VNT6656GEV00

USER'S MANUAL

Revision 1.2

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VIA TECHNOLOGIES, INC.

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Revision History

Release	Date	Revision	Initials
1.0	2006-07-05	Initial release.	SH
1.1	2006-08-30	To define the user scenario clearly	HC
1.2	2006-08-31	To update some GUI graphic to meet the new design.	HC

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1. Features

1.1. Drivers and Applications

- Drivers available for Microsoft Windows 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 SE, ME, 2000, XP, XPe, and Sever 2003.
NDIS 4	Supports Windows NT 4.0.
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 98 SE, ME, NT 4.0, 2000, XP, and Sever 2003.
WiFiset	Wireless configuration setup tool for Windows, 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.

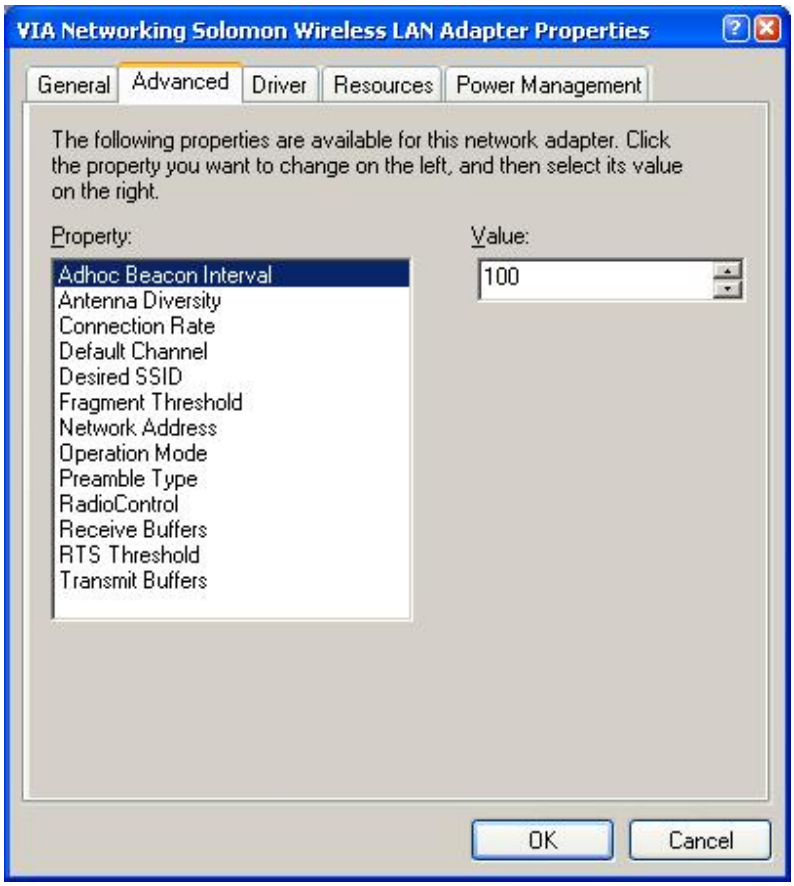
3. Software Package Information

3.1. Directory structure

DIRECTORY	DESCRIPTION
/ *(Root directory)*	Drivers for Windows 98 SE, ME, NT 4.0, 2000, XP, and Sever 2003; release note; and other documentations.
/XPe	Driver for Windows XP Embedded.
/WIFISET	Wireless configuration setup tool for Windows.
/WINSETUP	Windows driver setup utility for Windows 98 SE, ME, NT 4.0, 2000, XP, and Sever 2003.
/MPTOOL	Mass-production tool and the EEPROM layout guide.
/Win CE / CE4.2 / 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

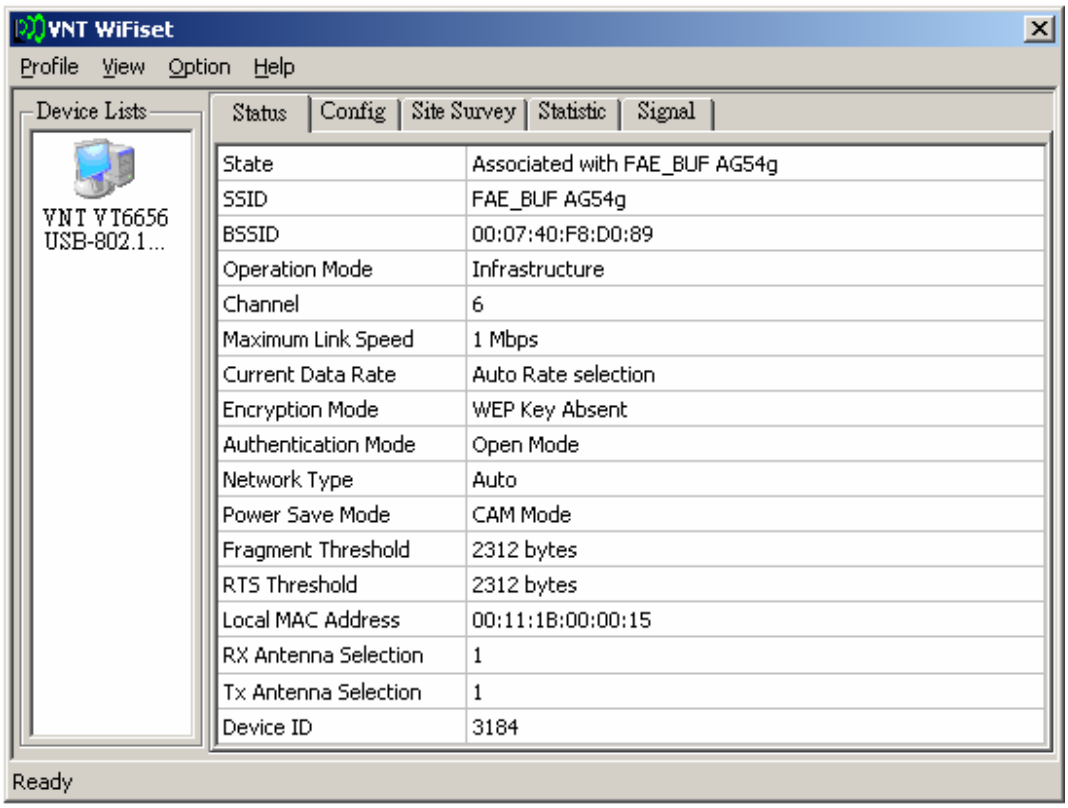
4.1. WiFiset[1]

The VIA 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

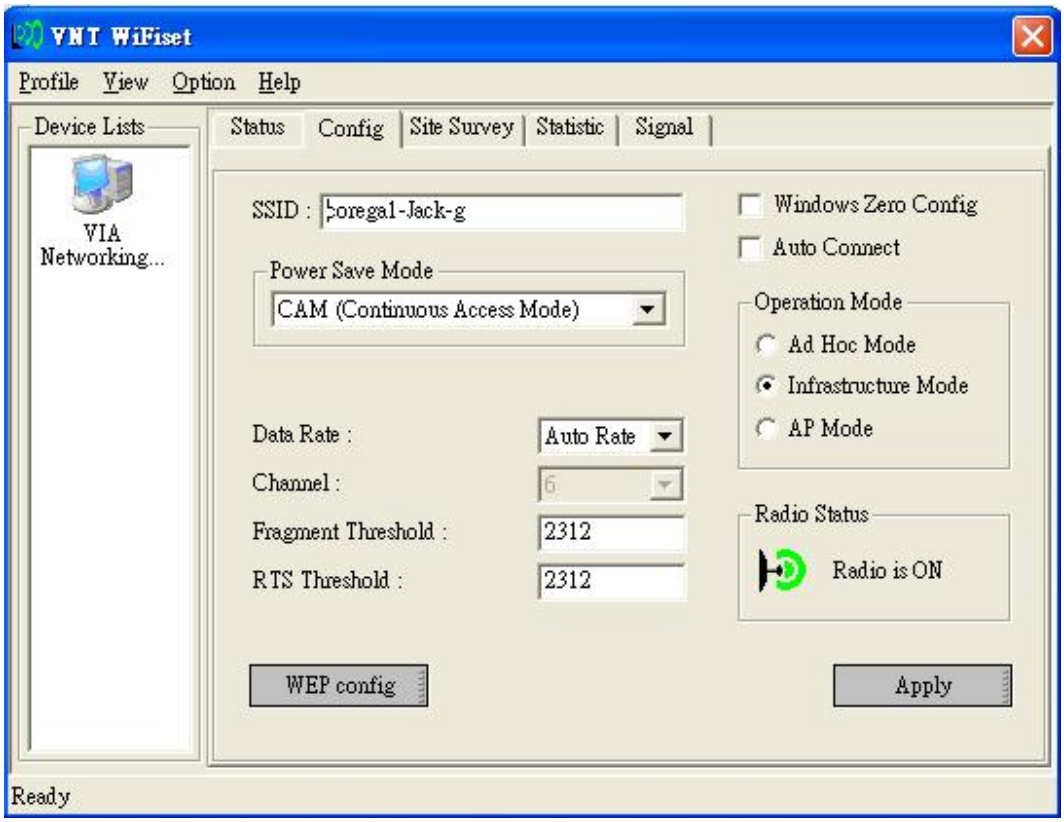


4.1.2. Config

Displays and controls the link configurations for the device.

[1] To avoid software conflict, WiFiset does not synchronize its settings with Windows Zero Configuration (WZC), nor vice versa.

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.

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

PS:

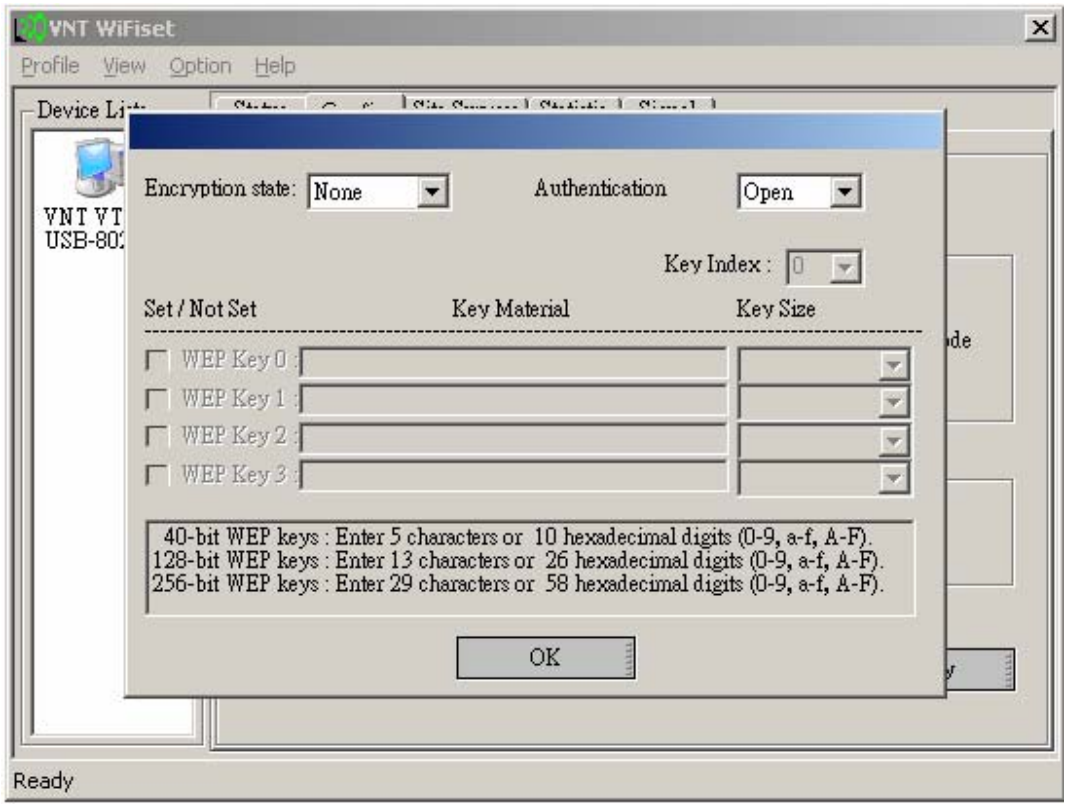
1. When user want to restore the former connection configuration from S4 to S3 automatically, user could follow the following steps to save the connection configuration data.

Step 1: After the user connected with AP, the user click the “Profile” folder to switch.

Step 2: To add a new profile “ANY” as section 4.1.6.1.

Step 3: To switch to Fig.3 GUI, and click the “Auto Connect”

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

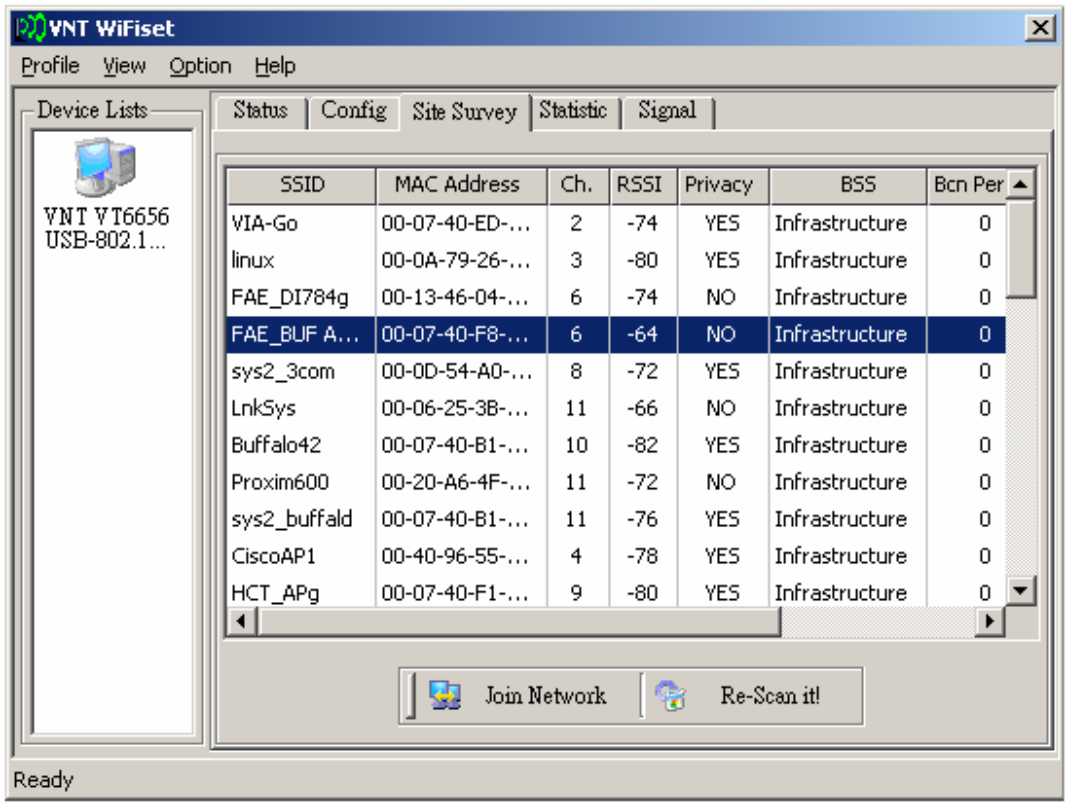
Determines the method of authentication.

- **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.

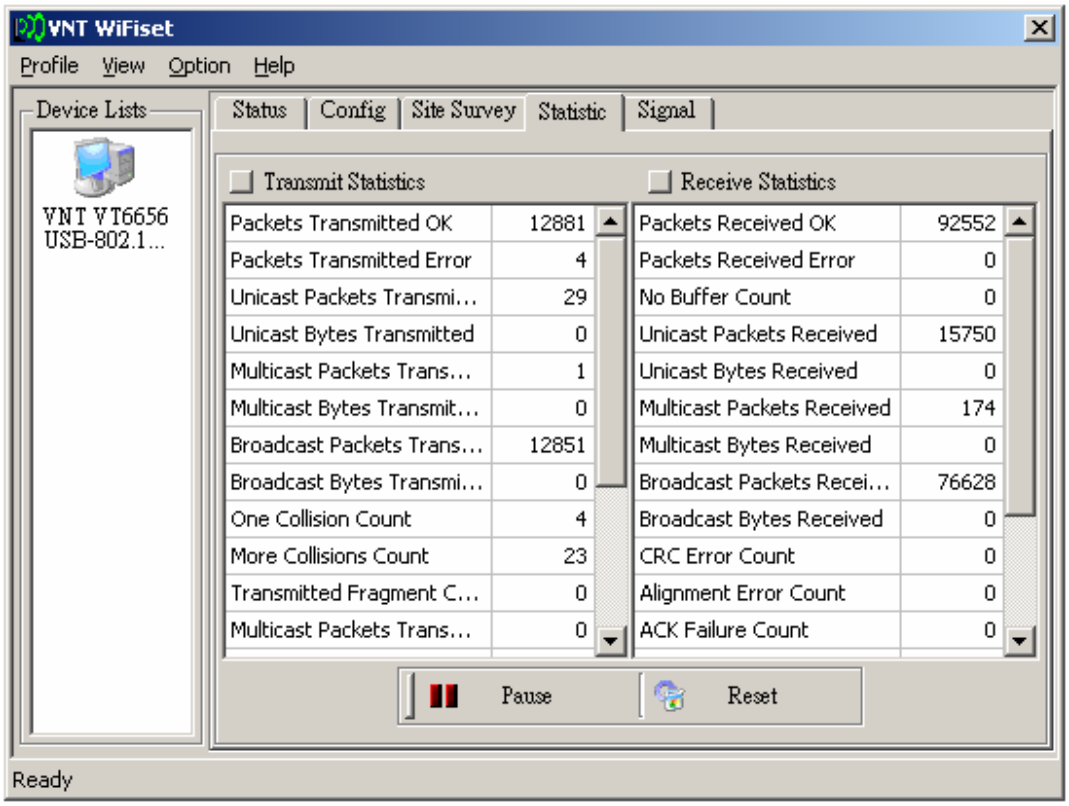
Re-Scan it!

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.

PS:

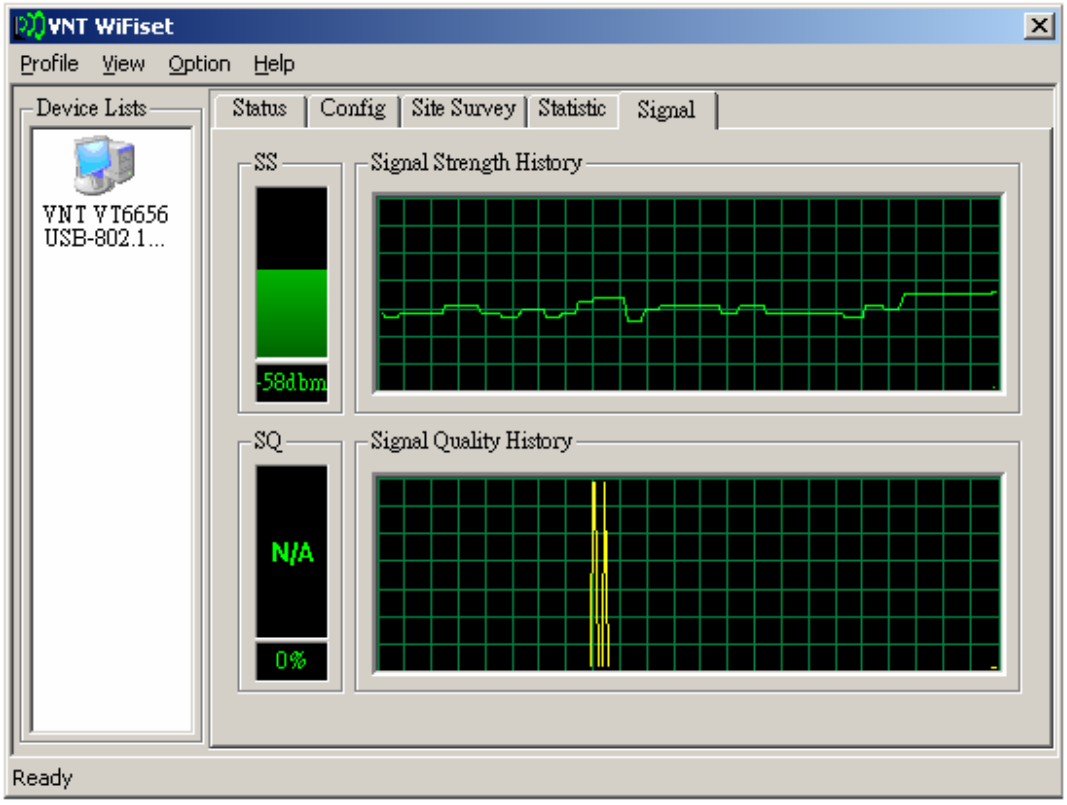
1. What's the definition of "Pause" and "Reset" item function in the statistic folder?

These two functions of "Pause" and "Reset" are designed for specialist user. The user could calculate the packets number of Tx/Rx. "***Pause***" is used to halt the calculation of Tx/Rx packets, and "Reset" is used to reset the data buffer of Tx/Rx packets.

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

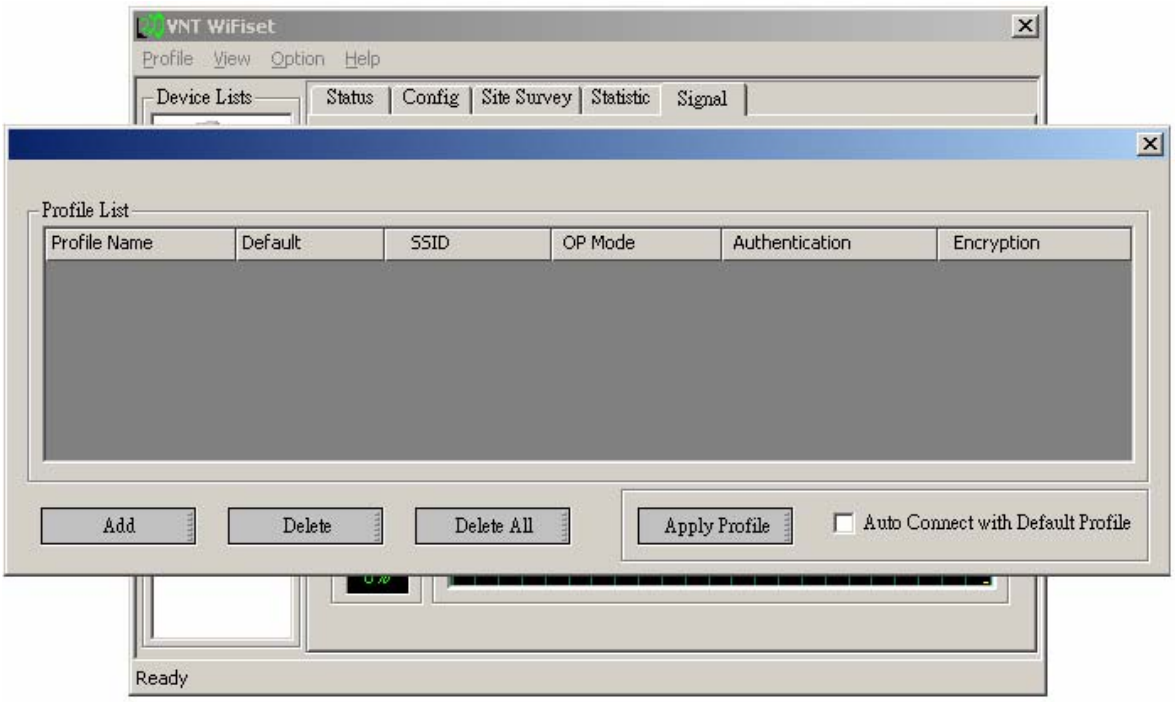
A profile is a set of preconfigured settings for a particular network environment. Having different profiles stored in WiFiset, you can move from one network to another without having to reconfigure the network settings.

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:

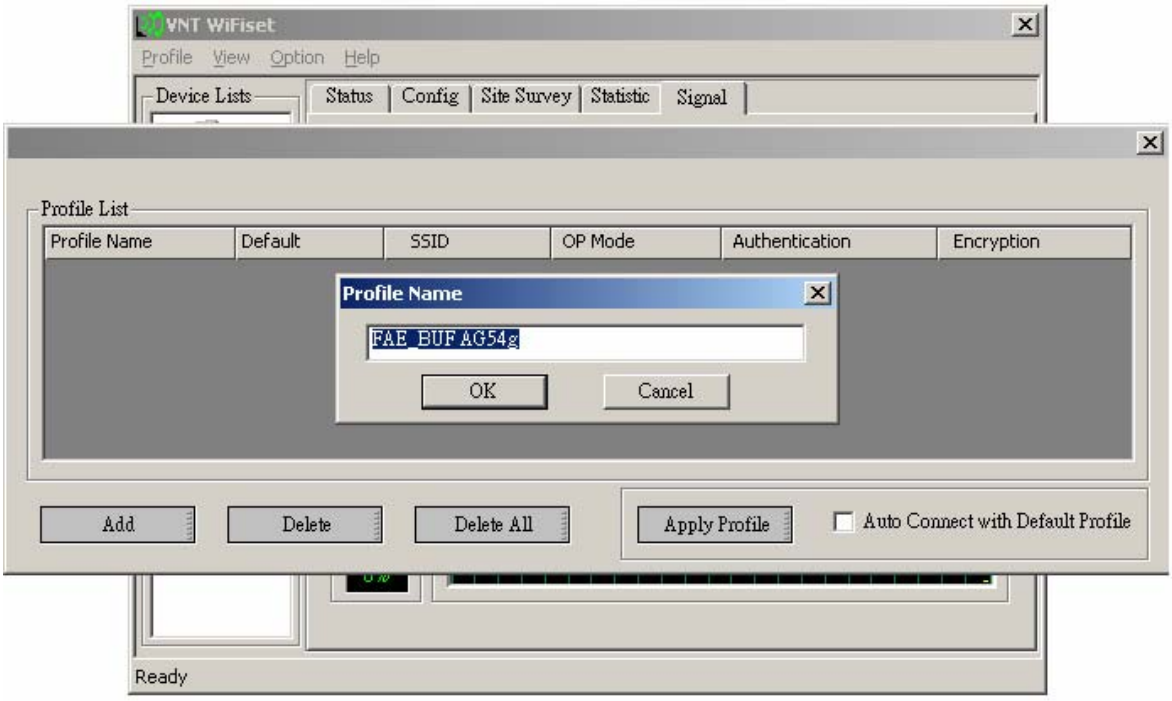
Step 1. Click **Profile** in WiFiset's menu bar, and then click **Add** to create a new profile based on the current network's configurations.

Figure 8. WiFiset—Adding a new profile



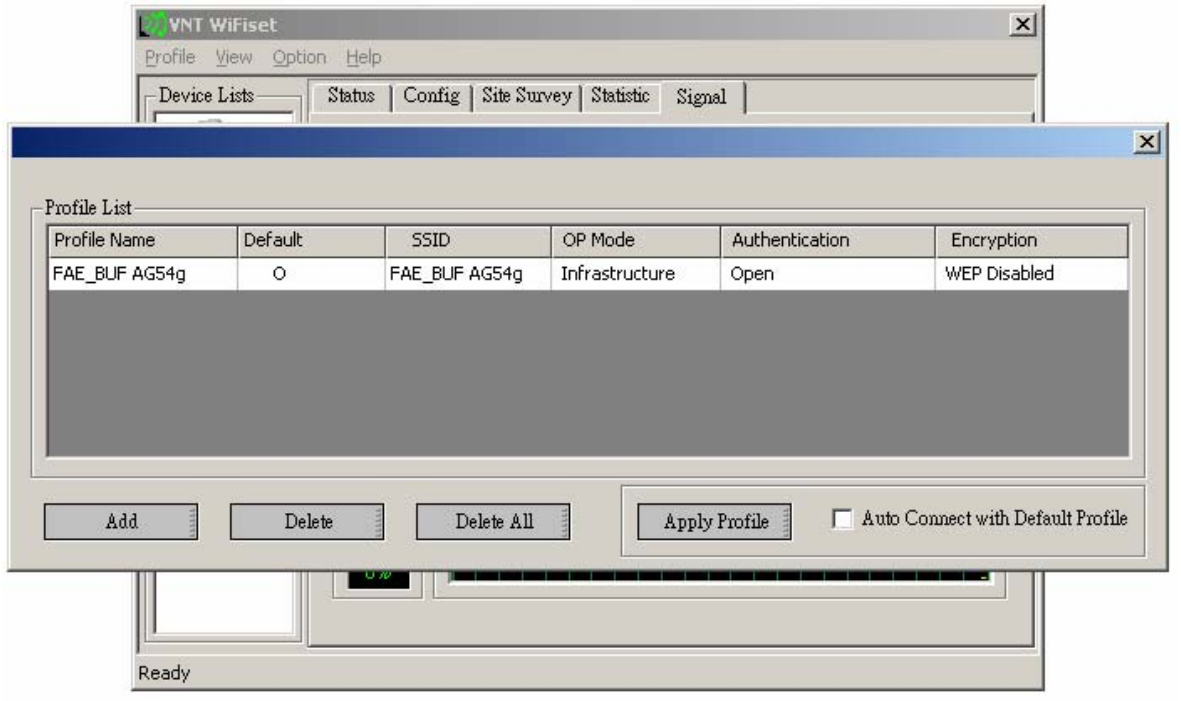
Step 2. Enter a name for the new profile, and then click **OK**.

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

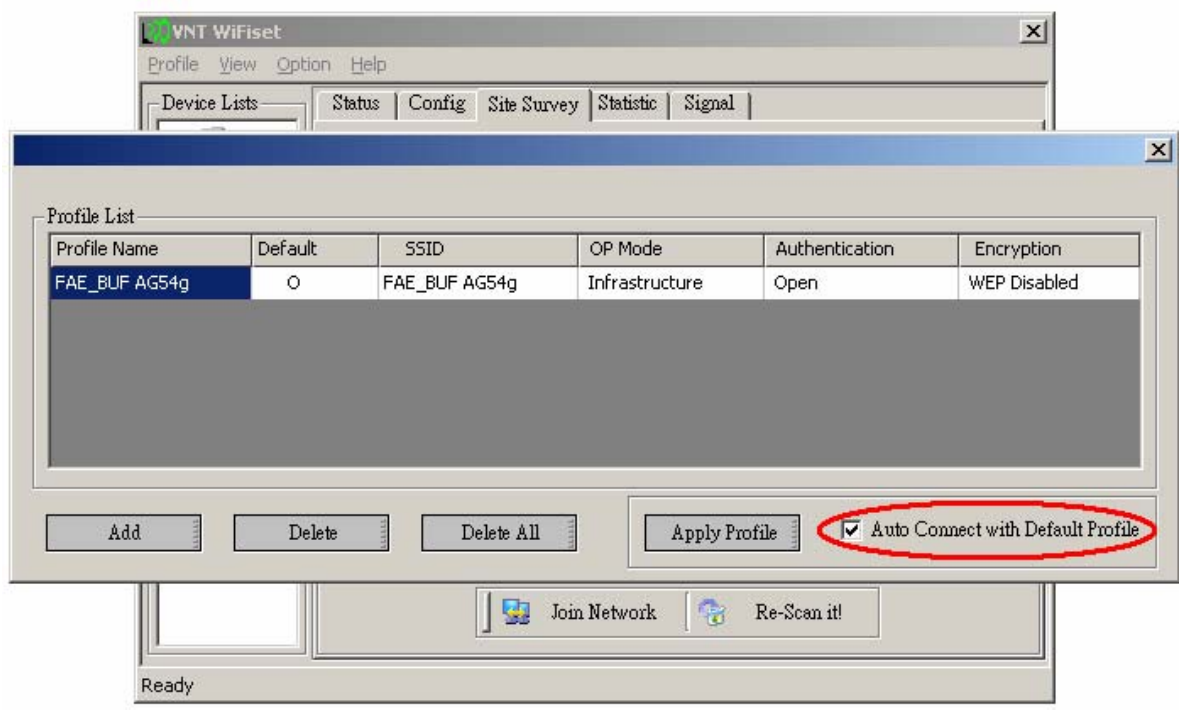
You can configure your device to automatically connect to a network according to the default profile.

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

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

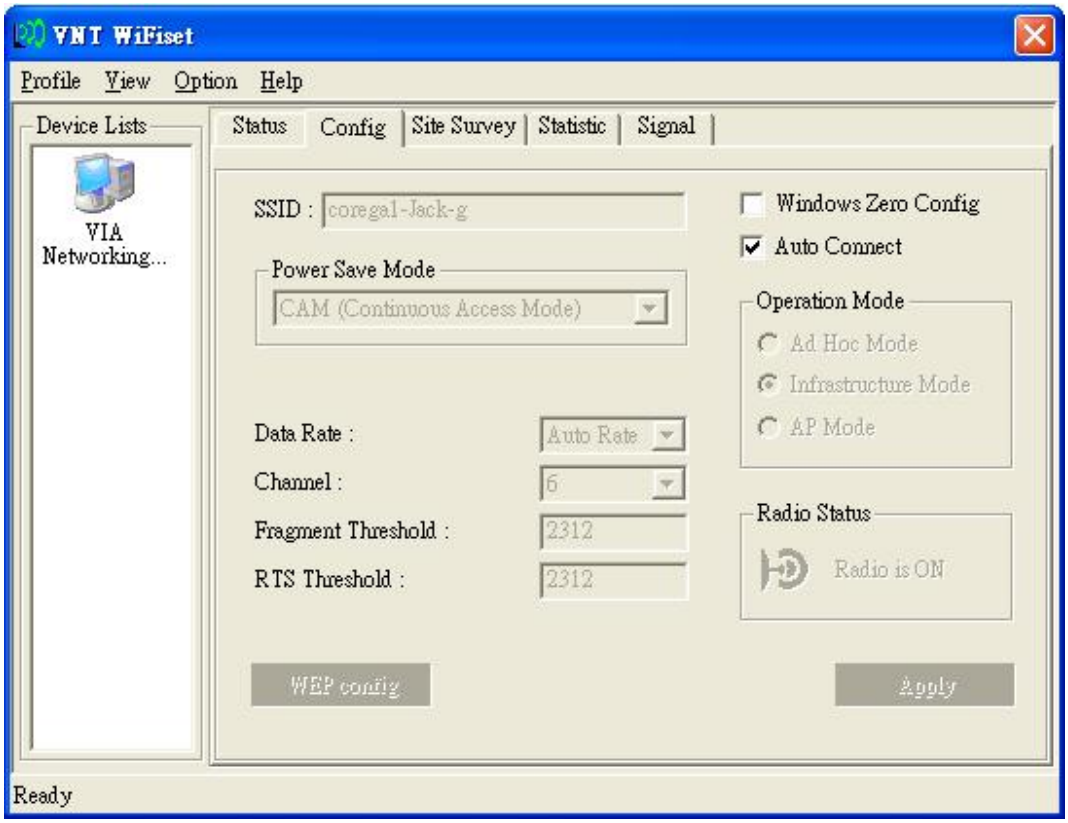
Step 3. Select the check box for **Auto Connect with Default Profile**, and then click the **Apply Profile** button.

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

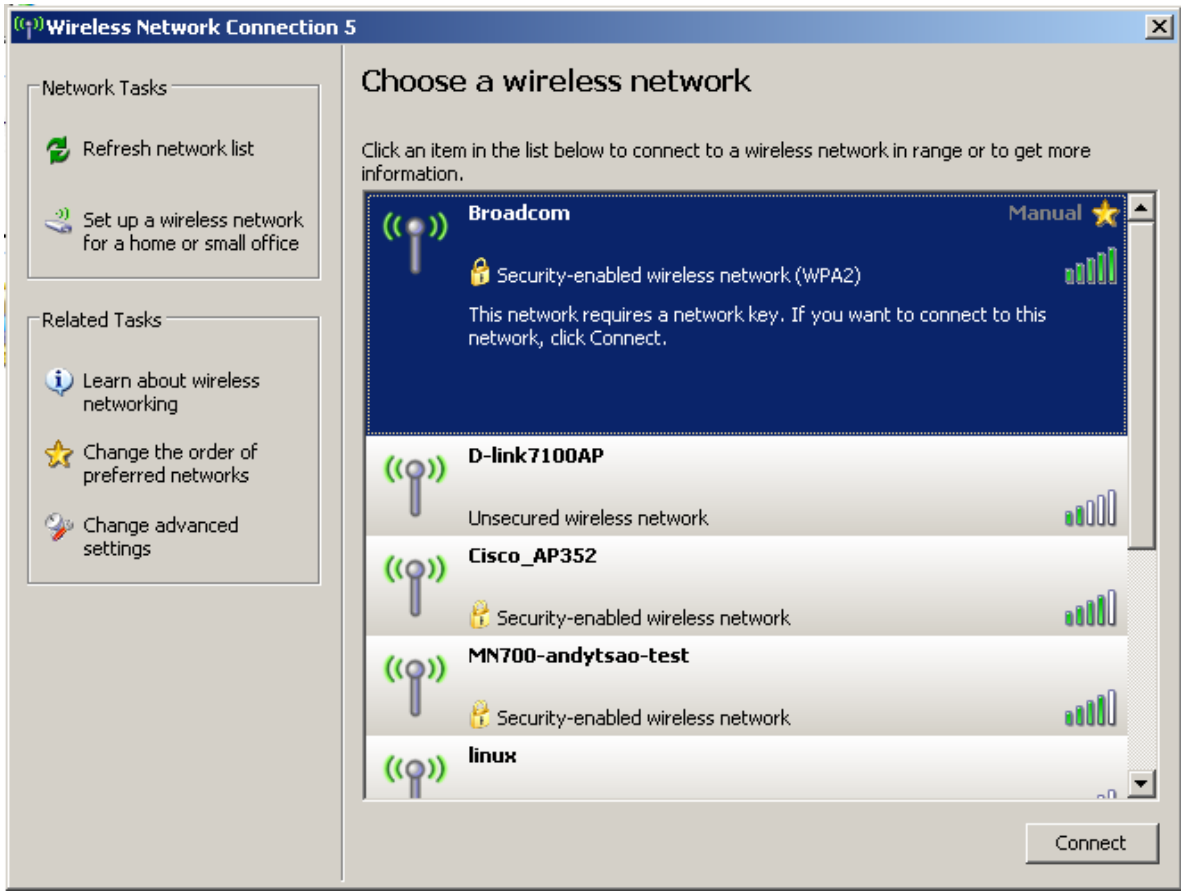


4.2. WPA Networking

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

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

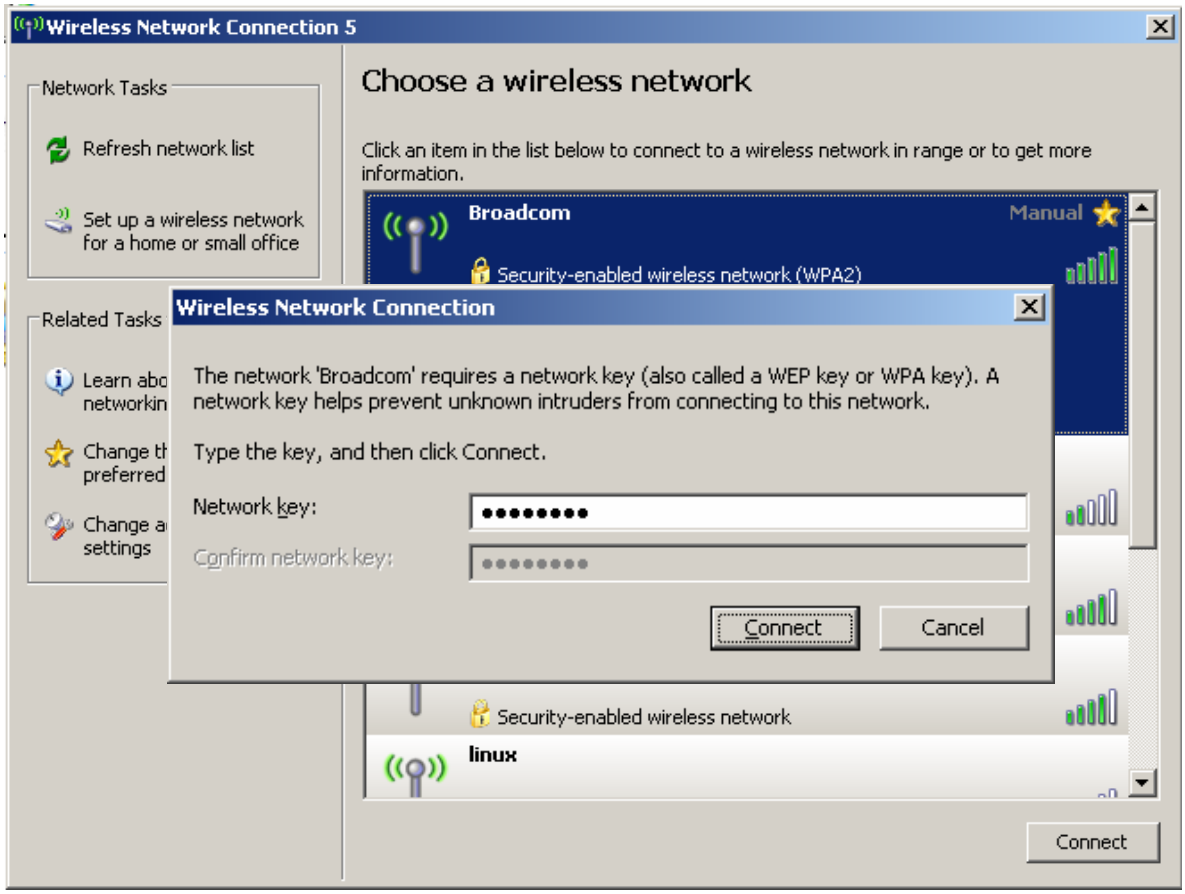
Figure 13. Wireless Network Connection



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 A: 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.

Appendix B: Important Notices

Federal Communications 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. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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

VIA Technologies, Inc. declared that VNT6656G6A10/VNT6656G6A40/VNT6656GUV00/VNT6656GEV00/VNT6656GUA00/VNT6656AU is limited in CH1~11 from 2412 to 2462 MHz by specified firmware controlled in USA.

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

The antenna must be installed such that 20 cm is maintained between the antenna and users, and

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

As long as 2 conditions above are 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.

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 users 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 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.