

PN20
Shuttle Wireless Kit

Realtek RTL8187

User Guide

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Chapter 1 Introduction

Thank you for purchasing Shuttle PN20 Wireless Kit. Shuttle PN20 Wireless Kit is a perfect combination of both performance and cost-effective product introduced by Shuttle. Shuttle hopes you can enjoy the wireless world through this solid profiled wireless card.

PN20 provides all the data rates in the IEEE 802.11 b/g standards. PN20 supports both the short and long preambles to ensure the compatibility of legacy wireless products and new ones, saving the panic works for end users to find compatible products.

Since the security has become one of the most important issue in the wireless society, PN20 provides you with the full security coverage from the naïve 64/128bits WEP encryptions, second generation WPA-PSK encryption, to the most advanced WPA2-AES encryption. WPA2 is the latest security standard currently approved by WIFI standard. Shuttle cares about your security on the wireless world and makes our efforts to protect our users from malicious sniffers.

Saving mode, Ad-Hoc wireless LAN, Wake on LAN (WOL) and other exciting features are also included in this Shuttle PN20 Wireless Kit. We will guide you through these exciting features in the following chapters and we believe that you will have a great satisfactory with its performance and ease of use.

Chapter 2 Specifications

PN20 Wireless Kit

WLAN Interface	Fully complies with IEEE 802.11 b/g specifications
Chipset:	RealTek RTL8187
RF Chip:	Realtek RTL8225
Data Rates :	54, 48, 36, 24, 18, 12, 9, and 6 Mbps (802.11g) 11, 5.5, 2, 1 Mbps (802.11b)
Frequency Band :	2.4GHz to 2.484GHz
Wireless Medium :	DSSS and OFDM
Media Access Protocol:	CSMA/CA
Operating Channels:	1-13(FCC:1-11 、 ETSI:1-13)
Operating Range:	<ul style="list-style-type: none"> • Indoors: Up to 328 ft (100 meters) • Outdoors: Up to 1312 ft (400 meters)
Receive Sensitivity :	
802.11g	54 Mbps: -71 dBm
	48 Mbps: -73 dBm
	36 Mbps: -77 dBm
	24 Mbps: -81 dBm
	18 Mbps: -83 dBm
	12 Mbps: -83 dBm
	9 Mbps: -83 dBm
	6 Mbps: -83 dBm
802.11b	11 Mbps: -87 dBm
	5.5 Mbps: -88 dBm
	2 Mbps: -89 dBm
	1 Mbps: -89 dBm
Transmit Power:	
802.11g:	14±1dBm
802.11b:	17±1dBm
Security :	64/128-bit WEP WPA— Wi-Fi Protected Access
Standards Conformance:	WPA certified, IEEE 802.11g, IEEE 802.11b

EMI:	FCC, CE
Environmental Range:	
Operating temperature:	0° to 40°C (32° to 104°F)
Operating humidity:	0 to 90% non-condensing
System Requirements	Windows XP/ 2000/ Vista
Antenna	Detachable dipolar antenna

Chapter 3 Installation/ Un-installation

3.1 Installation

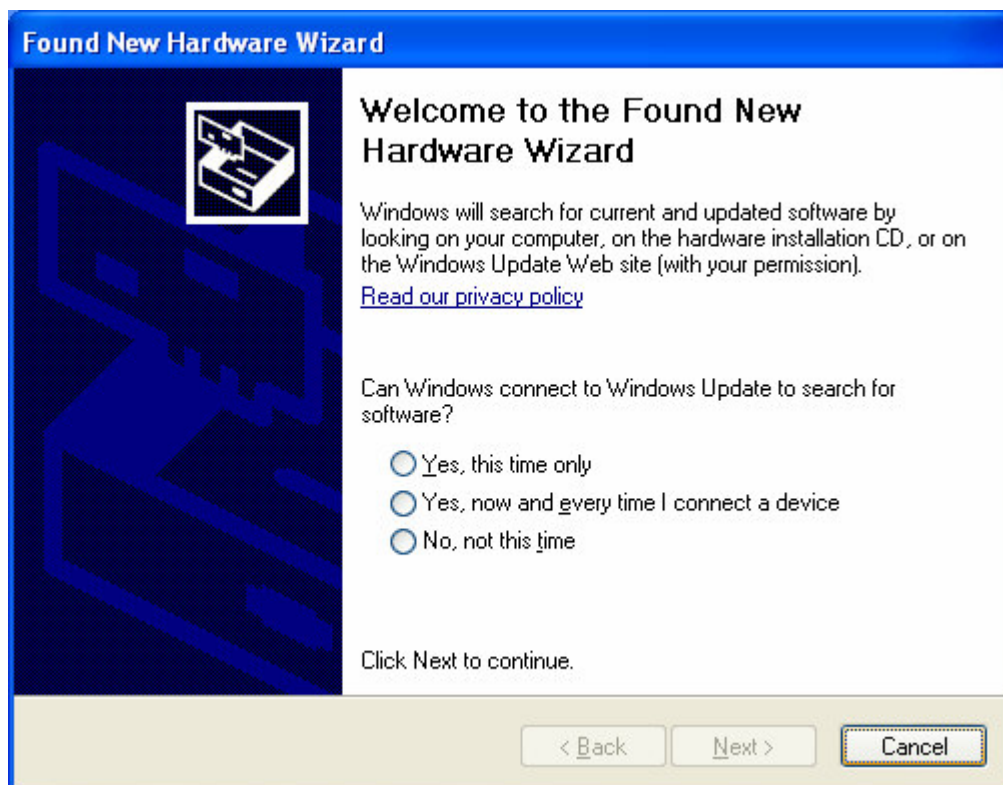
3.1.1 For Windows XP and Windows 2000 user

Before you proceed with the installation, please notice following descriptions.

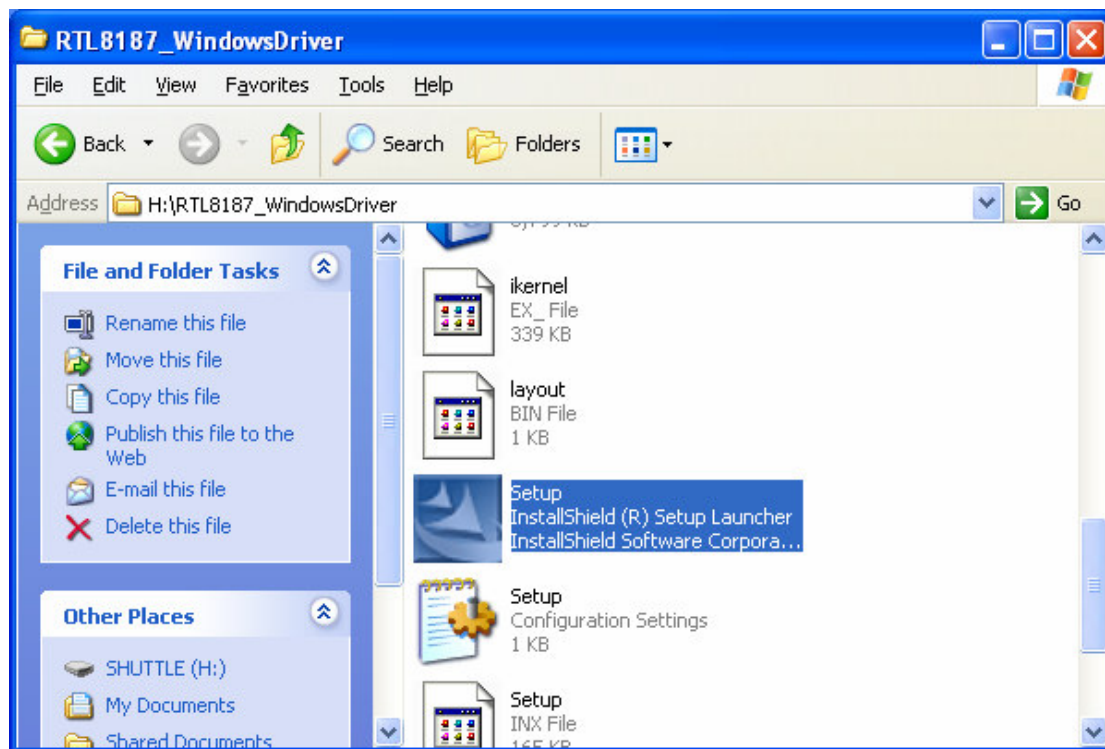
**Note1: The following installation was operated under Windows XP.
(Procedures are similar for Windows 2000.)**

**Note2: If you have installed the USB WLAN driver & utility before, please
uninstall the old version first.**

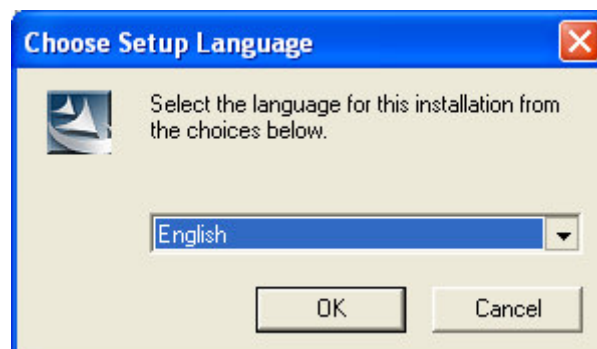
A. Ignore the following dialog. Please click “Cancel”.



- B. Insert the Installation CD to your CD-ROM Drive. Execute the “setup” program.



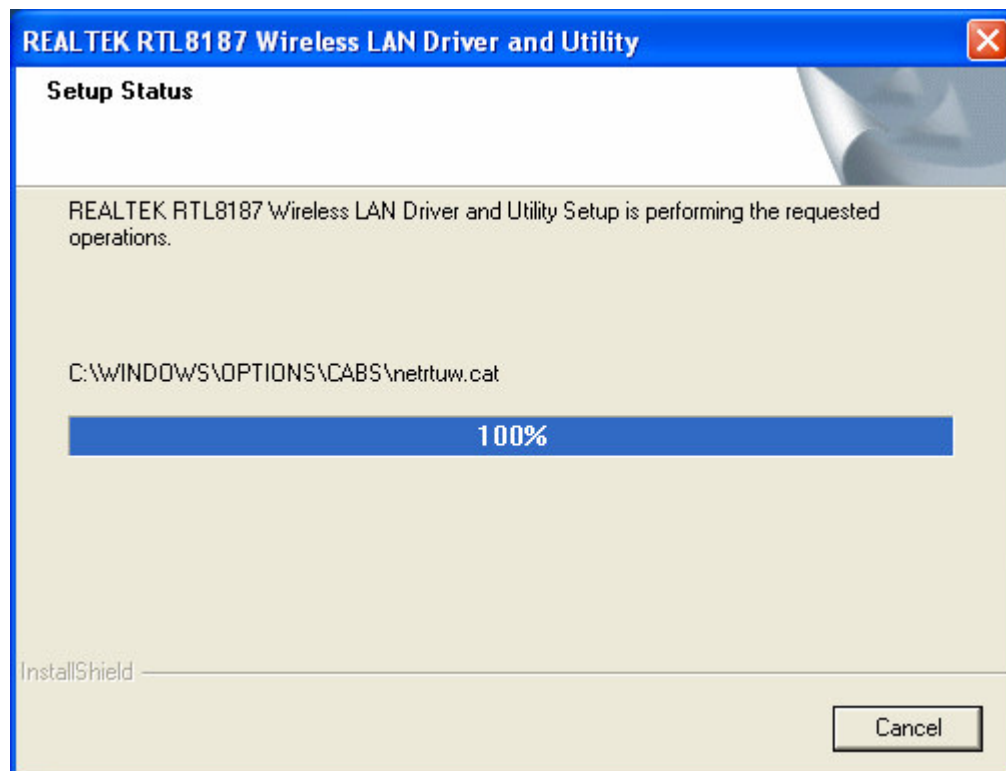
- C. Choose Setup Language

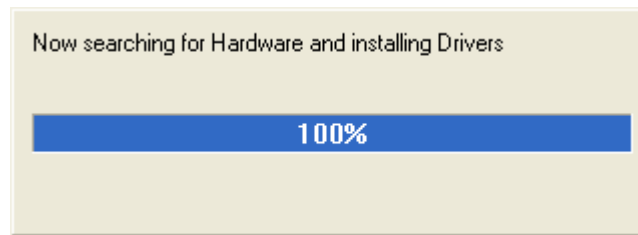


- D. Click “Next” to process the installation



- E. The system starts to install the software of the WLAN adapter.

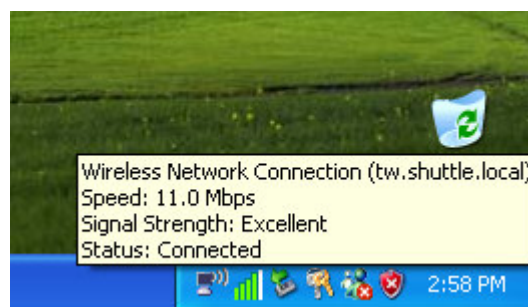




F. Please click "Finish" to complete the installation.

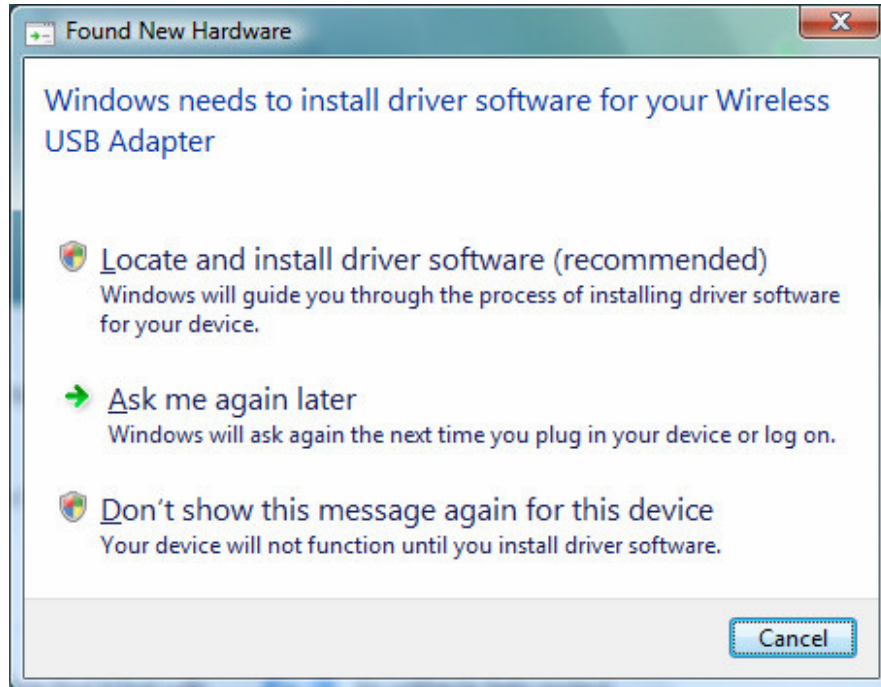


G. Now your PC has wireless network connection

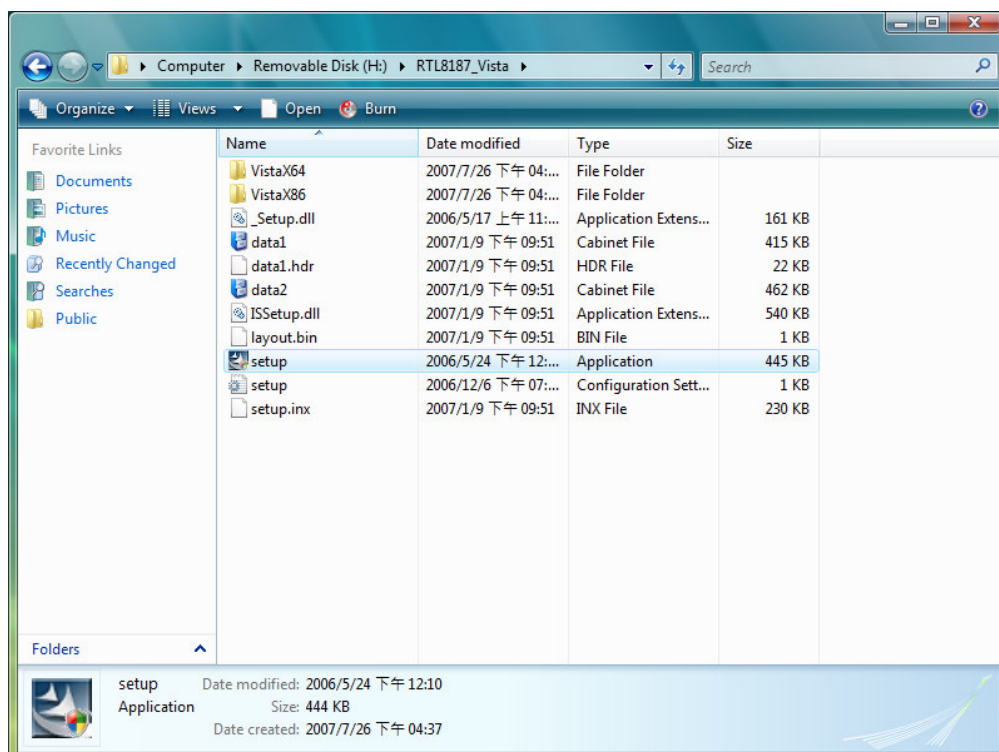


3.1.2 For Windows Vista user

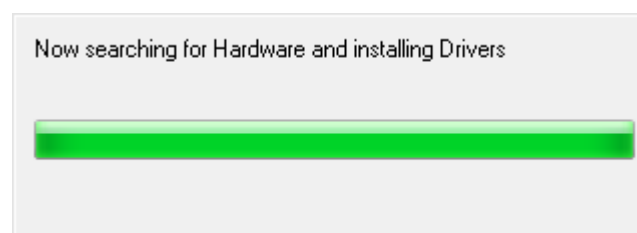
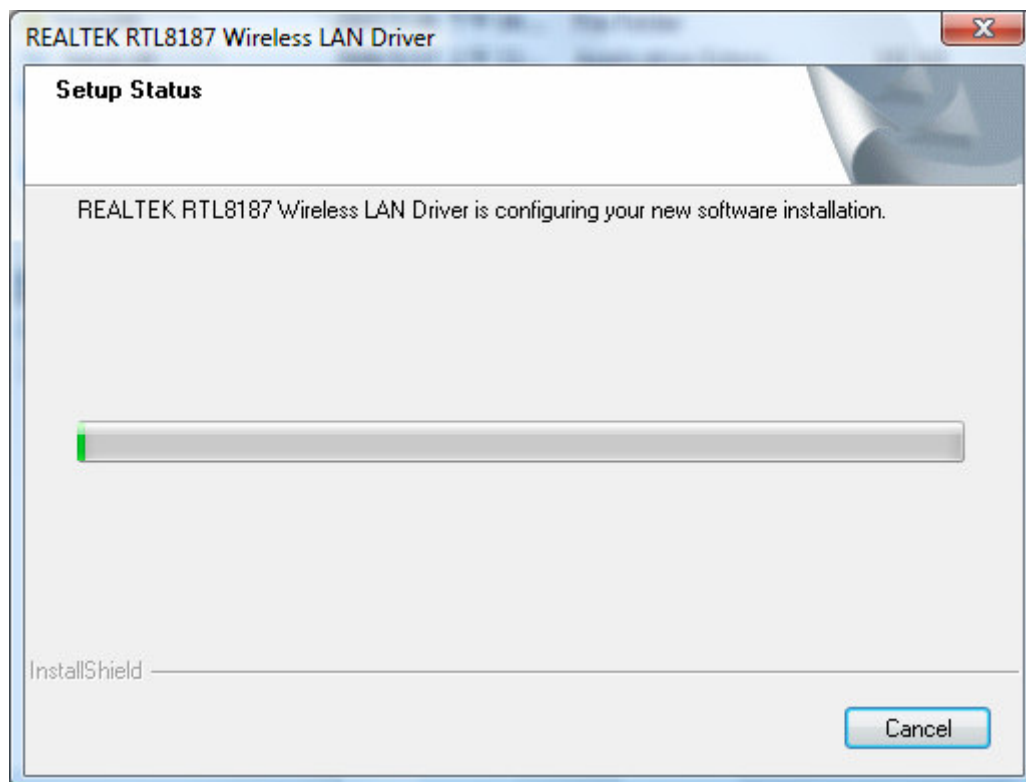
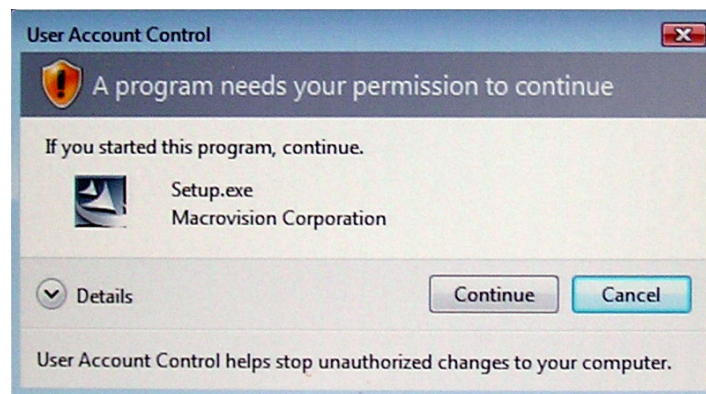
- A. Ignore the following dialog. Please click “Cancel”.



- B. Insert the Installation CD to your CD-ROM Drive. Execute the “setup” program.



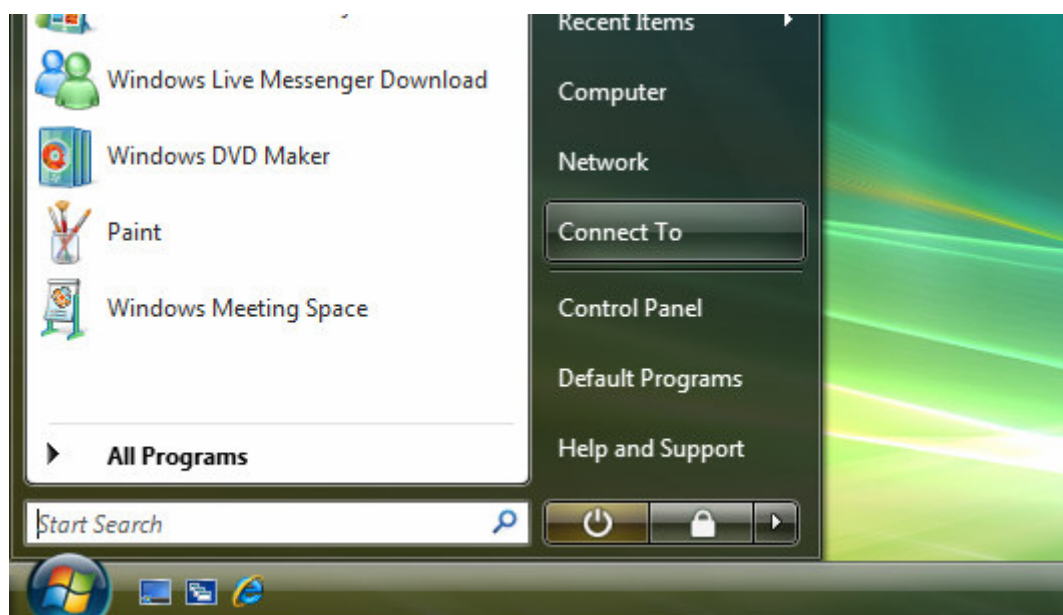
- C. The system will automatically detect the card and display “Hardware Installation” screen. Click “Continue” to continue.



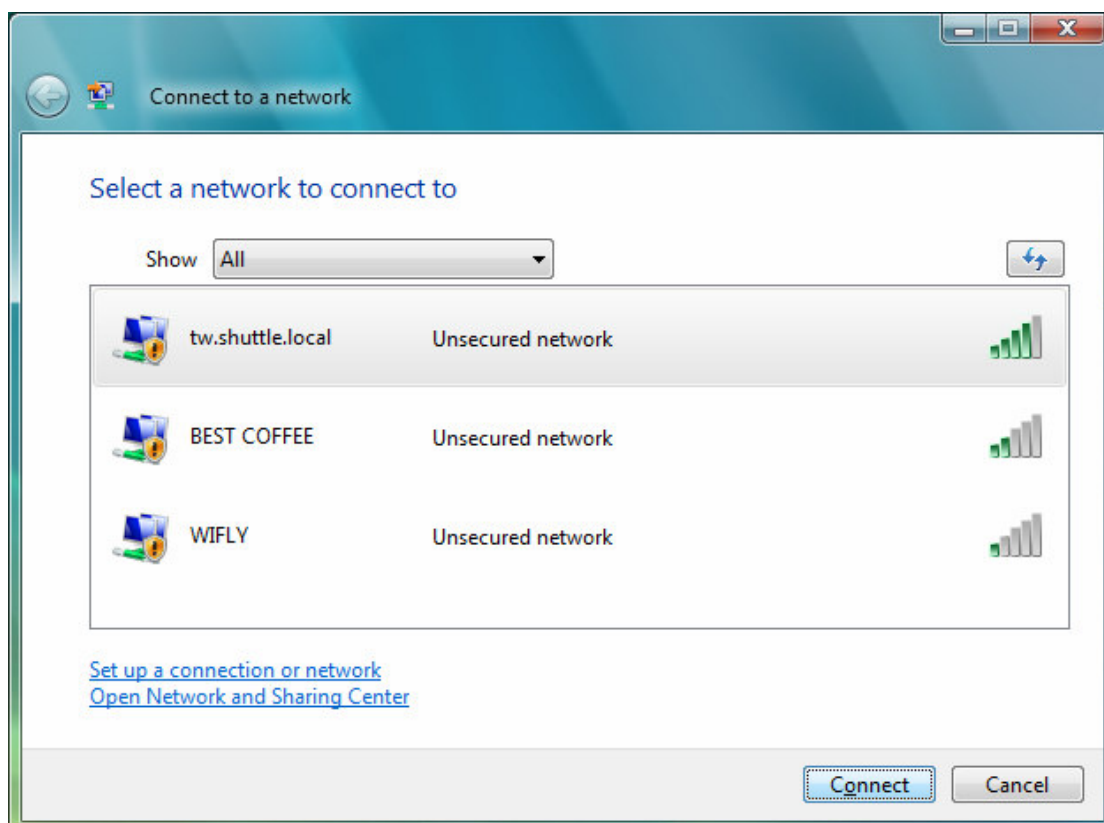
D. Please click “Finish” to complete the installation.



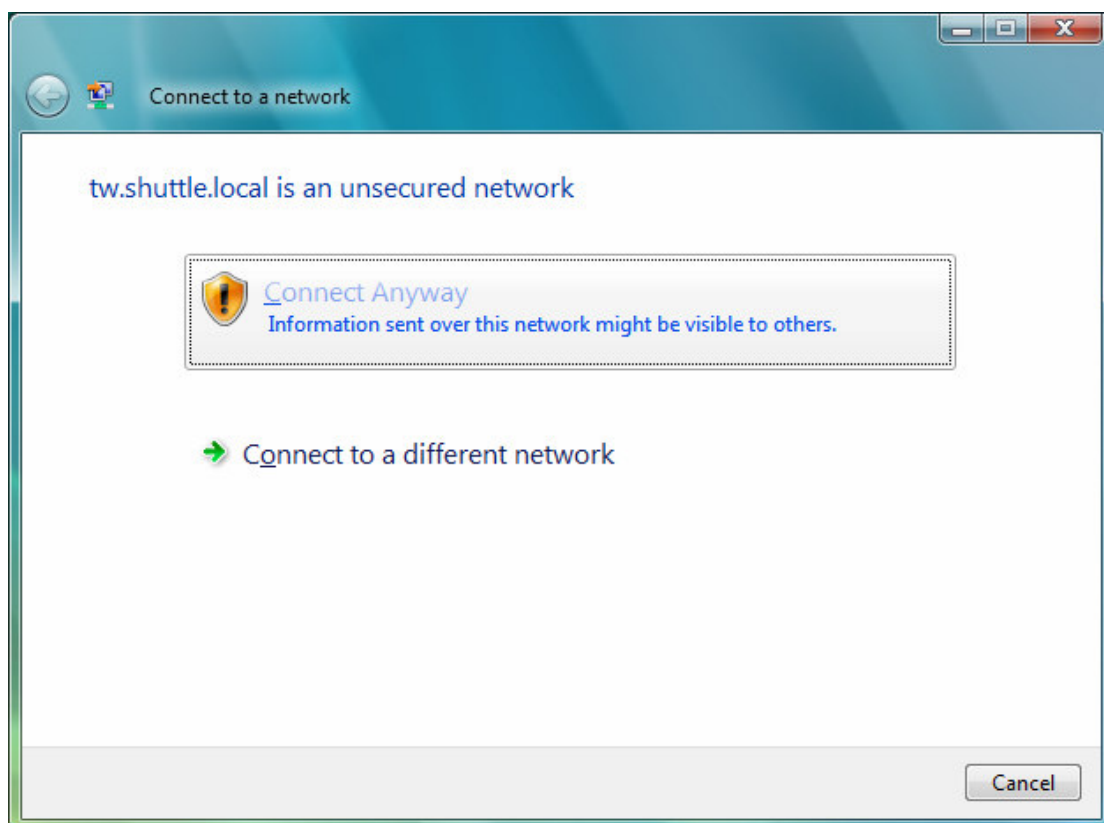
E. Please click the “Start” than select ”Connect To”



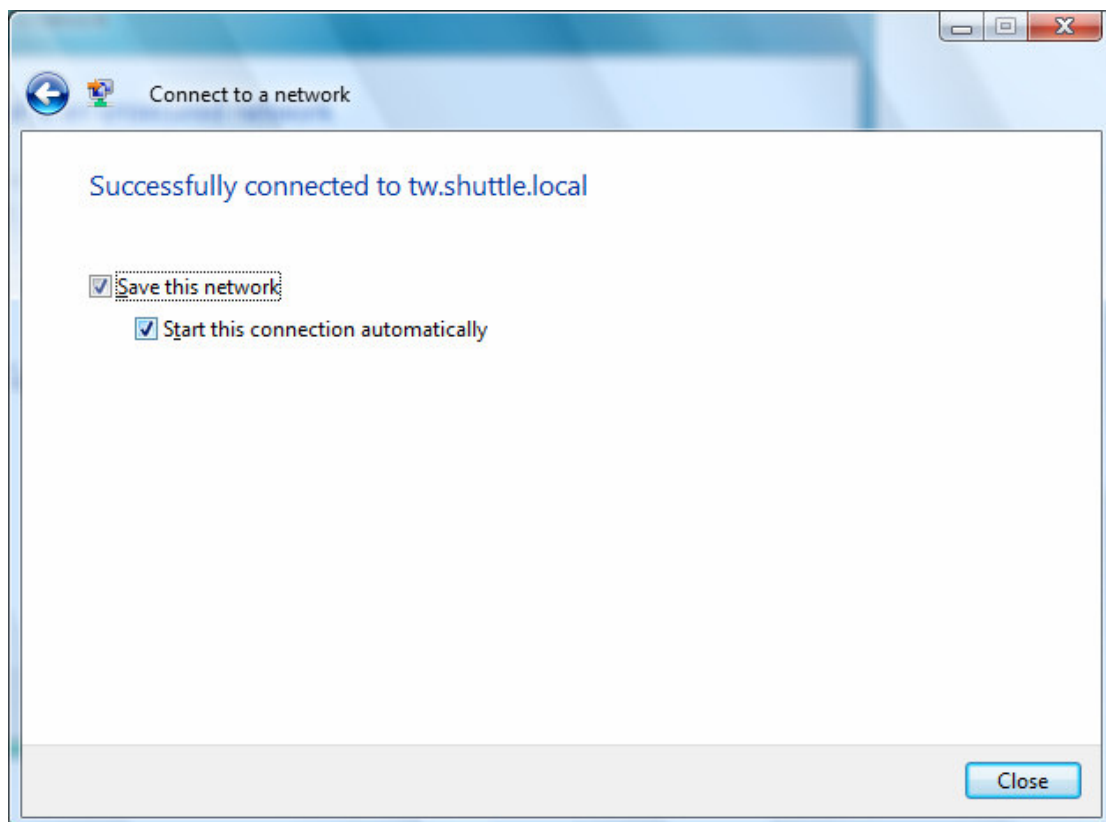
F. Please select your wireless network name and click “Connect”



G. Please click “Connect Anyway”



- H. You can select “Save this network, Start this connection automatically”, Windows will connect to wireless network on start up. Than click “Close” to finish.

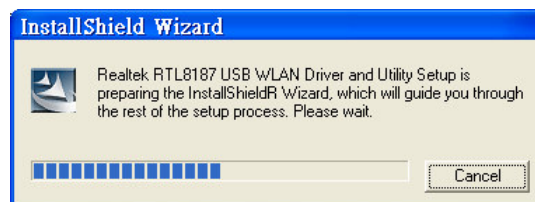
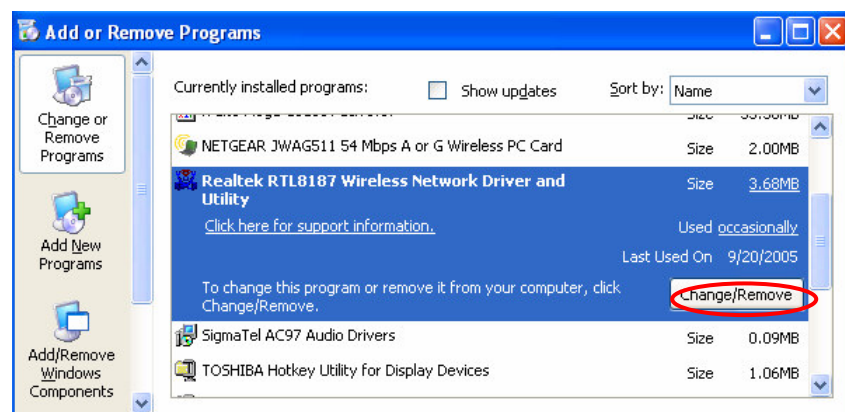
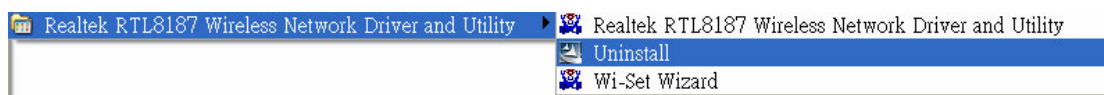


- I. Now your PC has wireless network connection

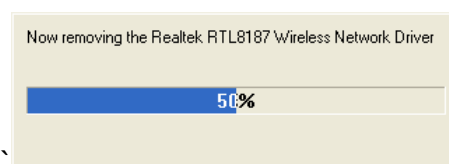
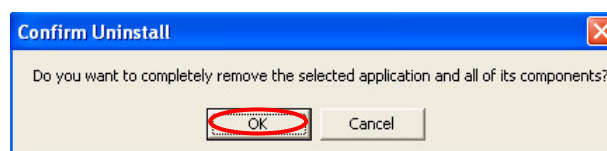
3.2 Un-installation

- A. Uninstall the RTL8187 WLAN Driver from “Start”→ “All Programs”→ “Realtek RTL8187 Wireless Network Driver and Utility” or “Control Panel”→“Change or Remove Programs”.

Please click “Un-install” (or “Change/Remove”) to remove RTL8187 WLAN driver.



- B. Please click “OK” if you want to remove RTL8187 USB WLAN Driver.

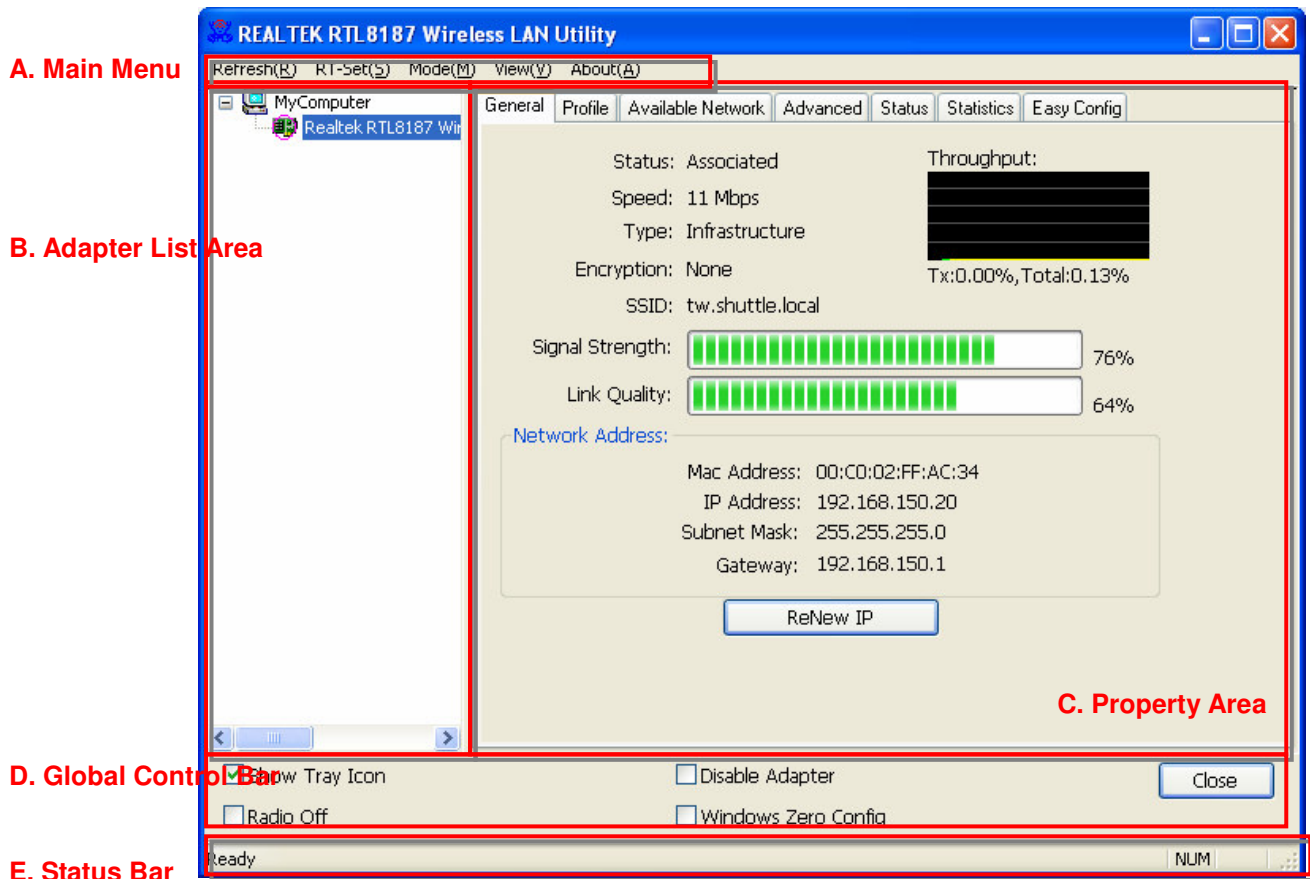


- C. Please click “Finish” to complete the un-installation.



Chapter 4 Wireless LAN Management GUI

4.1 Introduction of Main Window



A. Main Menu

The main menu includes five submenus.

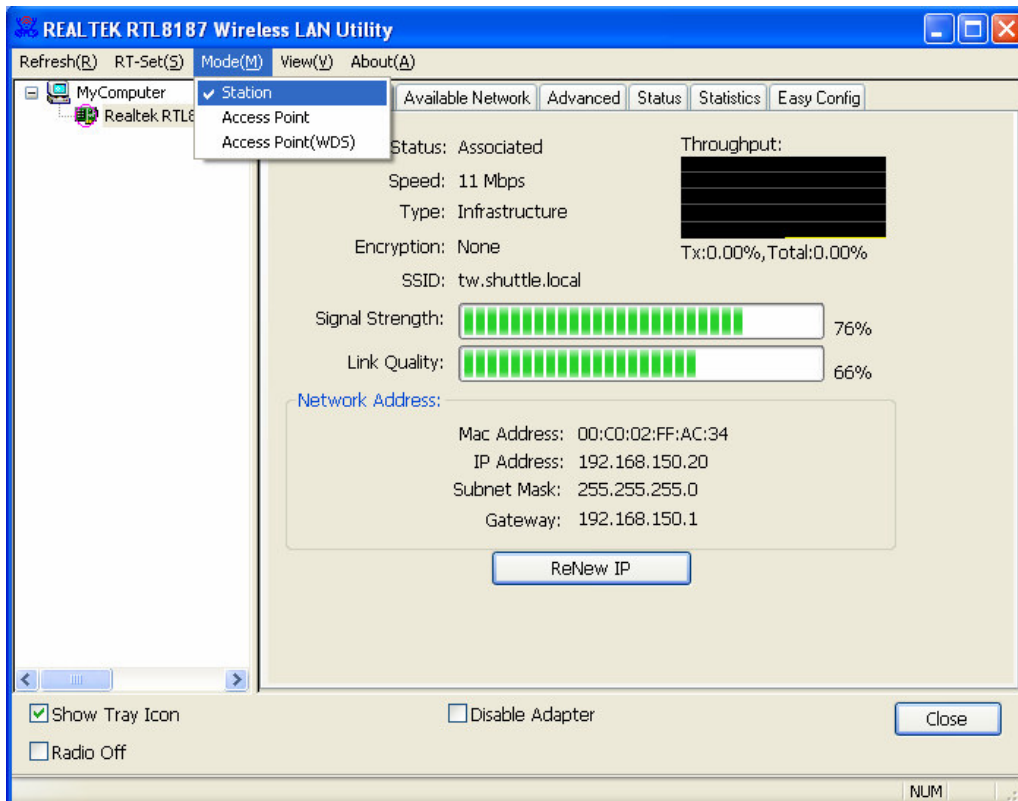
- **Refresh**

As clicking the refresh menu, we can update and re-enumerate the contents of adapter list area.

- **RT-Set**

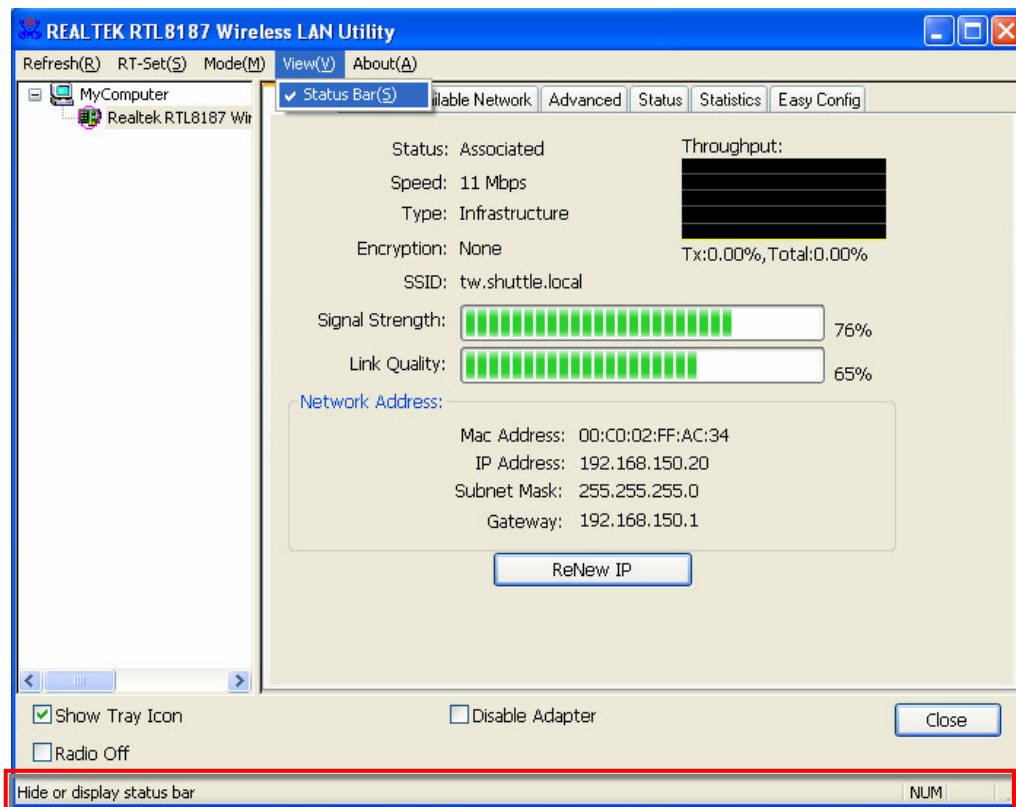
- **Mode**

Wireless configuration was quickly switched to be either [Station] or [Access Point] or [Access Point(WDS)].



▪ View

Enable/disable the present of status bar. Without check mark in front will make the status bar hidden.

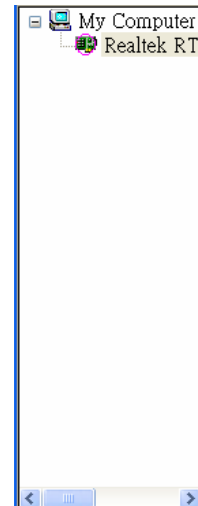


- **About**

Click the item to show the about dialog. The application version and license information are shown in the about dialog.

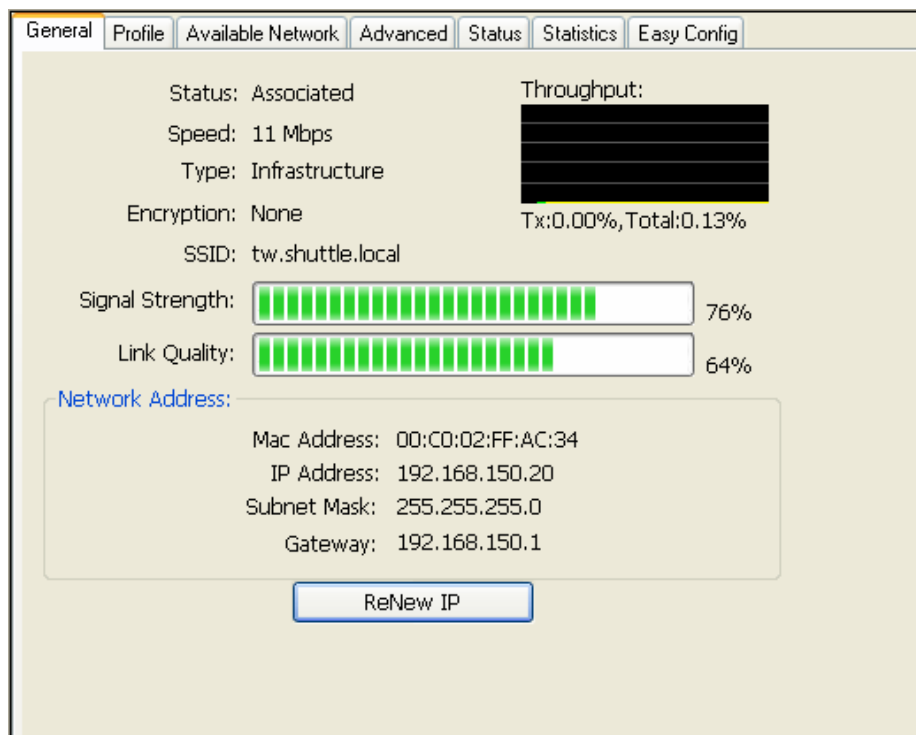
B. Adapter List Area

All connected adapters on this system for multiple adapter installations are displayed in this area. It is easy for users to change the selected adapter by one click. The contents of properties area are dependant on wireless configuration that the selected adapter was set up. If only single adapter was installed on the system, only one adapter is always selected.

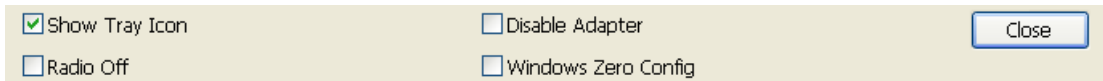


C. Properties Area

The contents of this area are dependent on current wireless configuration. The current configuration is determined on previous explanation of submenu "Mode". The more detail contents are described in following wireless configuration sections for both Station and AP mode.



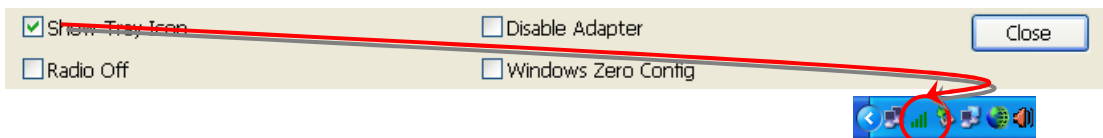
D. Global Control Bar



Each control items on this bar affects the adapter or management GUI directly.

- **Show Tray Icon**

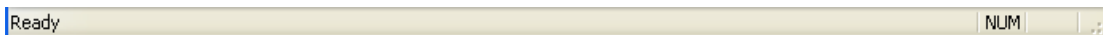
Making this item to be checked and pressing “Close” button, the management GUI will be minimized and stay on the tray icon located at the right down corner of Windows. On the contrary, management GUI will shut down while pressing “Close” button with unchecked condition.



- **Radio Off**

Turn off the radio for saving power. While the radio being off, the links with other wireless network nodes are disconnected. User should be care of it while the wireless configuration is in AP mode. The radio off will cause the sub network belong to the AP to disconnect with internet/intranet.

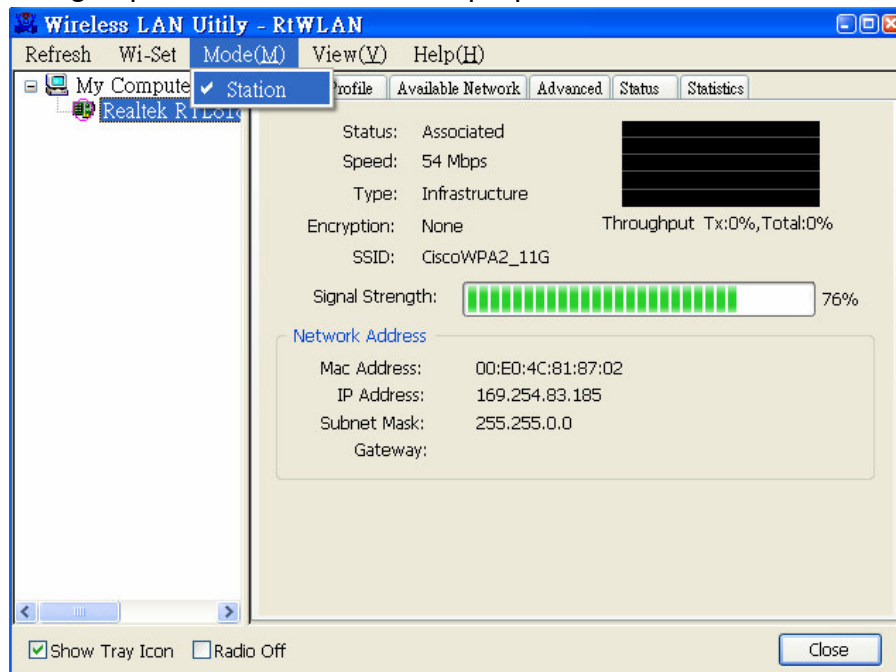
E. Status Bar



The hints or status of the management GUI are presented in the status bar.

4.2 Station mode

The following explanations focus on the properties area.



Infrastructure and Ad-Hoc

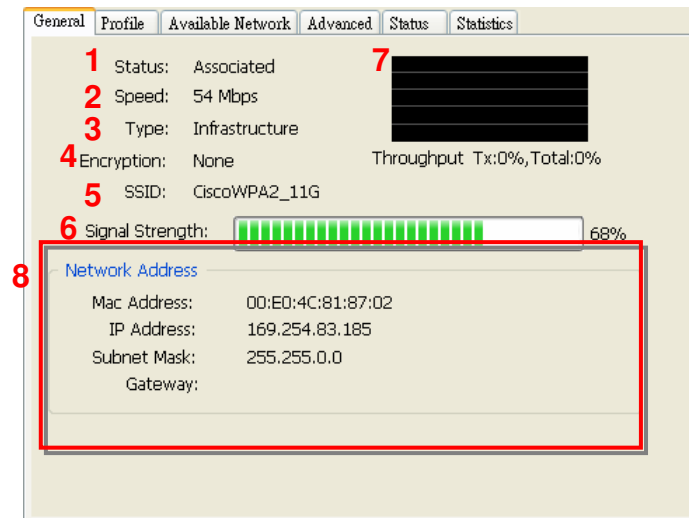
With both Infrastructure and Ad-Hoc types, the properties should look like the picture beside. Six property pages present different information of current wireless network status.

Reading the following explanations before you reviewing these pages, it could help you to well know the wireless environment around the system.

It is easy use to switch property pages just by left button clicking of mouse the title of each page. The following six sections describe detail information of the opposite page.

A. General page

This page represents the general information of this adapter.



1. Status

The connection status with access point this station has.

2. Speed

Current transition speed in Mbps.(Mega-Bits-Per-Second)

3. Type

Current wireless LAN configuration type

4. Encryption

Current encryption mode used

5. SSID

Name of wireless network

6. Signal Strength

The average quality of signal pf packets received from wireless network.

We recommend connecting access point with over 70% signal strength.

7. Throughput diagram

Current throughput, including transmission (Tx) and total traffic (Total).

8. Network Address group

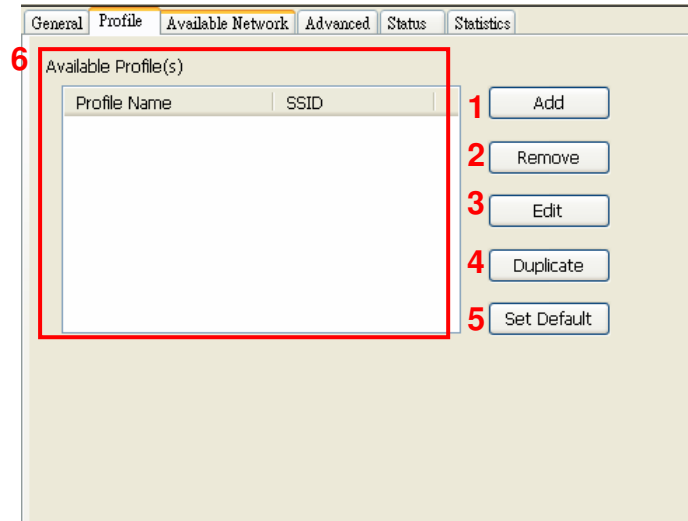
- Mac Address: six two-digital number of this adapter
- IP Address: assigned network address by DHCP server or self-definition in four three-digital number format
- Subnet Mask: the only valid value is 255.255.255.0
- Gateway: It comes from connected access point. Your system can not connect internet with this field empty.

B. Profile page

This page provides profiles management like add, remove, edit and duplicate just by pressing the button.

Available Profile(s)

The list box shows all the created profiles.



1. Add

Add a new profile for access point or IBSS (Ad-Hoc mode).

2. Remove

Remove the selected profile

3. Edit

Edit contents of selected profile

4. Duplicate

Make copy of selected profile.

5. Set Default

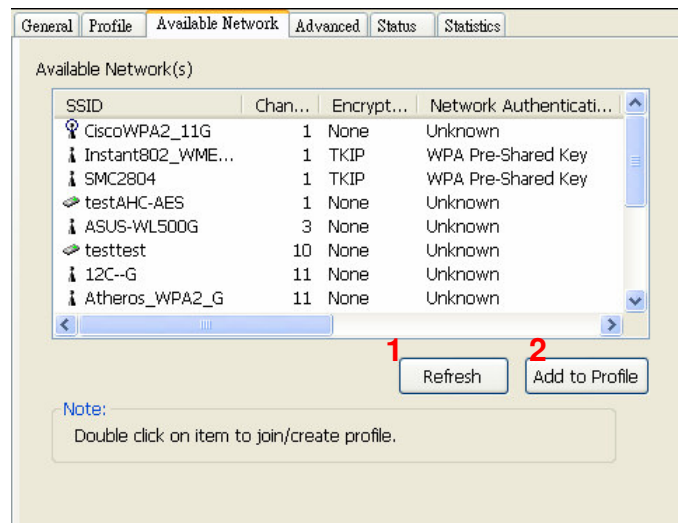
Set the selected profile as default selection.

6. Available Network page

This page presents all BSS, including access points and IBSS, around this system. And you could pick one of these network connections.

C. Available Network(s)

Present network connection around this system



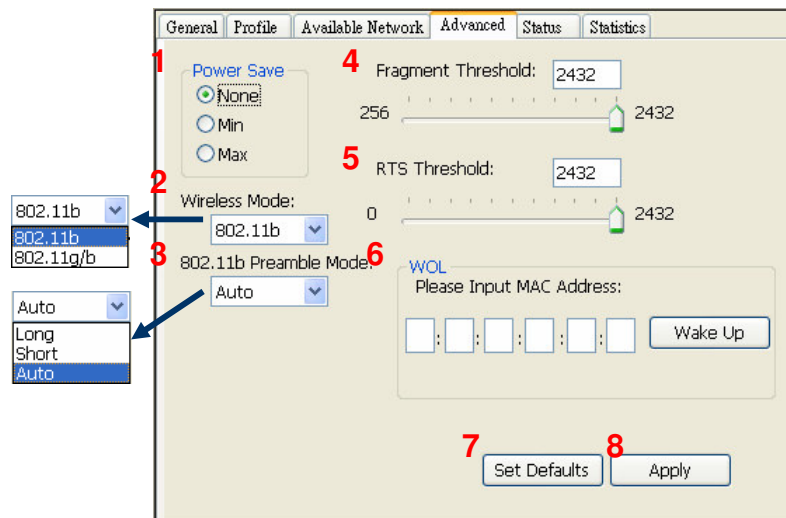
1. Refresh

Rescan network connection around this system

2. Add to Profile

Create profile for selected network connection in profile list and add it in to profile list.

D. Advanced page



1. Power Save

None: without power save mode

Min: wake up more frequently to receive packets

Max: wake up less frequently to receive packets

2. Wireless Mode

802.11b

802.11g/b

3. 802.11b Preamble Mode

Long: higher quality but with lower performance than preamble short mode

Short: Normal quality but with higher performance than preamble long mode.

Auto: use the preamble mode of current BSS.

4. Fragment Threshold

The threshold of fragment length. Higher threshold increase data transition performance with good signal quality. However, in a poor signal quality environment, data throughput might be worse on high fragment threshold than low fragment threshold.

5. RTS Threshold

Threshold of Request To Send mechanism. The RTS frame will not send out until the packet size over threshold.

6. WOL (Wake On LAN)

The wake-on-LAN is applied for remote control purpose. You could wake up a system through network packets. For Shuttle PN20 Wireless Kit, only the same adapter on another system could wake it up.

- Input MAC Address: the six two-digit numbers of Shuttle PN20 Wireless Kit on target system.
- Wake Up: press this button to wake it up

7. Set Defaults

Restore the default value to be current setting

8. Apply

Apply the current setting to GUI

E. Status page

General	Profile	Available Network	Advanced	Status	Statistics
Manufacturer		= Realtek			
NDIS Driver Version		= 5.1163.05.0818			
Short Radio Header		= No			
Encryption		= Disabled			
Authenticate		= Open			
Channel Set		= FCC			
MAC Address		= 00:ED:4C:81:87:02			
Data Rate		= 54 Mbps			
Channel (Frequency)		= 1 (2412 MHz)			
Status		= Associated			
SSID		= CiscoWPA2_11G			
Network Type		= Infrastructure			
Power Save Mode		= None			
Associated AP MAC		= 00:11:92:7E:A0:70			
Associated AP IP		= 0.0.0.0			
Up Time (hh:mm:ss)		= 0:07:20			

- Manufacturer: It always is RealTek.
- NDIS Driver Version:
- Short Radio Header
- Encryption: Current encryption mode.
- Authenticate: authentication state
- Channel Set: selected channel plan currently.
- MAC Address: MAC address of this adapter.
- Data Rate: wireless LAN transition speed
- Channel(Frequency): current channel number
- Status: wireless network status
- SSID: name of connecting access point
- Network Type: indicate current network configuration type
- Power Save Mode: current setting power save mode
- Associated AP MAC: MAC address of connecting access point
- Associated AP IP: IP address of connecting access point
- Up Time: total connection time

F. Statistics page

You could watch the Tx/Rx status of current wireless connection. This page shows a statistic analysis of packet transition.

General

Profile

Available Network

Advanced

Status

Statistics

Counter Name	Value
Tx OK	115
Tx Error	0
Tx Retry	0
Tx Beacon OK	0
Tx Beacon Error	0
Rx OK	19
Rx Retry	1
Rx CRC Error(0-500)	0
Rx CRC Error(500-1000)	0
Rx CRC Error(> 1000)	0
Rx ICV Error	0

Reset

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.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

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

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

This device is intended only for OEM integrators under the following conditions:

The transmitter module may not be co-located with any other transmitter or antenna.

As long as conduction above is met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End Product Labeling

The final end product must be labeled in a visible area with the following:

“Contains TX FCC ID: S8C-PN20”

Manual Information That Must be Included

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrate this module.

The users manual for OEM integrators must include the following information in a prominent location

IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements. The antenna must not be co-located or operating in conjunction with any other antenna or transmitter.