Wireless Card
User Manual

Model Name: T60H813

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Chapter 1 About the Wireless Mini-PCI Card

This IEEE 802.11g Wireless Card is compatible with notebook computer Mini-PCI slot. As a Plug-and-Play device, Windows 98/2000/ME/XP will automatically recognize the wireless Mini-PCI Card and initiate the installation process. Upon successful installation, the wireless Mini-PCI Card will communicate seamlessly with other IEEE 802.11g wireless products.

1-1 Features

1. Supports up to 54 Mbps data rate.
2. Supports point-to-point and point-to-multipoint access provides increased flexibility.
3. Seamless connectivity to wired Ethernet and PC network LAN's offers quick, trouble-free integration with existing networks.
4. Direct Sequence Spread Spectrum (DSSS) technology provides secure wireless connection.
5. Wireless connections eliminate the hassle and cost of cabling.
6. Supports a wide range of LAN (Local Area Network) Network Operating Systems (NOS)
   including Windows 98/2000/ ME/XP
7. Easy Plug and Play installation.
8. Omni - directional antenna provides wide range of reception.
9. Greater flexibility to locate or move networked PC's

1-2 Applications

This wireless Mini-PCI cards offer a fast, reliable, cost-effective solution for wireless client access to the network. Refer below for examples :

- Remote access to corporate network information
- E-mail, file transfer and terminal emulation
- Difficult-to-wire environments
- Historic or older buildings without Ethernet wiring.
- Buildings with asbestos insulation
- Open areas where wiring is difficult to employ
- Re-layout frequently environments
- Retailers, manufacturers or other organizations that frequently rearrange the

workplace or relocate

- Temporary LANs for special projects or peak time usage
- Trade shows, exhibitions and construction sites that employ temporary networks.
- Retailers, airline and shipping companies that need additional workstations for a peak period and auditors that require workgroups at customer sites.
- Access to database for mobile workers
- Medical, technical and retail specialists that require roaming access to a database or other network resources.
- SOHO (Small Office and Home Office) users
- Perfect for users that need a small, easy-to-install network that deploys rapidly.

1-3 Product Kit

The wireless PCMCIA card includes the following items. Ensure that the items in the following list have been included. If any of the listed items are missing, please contact your local dealer.

- One Compact Disk. The CD include 98/2000/ME/XP driver, utility and user manual

Chapter 2 Network Configuring and Planning

The wireless Mini-PCI card supports legacy Ethernet LAN network configuration options as defined by the IEEE 802.11g. The wireless Mini-PCI card can be configured as:

. Ad-Hoc mode for no Access Point wireless environment.

. Infrastucture mode for wireless environment with Access Point.

2-1 Network Topology

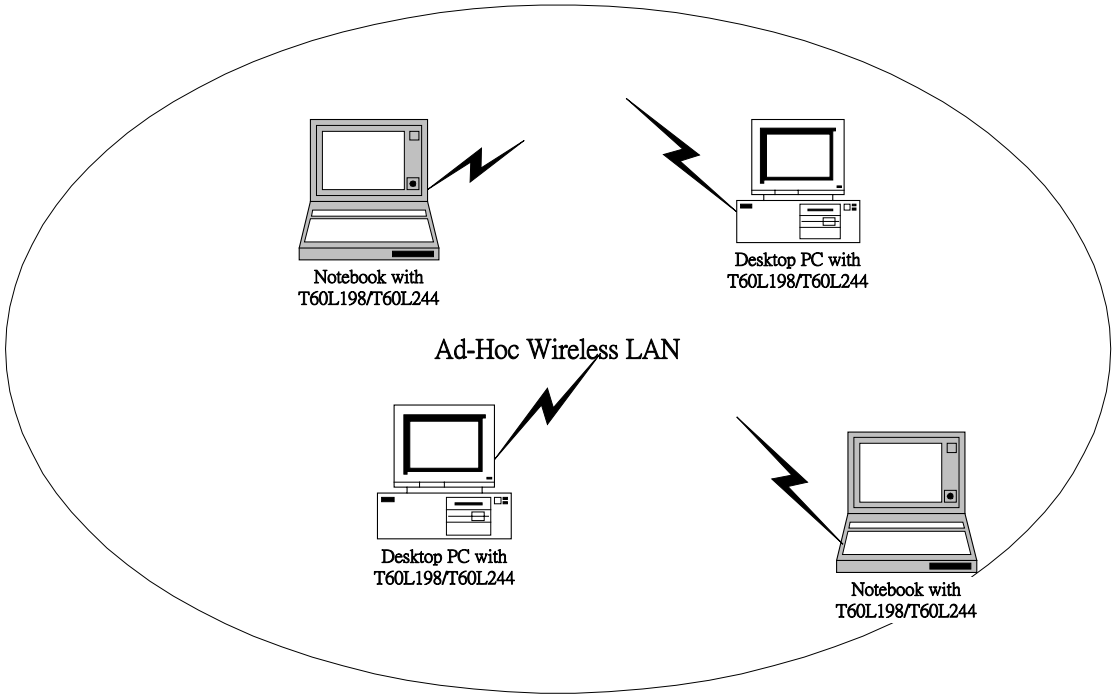


Fig.1 Ad-Hoc Wireless LAN

An Ad-Hoc wireless LAN is a group of computers. Each computer equipped with a wireless Mini-PCI card that configure to same radio channel in order to communicate with others. Ad-Hoc wireless LAN configurations are appropriate for branch level departments or SOHO operations.

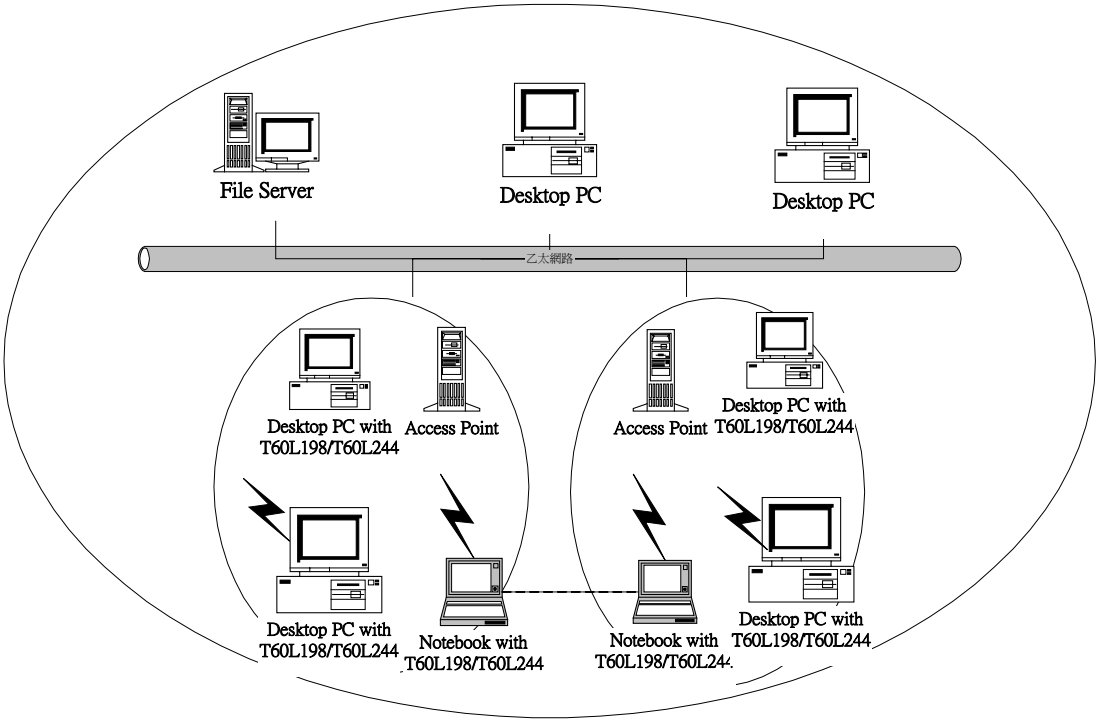


Fig.2 Infrastructure Wireless LAN Configuration

A group of wireless users and an Access Point compose a Basic Service Set (BSS). Wireless clients can talk to any computer in both wired and wireless LAN network via the Access Point.

2-2 Roaming

Infrastructure mode also supports roaming capabilities for mobile users. More than one BSS can be configured as an Extended Service Set (ESS). The continuous network allows users to roam freely within ESS. All wireless Mini-PCI cards and Access Point within one ESS must be configured with the same ESSID in order to utilize roaming function. Properly Access Point positioning with a clear radio signal can greatly enhance wireless performance.

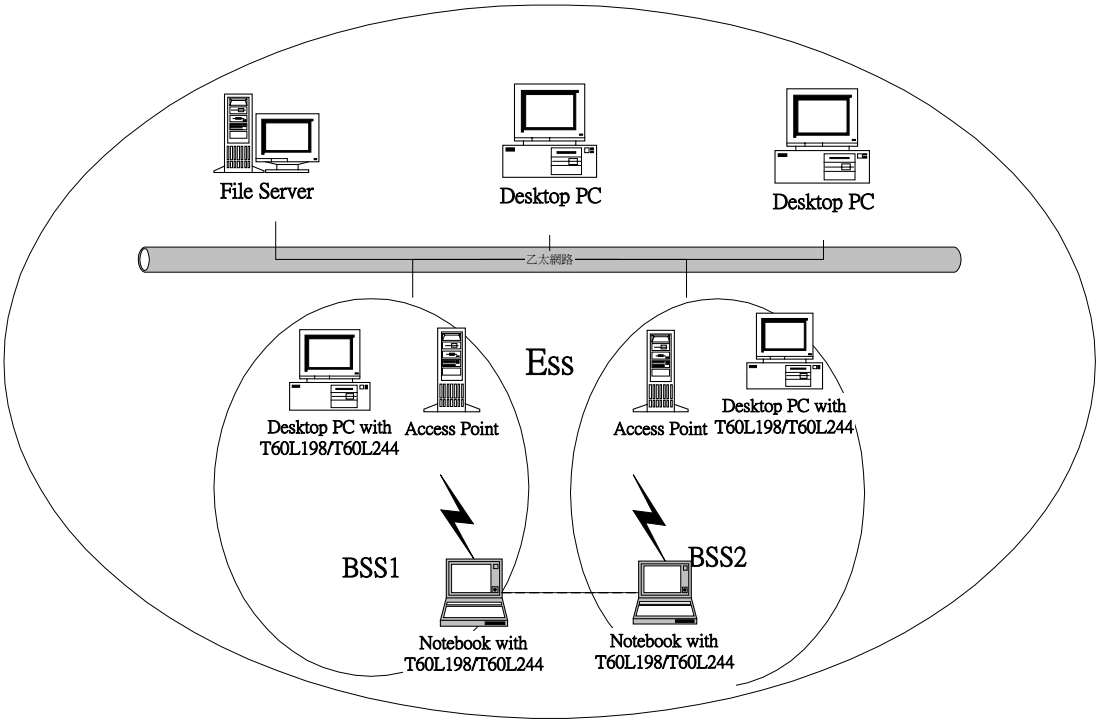


Fig.4 Roaming in an Extended Service Set (ESS)

Chapter 3 Installation

3-1 System Requirements

In order to install and use the wireless Mini-PCI card in your notebook computer. Your notebook system must meet the following requirements:

- A Mini-PCI Slot
- Compact Disk Device

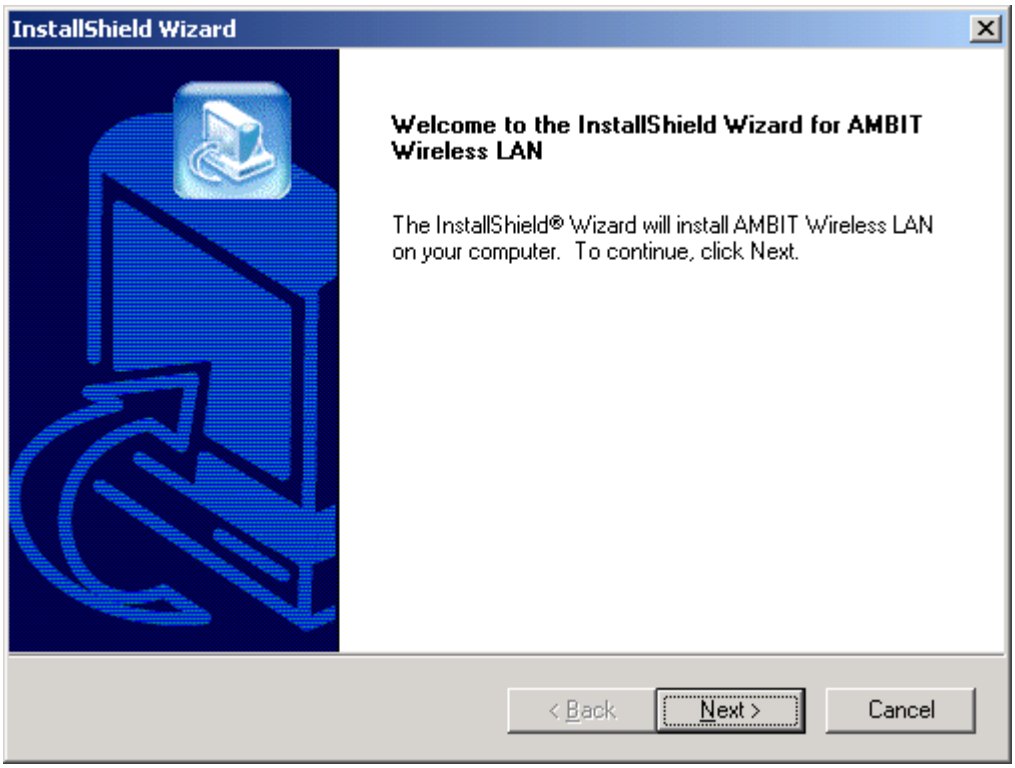
3-2 Inserting the Wireles Card

1. Locate an available Mini-PCI slot.
2. With the Mini-PCI card pin connector facing the Mini-PCI slot, you can easily insert the card into the slot.
3. After properly inserting the wireless card, you can continue with wireless driver and utility installation.

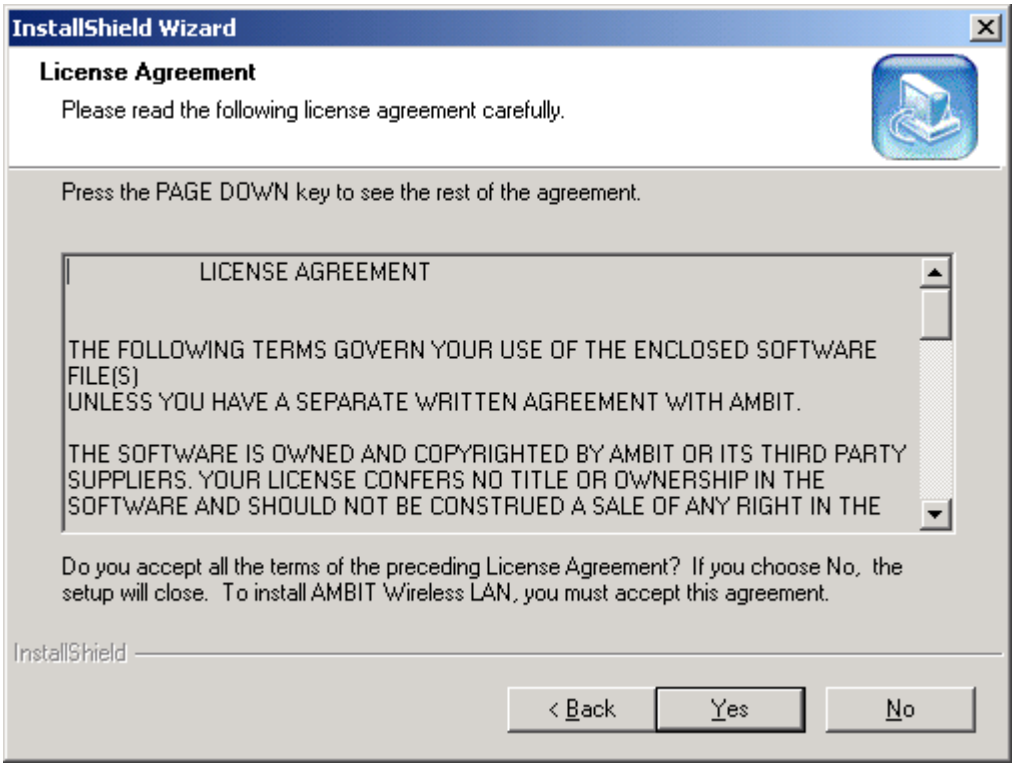
3-3 Installation and Uninstall Process

Install AMBIT Wireless LAN (Windows 98/2K/ME/XP)

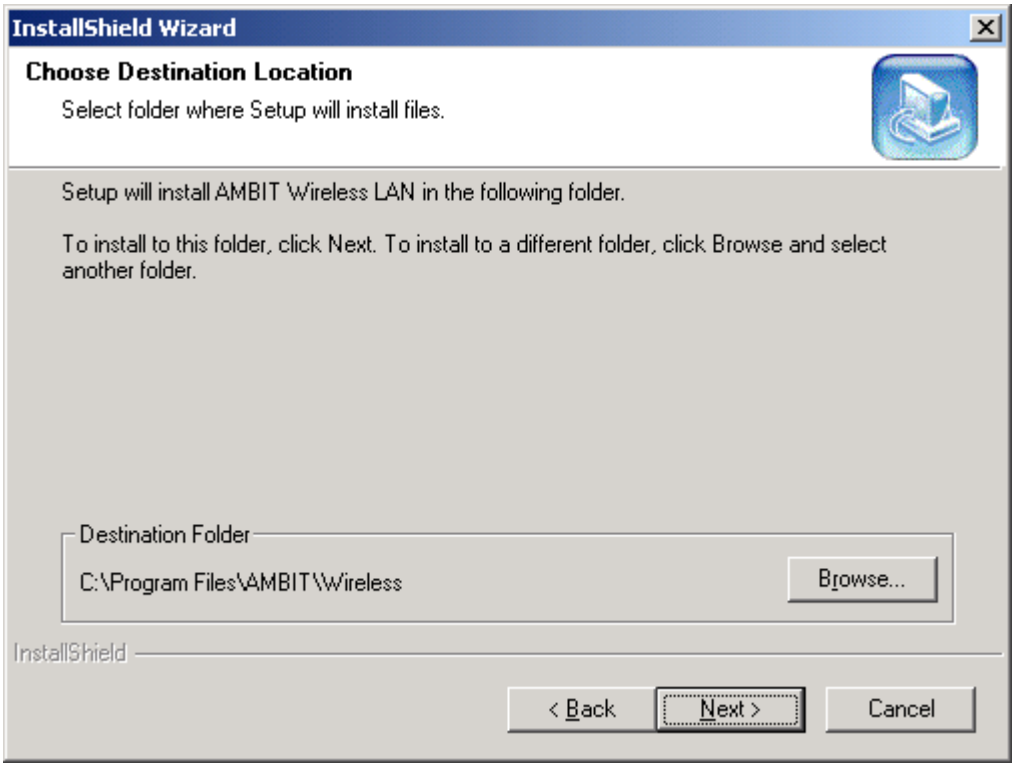
1. Execute the program ‘Setup.exe’ in the CD. Windows displays the dialog as below. Press ‘Next’ button to continue.



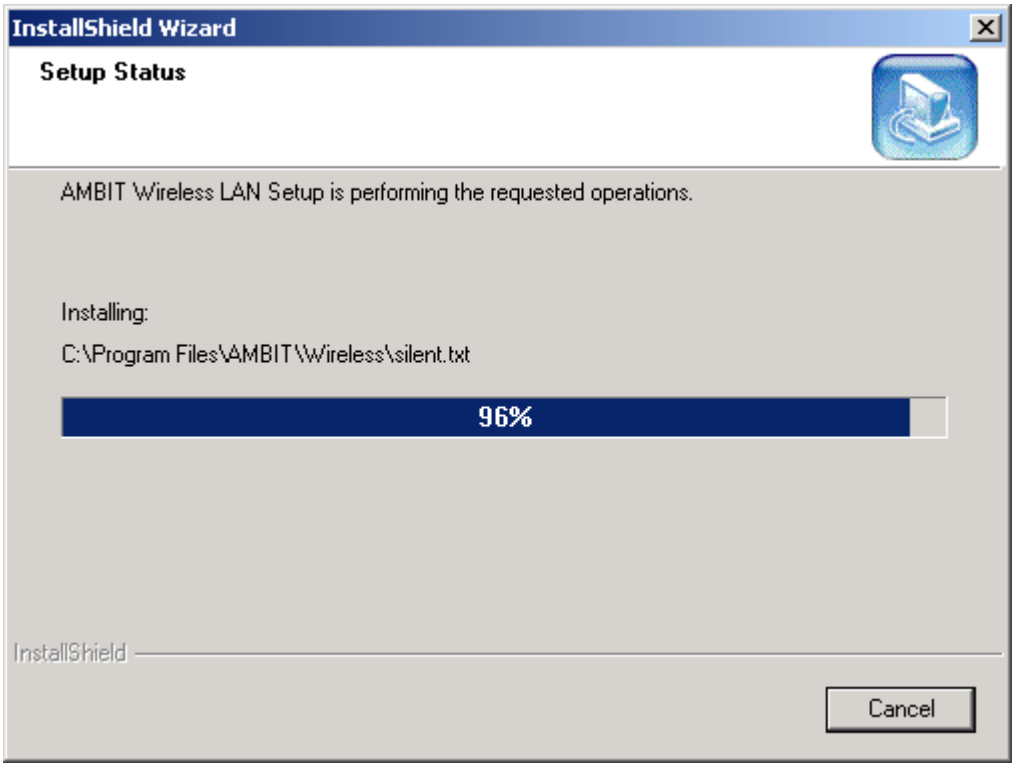
2. It displays a License Agreement dialog. Press ‘Next’ to continue.



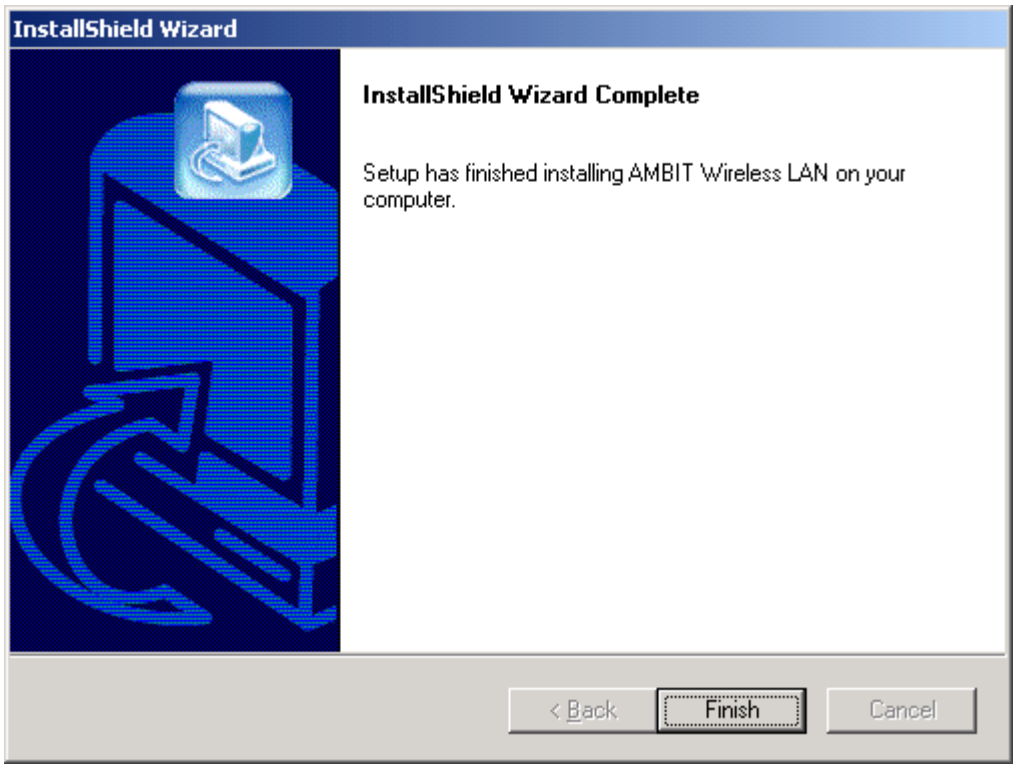
3. Select the destination folder that you want to place the files.



4. Wait for the install program to do the installation.

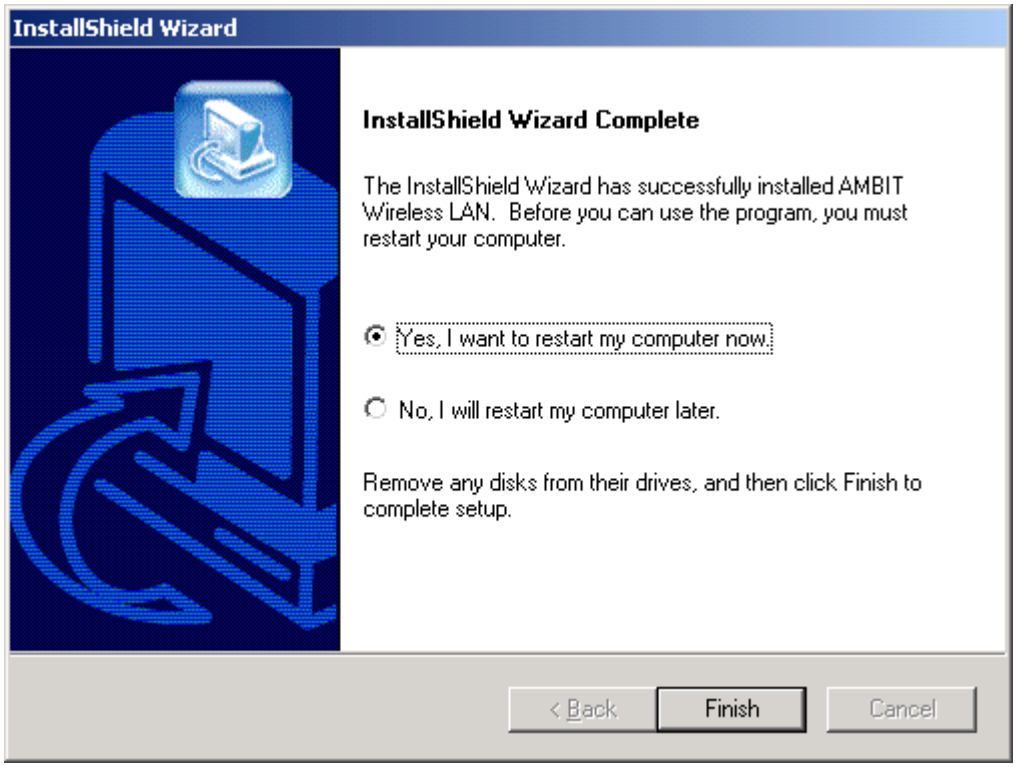


5. Congratulations! AMBIT Wireless LAN has been installed successfully. Please click ‘Finish’ to go to the next step.



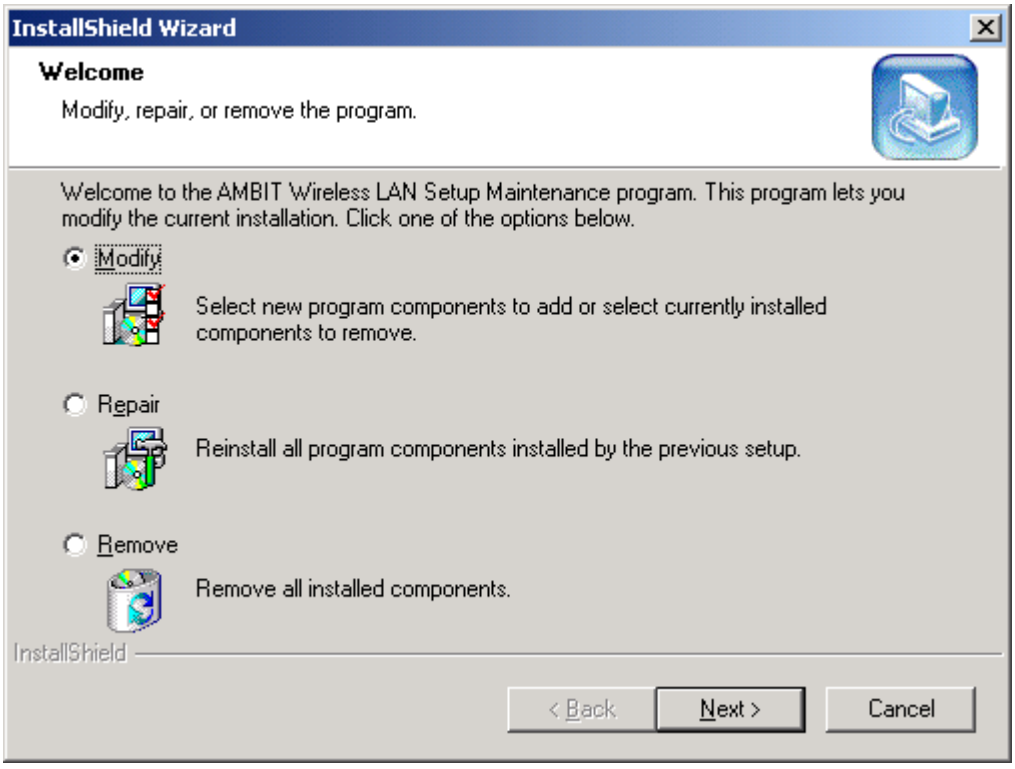
6. Please remove any disks from any drives before your click ‘finish’.

Then click ‘Finish’ to complete setup.

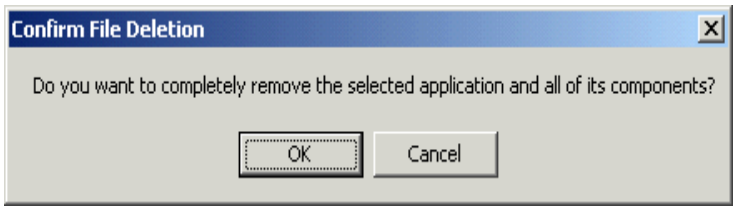


Uninstall Wireless LAN (Windows 98/2K/ME/XP)

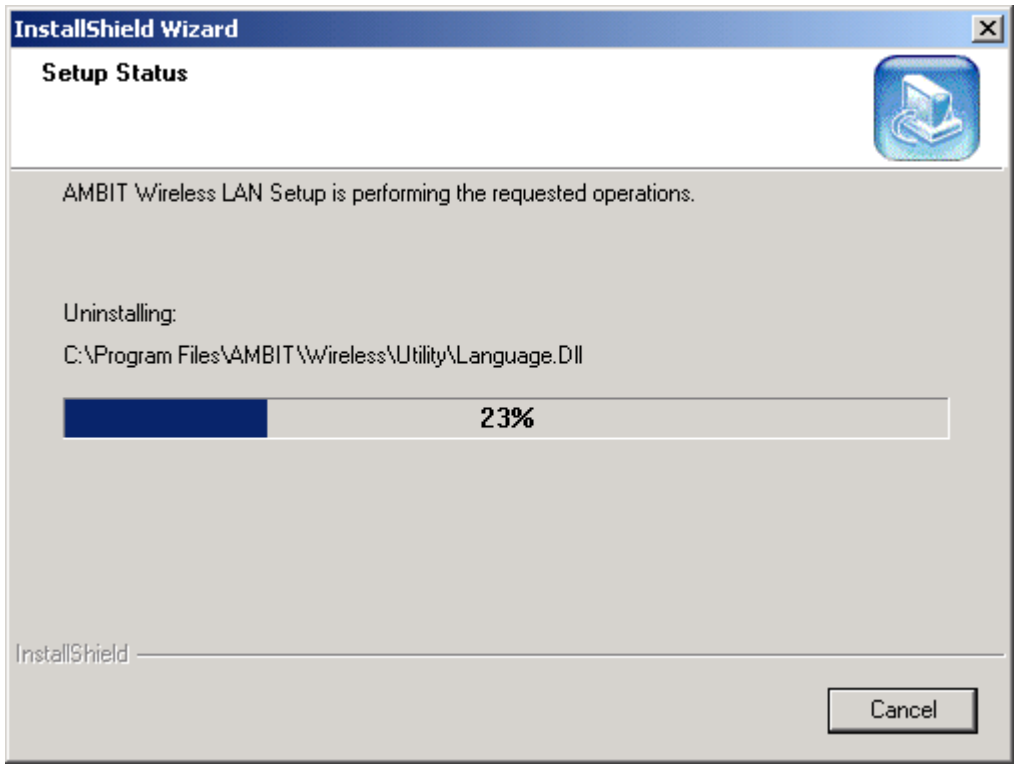
1. One can remove the AMBIT Wireless LAN via the ‘Add/Remove Programs’ in the ‘Control Panel’. Select ‘AMBIT Wireless LAN’ and click ‘Add/Remove’ button, the dialog as below displays.



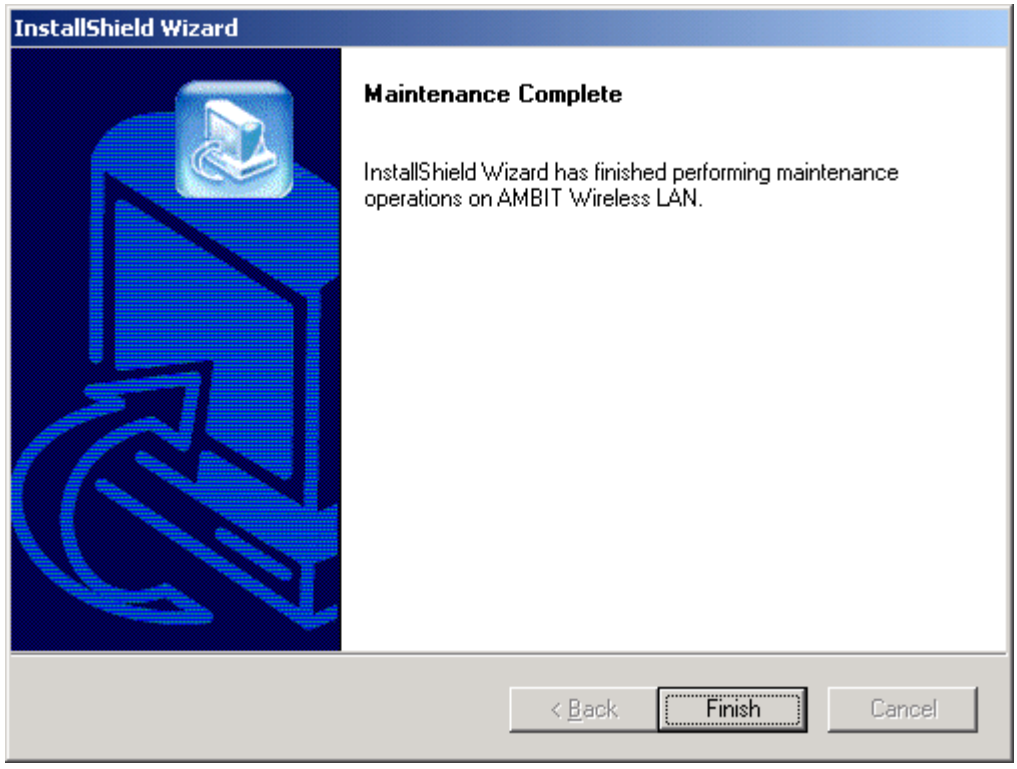
2. Select ‘Remove’ and then click the ‘Next’ button to perform the un-installation. Click ‘OK’ button if you really want to remove the AMBIT Wireless LAN.



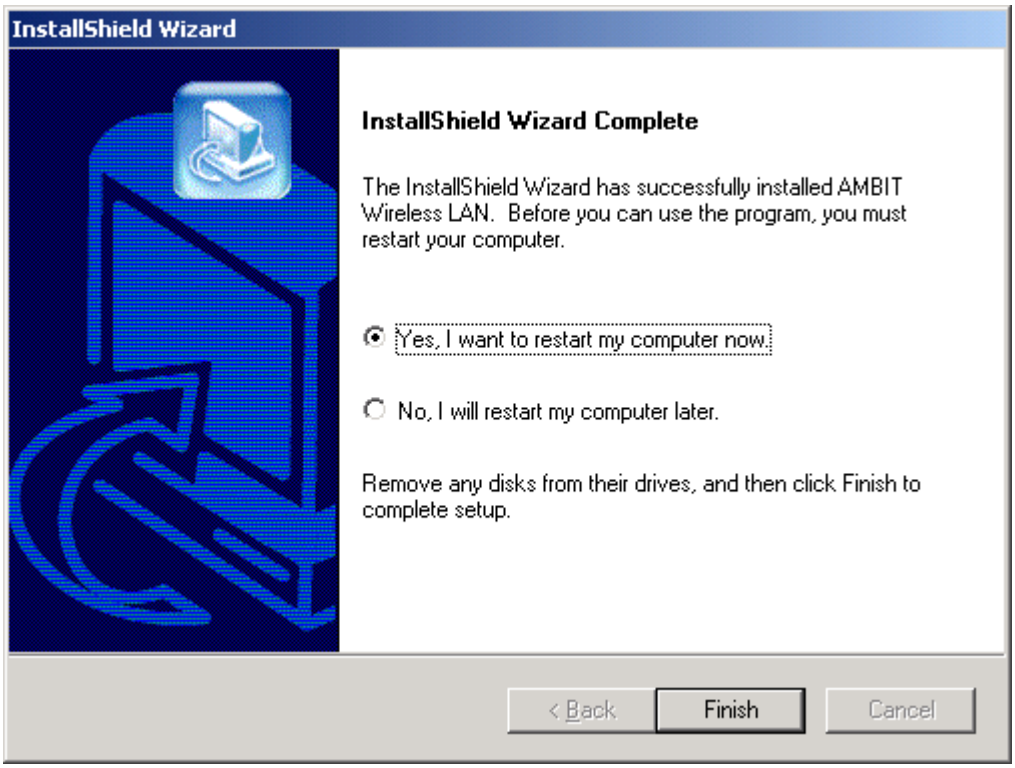
3. Wait for the un-installation to do its work.



4. Click ‘Finish’ to complete the un-Installation.



5 If you want to restart your computer now. Please remove any disks from any drives before your click ‘finish’. Then click ‘Finish’ to complete uninstallation.



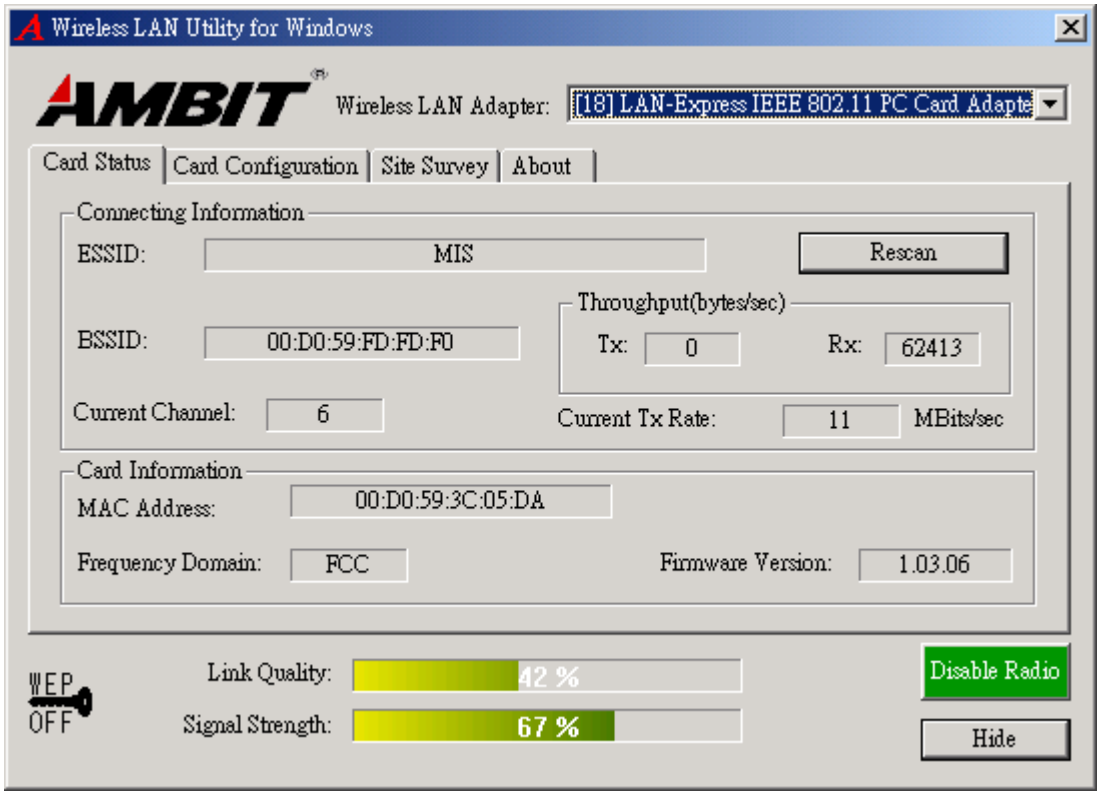
Chapter 4 Wireless Utility and Configuration

The following sections describe the Wireless Network Configuration Utility. This utility provides quick access and friendly interface to configure the card setup.

4-1 Windows 98/ME/2000 Wireless Utility

After installation is completed, a Wireless LAN Utility icon will appear in Desktop screen. Click it, then you will see the screen below. If you cannot find the icon, you can select “Start” ->”Program”->”Wireless LAN Configuration Utility” Icon.

Card Status



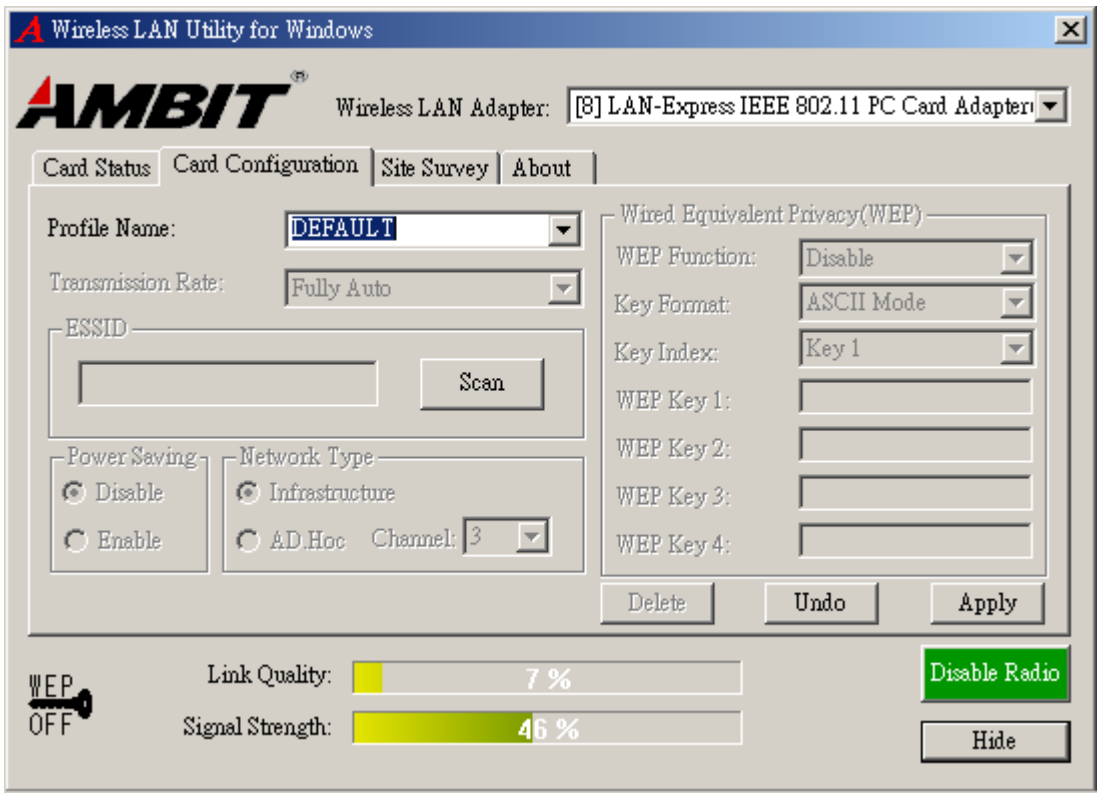
You can see the AP information that your card connected. In this page you also can find which channel and TX rate is used now, and Firmware Version , MAC Address and Frequency Domain.

ESSID: An acronym for Extended Service Set Identifier, ESSID is the unique name shared among all clients and Access Points in a wireless network. The ESSID must be

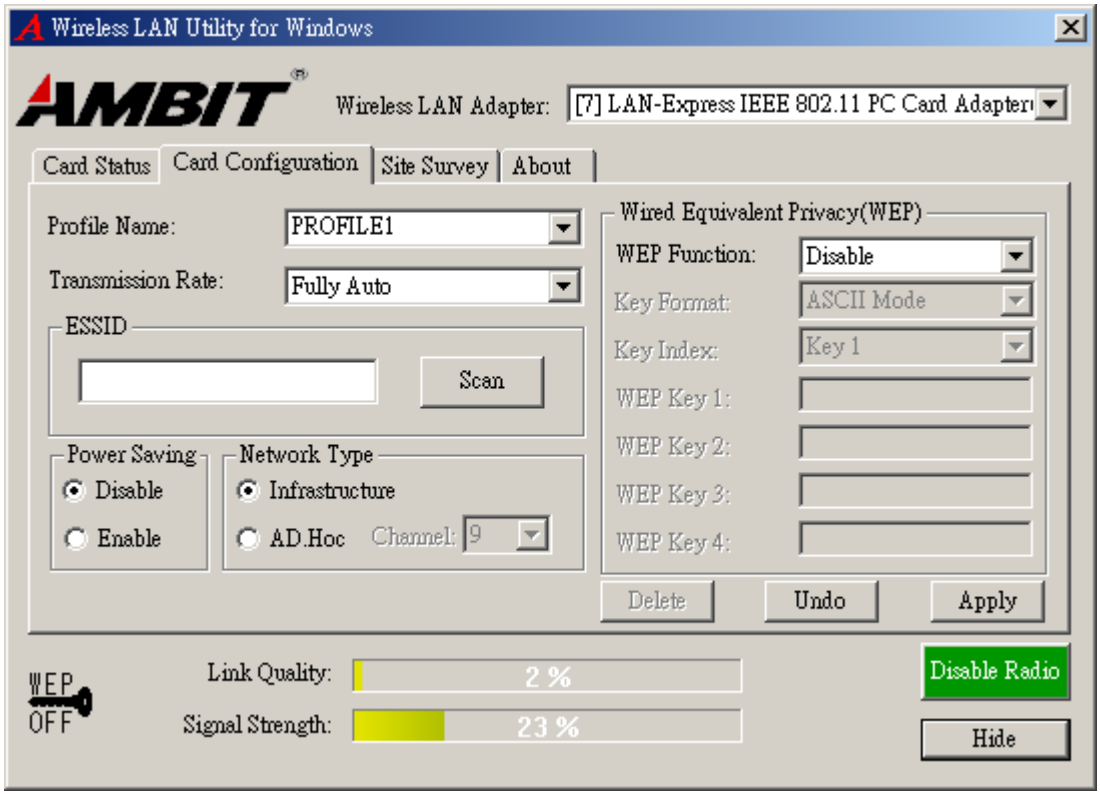
identical for all clients or Access Points participating in the same network. The ESSID is case sensitive and must not exceed 32 characters. Press ‘Rescan’ it will scan the specific ESSID that your profile set. If your profile set the ESSID to be ANY, then while you press ‘Rescan’, it will scan AP in the nearby area and choose the stronger one. From Link Quality and Signal Strength, you can tell the wireless transmission quality.

Card Configuration

If you have no idea how to fill in these columns, then you can choose the Profile Name: **Default** to connect AP nearby. Since it is a default setting and it cannot be changed the contents of these columns.



If you want to change this Card configuration, then select Profile Name as **PROFILE1**, then you can start changing these columns.



There are two network types:

Ad-Hoc: This mode is used for a simple peer-to-peer network. It offers file sharing between wireless clients without a wireless Access Point (AP).

Infrastructure: This mode allows a wireless LAN to be integrated into an existing wired network through an AP. Infrastructure type networks also permit roaming between Access Points while maintaining connection to all network resources. Infrastructure mode provides additional features, such as WEP security, power saving and extended range.

ESSID: You can either choose specific AP or connect to any AP in the nearby area.

Power Save: enable it, so it will be triggered when your computer system is inactive.

WEP Key: Wired Equivalent Privacy, WEP is an encryption scheme used to protect your wireless data communications. WEP uses a combination of 40-bit keys,128-bit keys to provide data encryption for your wireless network. AP and wireless card should use the same WEP key in order to communication.

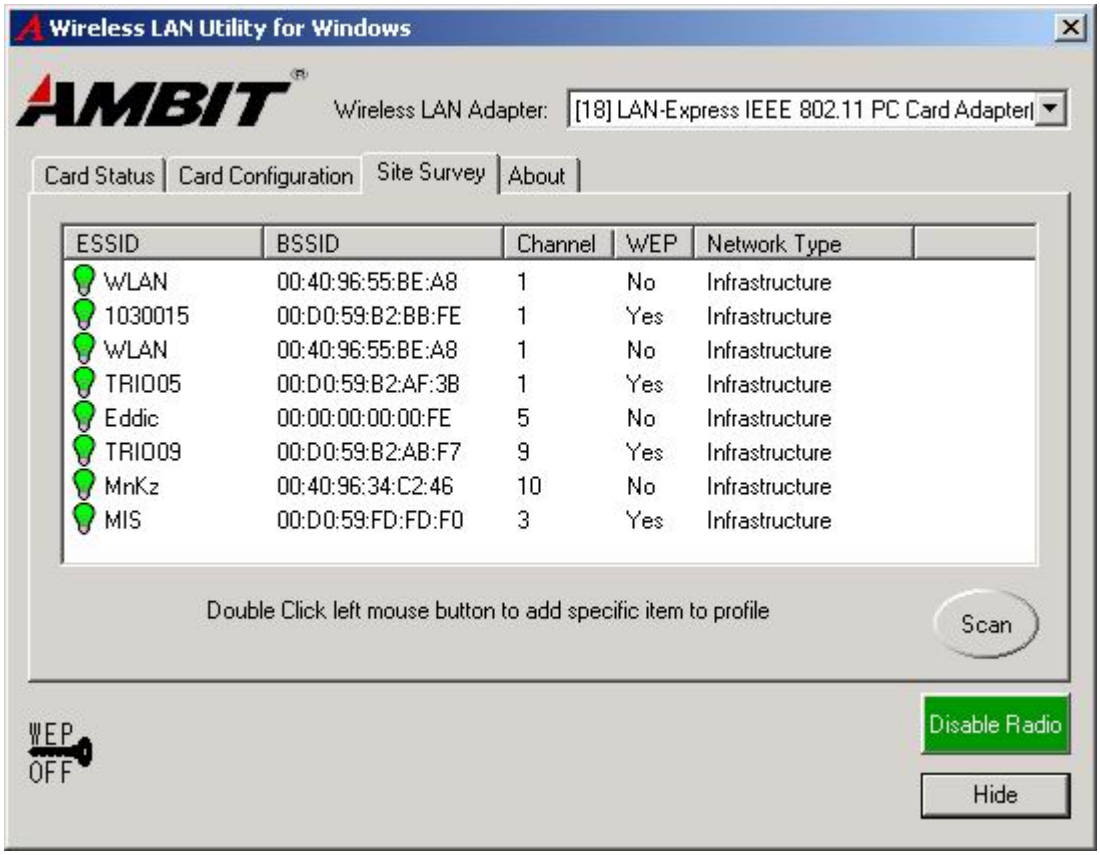
KEY Format: You can choose to enter ASCII Characters (0~9, a~z, A~Z) or Hexadecimal number (0~9, a~f, A~F)

Default Key: The current KEY you choose.

KEY1~4: If you choose 40-bit keys, then you must enter 5 ASCII Characters or 10 Hexadecimal numbers. If you choose 128-bit keys, then you must enter 13 ASCII Characters or 26 Hexadecimal numbers.

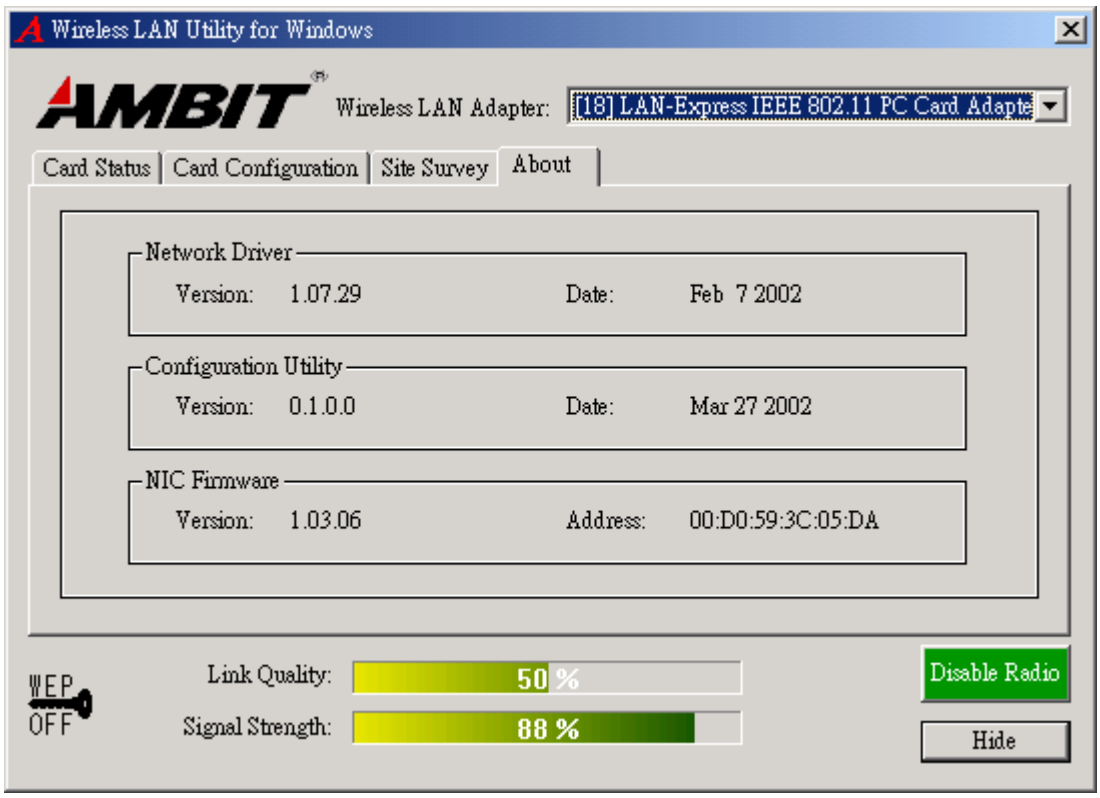
Site Survey

Use the Site Survey Tool. You can identify each AP or Adapter Card's current usage channel , with WEP key or not, Network Type and their signal strength.



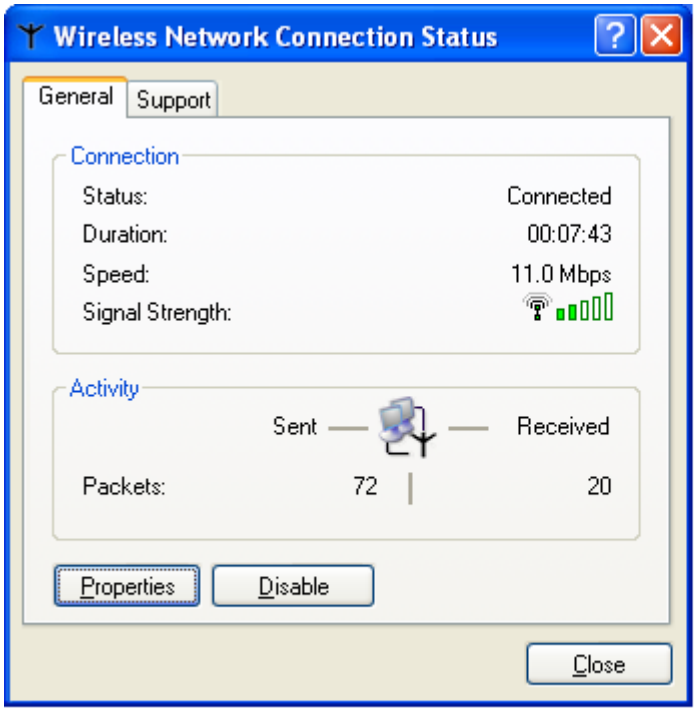
About

You will find the Network Driver, Configuration driver and NIC Firmware at About.



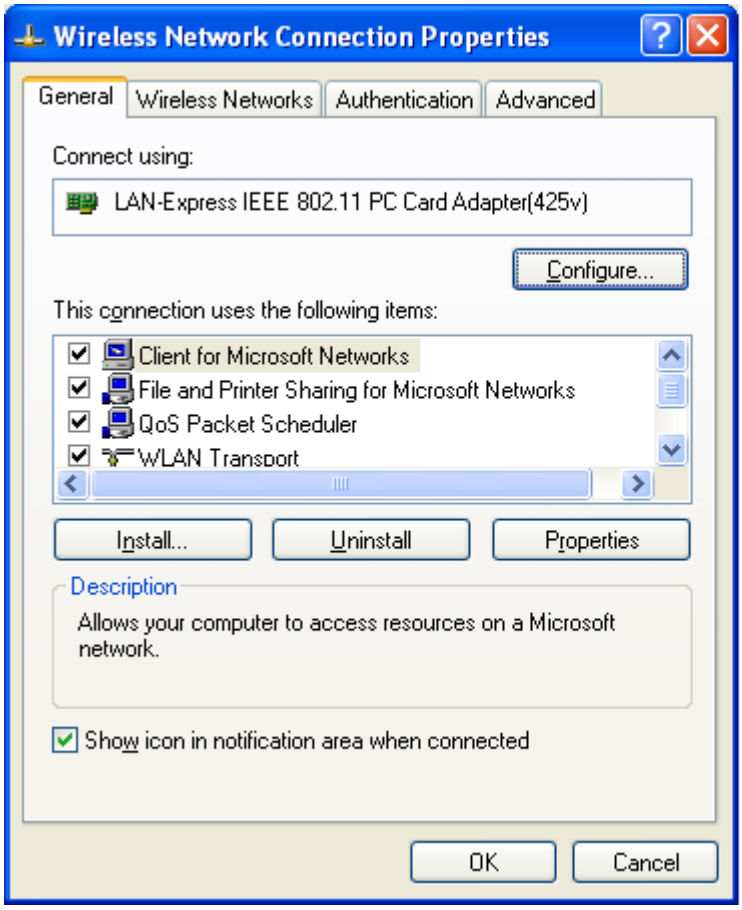
4-2 Windows XP Wireless Utility

1. To configure the wireless card setting, you can select Start\Settings\Network Connection in the Windows XP. Choose the wireless network connection, then you will see below screen. From this screen, you can see wireless connection status and wireless signal level.

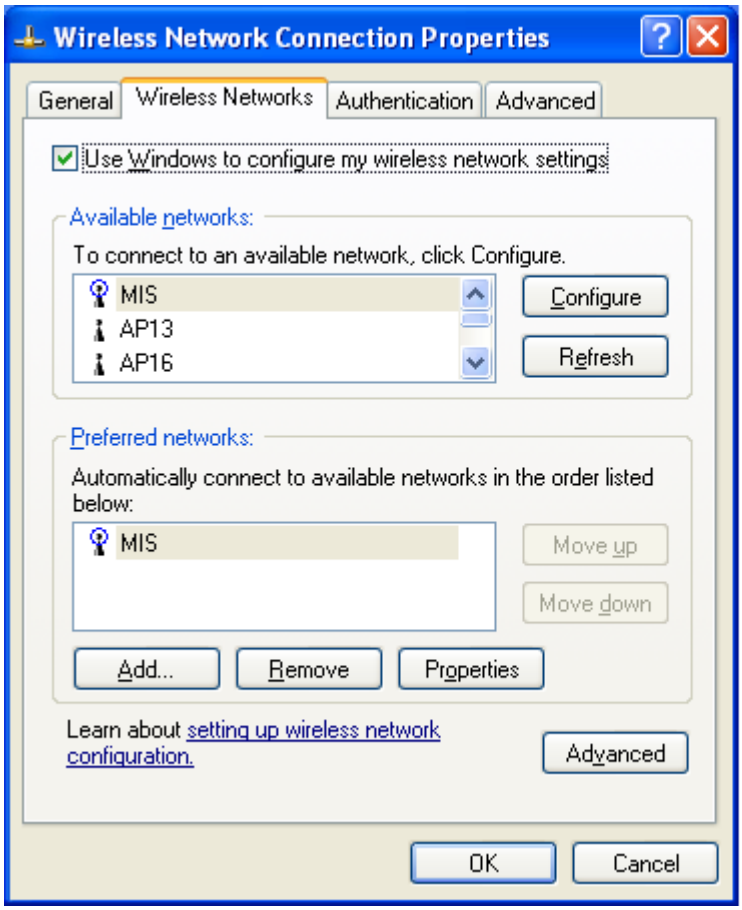


2. Select ‘Properties’ in the above screen. The following windows will show up.

In ‘General’ page, Wireless LAN card information and networking protocol have been displayed. Extra networking protocol can be installed in this page.



3. Select Wireless Networks page, you can see available wireless networks in your nearby area. You can add your preferred wireless Access Point to your list, so your wireless card will search for specific wireless networks.



Configure

To connect to an existing access point (infrastructure) network, under Available networks, click the network name, and then click ‘Configure’ to setup wireless security and data encryption.

Reflesh

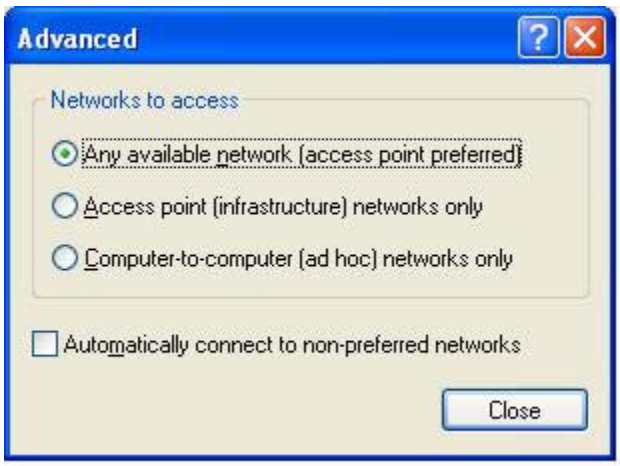
To update the list of available networks that are within range of your computer, click Refresh.

Add

To connect to an access point (infrastructure) network that you know is available but that does not appear under Available networks, under Preferred networks, click Add. In Wireless Network Properties, specify the network name (Service Set Identifier).

Remove

To remove a wireless network from the list of preferred networks.



Advanced

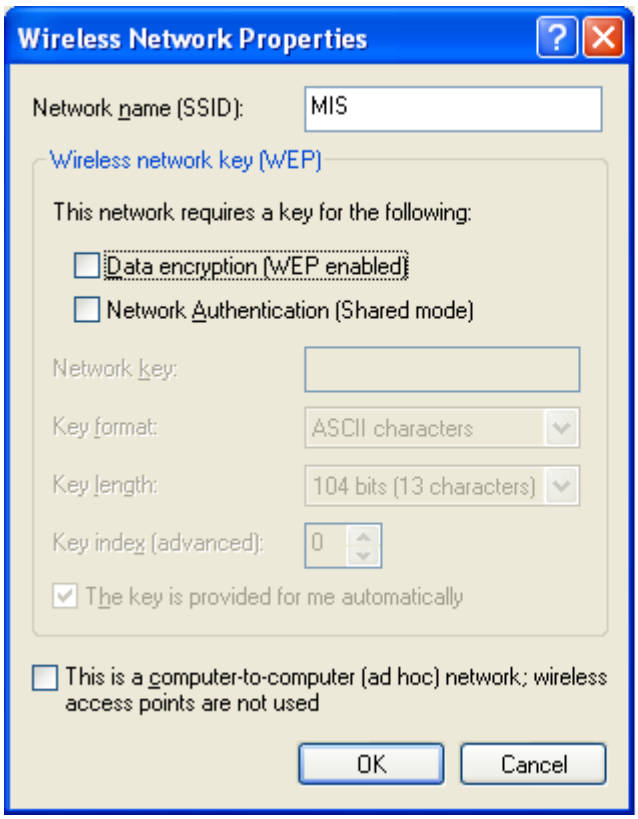
*If your network are configuring to a computer-to-computer (ad hoc) network, select ‘Computer-to-computer (ad hoc) network only’.

*If you want to connect to a computer-to-computer and access point (infrastructure) networks are within range of your computer, click ‘Access point (infrastructure)network only’.

*If you want to connect to a computer-to-computer (ad hoc) network and both computer-to-computer and access point (infrastructure) networks are within range of your computer, click ‘Any available network (access point preferred)’.

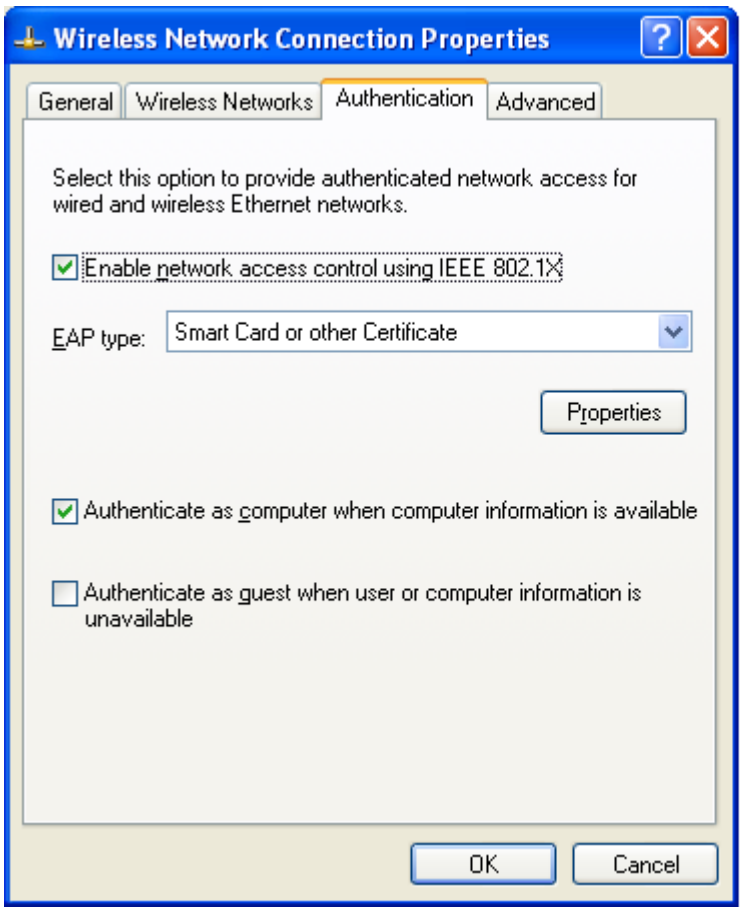
To automatically connect to available networks that do not appear in the Preferred networks list, click Advanced, and then select the Automatically connect to non-preferred networks check box.

Define your network name (SSID) in the following windows, so your can join a specific wireless network. Check AP has WEP on or not. You wireless network will need to have same WEP setting with AP in order to communicate. If your wireless network don't have any AP, check the **'This is computer-to computer (ad-hoc) network; wireless access points are not used'**

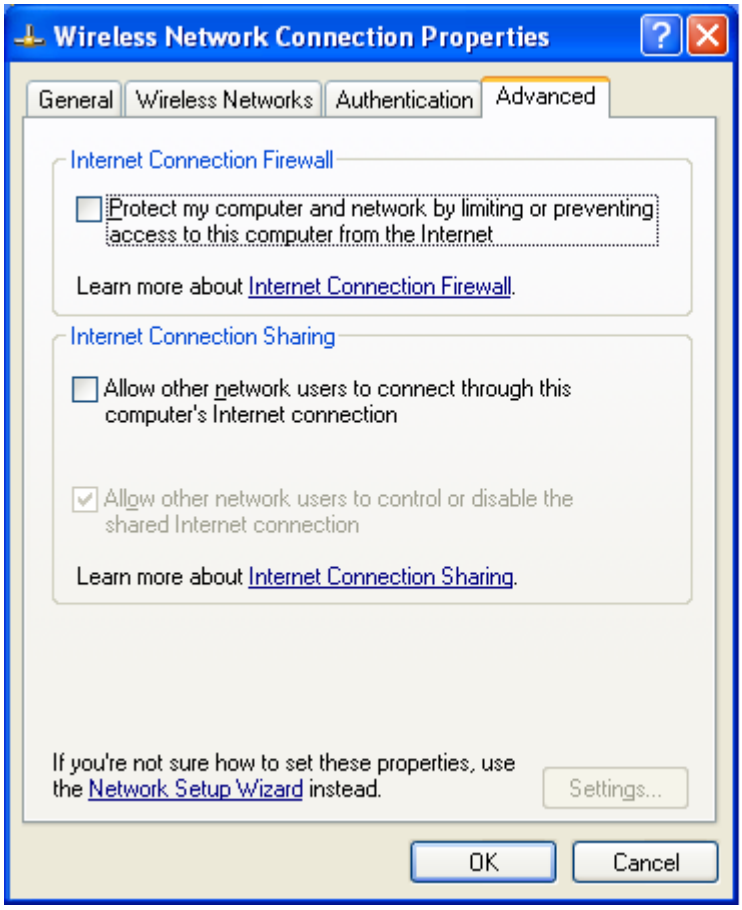


This window provides authentication via 802.1X. 802.1X, an IEEE standard that provides an authentication framework for 802-based LANs. 802.1X takes advantage of an existing authentication protocol known as the Extensible Authentication Protocol. 802.1x, giving someone secure, encrypted, wireless access on a Microsoft network will be as easy as setting a flag on the users domain account.

What does this mean for the Home Network user?
802.1x will ensure that if and when you make the change over to Wireless Ethernet, your neighbor will not be able to access your wireless LAN!



The ‘Advanced’ window offers Firewall and Internet Connection Sharing functions. Depends on your networking environment, you can select below functions.



Appendix A Troubleshooting

Problem Solving

1. My computer does not recognize the wireless network card.

Solution:

- The wireless network card is not properly inserted into the Mini-PCI slot.
- Ensure that the wireless network card has been inserted into an available Mini-PCI slot.

2. The wireless network card does not work properly.

Check and Solution:

- Insert the Mini-PCI card into Notebook's slot again. A beep should be heard if the card properly inserted.
- The Activity LED indicator is active if the card is properly connected.
- Right click on "My Computer" and the select Properties. Select the device Manager and click on the Network Adapter. You will find "LAN-Express IEEE 802.11 Mini-PCI card" if it is installed successfully. If you see the Yellow Question Mark besides the wireless network card, then the wireless card is not properly installed. Please check below:
  - Check if your Notebook has a free IRQ
  - Check that you have inserted the right card and have installed the proper driver.
  - Try to remove driver, install again, and then reboot your computer.

- Confirm the station is configured the same ESSID as the same wireless network.
- Check your channel is the same as AP setting. Try to use 'Rescan' function in the card status page after launch Wireless Utility.

Appendix B Glossary

Access Point - An internetworking device that seamlessly connects wired and wireless networks together.

Ad-Hoc - Ad-Hoc is a peer- to-peer wireless network without Access Point. A group of wireless clients consistent an independent wireless LAN.

Backbone - The core infrastructure of a network, the portion of the network that transports information from one central location to another central location. The information is then off-loaded onto a local system.

BSS - Stands for “Basic Service Set.” An Access Point associated with several wireless stations.

ESS - Stands for “Extended Service Set.” More than one BSS can be configured as an Extended Service Set. An ESS is basically a roaming domain.

Ethernet - A popular local area data communications network, originally developed by Xerox Corp., which accepts transmission from computers and terminals. Ethernet operates on 10/100 Mbps transmission rate over shielded coaxial cable or over shielded twisted pair telephone wire.

Infrastructure - An integrated wireless and wired LAN is called an Infrastructure configuration.

PCMCIA - Personal Computer Memory Card International Association, which develops standards for PC cards, formerly known as Mini-PCI cards, are available in three “types” which are about the same length and width as credit cards, but range in thickness from 3.3 mm (Type I) to 5.0 mm (Type II) to 10.5 mm (Type III). These cards can be used for many functions, including memory storage, as landline modems and as wireless LAN.

Roaming - A function that allows one to travel with a mobile end system (wireless LAN mobile station, for example) through the territory of a domain (an ESS, for example) while continuously connecting to the infrastructure.

Appendix C Specifications for Wireless Card

- **Frequency Band: 2400 ~ 2483.5MHz (for US, Canada, and ETSI)**
  2400 ~ 2497MHz (for Japan)
- **Modulation TYPE: CCK, BPSK, QPSK**
- **Operating Channels:**
  11 channels (US, Canada)
  13 channels (ETSI)
  14 channels (Japan)
- **Radio Technology: Direct Sequence Spread Spectrum**
- **Data Rate: 1 / 2 / 5.5 / 11 Mbps**
- **Output Power: > +13dBm**
- **Receive sensitivity: Min. -76dBm for 11Mbps; Min. -80dBm for 5.5/2/1 Mbps ;(@BER 10E-5)**
- **Antenna Type: Printed antenna**
- **Power Consumption : 5 V**
  TX mode 350 m A (Max.)
  Rx mode 230 m A (Max.)
- **Package : PCMCIA Type II**
- **Certification: ARIB STD33 & T66**
- **Driver : Windows 98/2000/ME/XP**

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 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.

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:

1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2) 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.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: “Contains TX FCC ID: MCLT60H813”.

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.