# VNT6656AU

## USER MANUAL

**Revision 1.0**

**July 4, 2005**

## VIA NETWORKING TECHNOLOGIES, INC.

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# Revision History

| Release | Date | Revision | Initials |
|---|---|---|---|
| 1.0 | 2005-7-4 | Initial release. | SHC |

# Table of Contents

# 1. Features

## 1.1. Drivers and Applications

- Drivers available for Microsoft Windows 95/98/ME/NT/2000/XP and all major distributions of Linux.
- Setup utility for automatic driver installation on Windows.
- Mass-production support tool.
- Mass-production application interface for custom programs.
- PATCH utility for driver customization. This utility allows the manufacturers to customize the driver packages, such as changing the drivers' icons and file names.

## 1.2. Certifications

- "Designed for Microsoft Windows" Logo.
- Wi-Fi Certified.

## 1.3. Software Packages

- Software package for manufacturers: A complete set of drivers and utilities.
- Evaluation package (CD version) for manufacturers: Includes MPTOOL, Winsetup, and drivers for Windows only.
- Software package for end users: Includes all drivers and utilities, except MPTOOL and PATCH.

## 1.4. Programming Guide

- All drivers are available in the binary format. Source codes are not released..
- An EEPROM layout guide is available.

# 2. Drivers and Utilities

## 2.1. Drivers

| DRIVER TYPE | DESCRIPTION |
|---|---|
| NDIS 5 | Supports Windows 98, 98 SE, ME, 2000, XP, and Sever 2003. |
| NDIS 4 | Supports Windows NT 4.0. |
| NDIS 3 | Supports Windows 95 and 95 OSR2. |
| Linux | Supports Red Hat Linux 6.2, 7.0, 7.1, 7.2, and 8.0.<br>(Supports kernel versions 2.2 through 2.6.) |
| WinCE 4.2 | Supports Windows CE 4.2. |
| WinCE 5 | Supports Windows CE 5.0. |
| x64 | Supports AMD 64-bit CPUs. |

## 2.2. Utilities for end users

| UTILITY NAME | DESCRIPTION |
|---|---|
| Winsetup | Automatic driver installation, uninstallation, and updating utility for Windows 95, 95 OSR2, 98, 98 SE, ME, NT 4.0, 2000, XP, and Sever 2003. |
| WiFiSet | Wireless configuration setup tool for Windows 95, 95 OSR2, 98, 98 SE, ME, NT 4.0, 2000, XP, and Sever 2003. |

## 2.3. Utilities for manufacturers

| **UTILITY TYPE** | **DESCRIPTION** |
|---|---|
| MPTOOL | Mass-production tool for Windows 2000/XP. |
| MP API | Mass-production application interface for manufacturer-specific programs. |

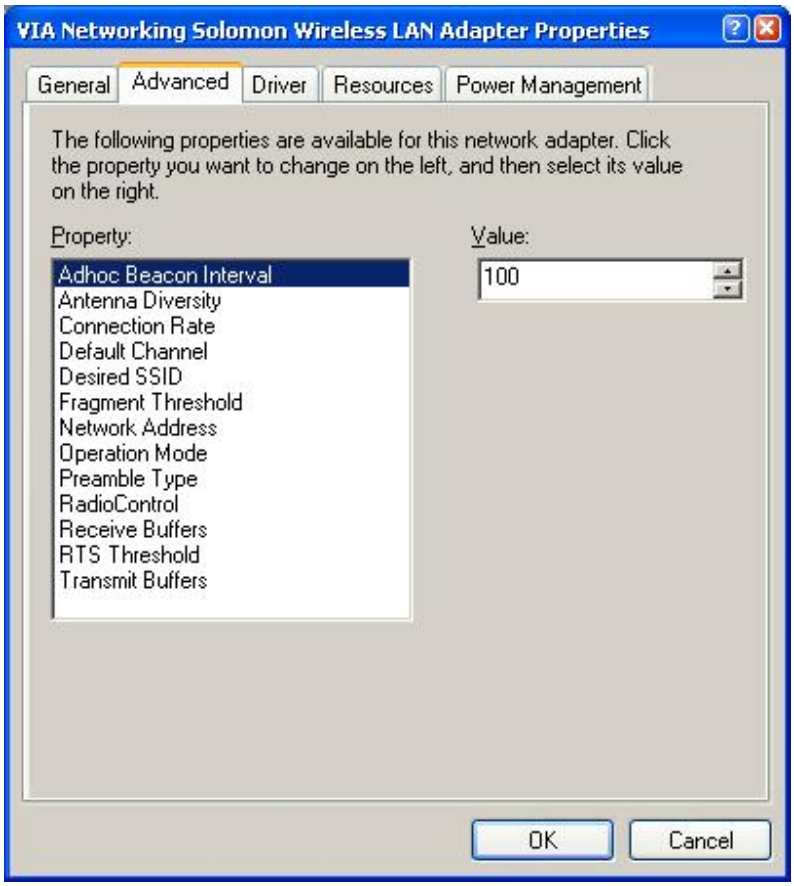
# 3. Software Package Information

## 3.1. Directory structure

| DIRECTORY | DESCRIPTION |
|---|---|
| / *(Root directory)* | Drivers for Windows 95, 95 OSR2, 98, 98 SE, ME, NT 4.0, 2000, XP, and Sever 2003; release note; and other documentations. |
| /LINUX | The Linux driver. |
| /WIFISET | Wireless configuration setup tool for Windows. |
| /WINSETUP | Windows driver setup utility for Windows 95, 95 OSR2, 98, 98 SE, ME, NT 4.0, 2000, XP, and Sever 2003. |
| /MPTOOL | Mass-production tool and the EEPROM layout guide. |
| /Win CE<br>/ CE4.2<br>/ CE5 | Drivers for Windows CE 4.2 and 5.0. |
| /x64 | Software for supporting AMD 64. |

## 3.2. Driver Keywords/Parameters

**Figure 1. Properties—Advanced**




**Adhoc Beacon Interval**
Defines the beacon interval in the ad hoc mode.

**Antenna Diversity**
Enables or disables antenna diversity.

**Connection Rate**
Specifies the connection rate (in Mbps): **1**, **2**, **5.5**, **11**, **6**, **9**, **12**, **18**, **24**, **36**, **48**, **54**, or **Auto**.

**Default Channel**
The user-defined connection channel—applicable in the ad hoc mode and AP mode.

**Desired SSID**
The user-defined SSID—to be automatically connected at driver startup.

**Fragment Threshold**
Defines the size at which packets are fragmented.

**Network Address**
The user-defined network address—overrides the network address originally set by the hardware vendor.

**Operation Mode**
Determines the operation mode: **Infrastructure** or **Ad Hoc**.

**Preamble Type**
Determines the acceptable preamble type: Select **Long** to accept long preambles only; select **Short** to support short preambles.

**RadioControl**
Determines whether the radio is on or off.

**Receive Buffers**
Defines the size of the internal driver buffers for received packets.

**RTS Threshold**
Defines the size at which packets are sent via the RTS-CTS mechanism.

**Transmit Buffers**
Defines the size of the internal driver buffers for packets to be transmitted.

# 4. Windows Utilities

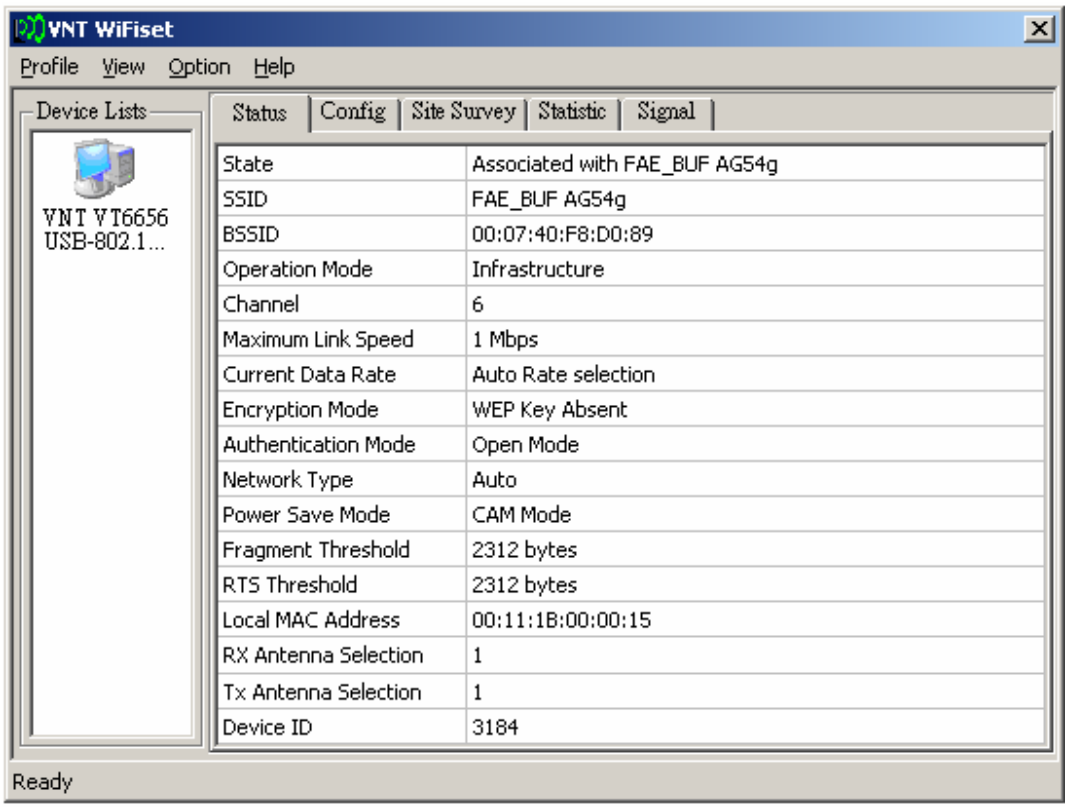
## 4.1. WiFiSet

The VNT WiFiset is a Windows-based application. Its main features are listed below.

### 4.1.1. Status

Displays the network status of the device.

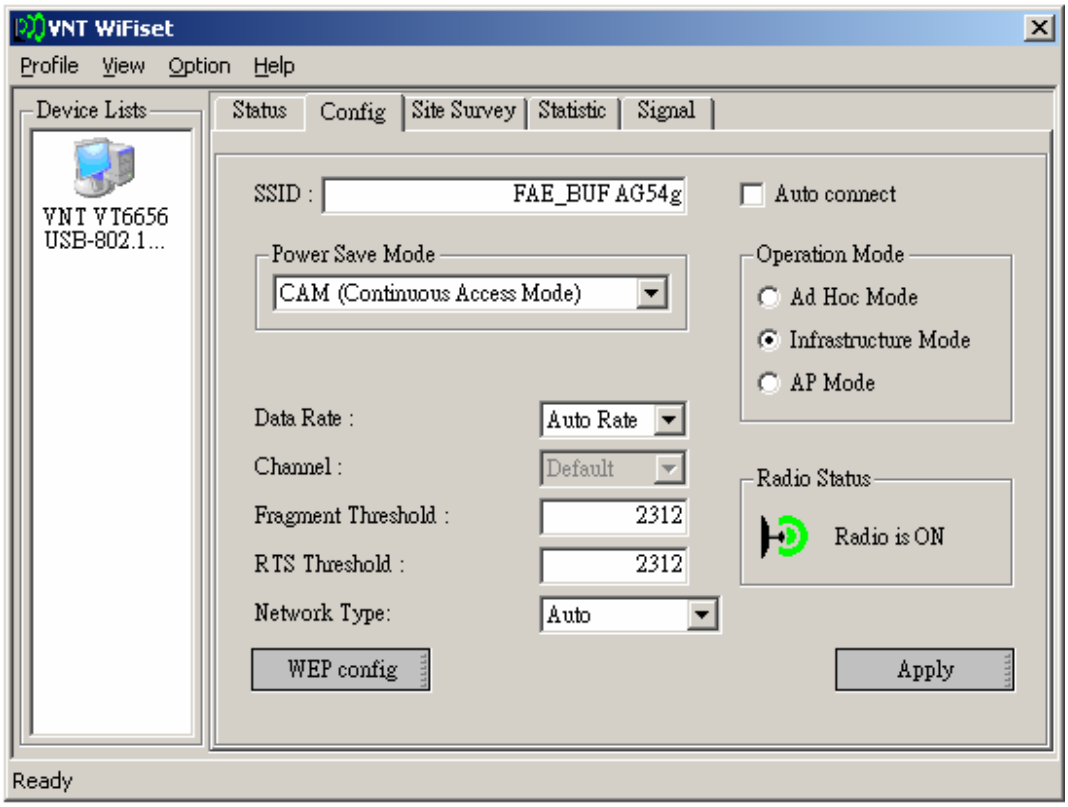
**Figure 2. WiFiset—Status**




### 4.1.2. Config

Displays and controls the link configurations for the device.

**Figure 3. WiFiset—Config**




## SSID

The service set identifier (SSID) is the name given to a wireless network by its administrator(s). The default value is **Any**, which allows the device to connect to any access point in the Infrastructure Mode, or to any other wireless device in the Ad Hoc Mode. The SSID can be up to 32 characters long, and is case sensitive.

## Power Save Mode

Selects a power-save mode from three preconfigured settings:

- **CAM (Continuous Access Mode)** Highest performance with no power saving.
- **Max PSP (Max Power Saving Mode)** Maximum power saving with reduced performance.
- **Fast PSP (Fast Power Saving Mode)** Greater power saving than CAM and higher performance than Max PSP.

## Operation Mode

Determines the type of network or mode of operation.

- **Ad Hoc Mode** For peer-to-peer networking with other wireless devices without routing through wired network.
- **Infrastructure Mode (default)** For connecting to a wired network via an access point.
- **AP Mode** For setting up the device as an access point. Note: In order to function as an access point, your computer must be physically connected to a wired network.

### Radio Status
Shows whether the radio is on or off.

### Data Rate
Selects the rate of transmission between your computer and the access point (in the infrastructure mode) or another wireless device (in the ad hoc mode). In general, a higher transmission rate would provide a smaller coverage area, and a lower transmission rate would cover a greater distance. The default setting is **Auto Rate**, which allows the device to start at 54 Mbps and automatically lowers the transmission rate when necessary.

### Channel
Selects the frequency channel for the transmission in the **Ad Hoc Mode** or **AP Mode**.

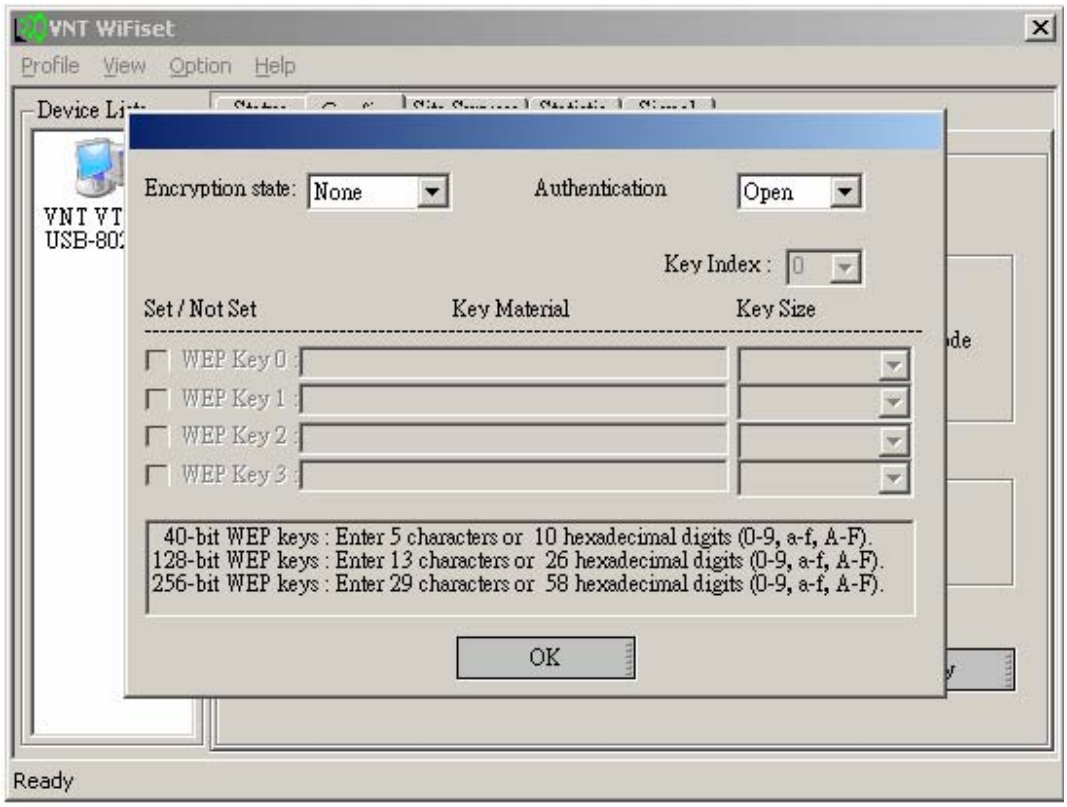
### Fragment Threshold
Defines the size at which packets are fragmented. The acceptable range of values is from 256 to 2312 bytes, and the default value is 2312 bytes.

### RTS Threshold
Defines the size at which packets are sent via the RTS-CTS mechanism. The acceptable range of values is from 0 to 2312 bytes, and the default value is 2312 bytes.

### Network Type
Selects the 802.11 network protocol usage; there are three modes, “802.11b only”, “802.11g”, and “Auto”. The default setting is **Auto**.

#### WEP config
Controls the authentication and encryption configurations for the device.

**Figure 4. WiFiset—WEP config**




## Encryption state

Determines whether Wired Equivalent Privacy (WEP) is used for data encryption.

- **None (default)** No encryption.
- **WEP** Data is encrypted with a WEP key. Up to four WEP keys can be specified. Each key can have a length of **40**, **128**, or **256** bits.

## Authentication Mode

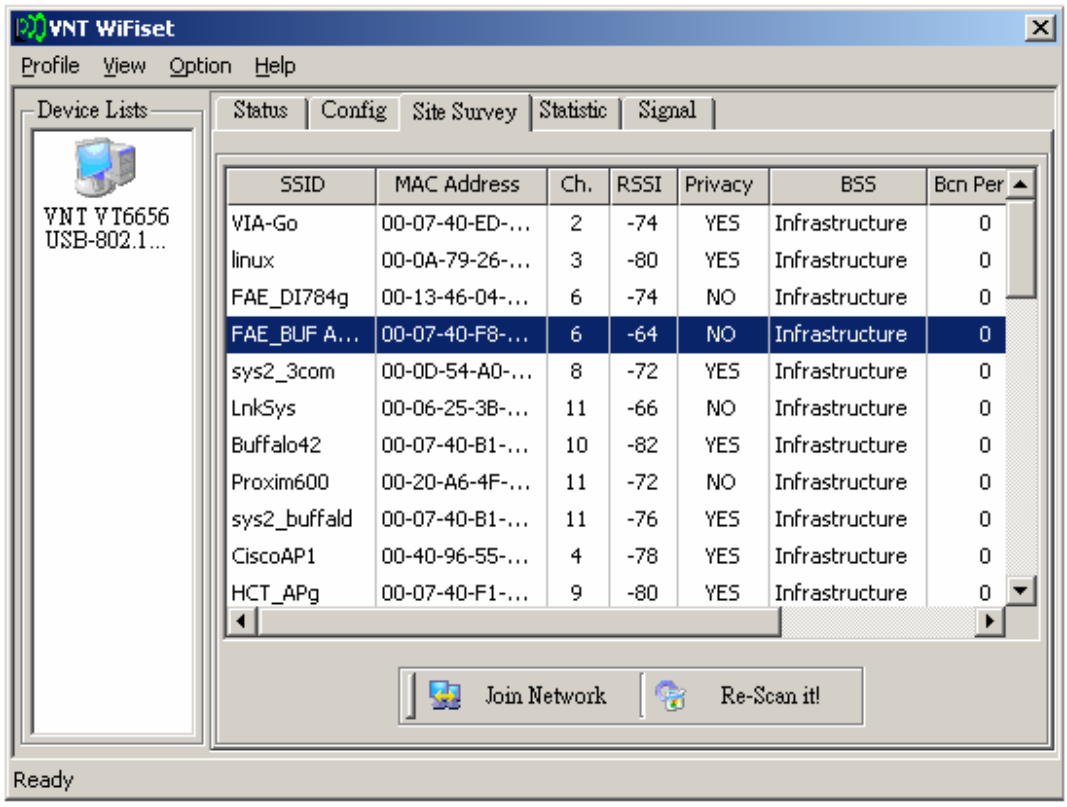
Determines the method of authentication.

- **Open System** (Default) A null authentication algorithm is used, which allows the device to be authenticated by any access point or other devices with an appropriate SSID.
- **Shared Key** A WEP key is used as a means of authentication, which allows the device to be authenticated only by access points or other devices that has the same WEP key in addition to an appropriate SSID.

### 4.1.3. Site Survey

Displays a list of all available networks within range.

**Figure 5. WiFiset—Site Survey**




**Join Network**

Joins the device to the selected network.

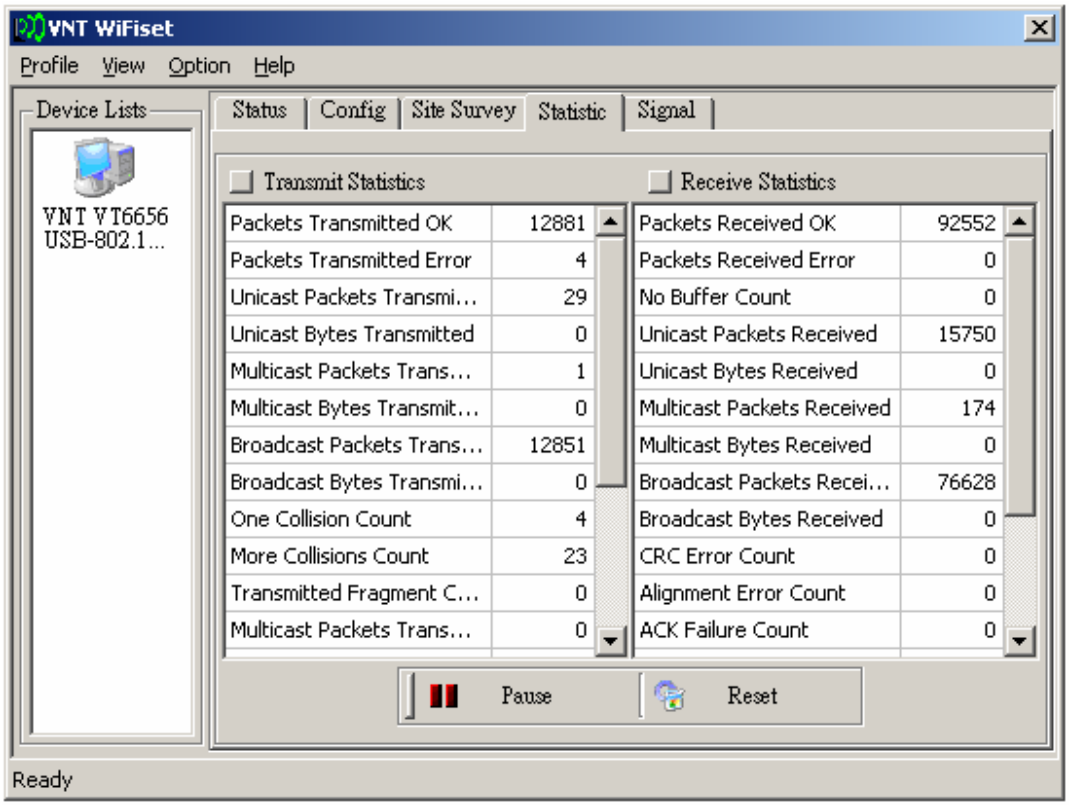
**Re-Scan it!**

Re-scans to discover all currently available networks within range.

### 4.1.4. Statistics

Displays the real-time transmission and reception statistics of the device.

**Figure 6. WiFiset—Statistic**



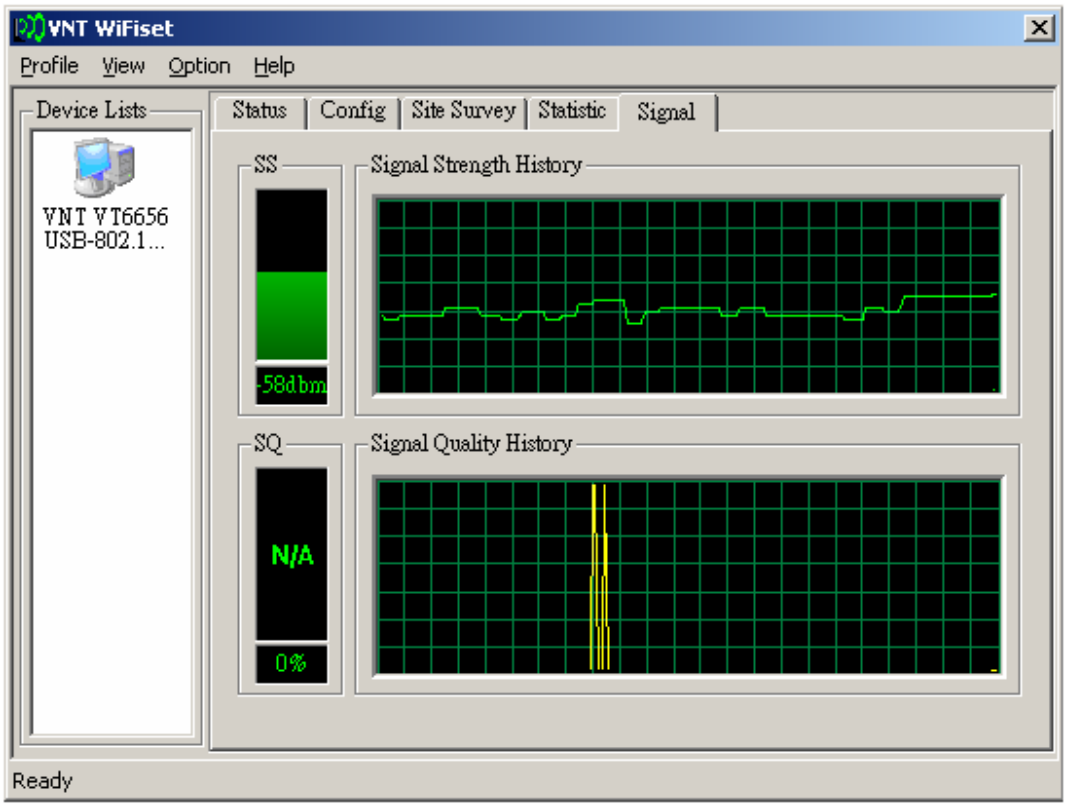

**Pause**
Pauses, or freezes, the currently displayed statistics. Clicking **Pause** again will resume the real-time display.

**Reset**
Resets all values to zero.

### 4.1.5. Signal

Displays the current and past values of signal strength (**SS**) and signal quality (**SQ**) for the connected network.

**Figure 7. WiFiset—Signal**




### 4.1.6. Profiles

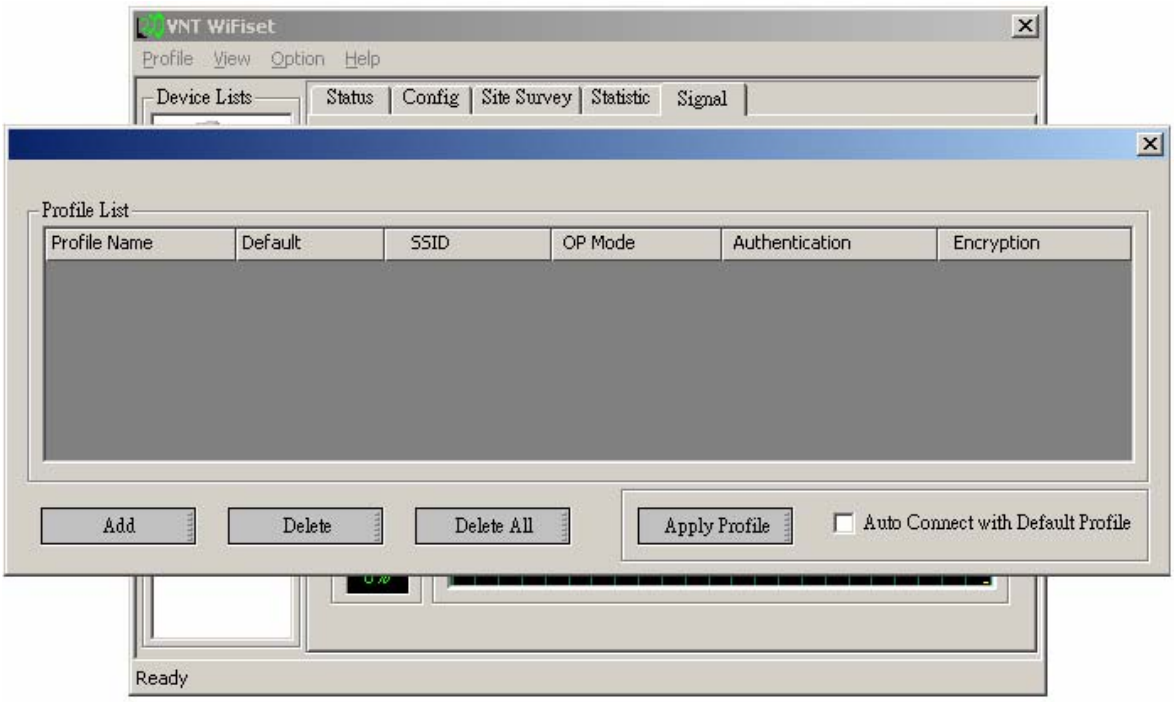
A profile is a set of preconfigured settings for a particular network environment. Having different profiles stored in WiFiset, you can move from one network to another without having to reconfigure the network settings.

#### *4.1.6.1. Adding a new profile*

Before adding the current network configuration as a new profile, make sure that your device is connected to a network and that all settings are properly configured. To add a profile in WiFiset, please follow these steps:

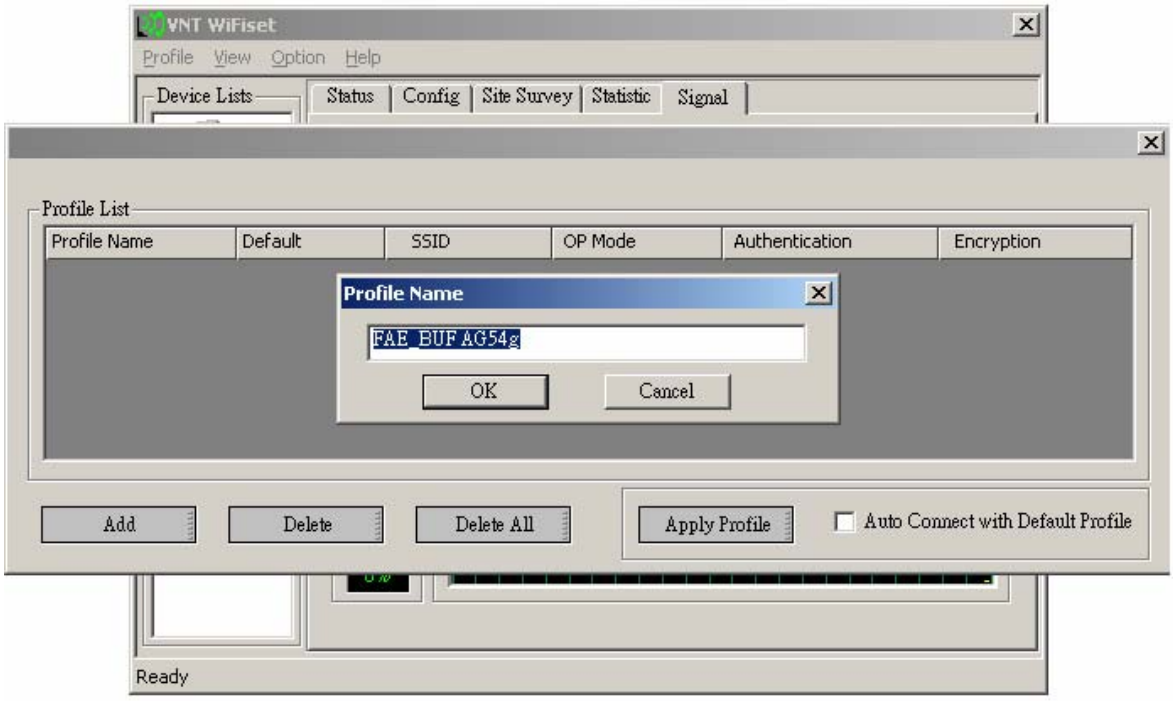
Step 1. Click **Profile** in WiFiset's menu bar, and then click **Add** to create a new profile based on the current network's configurations.

**Figure 8. WiFiset—Adding a new profile**



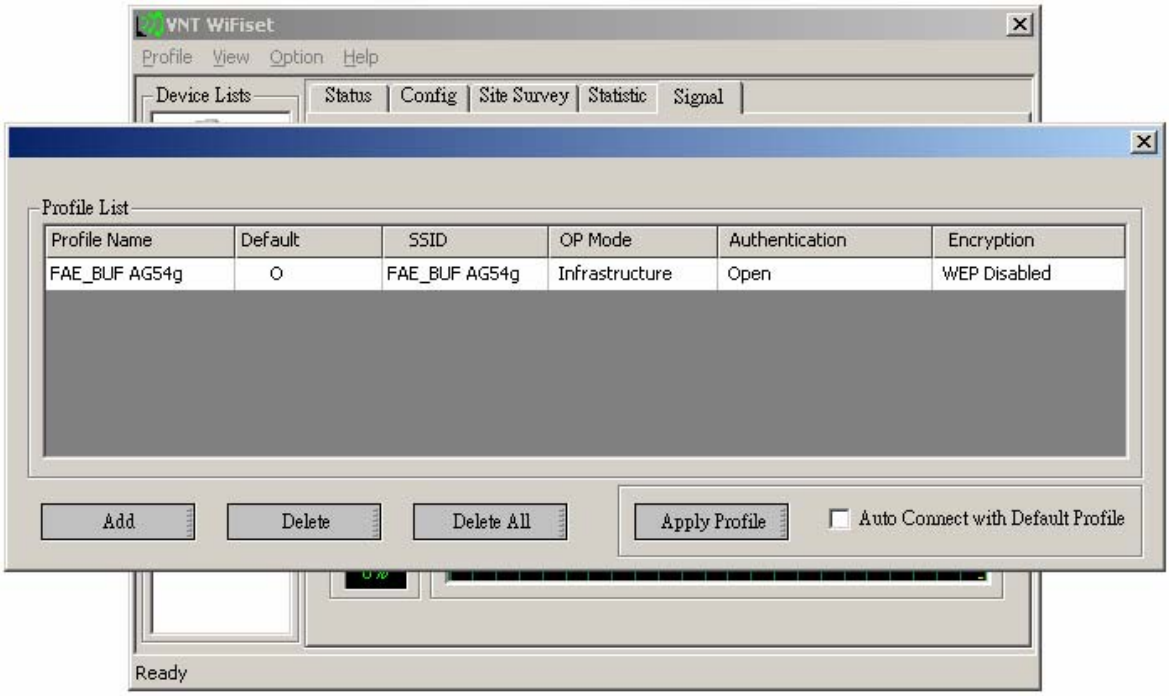

Step 2. Enter a name for the new profile, and then click **OK**.

**Figure 9. WiFiset—Profile Name**



Step 3. The new profile is now successfully added to the **Profile List**, and it's set to be a default one automatically.

**Figure 10. WiFiset—New profile added**




### *4.1.6.2. Default profile and automatic connection*

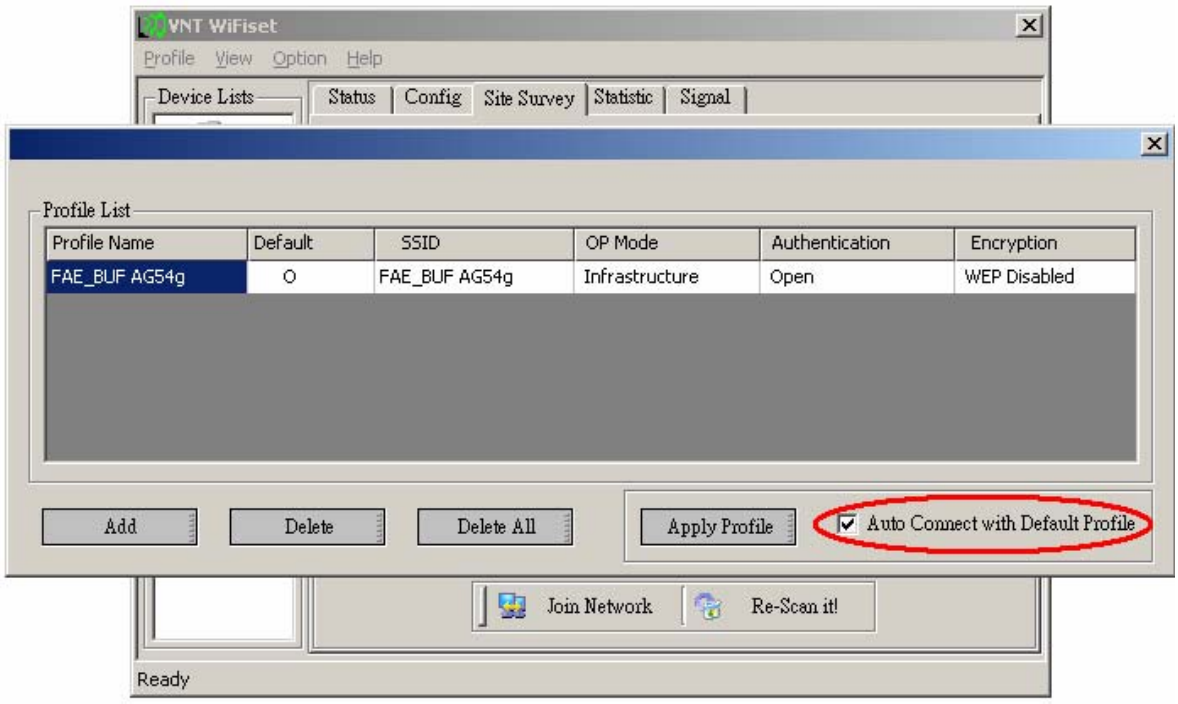
You can configure your device to automatically connect to a network according to the default profile.

Step 1. Select a profile name from the **Profile Select** box.

Step 2. Click the **Default Profile** button.

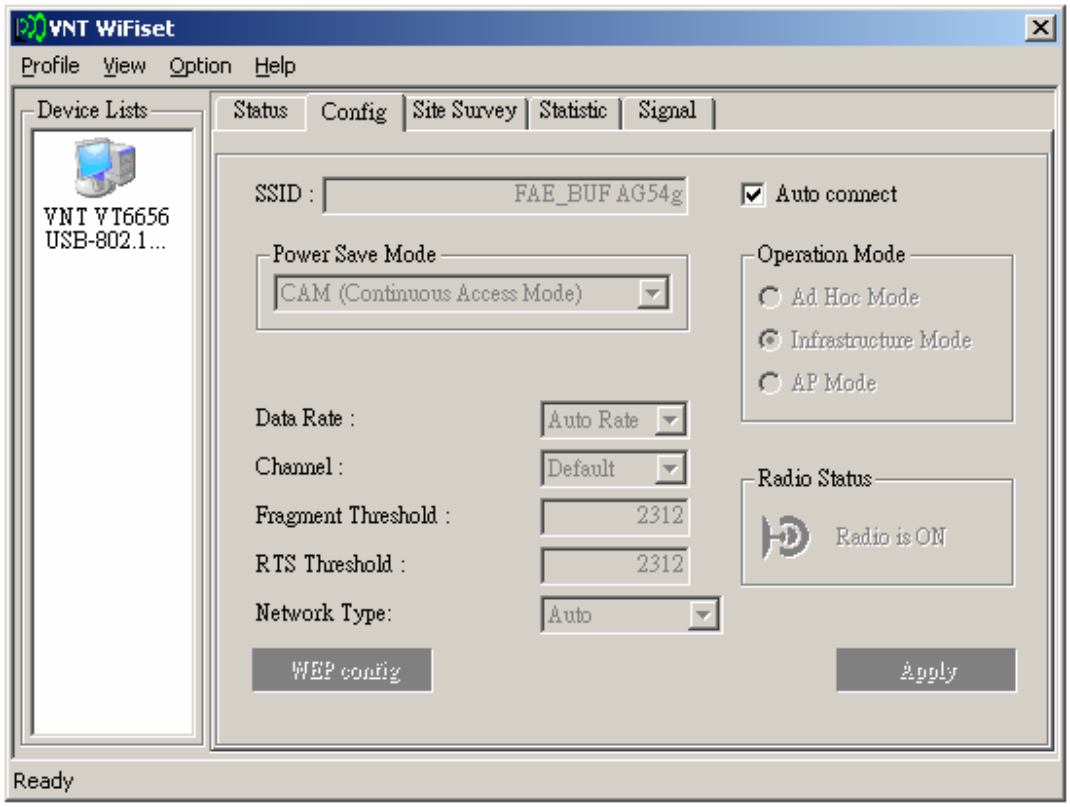
Step 3. Select the check box for **Auto Connect with Default Profile**, and then click the **Apply Profile** button.

**Figure 11. WiFiset—Auto Connect with Default Profile**




**Note:** Once the device is set to automatically connect with a netowork according to the default profile, most of the options under WiFiset's **Config** tab would become unavailable, and therefore appear dimmed—except for **Power Save Mode** and **Auto connect**. In addition, a check mark would now appear in the **Auto connect** check box.

**Figure 12. WiFiset—Auto connect**

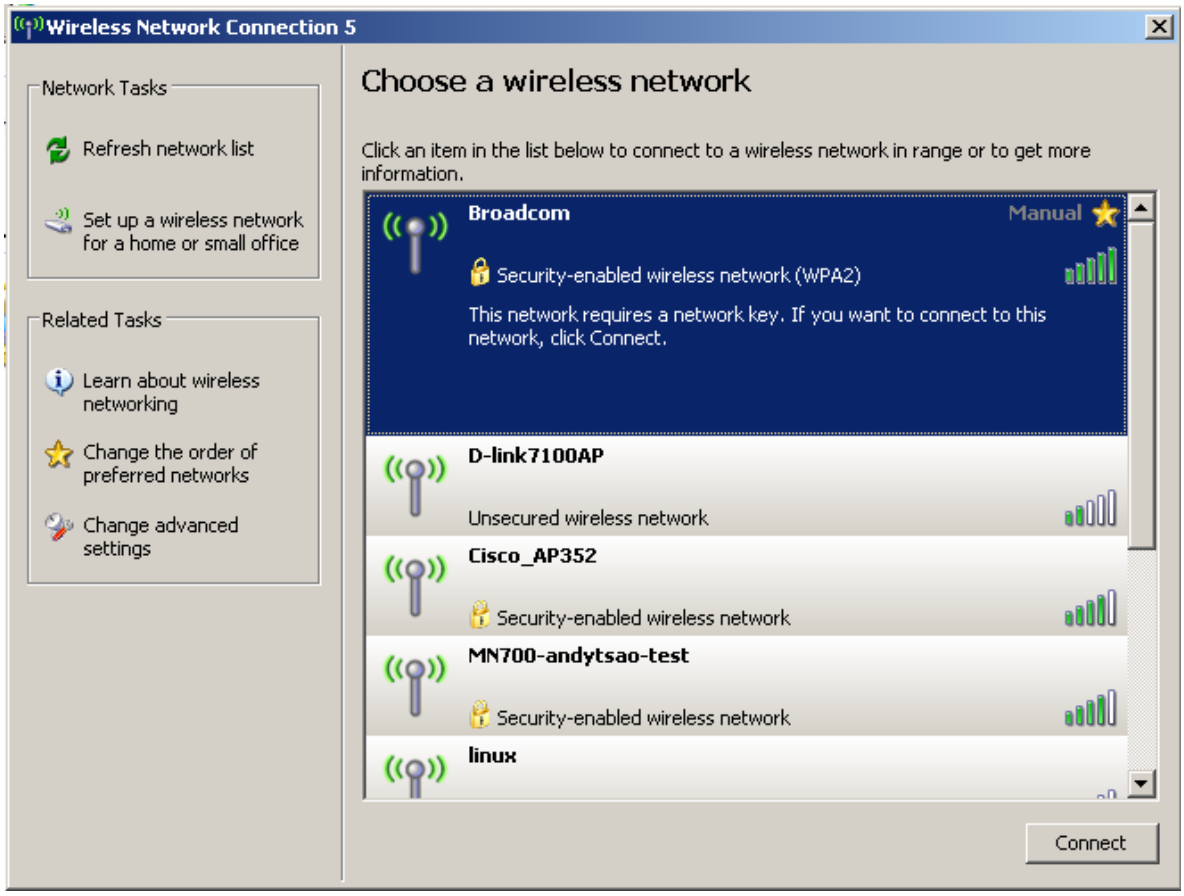



## 4.2. WPA Networking

VT6655 supports Windows XP Wireless Zero Configuration service for connecting to a Wi-Fi Protected Access (WPA) network.

Step 1. Open **Wireless Network Connection**.

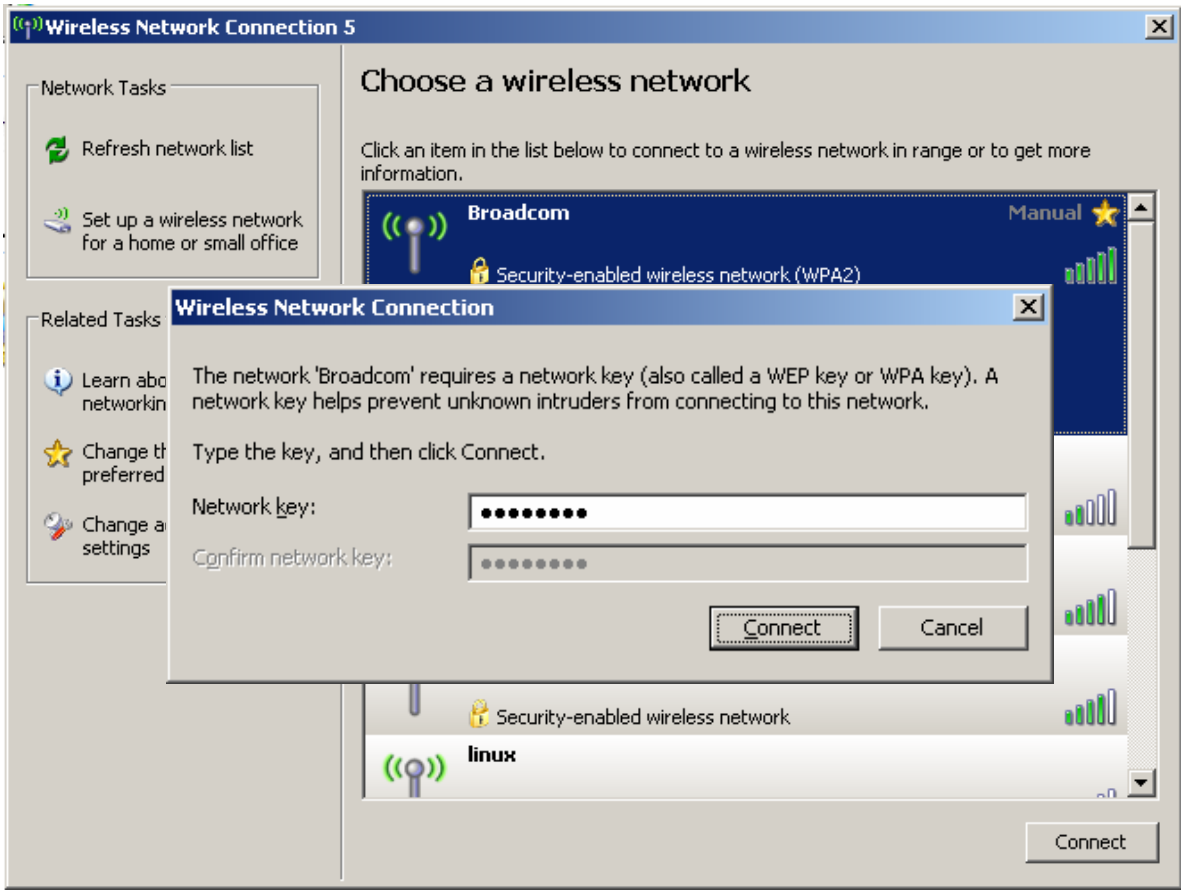
**Figure 13. Wireless Network Connection**




Step 2. Click a wireless network from the list of available networks, and then click **Connect**.

Step 3. Enter the network key, also known as WEP key or WPA key.

**Figure 14. Wireless Network Connection—Network key**



# Appendix: Terminology

- **ad hoc network** A network composed solely of stations within mutual communication range of each other via the wireless medium (WM).
- **access point (AP)** Any entity that has station functionality and provides access to the distribution ser-vices, via the wireless medium (WM) for associated stations.
- **Station (STA)** Any device that contains an IEEE 802.11 conformant medium access control (MAC) and physical layer (PHY) interface to the wireless medium (WM).
- **RTS (Request To Send)** The frame type used to deign the RTS-CTS clearing exchange. RTS frames are used when the frame that will be transmitted is larger than the RTS threshold.
- **CTS (Clear To Send)** The frame type used to acknowledge receipt of a Request to Send and the second component used in the RTS-CTS clearing exchange used to prevent interference from hidden nodes.
- **WEP (Wired Equivalent Privacy)** The optional cryptographic confidentiality algorithm specified by IEEE 802.11 used to provide data confidentiality that is subjectively equivalent to the confidentiality of a wired local area network (LAN) medium that does not employ cryptographic techniques to enhance privacy.
- **authentication** The service used to establish the identity of one station as a member of the set of stations authorized to associate with another station.
- **WPA (Wi-Fi Protected Access)** A specification of standards-based, interoperable security enhancements that strongly increase the level of data protection and access control for existing and future wireless LAN systems.

# 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 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. End user's must follow the specific operating instructions for satisfying RF exposure compliancee.

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 VNT6656AU in the U.S.A. is firmware-limited to channels 1 through 11.

This equipment has been SAR-evaluated for use in (notebooks) with side slot configuration. High SAR test value: 1.120W/kg