HighTek Harness Group
RF Business Department

HTKWLAN02 11Mbps MINIPCI WLAN Card

User's Guide

A. Introduction

The ***HTKWLAN02*** Wireless Local Area Network(WLAN) **MINIPCI Card** enables high-speed access without wires to network assets. This WLAN card uses the **IEEE 802.11b** protocol to enable communications between the host and the other computers, using the **2.4GHz ISM Radio Band** for the communications medium. It supports the IEEE 802.11b network specification for **Direct Sequence Spread Spectrum (DSSS)** signaling, providing data rates of **1, 2, 5.5, 11Mbps.** The host computer uses the ***HTKWLAN02*** WLAN card for communications in the same way that it would use an Ethernet adapter.

B. Features

- Support for 11, 5.5, 2 and 1 Megabit Per Second (Mbps) Data Rate
- Supports the IEEE 802.11 Direct Sequence Specification
- Driver Supports Microsoft Windows 98/SE, Me, 2000, XP
- Provides Wireless Data Communication at Full Ethernet Speed
- Designed to Fully Support Minipci Type 3B Defined Mechanical and Environment Stress Conditions

C. Specifications

C. 1 General Specifications

✍✍ Targeted Standard ……..IEEE 802.11b

✍✍ Data Rate……1 Mbps DBPSK

2 Mbps DQPSK

5.5Mbps CCK

11Mbps CCK

- Range……..Up to 100m, Indoor
  Up to 300m, Outdoor
- Frequency Range……2400~2499MHz
- Step Size……1MHz
- Rx to Tx Switching Speed……..5us(Typ.)
- Tx to Rx Switching Speed……..10us(Typ.)
- Operating Voltage……2.7~3.6 V_{DC}
- Operating Temperature Range……-40℃~85℃
- Storage Temperature Range……-65℃~150℃
- Mechanical……..Type 3B Minipci Card
- Antenna Interface……I-pex, 50Ω

C. 2 Receive Specifications

- Sensitivity……-83dbm(Typ.)
- RX Supply Current……280mA(Typ.)

C. 3 Transmit Specifications

- Output Power……..+16dbm(Typ.)
- Transmit Spectral Mask……..-30dBc(Typ.) at First Side-Lobe
- Supply Current……400mA(Typ.)

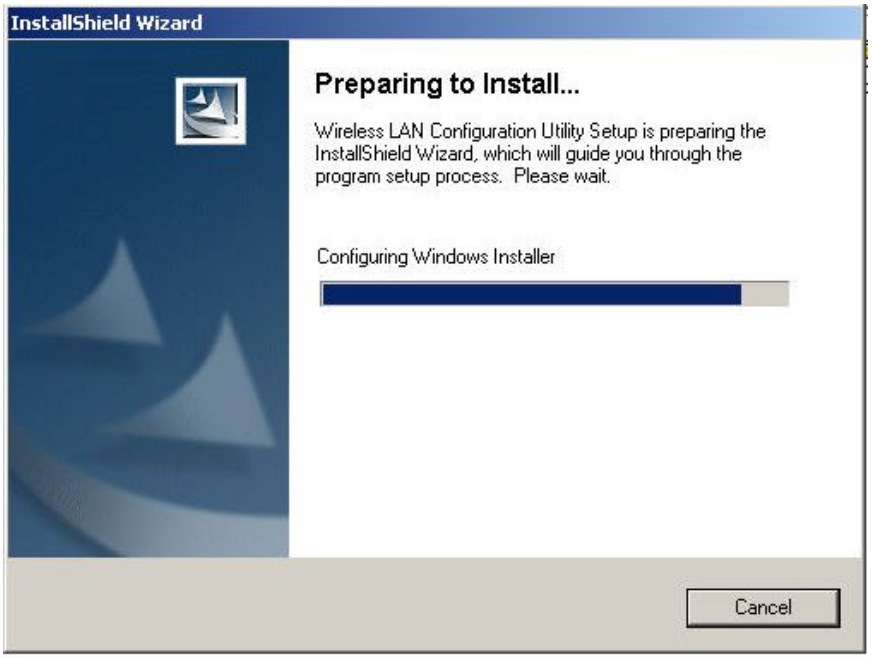
D. Installation Drivers

D. 1 Installation of HTKWLAN01 Windows Drivers

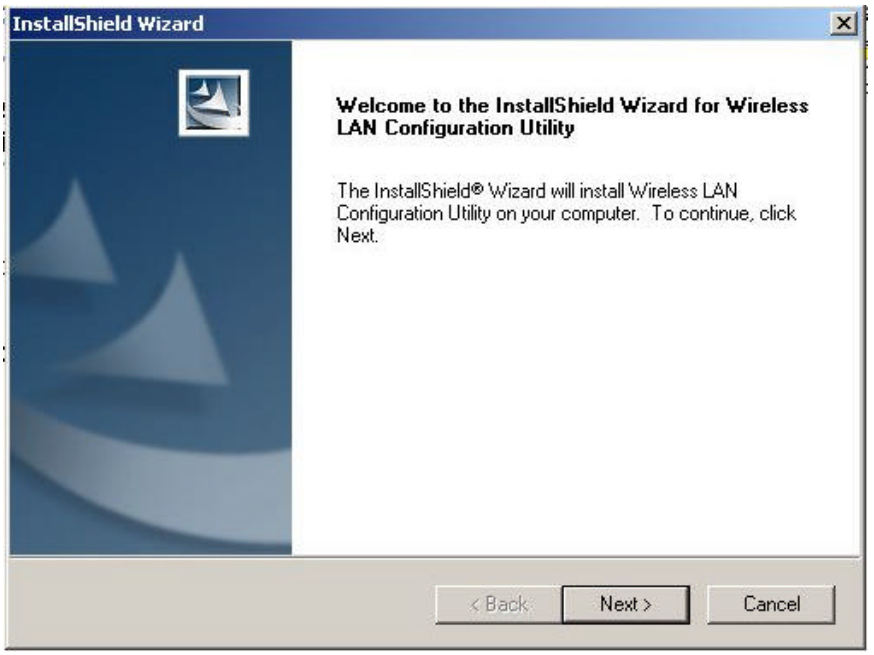
Step 1. With the **HTKWLAN02 MINIPCI WLAN** Card insert into the MINIPCI slot where is

inside your computer, and then boot your computer under Microsoft Windows 98/SE, Me, 2000 or XP.

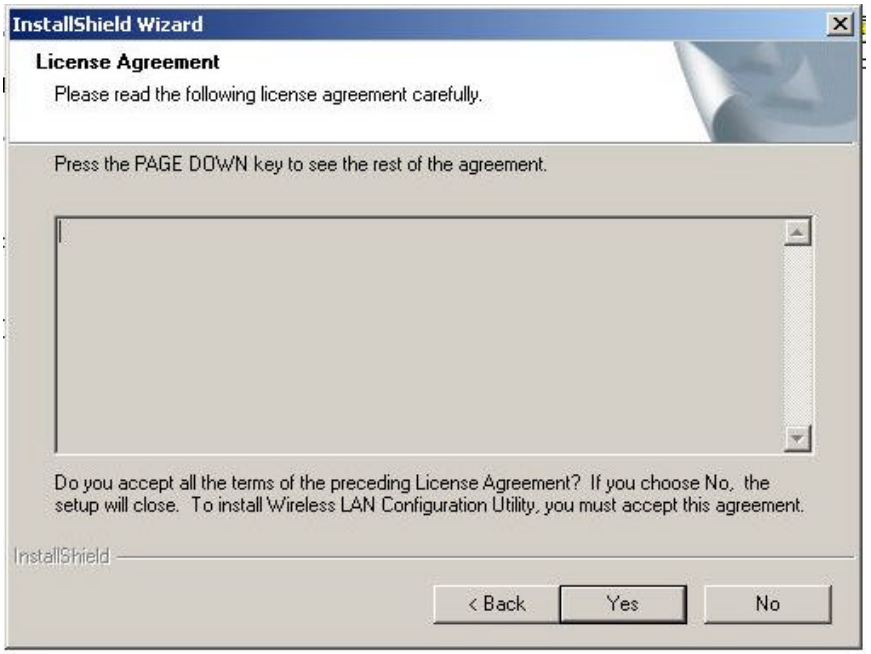
Step 2. Once your computer system has booted and to show a message that detecting a new device, in the same time insert the **Disk** what is **HTKWLAN02's Driver** for Windows into the CD-ROM drive.



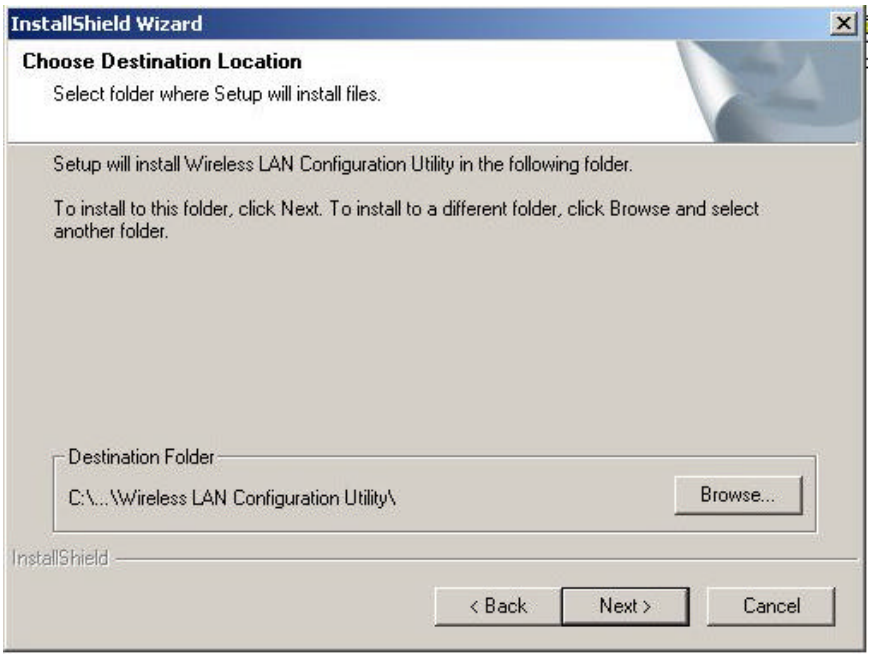
Step 3. Press **"Next"** to continue the install shield



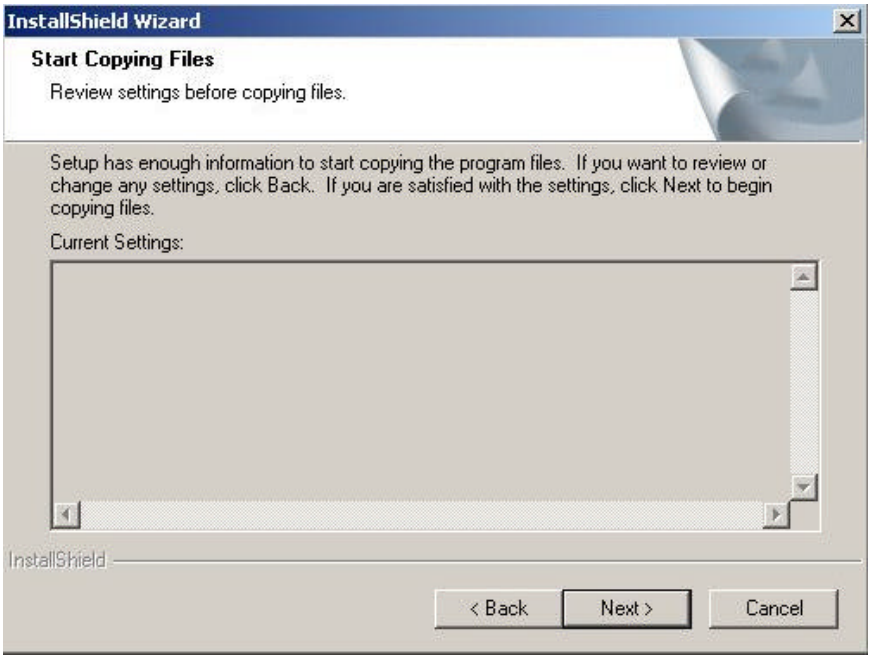
Step 4. Press **"Yes"** to continue installing



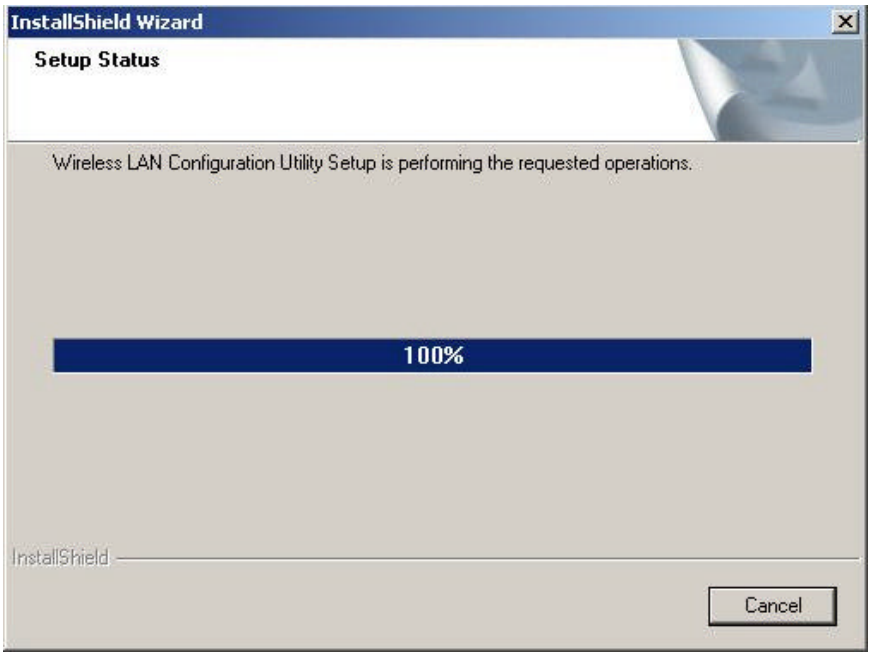
Step 5. Press **"Browse"** to choose the destination that you require to install, then press **"Next"**



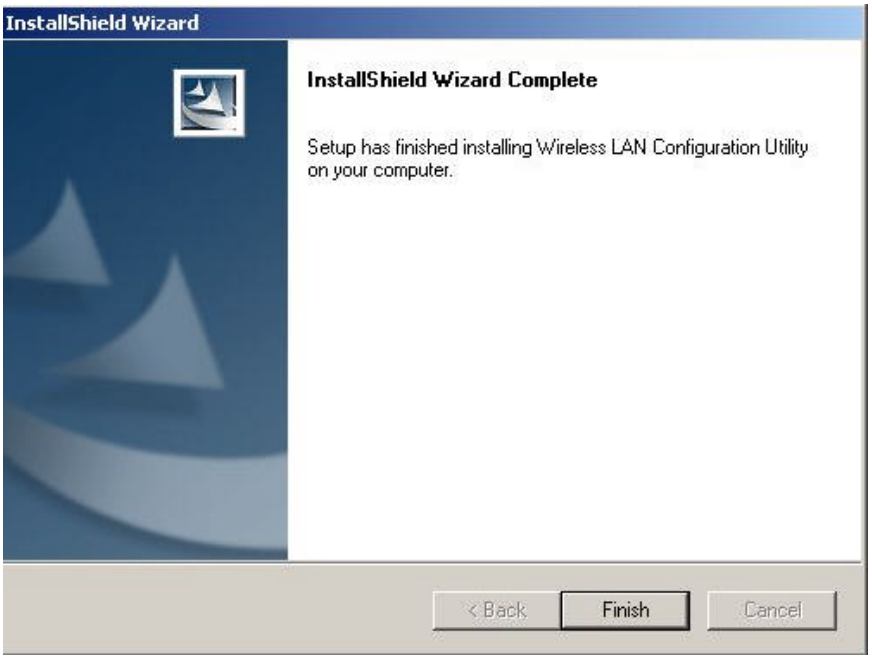
Step 6. Choose **"Next"**



Step 7. Install Shield is installing the program.

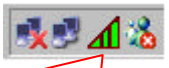


Step 8. Press **"Finish"** to complete the installing



D. 2 Operation

After you installed **HTKWLAN02** driver completely, both the driver and the Configuration Utility are installed on your computer, it's icon appears in the System Tray in the bottom right corner of your computer.



HTKWLAN02 Configuration Utility Icon

The color and layers are to shine behind the High-Tek(HTK) logo indicates the link status.

✍✍ Red and one layer to shine indicating no or very poor link quality.

✍✍ Yellow and two layers to shine indicating a usable but weak link.

✍✍ Green and all layers to shine indicating a good or excellent link.

D. 3 Using the Wireless LAN Configuration Utility

The Wireless LAN Configuration Utility appears as an icon on the system tray of Windows while the card is running. You can open it by clicking on the icon.

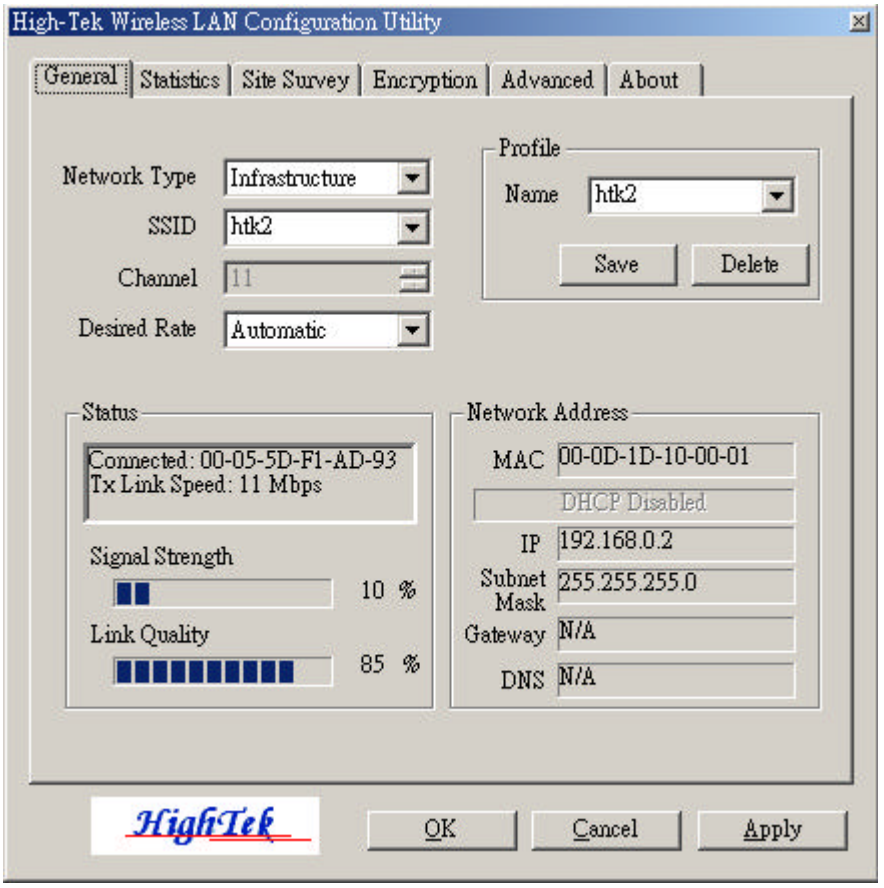
While the station is in infrastructure mode and not associated to an Access Point, the color of the icon is red. As soon as the station associates to an Access Point, the icon color automatically turns to "**Green**". In Ad-Hoc mode the color is always Green, except when the card is resetting and initializing where it turns to **"Purple"** during the reset and initialization procedure.

The Wireless LAN Configuration Utility is a highly integrated application include the following options (tabs),

✍✍ ***General***
✍✍ ***Statistics***
✍✍ ***Site Survey***
✍✍ ***Encryption***
✍✍ ***Advanced***
✍✍ ***About***

General **:**

A typical screen of the application in Infrastructure mode is shown in Figure 1-1. The configuration parameters are shown at the top of the screen.



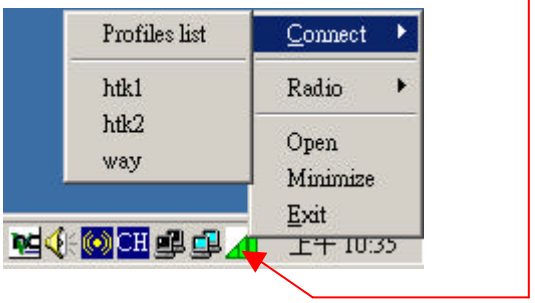
The fields in this menu provide the following information:

- **Network Type :** The **HTK WLAN** Interface adapter can operate in one of two types of networks, which are specified in the Network Type: field of the Configuration menu. Clicking the down arrow at the right of this field displays the available types.

1. **AdHoc:** IEEE 802.11, the standard on which the WLAN protocol is based, defines two modes to handle two separate needs. The first, called AdHoc (or IBSS) mode, is used when two or more wirelessly-enabled PCs wish to exchange data directly, without an Access Point. In this case the PCs can establish a peer-to-peer network in which they are the only members and over which they can exchange data. To exchange data, each computer participating in the AdHoc network must also specify the same
2. **Infrastructure:** The second mode defined by the IEEE 802.11 standard is called infrastructure mode, and is the primary application for WLAN operation. In this mode all data on the wireless network is directed to an Access Point, which then routes the data to the appropriate wireless station. The Access Point may also be configured to allow data to be bridged from the wireless network to wired networks. To participate in a wireless LAN in infrastructure mode, every station and Access Point must specify the same Network Name. In infrastructure mode, all available channels are scanned for

traffic, so there is no need to specify a channel.

- **SSID:** Officially, in wireless networks the network name is known as the SSID (Service Set ID entifier), and is used by Access Points and stations to identify a wireless LAN. Your **HTK WLAN** Interface adapter scans the available channels looking for an Access Point or another station which has specified this same SSID. It then attempts to associate with these Access Points or stations to form a wireless LAN. To change the SSID, simply highlight it, type the new SSID, and click the Apply button. In typical infrastructure applications a company will use a single SSID for all Access Points. If the radio is scanning and cannot find a channel when an Access Point is known to be in range, verify that the Network Name is set correctly.
- **Channel:** shows the channel on which the connection is made. In Infrastructure mode, this number changes as the radio scans the available channels.
- **Desired Rate:** shows the current transmit rate of the current association
- **Profile: HTK WLAN** Wireless LAN Configuration Utility provides the easy to use profile function. Profile memorize the Network settings include Network Type, SSID, Desired Rate and Encryption Key. User can enter profile name of current setting **(Up to 10 sets)**. Users can recall the settings by clicking the scroll button or "Right- Clicking" the icon in system tray then choose the proper profile list.

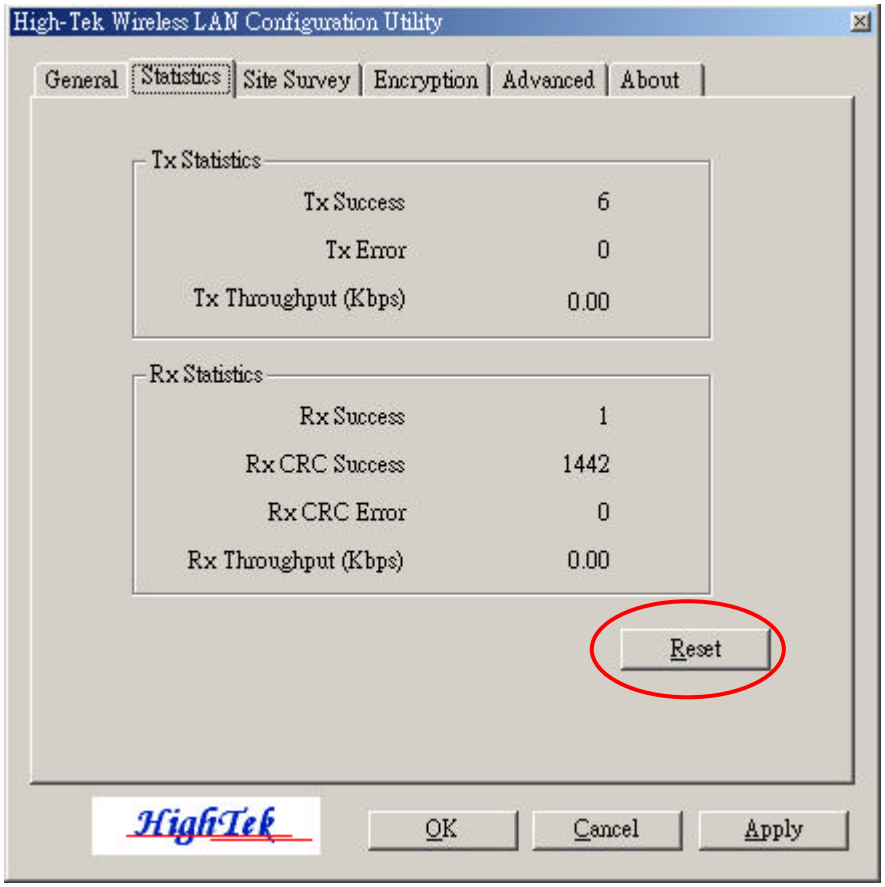


- **Status:** shows the association state of your computer with the wireless LAN. When operating in Infrastructure mode, this field shows the MAC address of the Access Point with which you are communicating. When operating in Peer-to Peer mode, this field shows the virtual MAC address used by computers participating in the AdHoc
- **Signal Strength:** is based on the received signal strength measurement of the baseband processor of the Beacon signal.
- **Link Quality:** is based on the quality of the received signal of Access Point beacon.
- **Network Address:** shows the current Network status such as MAC address (Wireless Card), DHCP (Enable or not), IP address, Subnet Mask address, Gateway Address and DNS server address.

Statistics :

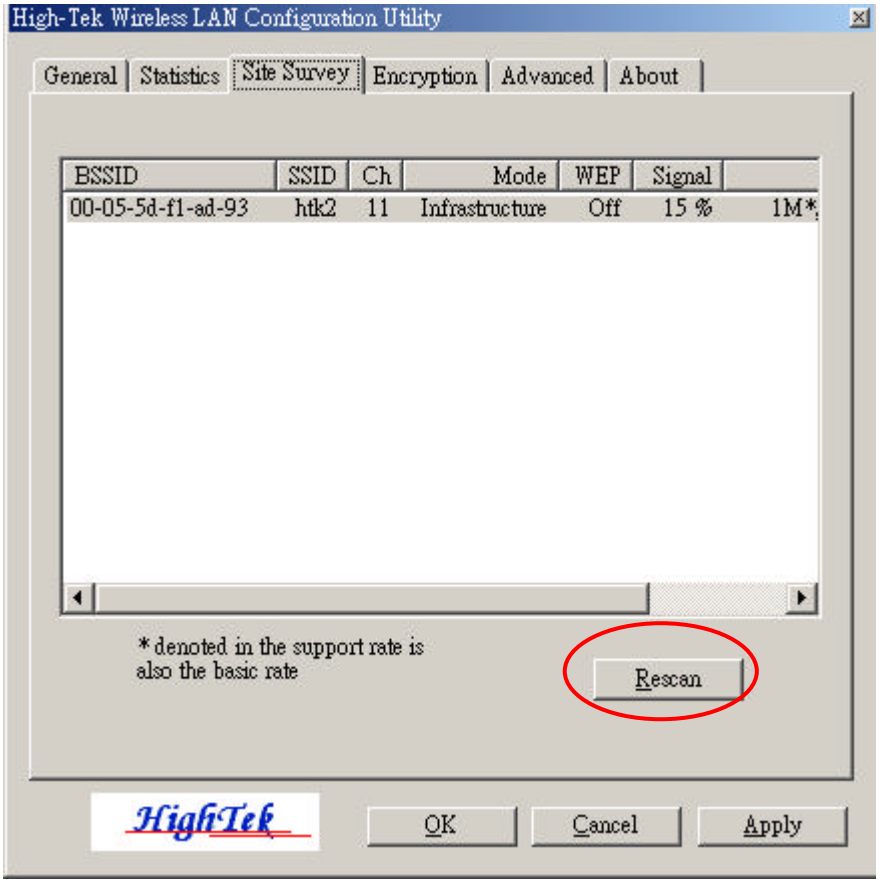
This option enables you to view the available statistic information (Total Packet Number, Error Packet

Number, FER-Frame Error Rate, Throughput). In order to reset or update this statistics list, press the **"Reset" button"**.



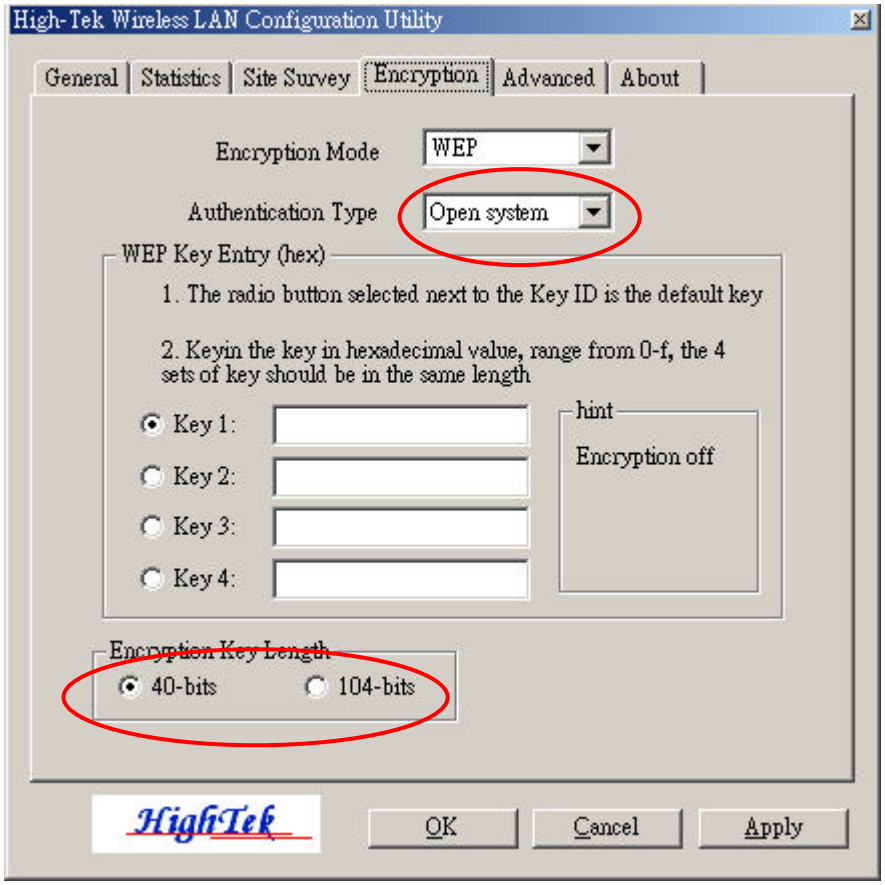
Site Survey :

By choosing the **Site Survey** option, you can scan all the channels to find all the access points within the range of your card. In Figure 1-3, the list includes information about the BSSID and SSID of the access point(s), the Channel, Mode (Network Type), whether or not WEP encryption is used, signal strength and Support Rate. In order to update this list, press the **"Rescan"** button. If you want to associate with any of the access point(s) listed, Double-clicking on your choice and the system will take you back to the **General** screen showing you the parameters of the connection newly established.



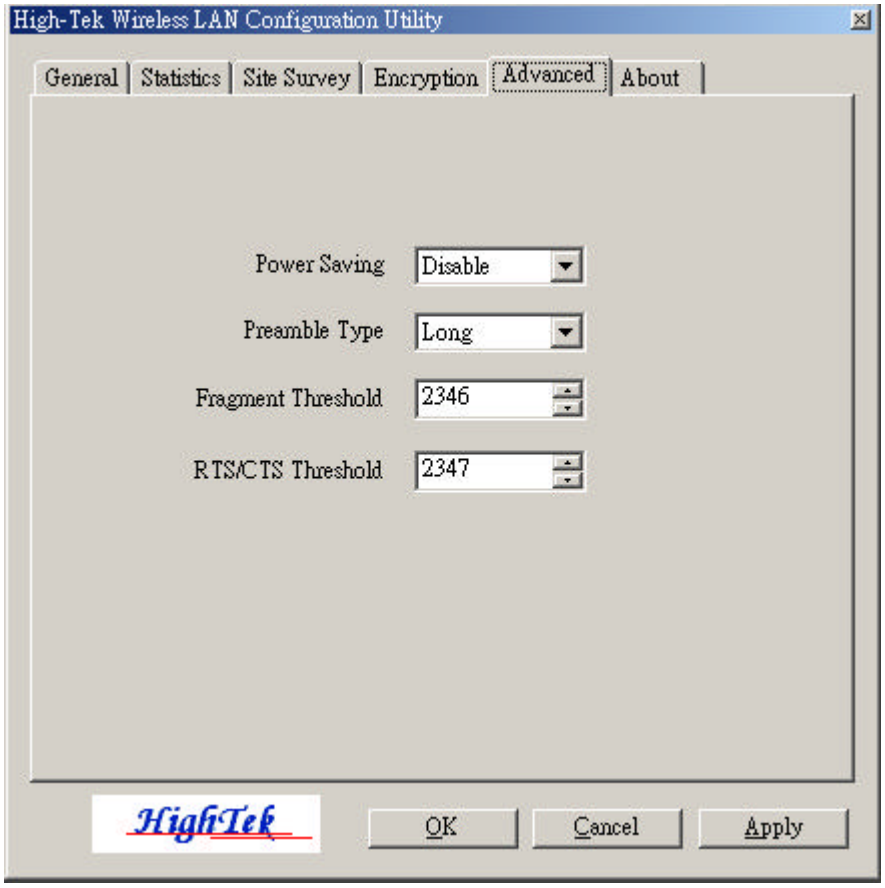
Encryption :

By choosing this option, you can set 4 different WEP keys and specify which one of them to use. If you decide to use encryption, you can choose any of the available WEP keys (1 to 4) and the **"Encryption Key Length"**. You also have the option to select the **"Authentication Type (Open system/Shared key)"**. In order to take effect of the changes you wish to make, press the **"Apply"** button at the bottom of the screen.



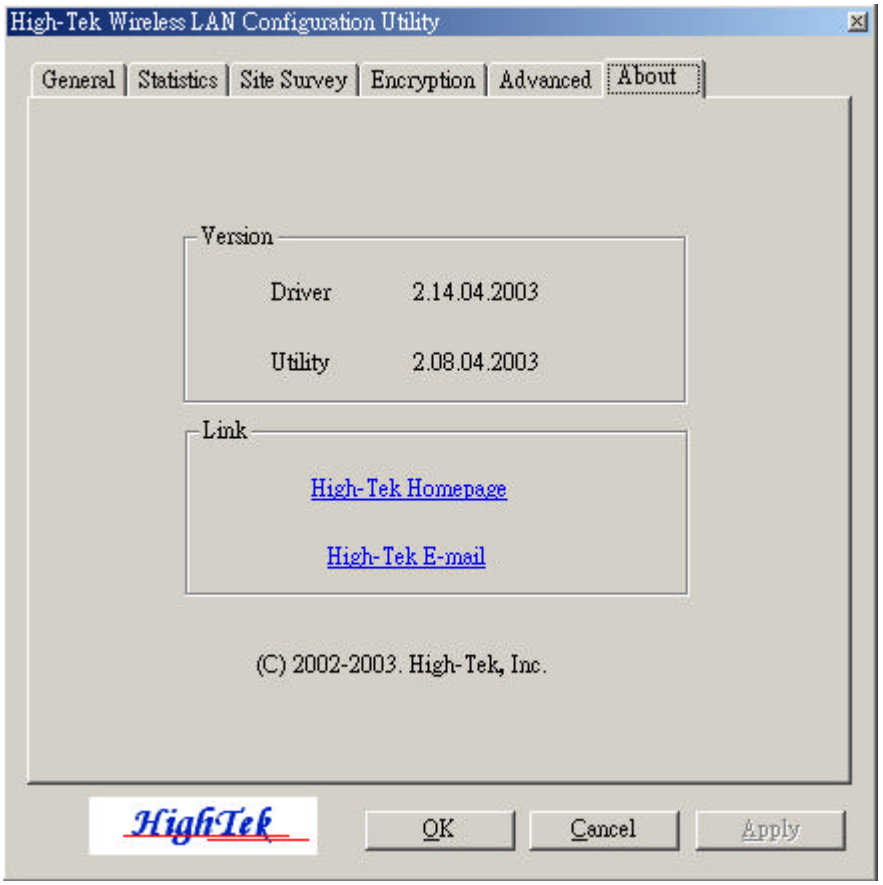
Advanced :

Choosing the ***Advanced*** option, you can change advanced configuration settings, such as the **Power Saving mode**, **Preamble Type**, **Fragmentation Threshold**, and **RTS/CTS Threshold** (See Figure 1-5). Figure 1-5 shows the recommended configuration for the advanced settings. Before selecting Short Preamble, make sure that the other stations and APs are also supporting this feature.



About :

By choosing this option, you can view basic information about the Utility such as the Driver and Application Version. And you can click the hyperlink to connect the website for technical support.



Warning: **Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.**

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.

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly

approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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 or more 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 needed.**
✍✍ **Consult the dealer or an experienced radio/TV technician for help.**

CAUTION:

1. **To comply with FCC RF exposure compliance requirements, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons.**
2. **This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter**

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

1) The antenna must be installed such that 20 cm is maintained between the antenna and users. For laptop installations, the antenna must be installed to ensure that the proper spacing is maintained in

the event the users places the device in their lap during use (i.e. positioning of antennas must be placed in the upper portion of the LCD panel only to ensure 20 cm will be maintained if the user places the device in their lap for use) and

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

As long as the 2 conditions above are met, further transmitter testing 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

This transmitter module is authorized only for use in devices where the antenna may be installed such that 20 cm may be maintained between the antenna and users (for example access points, routers, wireless ASDL modems, certain laptop configurations, and similar equipment). The final end product must be labeled in a visible area with the following: "Contains TX FCC ID: {Q2EWLAN02 }".

RF Exposure Manual Information That Must be Included

The users manual for end users 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."

Additional Information That Must be Provided to OEM Integrators

The end user should NOT be provided any instructions on how to remove or install the device.

Ambassador in U.S.A

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