# PN20

## Shuttle Wireless Kit

**Realtek RTL8187**

# User Guide

# Content

# Chapter 1 Introduction

Thank you for purchasing Realtek RTL8187 Wireless LAN USB 2.0 Adapter. Realtek RTL8187 Wireless LAN USB 2.0 Adapter is another perfect combination of both performance and cost-effective product introduced by Realtek. Realtek hopes you can enjoy the wireless world through this solid profiled wireless card.

RTL8187 provides a full solution of all the IEEE 802.11 b/g protocols. Both of our solutions passed the WIFI tests and will be compatible with all the wireless products with WIFI logo. If you have a Realtek RTL8187 Wireless LAN USB 2.0 Adapter on hand, it means you can connect to the wireless world without any difficulty.

RTL8187 provides all the data rates in the IEEE 802.11 b/g standards. RTL8187 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 became one of the most important issue in the wireless society, Realtek 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. Realtek cares about your security on the wireless world and makes our efforts to protect our users from malicious sniffers.

Saving mode, Adhoc wireless Lan, Wake on Lan(WOL) and other exciting features are also included in this Realtek RTL8187 Wireless LAN USB 2.0 Adapter. We will guild 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

## Host system connections

| | |
|---|---|
| Interface | Fully complies with USB 2.0 or 1.1 |
| USB date transfer rate | USB high speed (480Mbps), and full speed (12Mbps) |

## Wireless LAN (WLAN) environment connections

| | |
|---|---|
| WLAN Interface | Multimode features<br>Fully complies with IEEE 802.11 b/g specifications |
| WLAN transfer rate | 802.11 b: DQPSK with data scrambling capability to provide data rate of 1, 2, 5.5, and 11Mbps<br>802.11 g: A high-speed Fast Fourier Transform(FFT)/Inverse Fast Fourier Transform (IFFT) provide data rate of 6, 9, 12, 18, 24, 36, 48 and 54Mbps |
| WLAN Frequency band | 2.4 ~ 2.497 GHz ((Industrial Scientific Medical Band) |
| Operation Channel | Channel 1 ~ 11 |
| Coverage Area | Indoors: 100m with straight path<br>Outdoors: 400m |
| Compatibility | Fully compatible to IEEE 802.11 b/g devices |
| Security | Hardware-based IEEE 802.11i encryption/decryption engine, including 64-bit/128-bit WEP, TKIP, and AES |
| Antenna | Detachable dipolar antenna |
| Wake on WLAN | Wake up system by wireless LAN (AP mode) |

# Chapter 3 Installation/ Un-installation

## 3.1 Installation

### 3.1.1 For Windows XP and Windows 2000 user

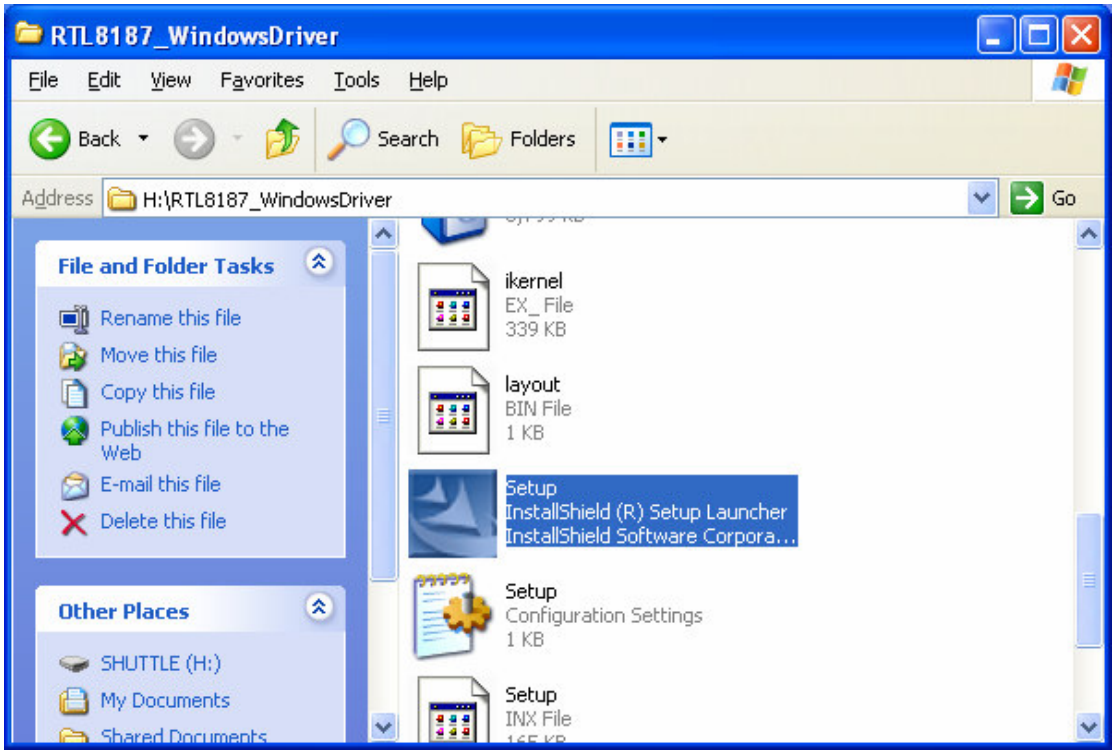
Before you proceed with the installation, please notice following descriptions.

**Note1: The following installation was operated under Windows XP. (Procedures are similar for Windows 98SE/Me/2000.)**

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

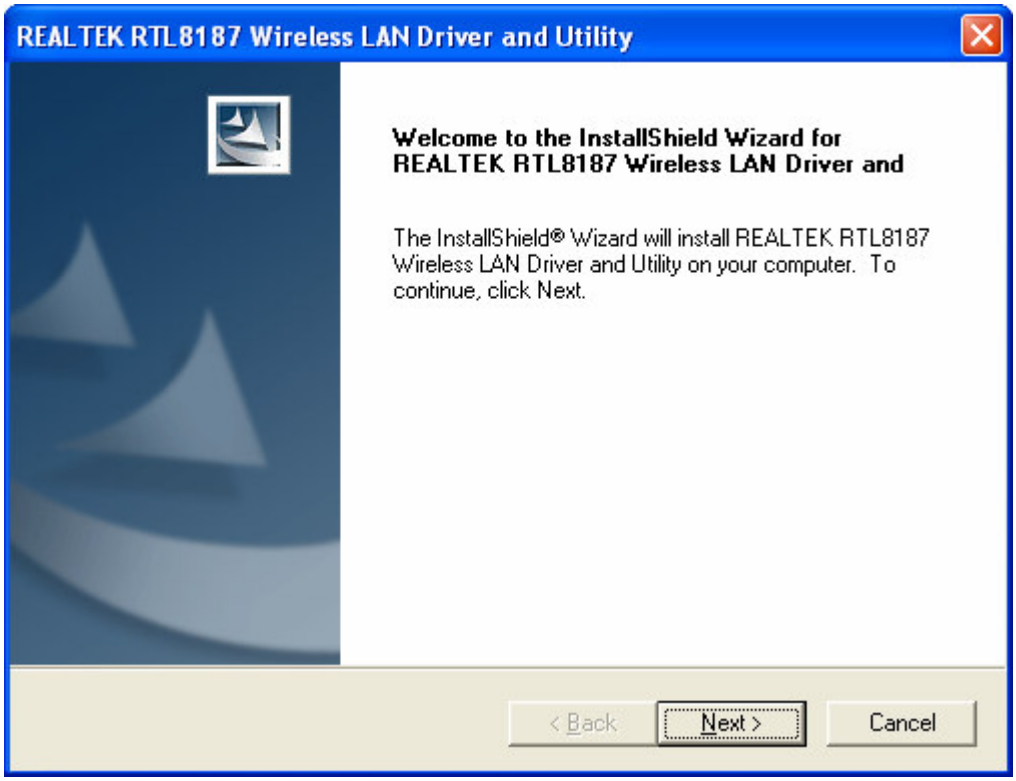
A. Ignore the following dialog. Please click “Cancel”.

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

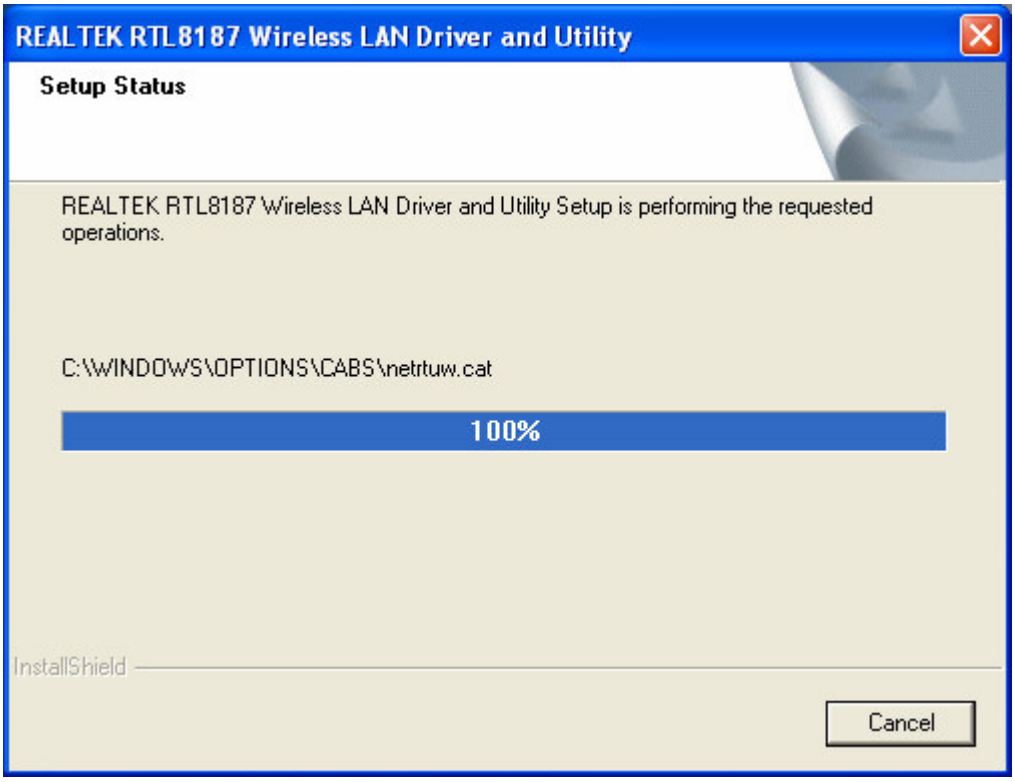


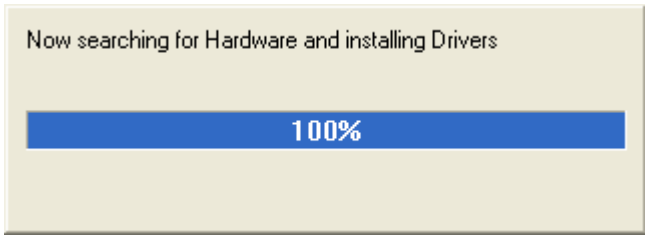

C. Choose Setup Language

D. Click “Next” to process the installation

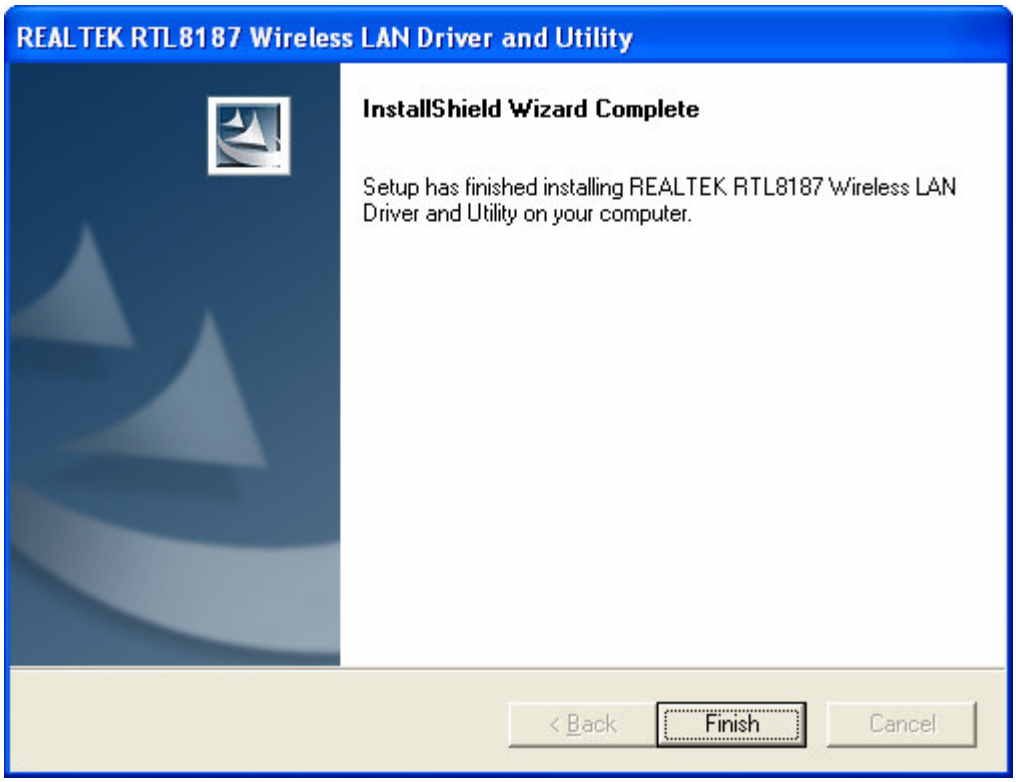



E. The system starts to install the software of the WLAN adapter.

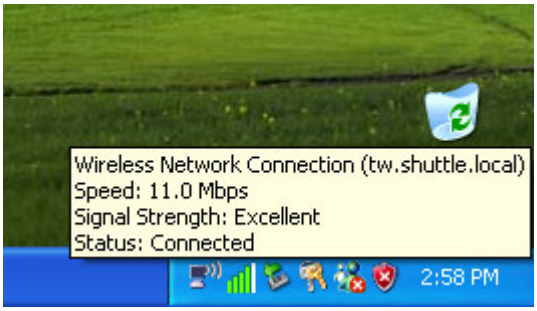





F. Please click “Finish” to complete the installation.

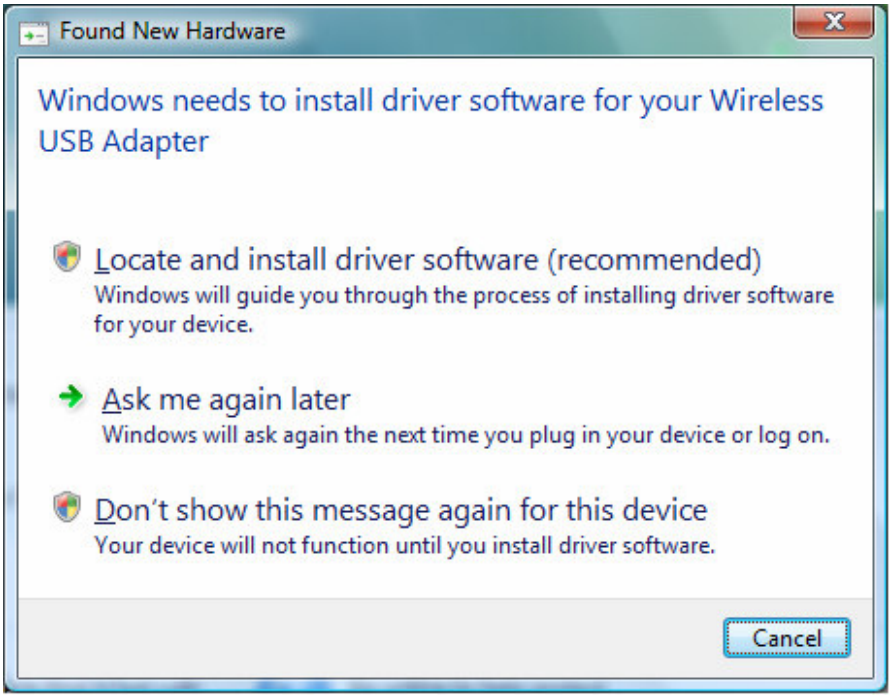



G. Now your PC has wireless network connection

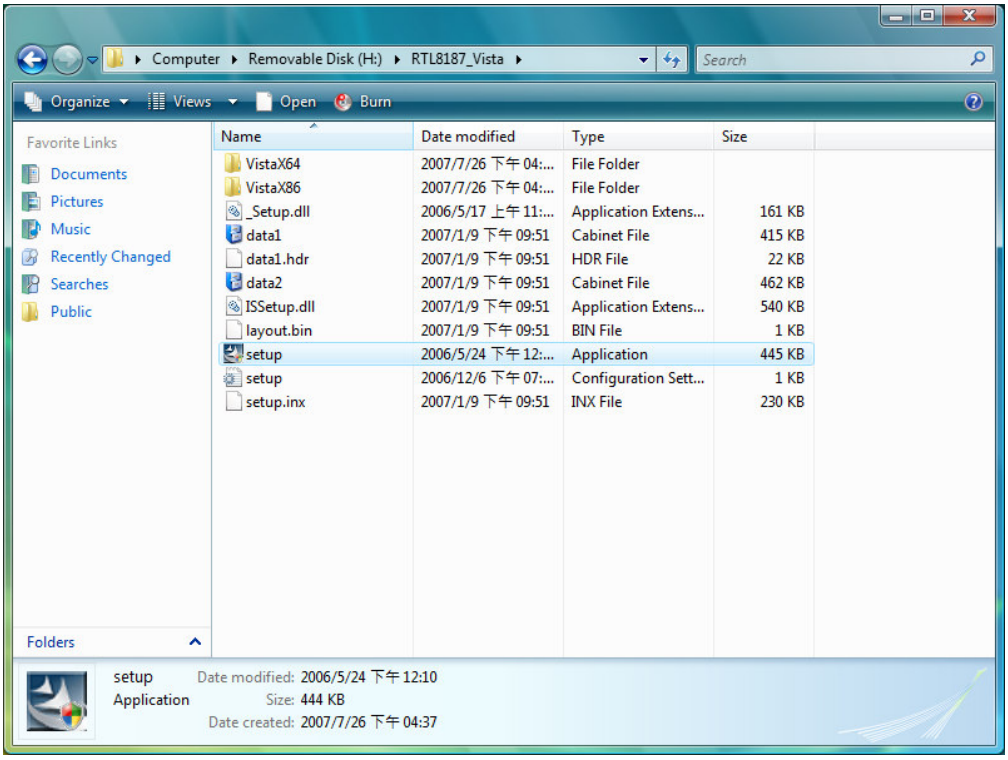


### 3.1.2 For Windows Vista user

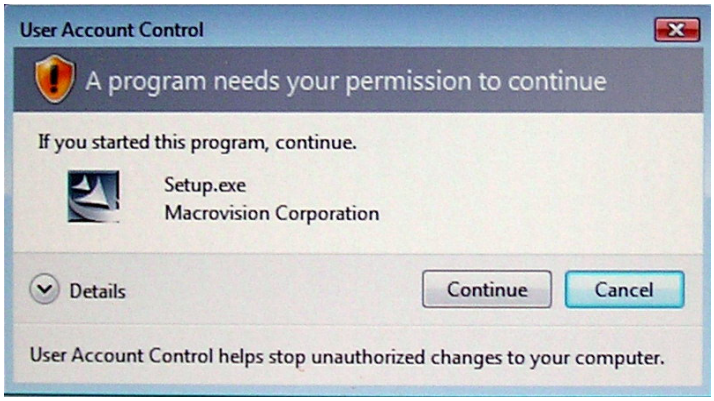
A. Ignore the following dialog. Please click “Cancel”.

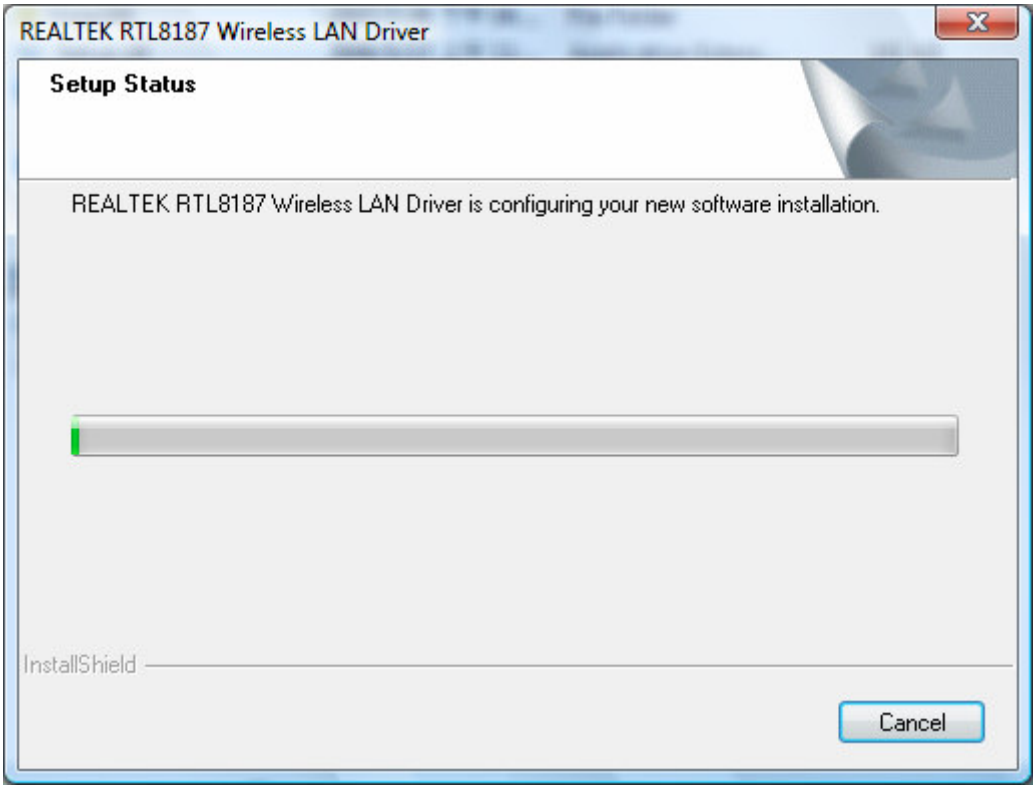


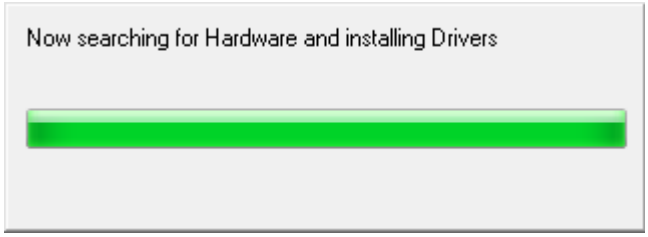

B. Insert the Installation CD to your CD-ROM Drive. Execute the “setup” program.



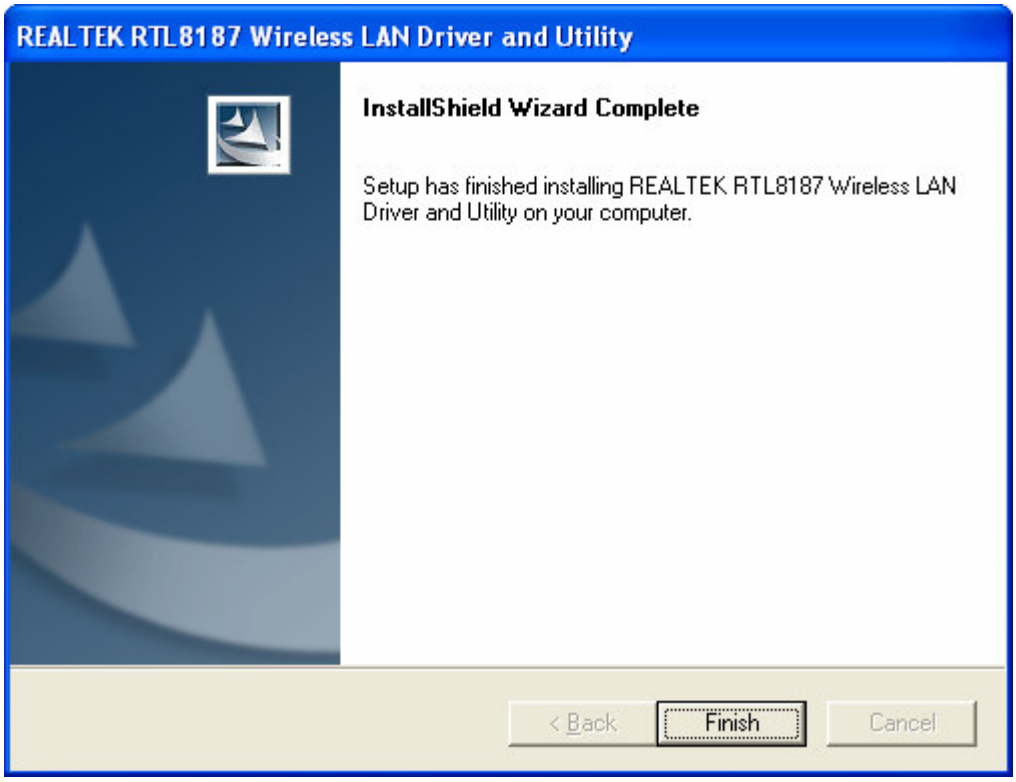
C. The system will automatically detect the card and display “Hardware Installation” screen. Click “Continue” to continue.



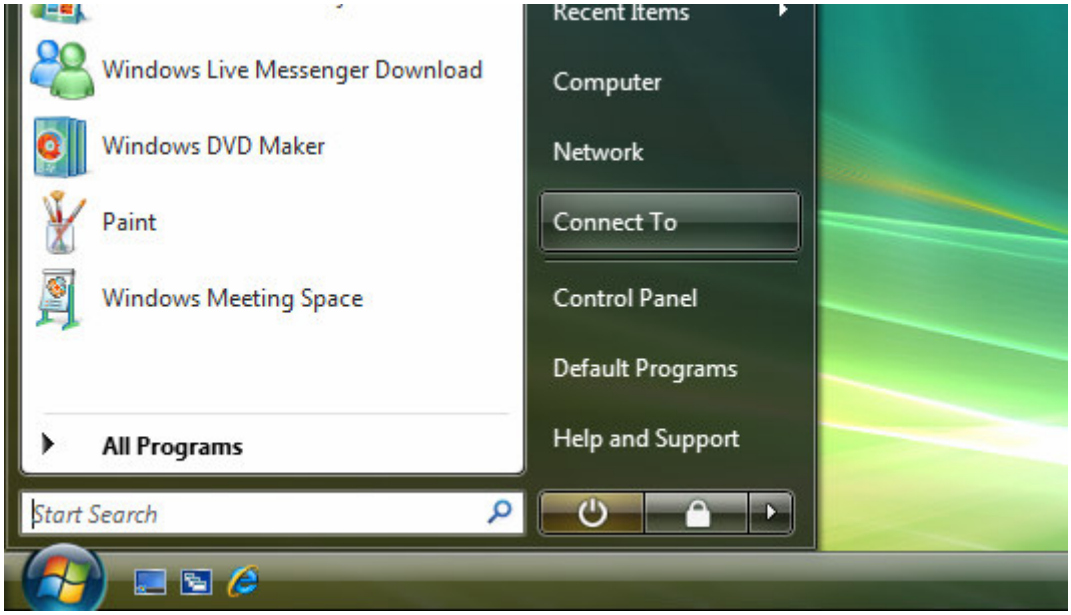



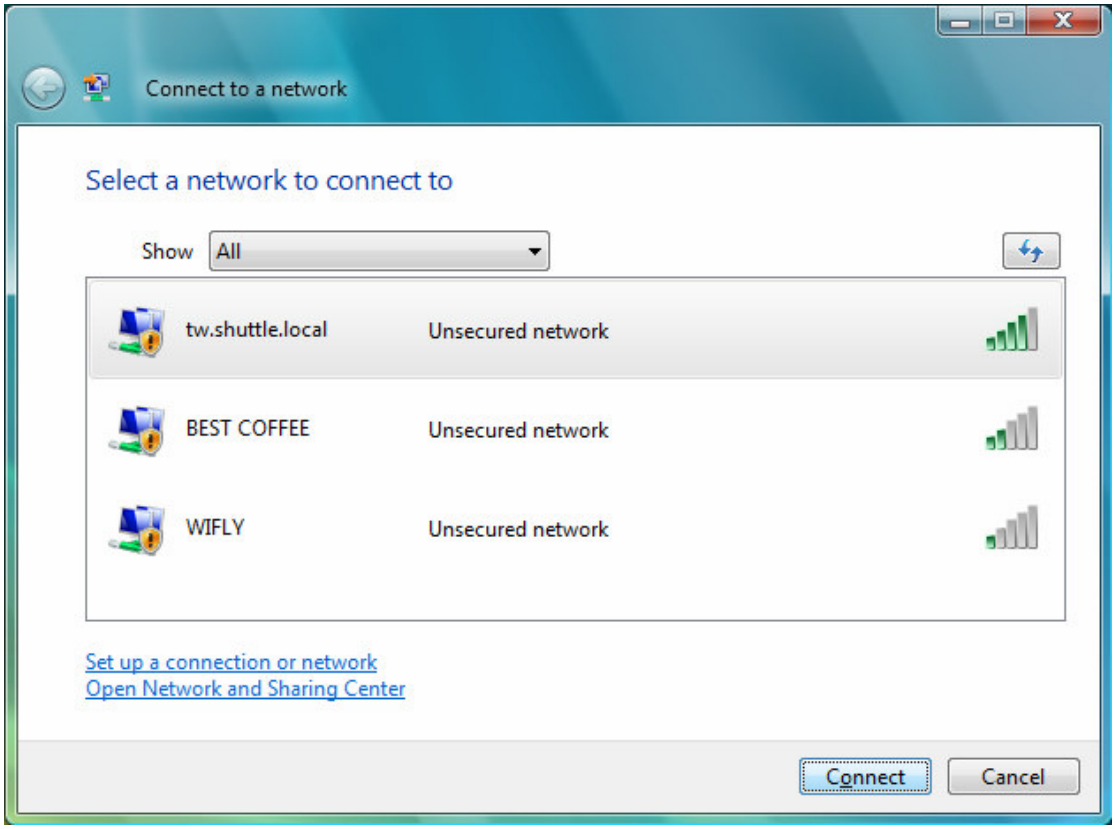
D. Please click “Finish” to complete the installation.



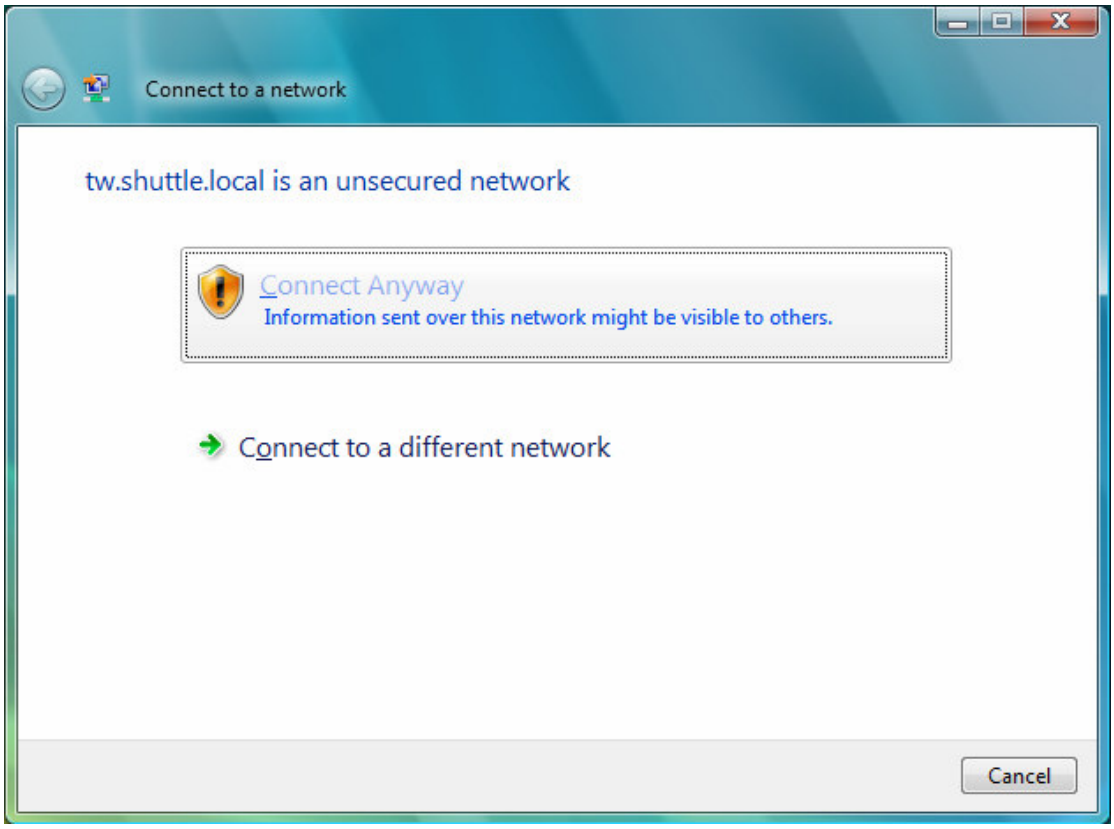

E. Please click the “Start” than select ”Connect To”



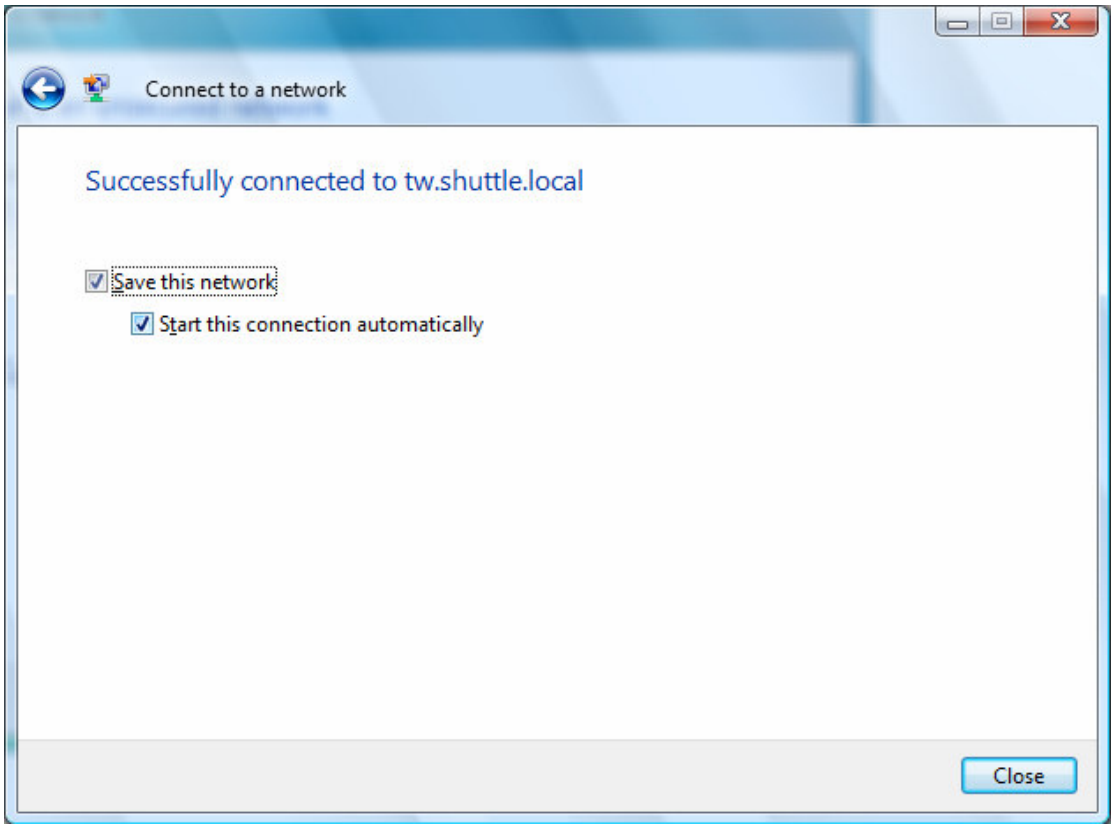
F. Please select your wireless network name and click “Connect”




G. Please click “Connect Anyway”



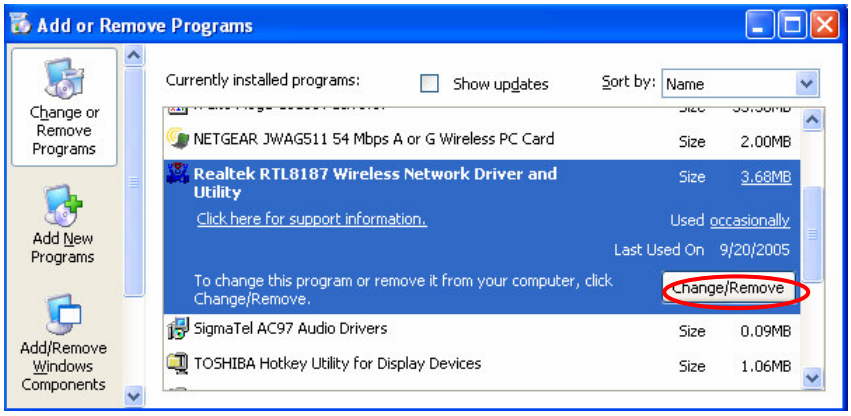
H. You can select “Save this network, Start this connection automatically”, Windows will connect to wireless network on start up. Than click “Close” to finish.

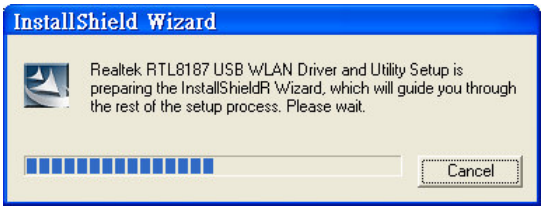



I. Now your PC has wireless network connection

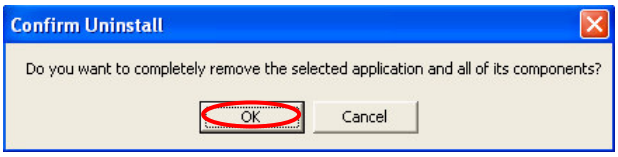
## 3.2 Un-installation

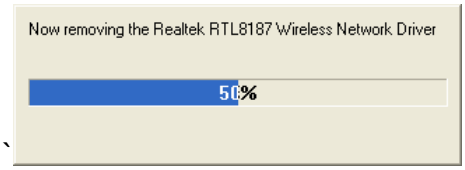
A. Uninstall the RTL8187 WLAN Driver from “Start”→ “All Programs”→ “Realtek RTL8187 Wireless Network Driver and Utility” or “Control Panel”“”→“Change or Remove Programs”.
Please click “Un-istall” (or “Change/Remove”) to remove RTL8187 WLAN driver.

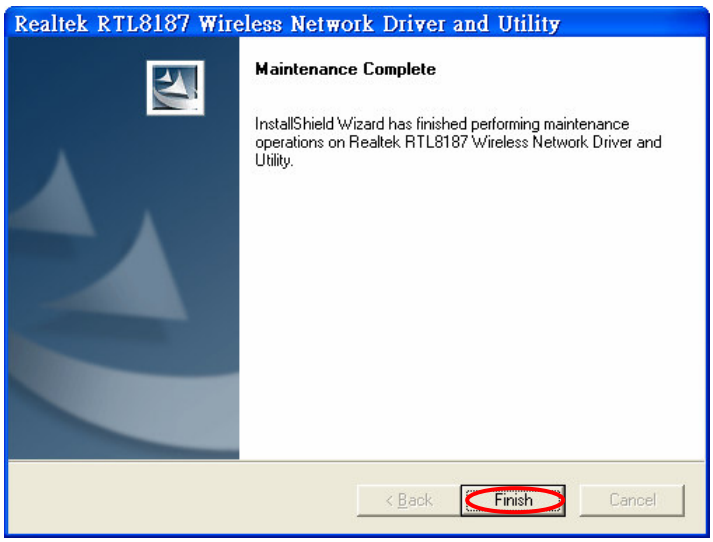




B. Please click “OK” if you want to remove RTL8187 USB WLAN Driver.



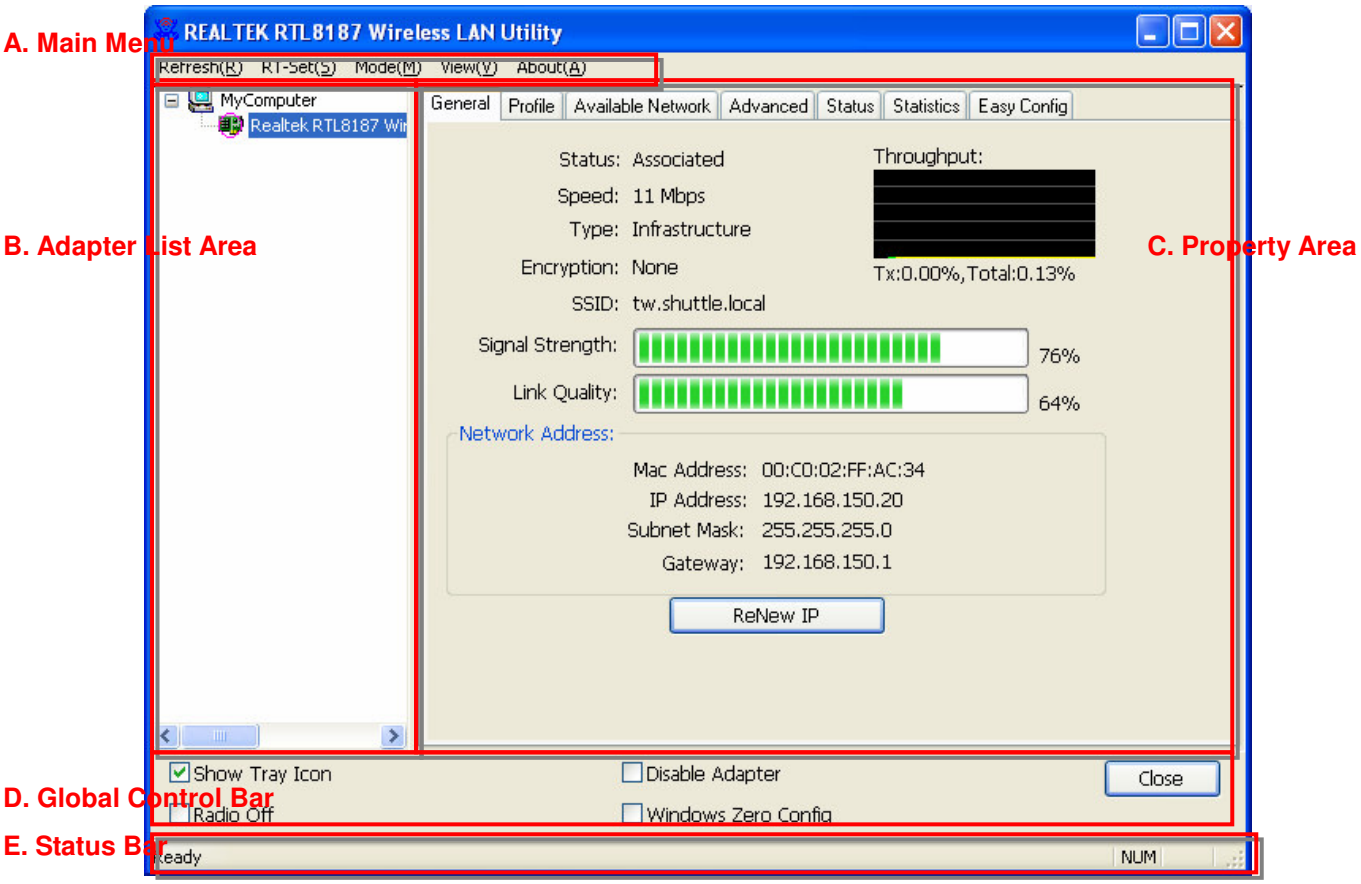




C. Please click “Finish” to complete the un-installation.


Realtek RTL8187 Wireless Network Driver and Utility
Maintenance Complete
InstallShield Wizard has finished performing maintenance operations on Realtek RTL8187 Wireless Network Driver and Utility.
< Back
Finish
Cancel

# Chapter 4 Wireless LAN Management GUI

## 4.1 Introduction of Main Window




### A. Main Menu

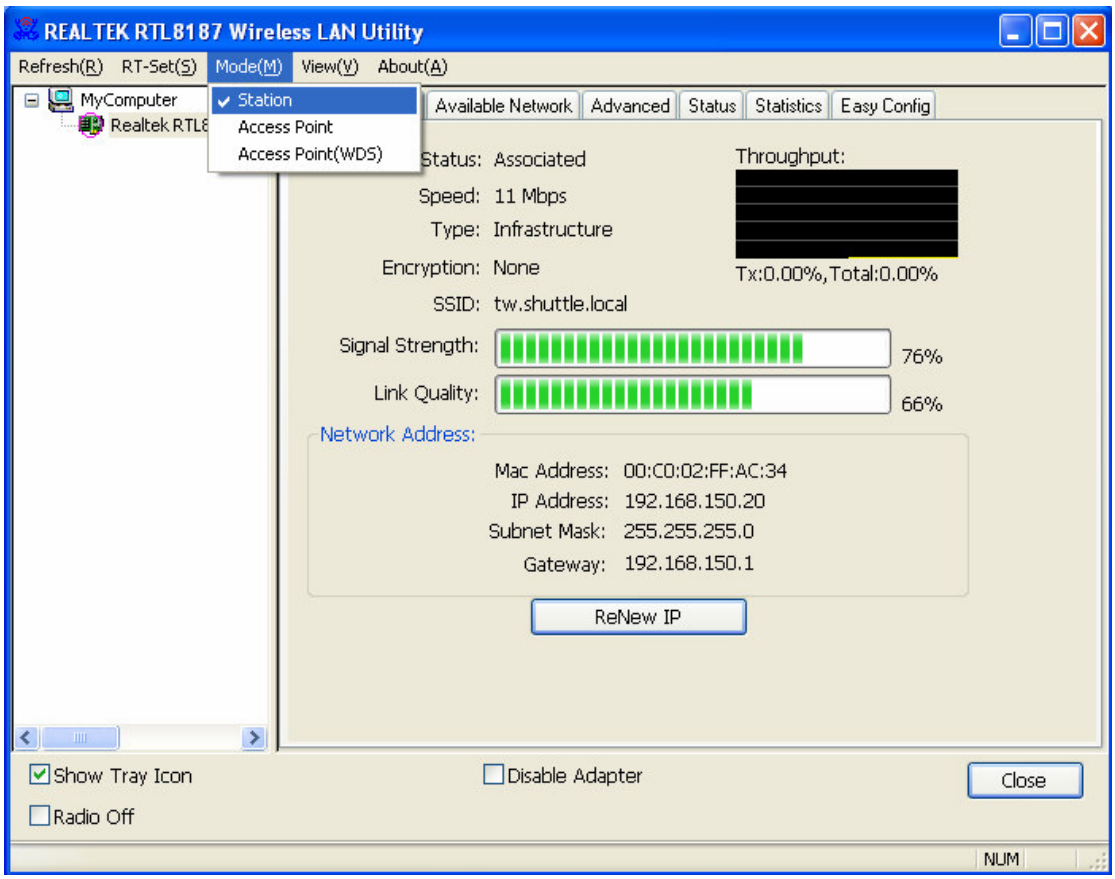
The main menu includes five submenus.

- **Refresh**

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

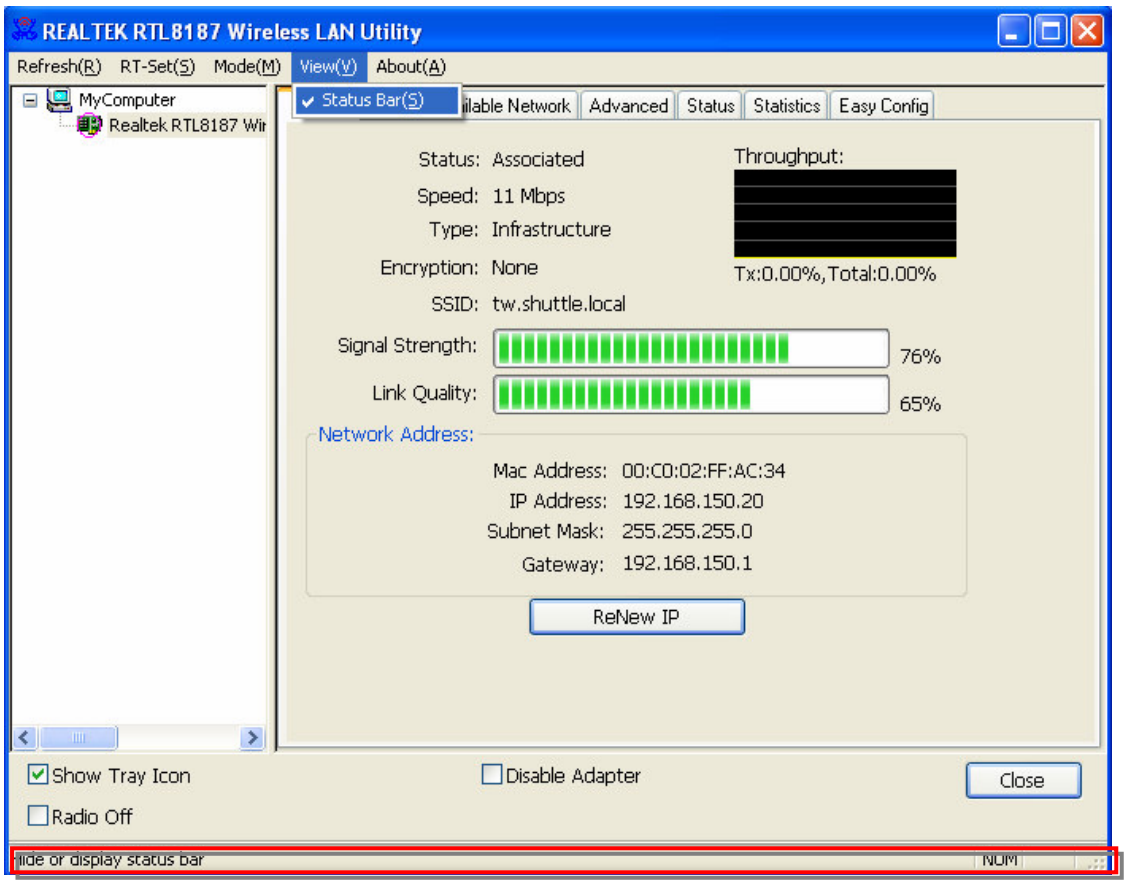
- **RT-Set**
- **Mode**

  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**

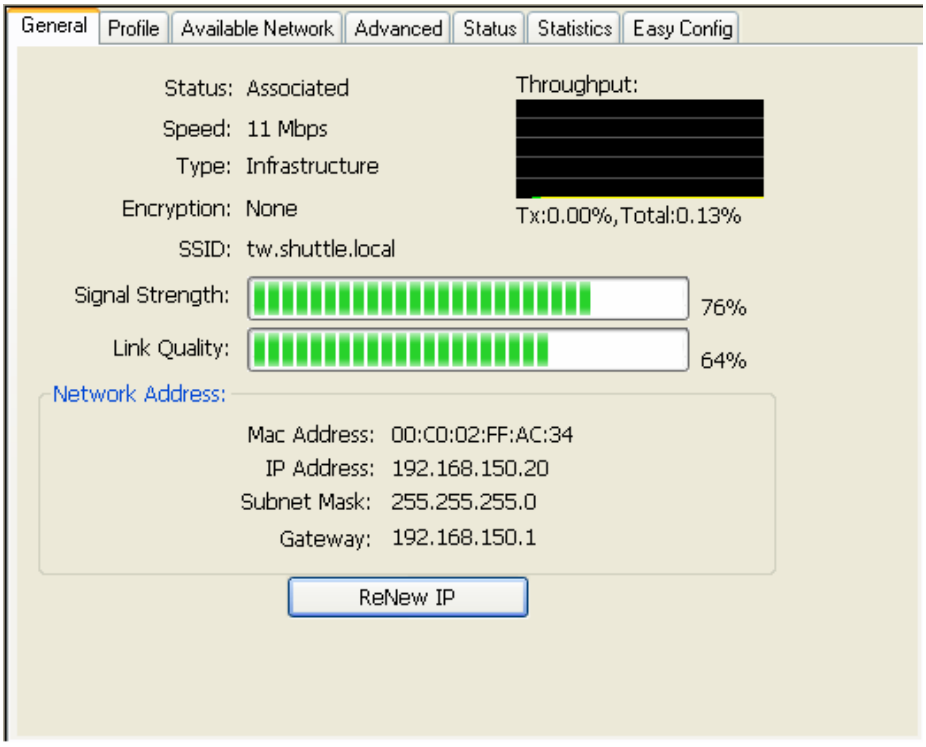
Click the item to show the about dialog. The application version and license information are shown in the about dialog.

## B. Adapter List Area

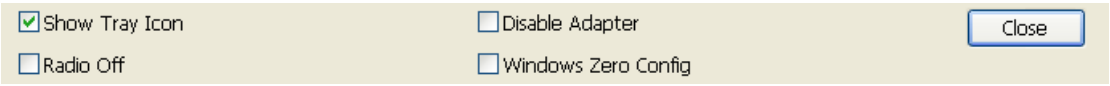

All connected adapters on this system for multiple adapter installations are displayed in this area. It is easy for users to change the selected adapter by one click. The contents of properties area are dependant on wireless configuration that the selected adapter was set up. If only single adapter was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



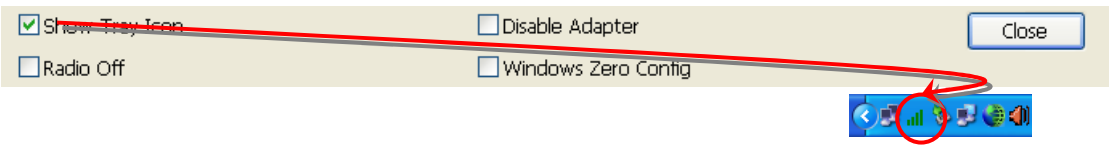

## D. Global Control Bar




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

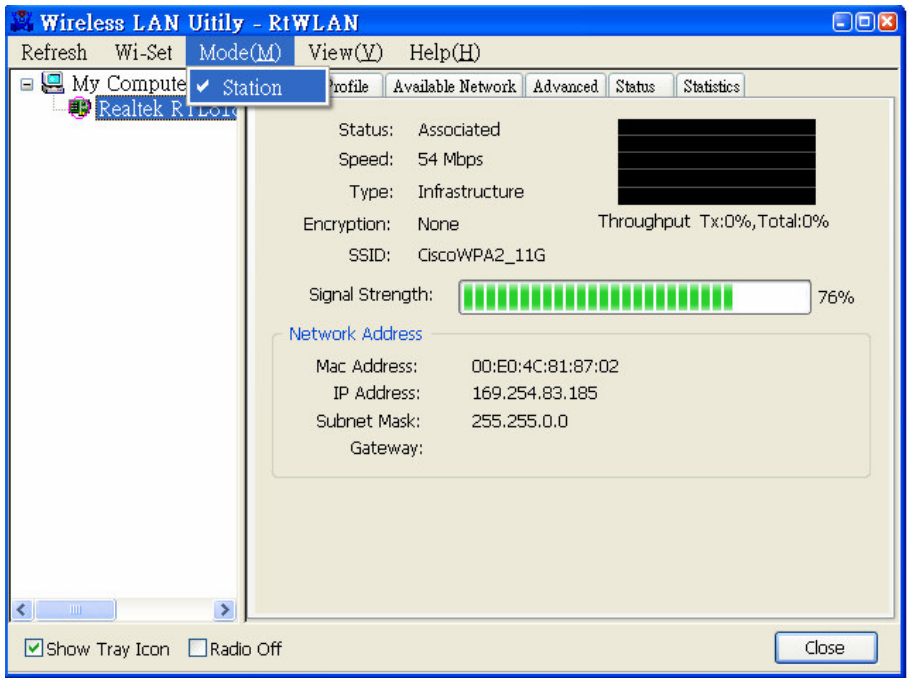
other wireless network nodes are disconnected. User should be care of it while the wireless configuration is in AP mode. The radio off will cause the sub network belong to the AP to disconnect with internet/intranet.

### 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**

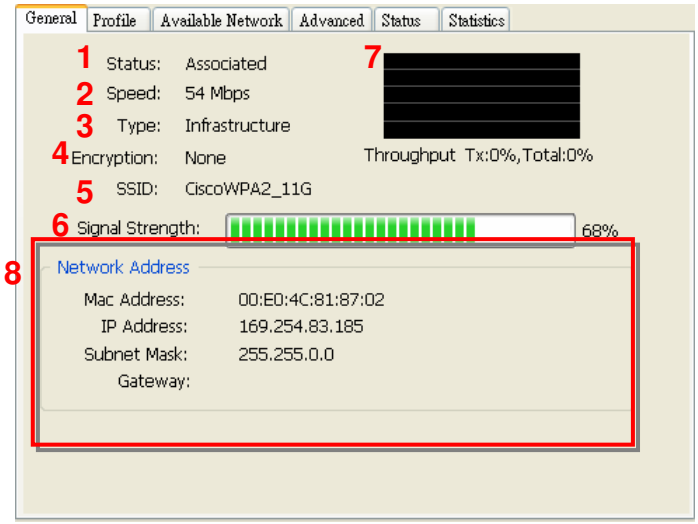
With both Infrastructure and Ad-Hoc types, the properties should looks like the picture beside. Six property pages present different information of current wireless network status.

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**

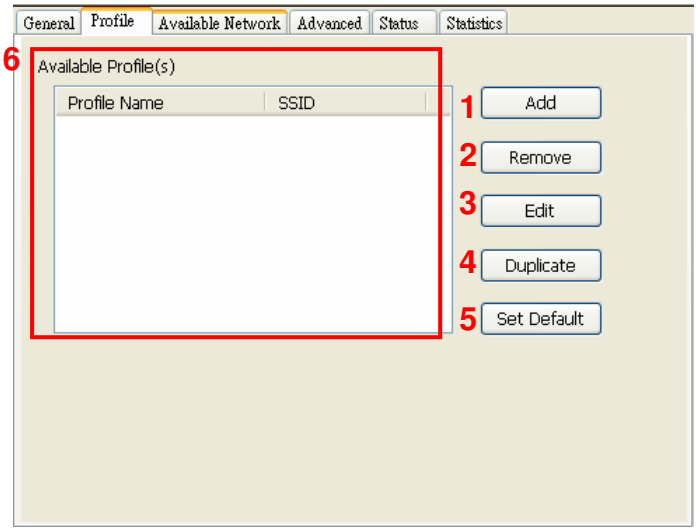
   - Mac Address: six two-digital number of this adapter
   - IP Address: assigned network address by DHCP server or self-definition in four three-digital number format
   - Subnet Mask: the only valid value is 2555.255.255.0
   - Gateway: It comes from connected access point. Your system can not connect 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**

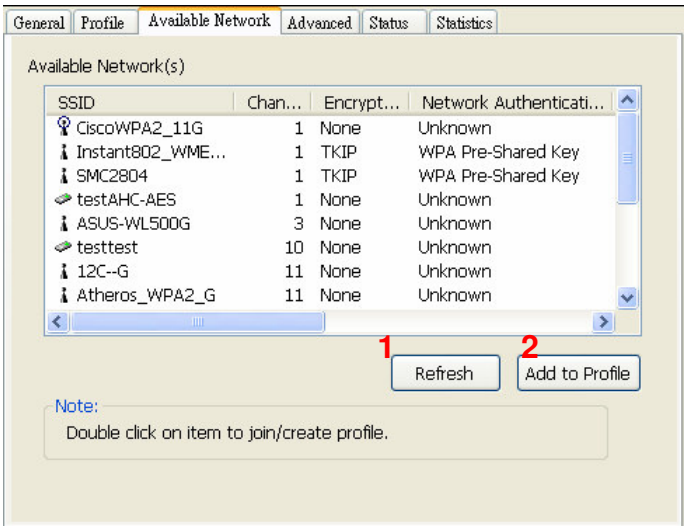
Set the selected profile as default selection.

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



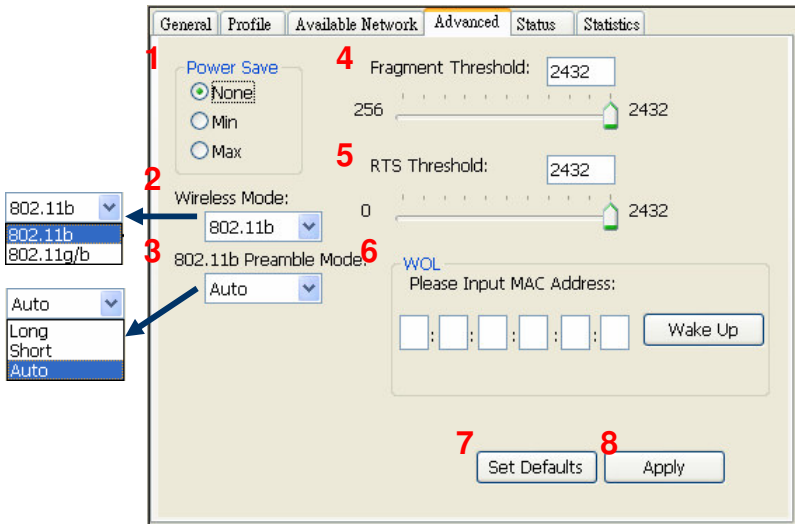

### 1. Refresh

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 then 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 worser 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 Realtek RTL8187 Wireless LAN USB 2.0 Adapter, only the same adapter on another system could wake it up.

- Input MAC Address: the six two-digit numbers of Realtek RTL8187 Wireless LAN USB 2.0 Adapter on target system.
- Wake Up: press this button to wake it up

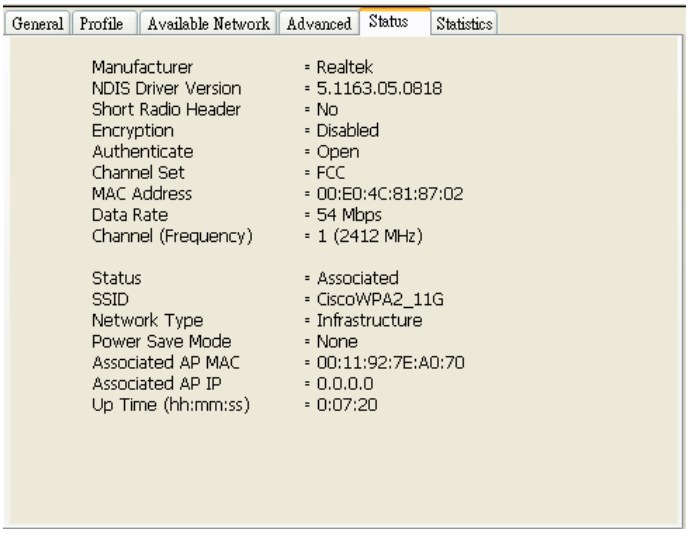
**7. Set Defaults**

Restore the default value to be current setting

**8. Apply**

Apply the current setting to GUI

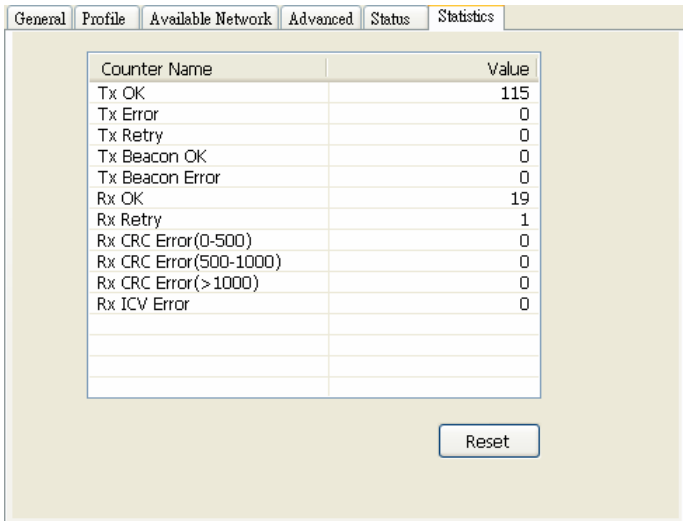
## E. Status page




- 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.

" To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.