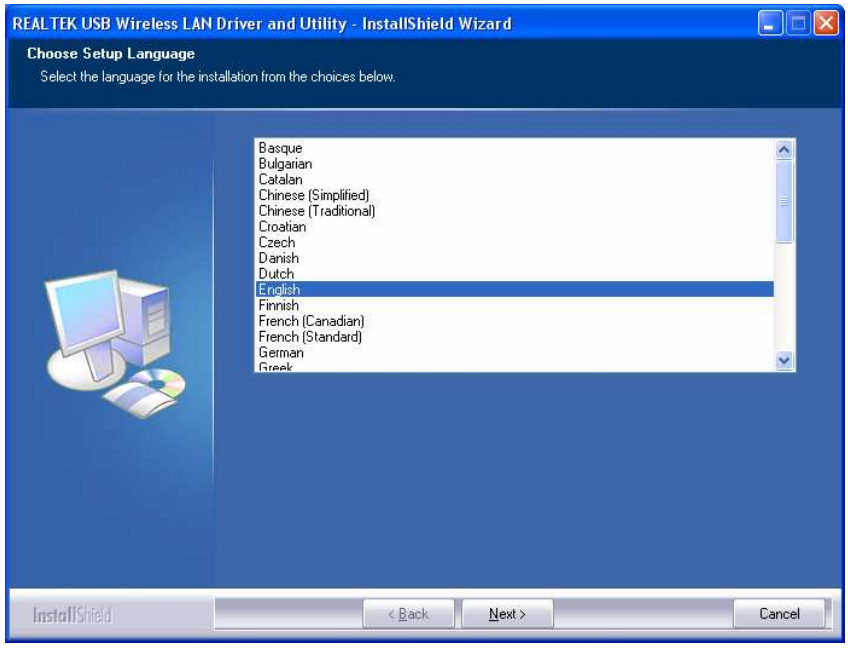
Software Installation

Note: The following driver installation guide uses Windows XP as the presumed operation system. The procedures and screens in Windows2000 and Vista are familiar with Windows XP.

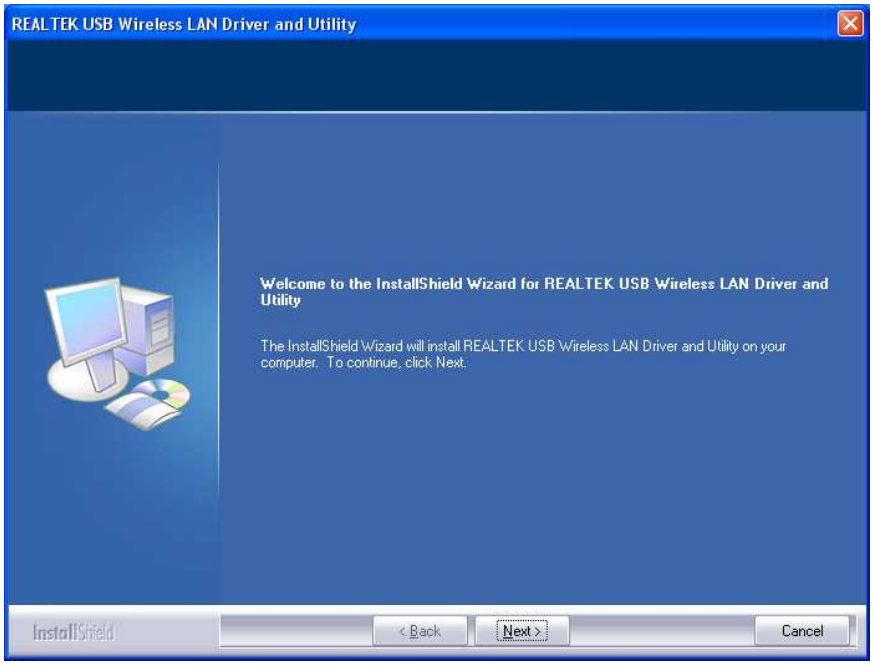
Insert the CD-Rom that came with this product to your CD-Rom drive. The menu window pops up automatically. Please click the **"Driver"** button of this product.

Note: If the CD-Rom fails to auto-run, please click on "**My Computer**"→ **your CD-Rom Drive** then double-click the "**Setup"** icon to start the this menu.

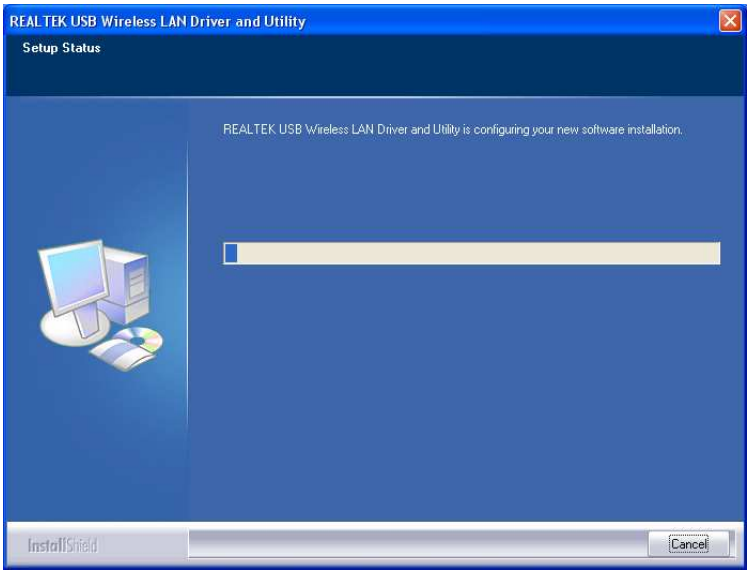
1. The language-selecting window pops up. Please select the language you use and click **OK**.



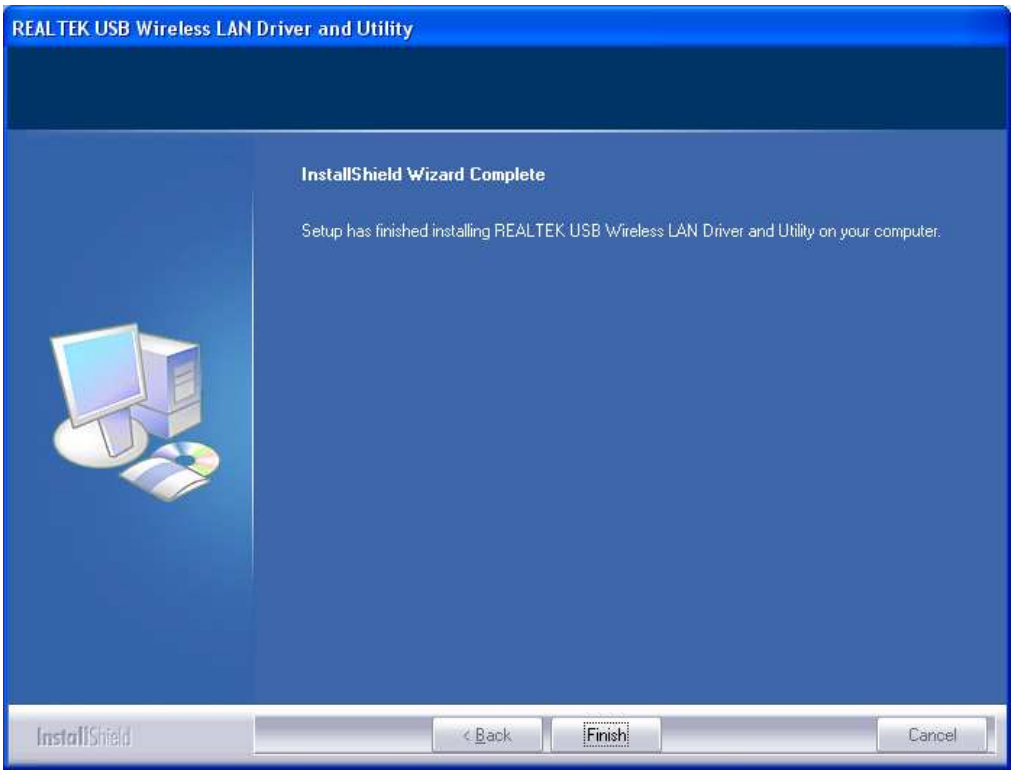
2. The welcome window pops up. Click the **"Next"** button to proceed.



3. Please wait while installation.



4. Click the **"Finish"** button to complete driver and utility installation.

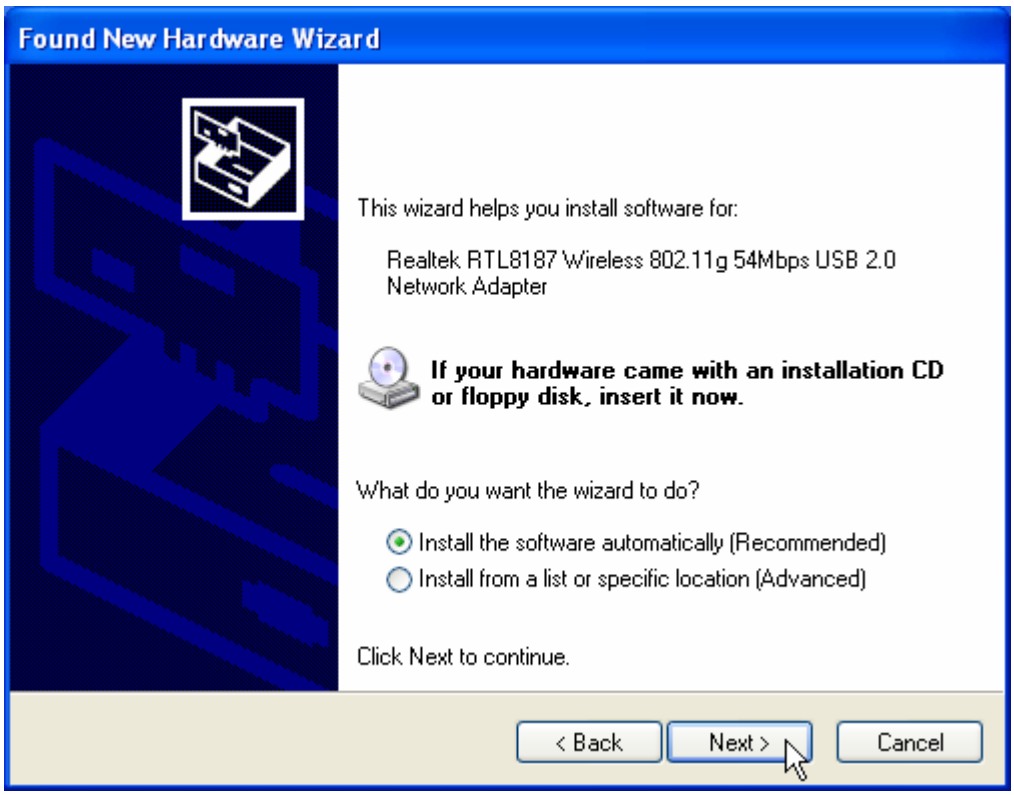


5. For Windows XP and 2000 users, please insert this USB wireless adapter to your computer.

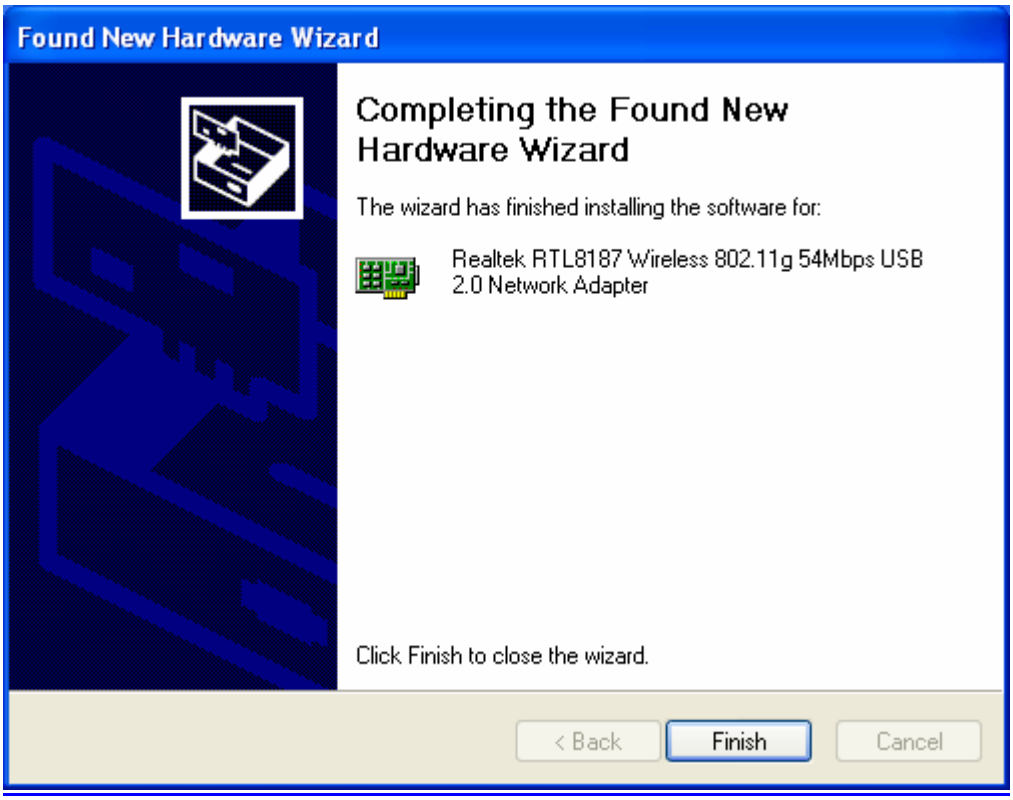
6. The **"Found New Hardware Wizard"** pops up.

7. Select **"No, not this time"** and click the **"Next"** button.

8. Select **"Install the software automatically"** and then click the **"Next"** button.



9. Click the **"Finish"** button to complete installation.


Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
Realtek RTL8187 Wireless 802.11g 54Mbps USB 2.0 Network Adapter
Click Finish to close the wizard.
< Back
Finish
Cancel

Management Guide

Read this chapter to understand the management interface of the device and how to manage the device.

Making a Basic Network Connection

Before You Start

In the following instruction for making a network connection, we use the utility we provided to configure your wireless network settings.

Note: For Windows XP users that want to configure your wireless network using this Utility, please perform the following procedures to disable your native Windows XP wireless support (Wireless Zero Configuration Service)

1. Double click the  icon on your desktop to start the utility.

2. Make sure that the **"Windows Zero Config"** checkbox is unchecked.

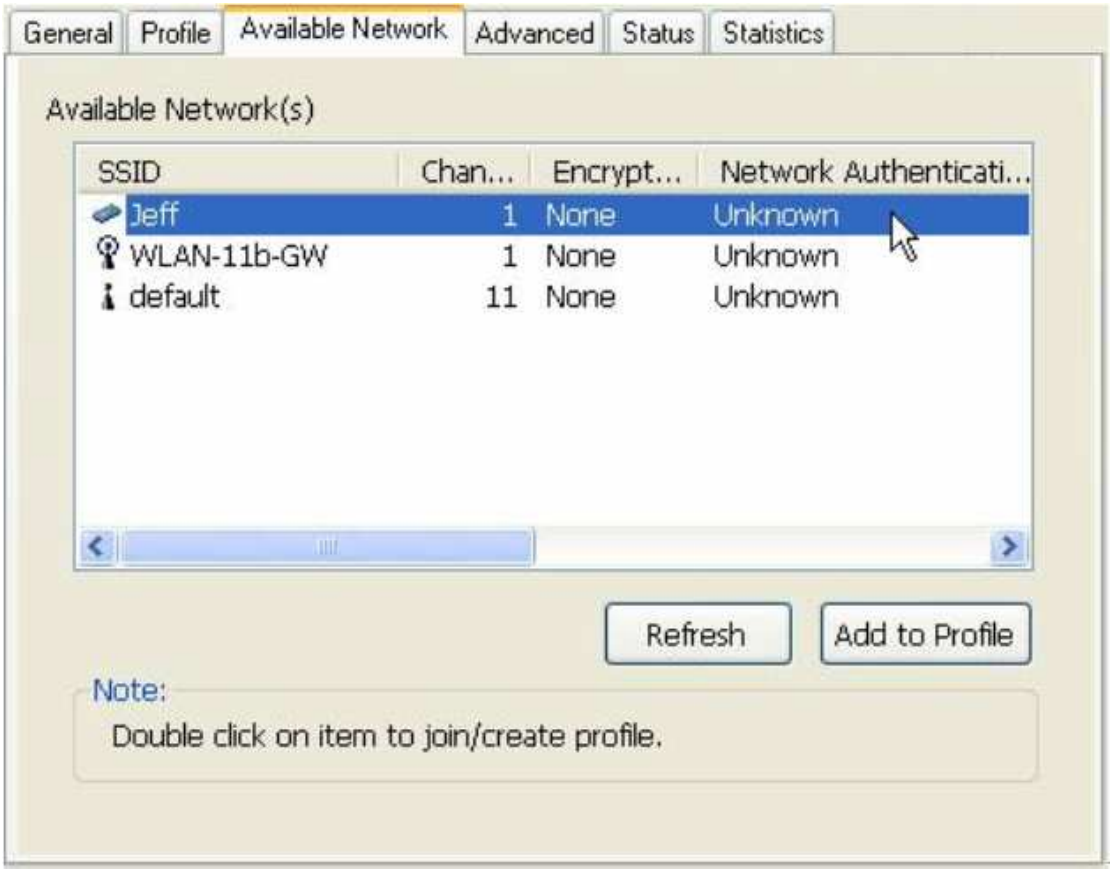
Ad-Hoc Mode

An Ad-Hoc mode wireless network connects two computers directly without the use of a router or AP. It is also know as a peer-to-peer network. For example, we can install this wireless adapter to two computers respectively. The communication between the two computers is an Ad-Hoc mode network.

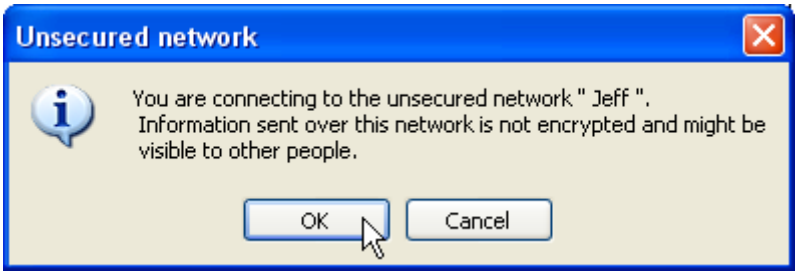
Ad-Hoc Mode

To use this adapter in Ad-Hoc Mode

1. Double click the  icon on your desktop.
2. Click the **"Available Network"** button to scan available wireless network adapters. Double click on the network adapter that you are going to connect to.



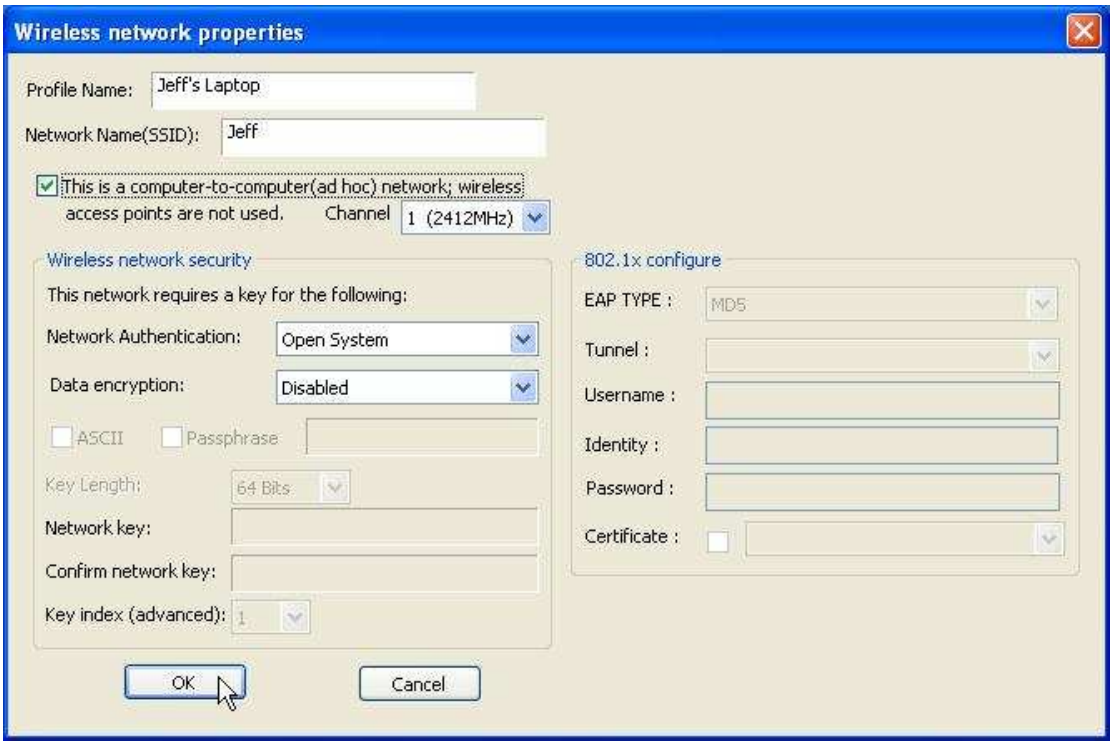
3. Click the OK button to confirm that you are connecting to an open wireless network.



4. Click OK to add this network into the profile list.

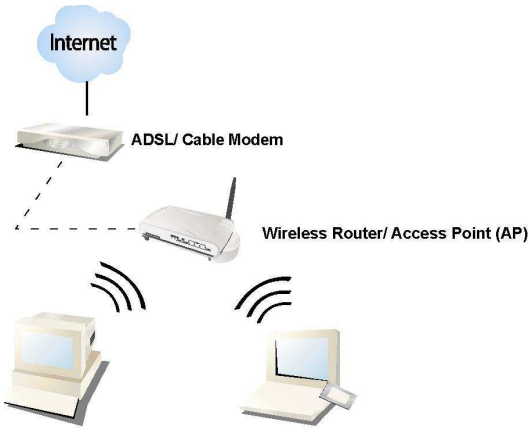
Note: This example is an open wireless network. If you are going to connect to a Wireless adapter with security protection, you will have to configure the encryption settings in this profile to be corresponding to the other wireless adapter. Please click on the **"Network Authentication"** drop list to select an authentication method, and then select a **"Data encryption"** type. Fill in each

required blanks and click **"OK"**.



Infrastructure mode

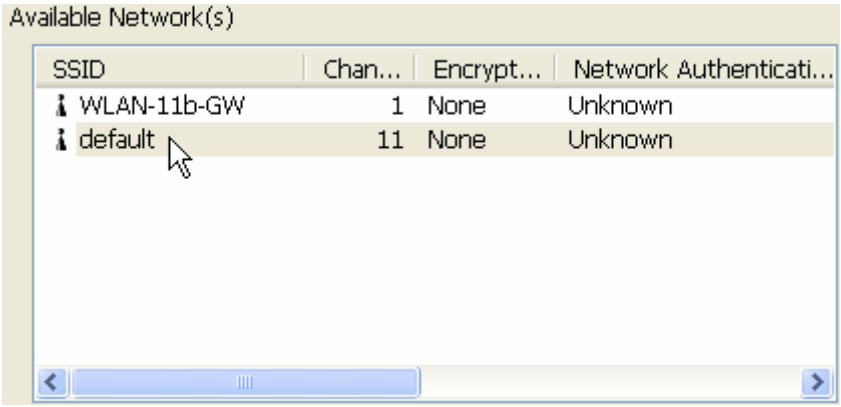
An Infrastructure Mode network contains at least one wireless client and one wireless AP or router. This client connects to Internet or intranet by communicating with this wireless AP.



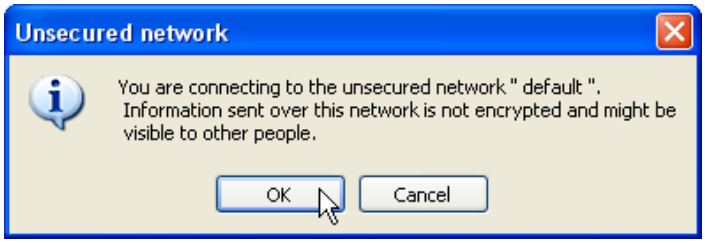
Infrastructure Mode

To use this adapter in Infrastructure Mode:

1. Double click the  icon on your desktop.
2. Click the **"Available Network"** button to scan available access points. Double click on the AP that you are going to connect to.



3. Click the OK button to confirm that you are connecting to an open wireless network.



4. Click **OK** to add this network into the profile list.

Note:

This example is an open wireless network. If you are going to connect to an AP with security protection, you will have to configure the encryption settings in this profile to be corresponding to your AP. Please click on the **"Network Authentication"** drop list to select an authentication method, and then select a **"Data encryption"** type. Fill in each required blanks and click **"OK"**.

Tip: Windows XP and Windows 2000 users is also allowed to connect to your wireless network with the "RT-Set" setup wizard. Please refer to **"Appendix"** for more information.

Introduction to the Wireless LAN Utility

Note: This management instruction uses Windows XP as the presumed operation system.

Starting the Wireless LAN Utility

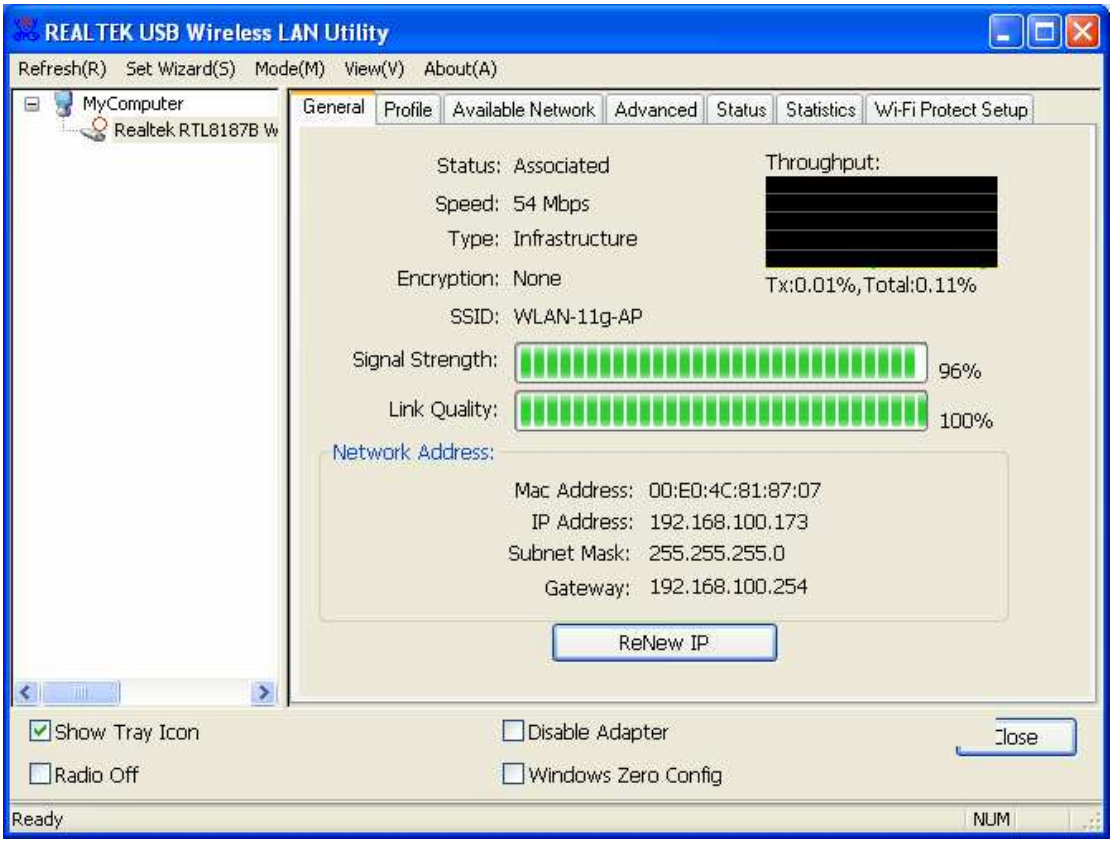
Double click the  shortcut on your desktop. The Wireless LAN Utility pops up.

You may click on the tabs above to configure this adapter. The checkboxes below provide the following functions:

Show Tray Icon	Check this checkbox to show the utility icon on your system tray, which is in the notification area at the lower-right corner of the windows desktop. You may also uncheck it to remove the utility icon from system tray.
Windows Zero Config	Uncheck this checkbox to use native Windows XP wireless support (Wireless Zero Configuration Service) instead of using this utility to configure your wireless network.
Radio Off	Check this checkbox to prevent this adapter form transmitting or receiving signals. Uncheck it to communicate.
Disable Adapter	Check this checkbox to disable this wireless adapter. Uncheck it to enable this adapter again.

General

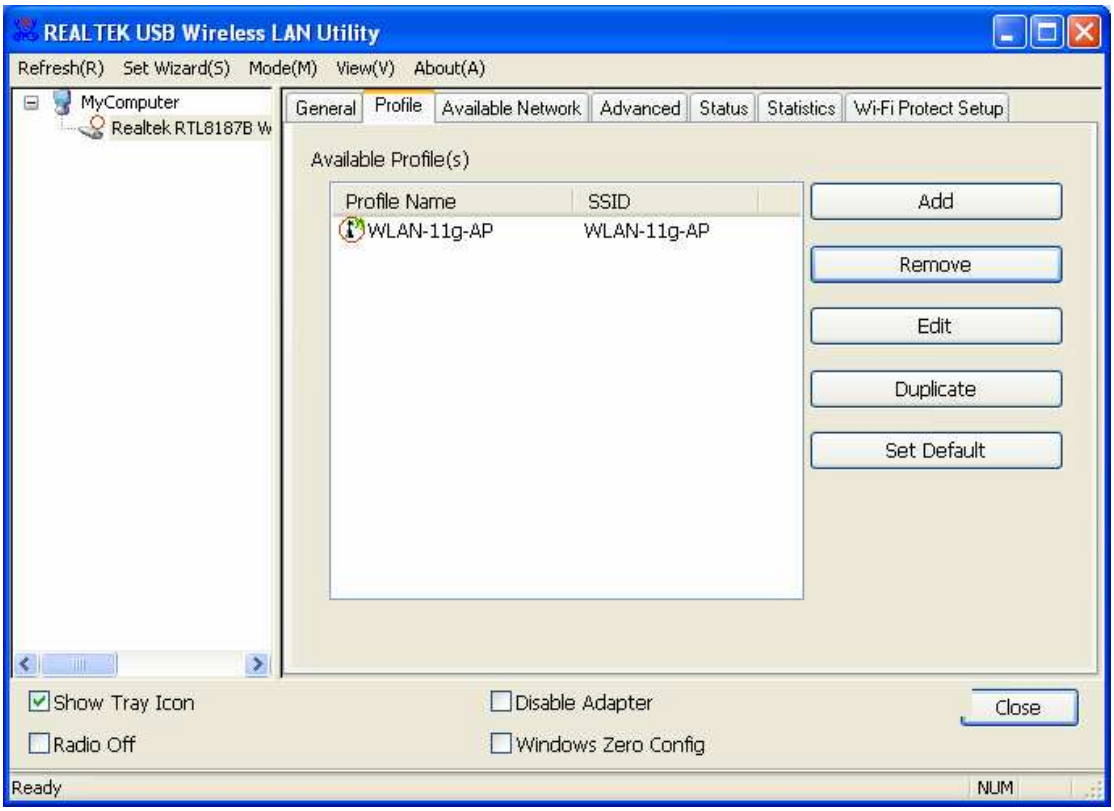
After starting the utility, the general page pops up This **General** tab provides the information of your current wireless network connection. You may click the **Renew** button to refresh those listed information.



Status:	Check if the device associated to target network.
Speed:	The current connection speed
Type:	Infrastructure mode or Ad-Hoc mode.
Encryption:	The performing encryption mode for connecting to current network profile.
SSID:	The SSID (network name) of the connected wireless network.
Signal Strength:	Indicates the signal strength detected by this adapter.
Network Address:	Shows the current IP addresses settings for this adapter.

Profile

The **Profile** tab lists the preferred connections. You can click the buttons beside to do configure each connection.



Add Click this button to add a connection profile for this adapter.

Remove To remove a connection profile, click this profile on the profile list and click this button to delete it.

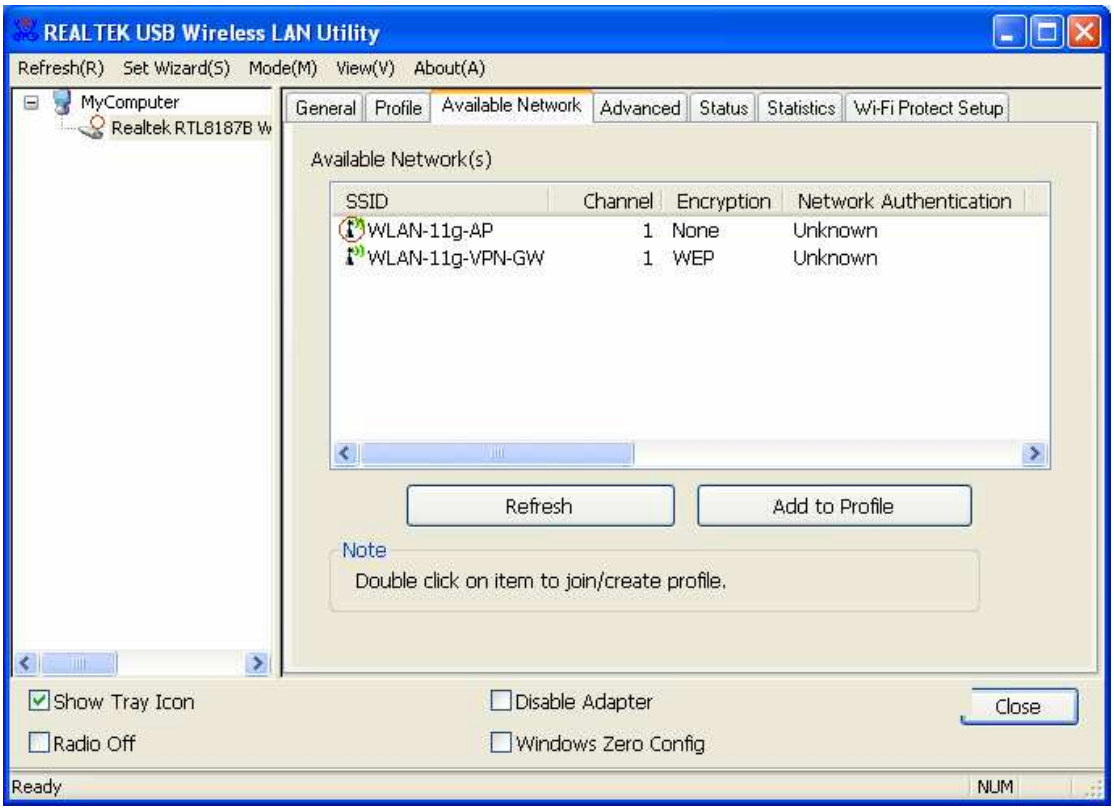
Edit To modify the configurations for a profile, click this profile on the profile list and click this button to edit.

Duplicate To make a copy of a profile, click the profile that going to be copied, and click this button to copy it.

Set Default To select a profile as your default wireless connection, click this profile on the list and click this button. You may also double click on each profile to select it as your default wireless connection.

Available Network

This available tab lists the reachable wireless network of this adapter.



Refresh Click this button to rescan available networks around the adapter.

Add to Profile To add an available Network to your profile list, select an available network and click this button to add.

Advanced

This Advanced tab provides advanced configurations to this adapter. Every modification in this tab will be performed after clicking the **Apply** button.
To restore the default settings of the advanced tab, click the **Set defaults** button to perform restoring.

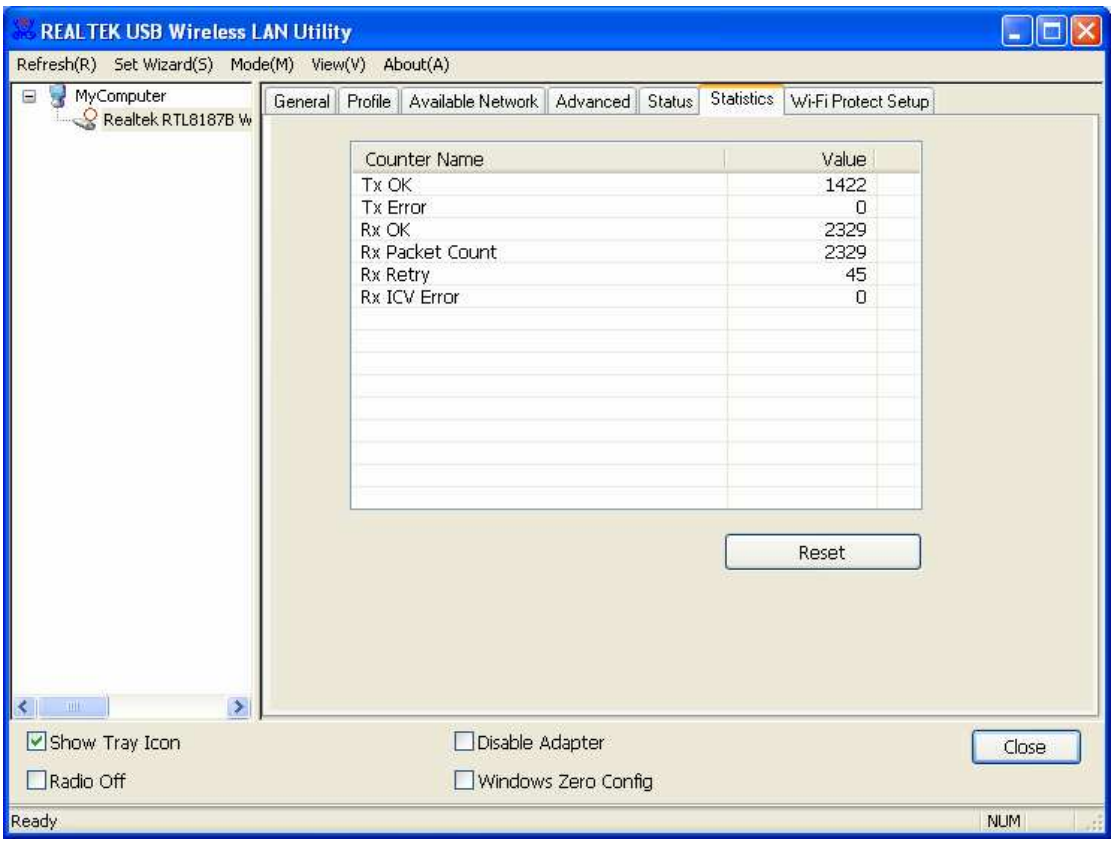
Power Save	
None	Disable Power saving function.
Min	Minimum power consumption
Max	Maximum power consumption
Turbo Mode	
OFF	Disable turbo mode
ON	Enable turbo mode
AUTO	Enable or disable turbo automatically according to the detected environment
Fragment Threshold	
The maximum size of a packet that is going to be segmented and transmitted. Select the size from 256 to 2432(default) bytes.	
RTS Threshold	
Select the RTS Threshold form 0 to 2432(default)	
Wireless Mode	
802.11g/b	Connect to a 802.11g/b network (2.4GHz/54Mbps)
802.11b	Connect to a 802.11b network (2.4GHz/11Mbps)
802.11b Preamble Mode	
Select the preamble mode to be long, short or auto detection mode.	
WOL	
Enter the MAC Address of the designated device and click wake up button to power on the device.	
PSP XLink Mode	
Mark this check box to enable PSP XLink mode. This function allows PSP users to play games with players around the world.	
WMM Parameter	
Mark the checkbox to enable QoS or Power save function for WMM.	

Status

This tab shows the current connection status of this adapter.

Statistics

See this tab to show the transmission activity record. Clicking the **"Reset"** button recounts the values from zero.



Wi-Fi Protected Setup

This page provides users to connect this device with routers or AP with PIN number or PBC mechanism. Click on the PIN or PBC button to start.

Note: Please note that the two connection methods would only work with routers or AP that support PIN number or PBC. Please make sure that the AP or Router support this function first.

Appendix

RT-Set Setup Wizard

For Windows 2000 and XP users to connect to a wireless network easily, we also provide the RT-Set setup wizard to help users set their preferred wireless network step by step. You can configure your wireless network via this RT-Set setup wizard in the following three modes:

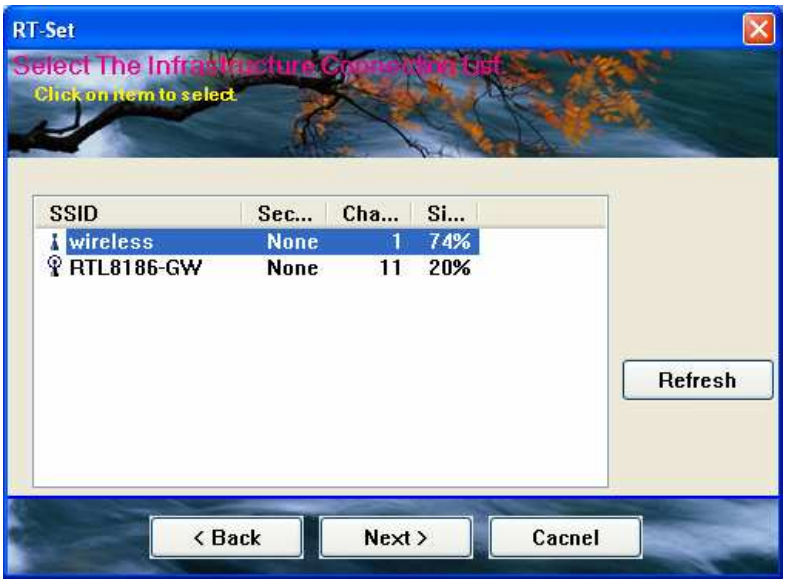
Station mode (infrastructure): Select this mode to connect to the AP (access point) in your LAN.
Station mode (ad hoc): Select this mode to connect to another wireless network adapter in your LAN.
AP mode: Select this mode to perform this adapter as an AP (access point).

To start the RT-Set Wizard, please click the **"RT-Set"** tab on the up-left corner of the window

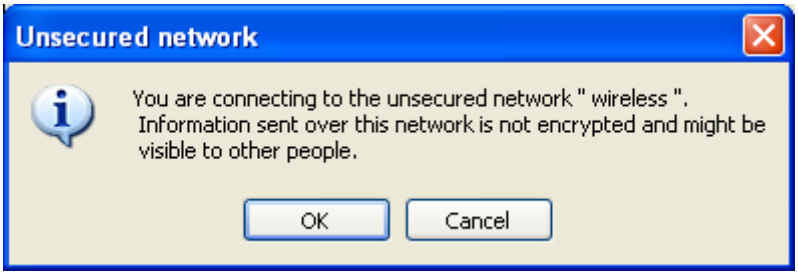
Connect to a wireless network in infrastructure mode

1. To connect this adapter to an AP, select the **"Station (infrastructure)"** mode and click the "Next" button to proceed.

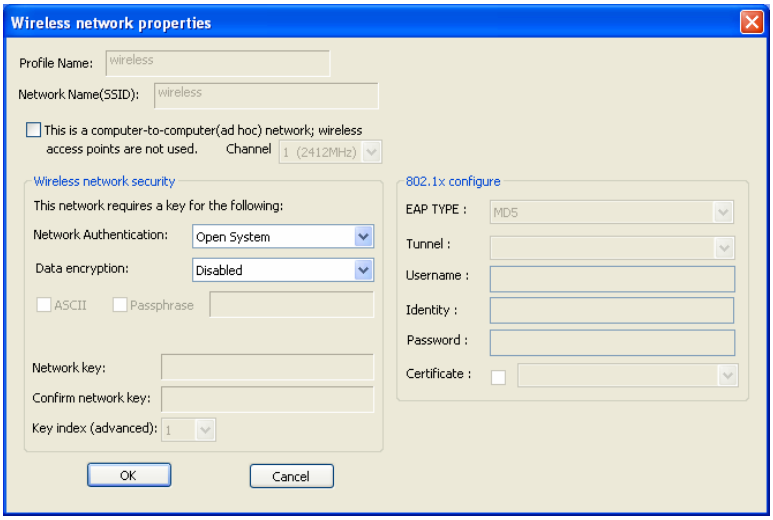
2. The RT-Set scans the available AP within your LAN. Those AP are listed with their SSID. Click the wireless AP that you are going to connect with and then click the **"Next"** button.
   You may also click the "Refresh" button to scan wireless AP again.



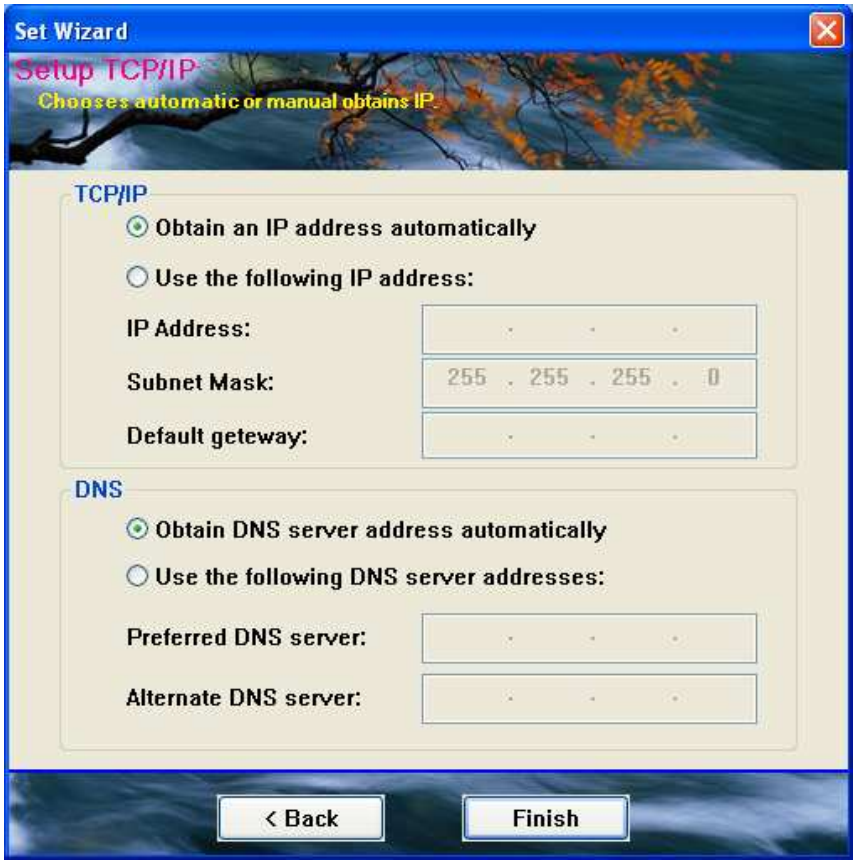
3. The "unsecured network" window may pop up if the AP you select doesn't use security encryption settings. Click the "OK" button after your confirmation.



4. Click "OK" after configuring the profile content to be corresponding to the AP that you are going to connect with. If you are connecting to an AP without security encryption, please click "OK" button without configuration.



5. Configure the IP address for connecting to the network. You may choose "Use the following IP address" to fill in IP addresses manually or choose "Obtain an IP address automatically (recommend)".

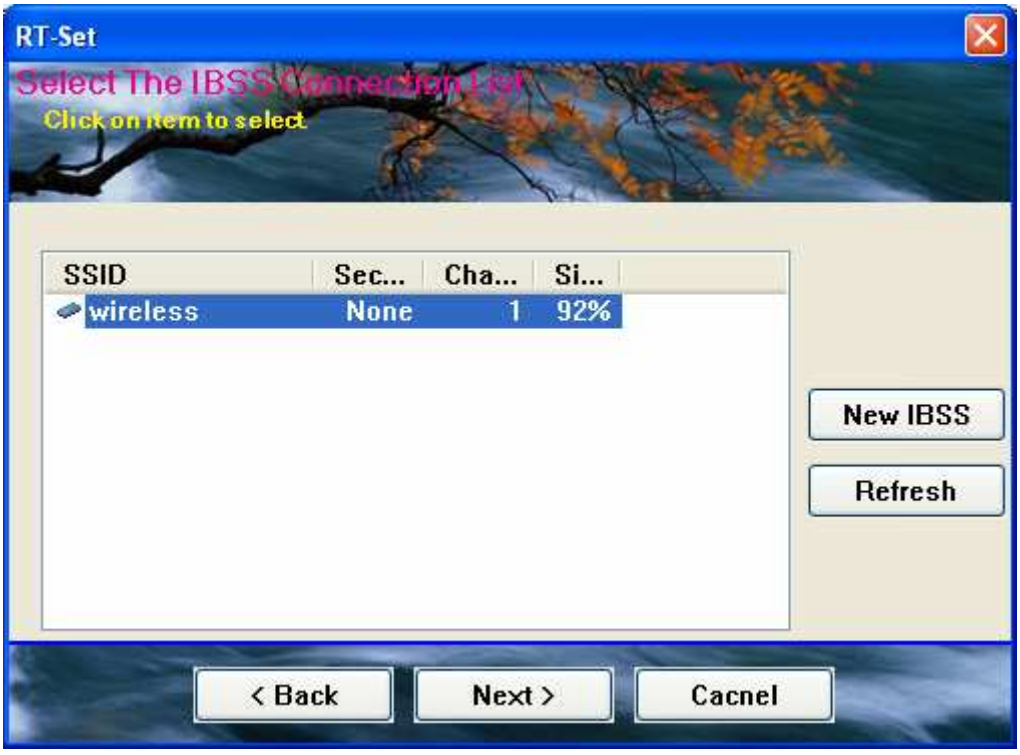


6. After configuring IP addresses, click the "Finish" button to complete.

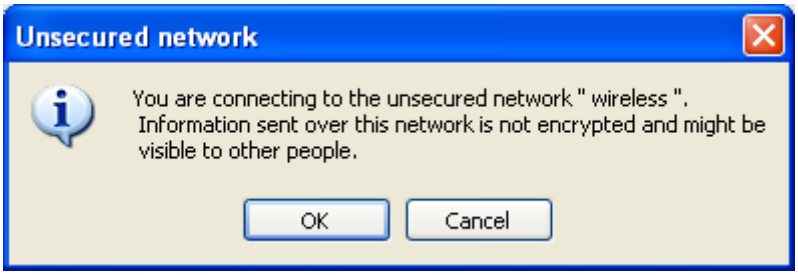
Connect to a wireless network in ad hoc mode

1. To connect this adapter to another computer, select the "Station (ad hoc)" mode and click the "Next" button to proceed.

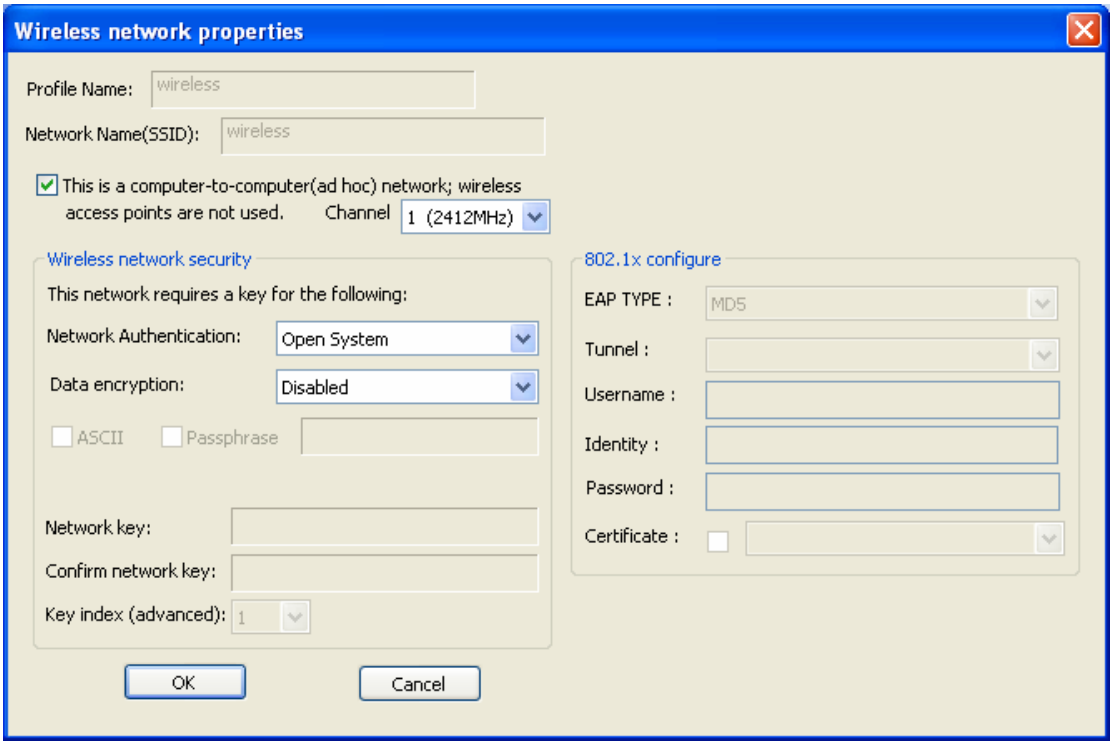
2. The RT-Set scans the available wireless adapters within your LAN. Those adapters are listed with their SSID. Click the one that you are going to connect with and then click the **"Next"** button. You may also click the **"Refresh"** button to scan wireless adapters again.



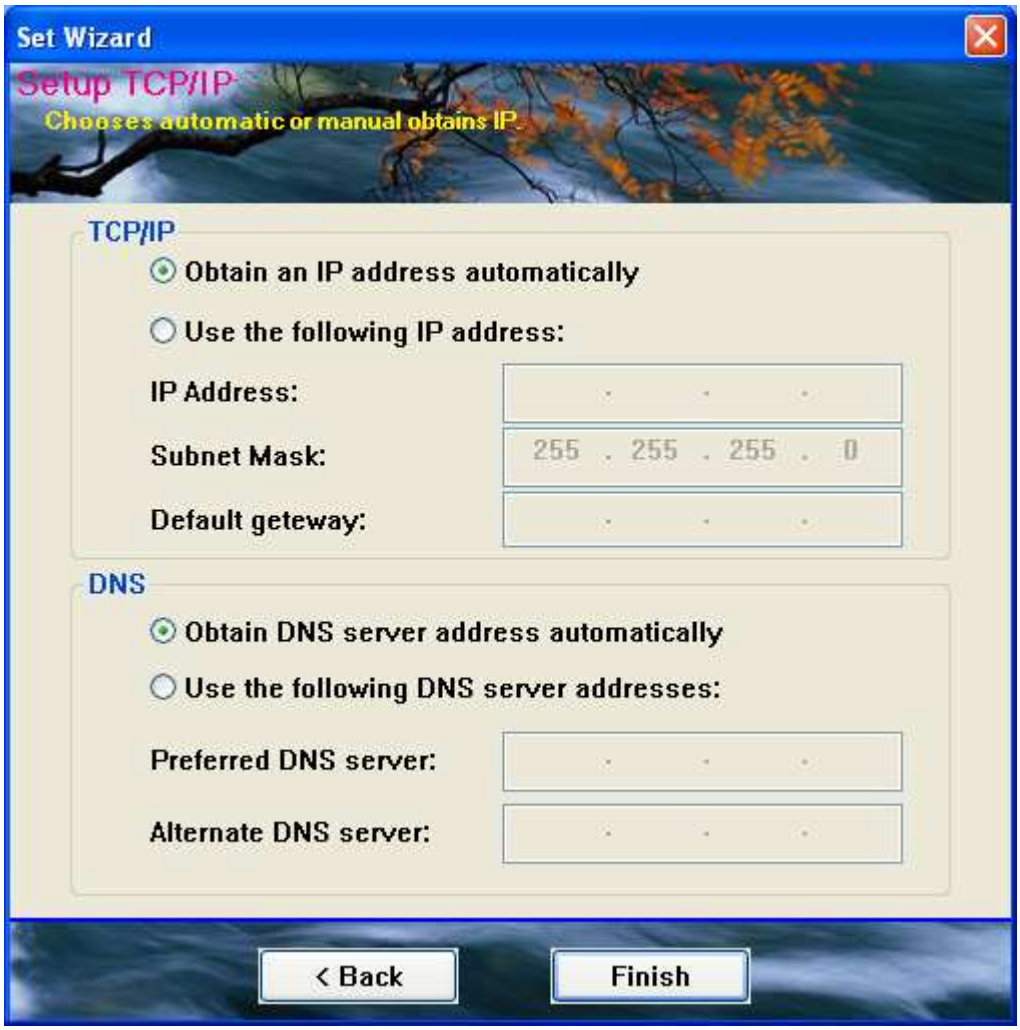
3. The “unsecured network” window may pop up if the adapter you select doesn’t use security encryption settings. Click the “OK” button after your confirmation.



4. Click “OK” after configuring the profile content to be corresponding to the wireless adapter that you are going to connect with. If you are connecting to a wireless adapter without security encryption, please click “OK” button without configuration.



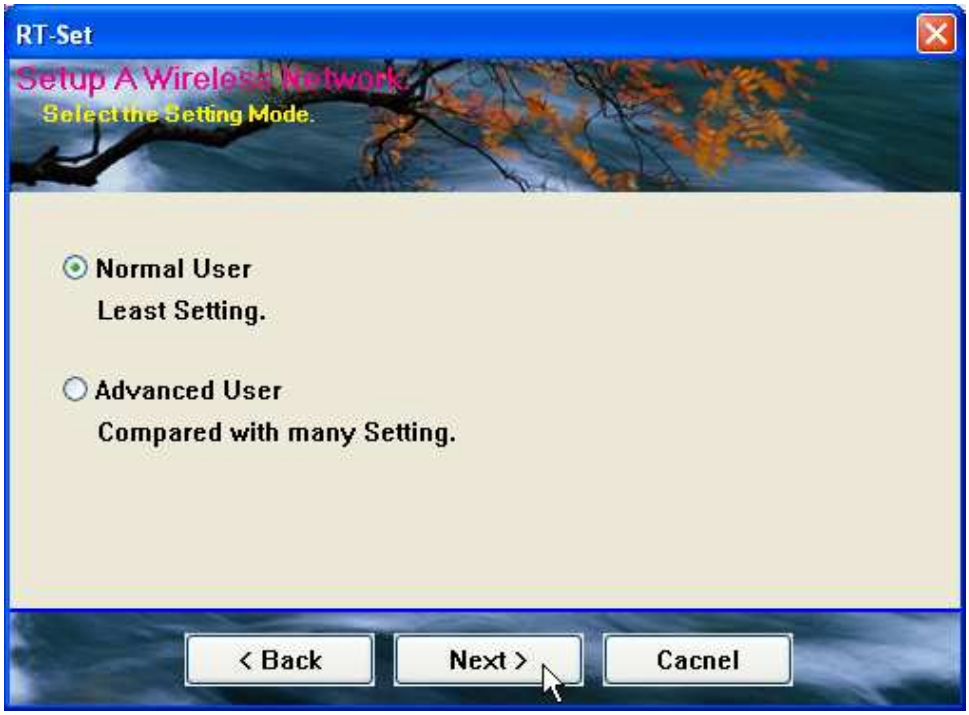
5. Configure the IP address for connecting to the wireless adapter. You may choose "Use the following IP address" to fill in IP addresses manually or choose "Obtain an IP address automatically".



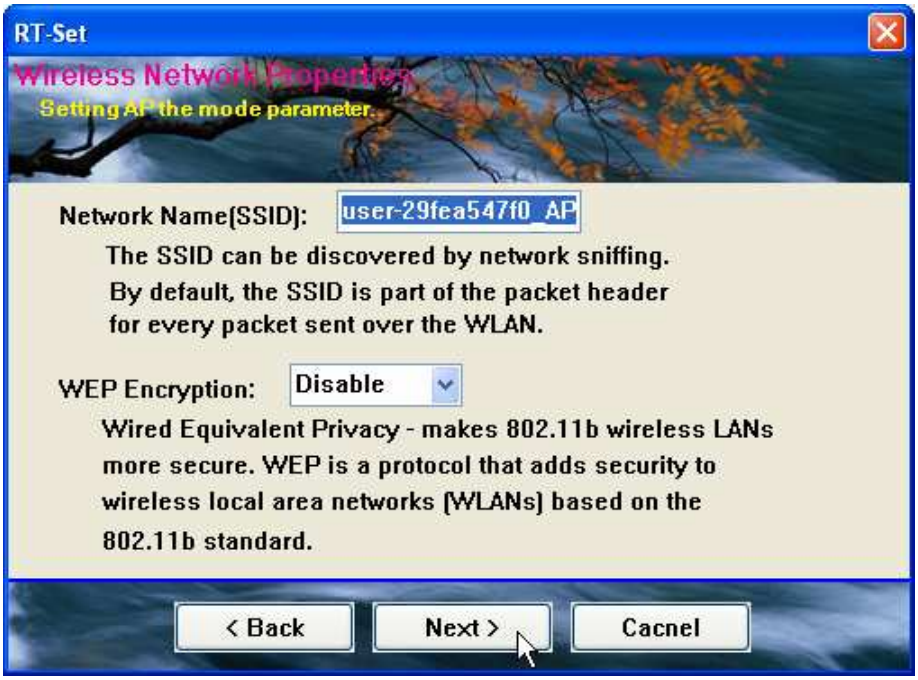
Use this adapter as an AP

1. To use this adapter as an AP (access point), select the "AP" mode and click the "Next" button to proceed.

2. Select "Normal User" (recommend) to make an step-by-step configuration. You may also select "Advanced Users" to configure this AP with more detail.



3. Assign an SSID for this AP, which is the name that is going to be identified while other wireless devices scan for available network. Choose to use WEP encryption or not from the drop list and click "Next" to proceed.



4. Click the "Next" button after confirming those settings above.

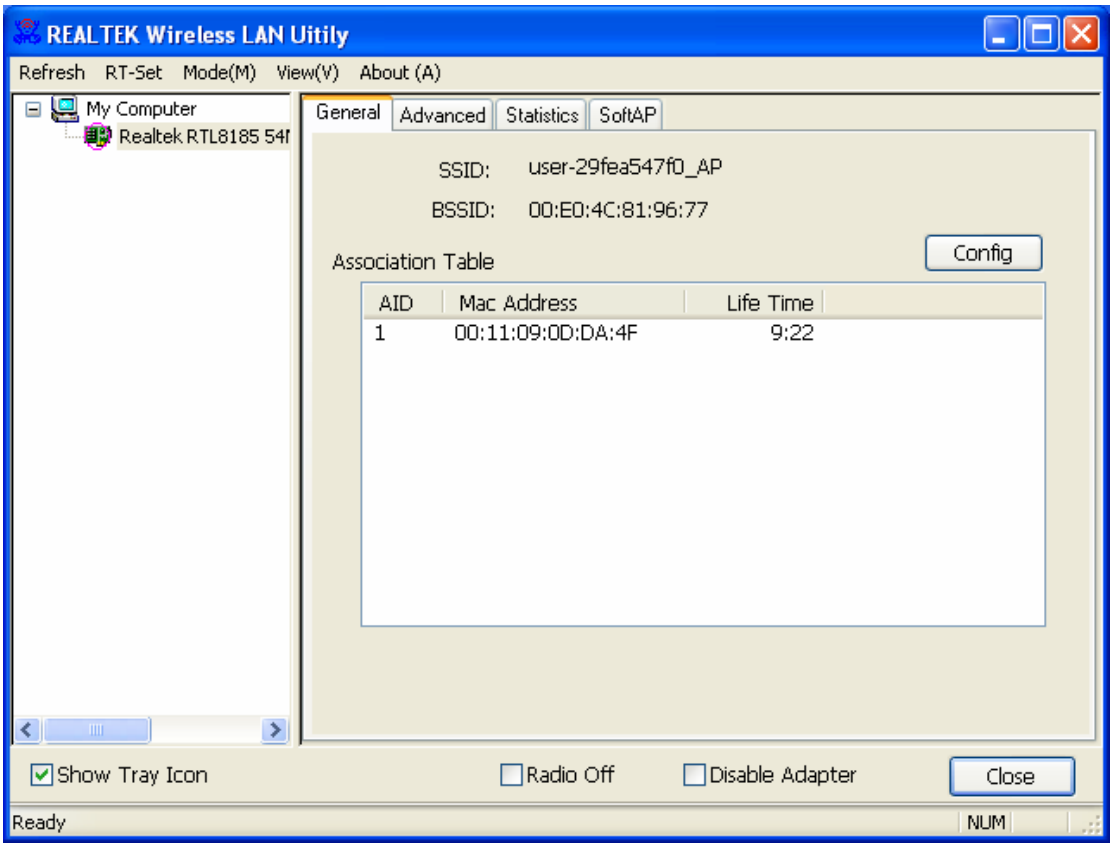
5. Click “Finish” to complete setup.

AP mode management guide

General

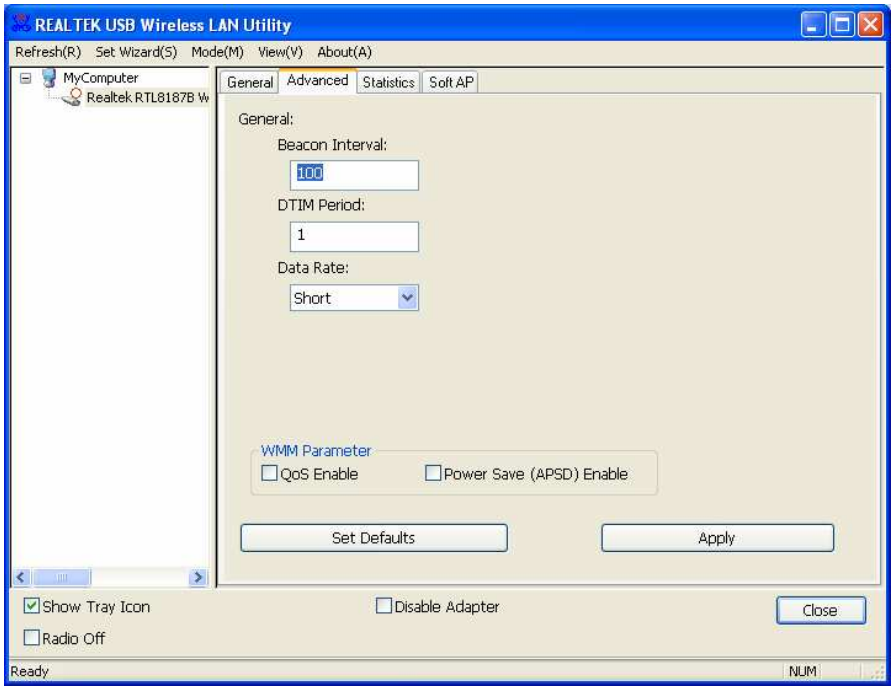
After configuring the adapter in AP mode, this "**General**" page shows up, which shows the general information of this AP.

SSID:	The SSID (network name) of the wireless network constructed by this AP.
BSSID:	The MAC address of this AP
Config:	Click this button to change configurations to this AP
Association Table:	Shows the information of those devices that associated with this AP including their MAC addresses and the time that they connected with this device.



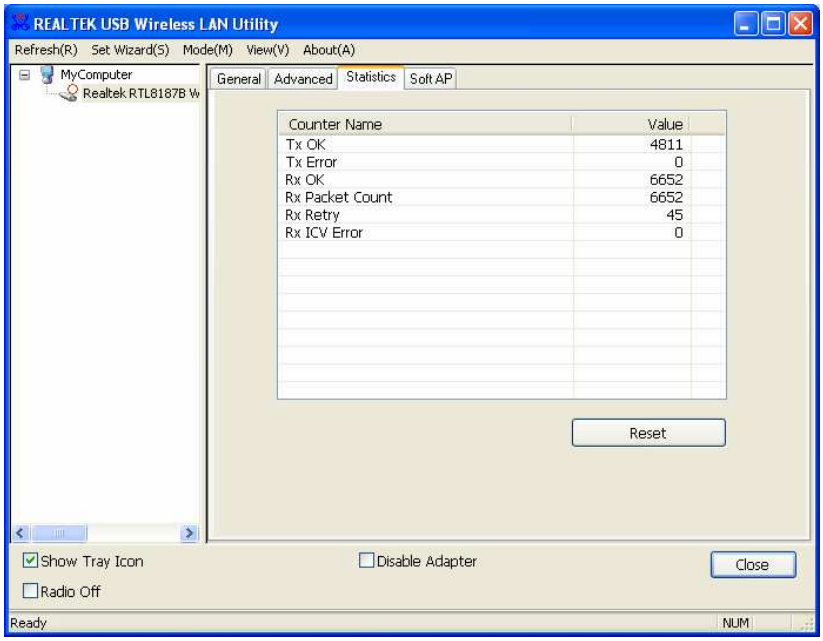
Advanced

Beacon Interval:	Define the interval between beacons from 20~1000
DTIM Period:	Set the DTIM period between 1~255
Preamble Mode:	Click the drop list to select the preamble to be long, short or auto
Set Defaults:	Click this button to restore the settings above to default
Apply:	Click this button to execute changes.
WMM Parameter	Mark the checkbox to enable QoS or Power save function for WMM.



Statistics

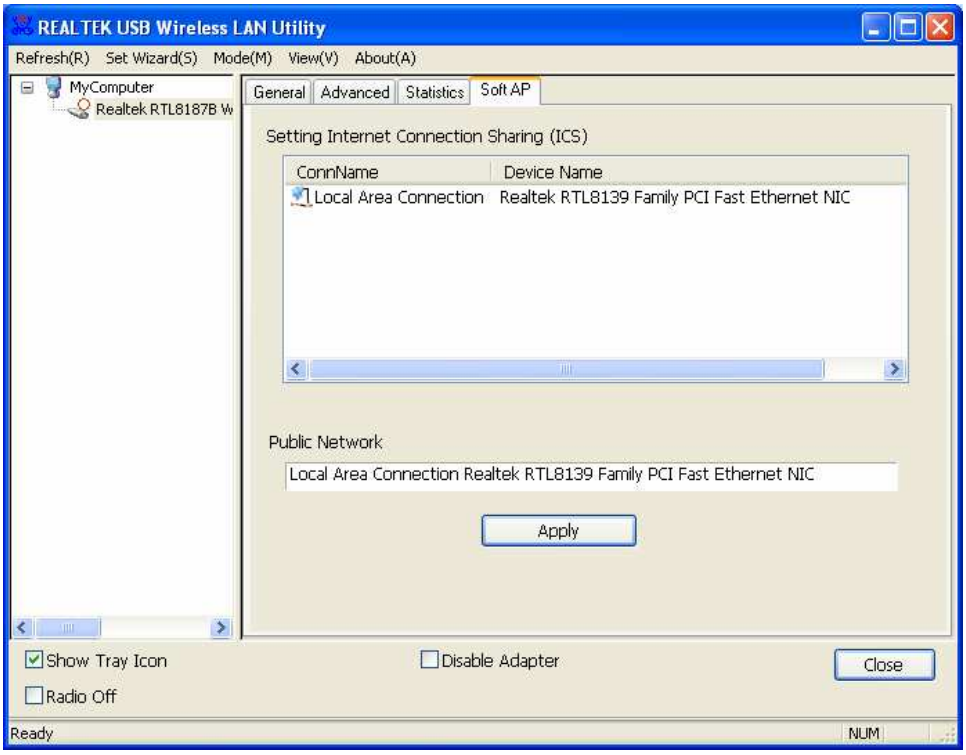
See this tab to show the transmission activity record. Clicking the **"Reset"** button recounts the values from zero.



SoftAP

This page allows users to select the adapter for connect to public network.

Please click on the device that are used for connecting to public network and click the “Select” button, and then click the “Apply” button to execute.



Product Specification

Standard
IEEE 802.11b, IEEE 802.11g
Interface
USB rev1.0/1.1/2.0
Antenna
Antenna gain: 2dB Antenna type: Patch antenna
RF Maximum output power
802.11b:14.962mW 802.11g:15.136mW
Number of channels
802.11b: 11 channels (USA, Canada), 13 channels (Europe) 802.11g: 11 channels (USA, Canada), 13 channels (Europe)
Carrier frequency of each channel
802.11b /g --- Ch1: 2412 MHz, Ch2: 2417 MHz, Ch3: 2422 MHz, Ch4: 2427 MHz, Ch5: 2432 MHz, Ch6: 2437 MHz, Ch7: 2442 MHz, Ch8: 2447 MHz, Ch9: 2452 MHz, Ch10: 2457 MHz, Ch11: 2462 MHz (Ch12: 2467MHz, Ch13: 2472MHz for Europe)
Security
64/128-bit WEP, WPA (TKIP with IEEE 802.1x), AES
Receiver Sensitivity
54Mbps OFDM, 10%PER, -68dBm
11Mbps CCK, 8%PER, -86dBm
1Mbps BPSK, 8%PER, -92dBm
Channel
USA 11, Europe 13
Network Data Rate
802.11b: 11/5.5/2/1 Mbps
802.11g: 54/48/36/24/18/12/9/6 Mbps
Range Coverage
Indoor 35~100 meters
Outdoor 100~300 meters
LED indicator
Link/ACT(Green)

Operating Temperature
0- 40 ^{0}C (32 – 104 ^{0}C)
Operating Humidity
10% ~ 90% (non-condensing)
Emission
FCC Class B, CE FCC Part 15.247 for US (2.412~2.462 MHz) ETS 300 328 for Europe (2.400~2483.5 MHz) DGT LP0002 for Taiwan (2.412~2.462MHz)

61NB-W420B+207C