WLAN Card

User Manual

Version: 0.1

FCC Class B Radio Frequency
Interference Statement

FEDERAL COMMUNICATIONS COMMISSION

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.

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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:

1.   Reorient or relocate the receiving antenna.

2.   Increase the separation between the equipment and receiver.

3.   Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4.   Consult the dealer or an experienced radio/television technician for help.

The user should not modify or change this equipment without written approval from Fi Win, Inc. Modification could void authority to use this equipment.

Notice 1:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2:

To comply with the FCC RF exposure compliance requirements, no change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void user's authority to operate the device.

Table of Contents

1. Introduction

WLAN Management Utility supports the following:

- 802.11b WLAN Configuration
- Windows 98SE / ME / 2000
  (In Windows XP, we use its default WLAN Utility)

2. Installation

2.1 Overview

To establish your wireless network connection, the following steps should be executed.

1. Install the software using the installation CD.

2. Insert the Wireless LAN card.

This product is designed for Windows 98SE, Millennium, 2000, and XP. The installation procedure for each platform is similar. Please follow the installation wizard that provided by your system install the software.

2.1.1 WLAN Driver/Utility Installation

1.   Insert the installation CD into your CD-ROM drive. The setup program will start
automatically.

2.   Click "Next" to go to next screen.

3.   Select the destination folder. To install to the default folder as shown below, click "Next" to
go to the next screen.

4.   During installation, Driver and Utility files will be copied to your system directory.

5.   Select "No" and then click "Finish" to complete the installation (It is recommended to select
"Yes" for Windows 98).

6.   The shortcut   will appear on your desktop. By click this icon, you can run the Utility
program.

   You will also find a shortcut "WLAN Manager" at Start\Programs\Startup Menu as shown
below:

7.   After click the shortcut, an icon will appear on the bottom right of the screen. Right click
that icon and select open, the WLAN Utility will pop-up on the screen.

2.1.2 Install the WLAN card
   *The WLAN driver and utilities are included on the accompanying installation CD.
Please follow the installation procedures in Section 2.2. (Your WLAN card will not work
properly if the driver and utilities are not installed correctly).*

   *Make sure that there is an empty WLAN slot (for example PCMCIA, USB, mini-PCI) for
WLAN card.*

   Insert the WLAN Card and the installation will start automatically. When the WLAN card
setup task is completed, you can run the WLAN Utility.

2.2 Utility Startup Configuration Details

WLAN Card has its own management software. Users can control all functions provided by the application named WLAN Utility. The Utility icon will appear on the working bar by double clicking the WLAN Utility shortcut on your desktop.

Three colors are used to describe the status of connection and it is shown on the right of working bar. Green indicates excellent connection. Yellow indicates the connection has poor quality (Yellow) and Red means no connection. Double click the icon and the WLAN utility will be opened.

WLAN Utility contains five major functions. Each function is described below:

- **Status**: provide the information of the current wireless connection.
- **Profile**: allow users easily configure different settings for each profile.
- **Survey**: support site-survey tool to list the active access points that are within the range of your computer.
- **Statistics**: provide statistical counters of data transmission and reception.
- **About**: provide valuable information about the firmware and software version, MAC address, and so on.

2.2.1. Setting

This page is aimed at the basic setting of WLAN. You can change the configuration by click "Apply" to the following items.

- Profile Name: The name of the profile that is currently in use.
- Mode: If you want to connect with an access point, choose "Access Point". If you have more stations and just want to set them as peer to peer local network, choose "Peer to Peer".
- SSID: It is the group name that will be shared by every member of your wireless network .You will only be able to connect with an Access Point (AP), which has the same SSID. Note that the SSID will be the continuous string excluding blank and case sensitivity.
- Channel: It shows radio channel numbers used for networking. The Channel can be changed only under the Ad-Hoc Mode. If the Mode is Infrastructure, this

parameter will not be active. Infrastructure Client nodes will always go to the same channel as their AP.

Wired Equivalent Privacy

- If you would like to enable WEP, click the encryption button.

- You may desire additional measure of security in your wireless network, which can be achieved by using the Wired Equivalent Privacy (WEP). Follow the steps below to set your WEP: Select the data privacy algorithm you want (64 or 128 bit WEP type). If you select 64 or 128 bit WEP type, 4 sets of WEP key will be generated; if you select disable , then profile encryption will not active.

Country

- Every country has different legal frequency range. Please choose proper country setting. Under the infrastructure mode, the setting value will be determined by the Access Point and can't be set by users.

2.2.2. WLAN Management Utility Introduction

1. Status Tab

The **Status** tab provides information on the current profile, if any, being used in the wireless connection. The information listed on the Status tab is indicated below. Figure 1 shows the screen layout of the **Status tab.**

- **Profile Name**
  The name of profile currently in use
- **Connection Status**
  SSID
  The name of the **SSID (Service Set Identification)** associated with the
  profile.
  State
  This field is used to display the current state of the driver. The states

field can be the following:

- **Associated** - Normal flow of operation between stations in Ad-Hoc mode
- **MAC address** of the access point - normal flow of network operation between the access point and stations in the infrastructure mode.
- **Not Associated** - means the node cannot detect any ad-hoc station or access point within the range.
- **Scanning** - Searching for available access point or active node.
- **Driver Not Loaded** – means the driver of wireless adapter is not currently loaded on the system.

Mode

The mode can be either "**access point**" or "**peer-to-peer**":

- **Access Point** – This mode of operation requires the presence of an access point. All communication is done via the access point, which relays packets to other wireless clients in the BSS as well as to nodes on a wired network such as Ethernet.
- **Peer-to-Peer** – This is the peer-to-peer mode of operation. All communication is done from client to client without the use of an access point.

Channel

It shows the channel being used, if any, for this wireless connection. The communication channel ranges from **1 to 11(US/FCC, Canada/RSS)**, **1 to 13(Europe/ETSI) or 1 to 14(Japan/TELEC)**

Current Tx Rate

It shows the transmit rate being currently used for an active connection. The value is masked when the state shows the "scanning" message.

Power Saving Mode

Indicate the power saving mode is being enabled or disabled. Power saving mode can reduce the power usage by temporarily disconnecting wireless connections when the connection is idle.

Figure Status indication area

There are two modes in the status indication area. One is **Access Point** and the other is **Peer-to-Peer**. At the same time, each mode allows users to opt the WEP enable or WEP disable. When encryption is enabling, wireless client shall offer the matched WEP key for key verification to connect the access point; otherwise, the connecting will fail.   According to the potential fact that WEP key mismatch case may happen, WCM offer a sense of figures, which can help to point out the status. The detailed description with the matched figure will be shown as below.

Access Point / WEP disable

	The receiver can receive **excellent** signals. Encryption is enabled and matched each other.
	The receiver can **not receive** any AP's signal. Encryption is enabled and matched each other.

Peer-to-Peer / WEP disable

	The receiver can receive **excellent** signals. There is no encryption in use.
	The receiver can **not receive** any AP's signal. There is no encryption in use.

Peer-to-Peer / WEP enable / WEP match

	The receiver can receive excellent signals. Encryption is enabled and matched each other.

	The receiver can not receive any AP's signal. Encryption is enabled and matched each other.

2. Profile Tab

The **Profile** tab is used to configure the various profiles available to you for wireless connections. The Profile tab contains some of the same fields as the Status tab, but unlike the Status tab, all of the fields in the **Profile** tab are alterable. Figure 2 shows the screen layout of the profile tab.

Profile Name

Allow to give a name to the profile. Any user can add **9 different profiles at most** if he wishes. After assigning a new profile name and complete related fields shown below it, you then can press Apply to save the profile. Click "Apply" or "OK" to activate the options that you have set.

Defaults

Pressing this button restores each field in the panel to its default value. The default value for each field is as below.

SSID

The identification of BSS (Basic Service Set) is associated with the current profile. The default value is "ANY". This allows your wireless client to automatically associate to any access point in the vicinity of your wireless client.

Mode

This field allows you to select from a list of supported network mode. The modes displayed will have "**Access Point**" and "**Peer-to-Peer**". The default value is "Access Point".

Transmission Rate

The transmission rate is the rate at which the data packets are transmitted by the client of the access point. You can set this to **1Mbps, 2Mbps, Auto 1 or 2Mbps, 5.5Mbps, 11Mbps**, **or Fully Automatic**. The default value is "Fully Automatic".

Peer-to-Peer Channel

Changing the channel is only effective in **Ad-Hoc** networks. Networking operating infrastructure mode can automatically scans for a channel. Be aware that when the peer-to-peer mode is selected, be sure to set your wireless stations with the same channel.

Power Saving Mode

The field allows you to set enable or disable the power saving mode. Power saving mode can reduce power usage by temporarily disconnecting wireless connections when the connection is idle. The default value is "Disabled".

2.1 Advanced

RTS Threshold

The field allows you to set enable or disable. When the field is set to Enabled, you can adjust the value between **0 to 3000**. RTS threshold is a mechanism implemented to prevent the "**Hidden Node**" problem.   "Hidden Node" is a situation in which two stations are within range of the same access point, but are not within range of each other. Thus, it provides a solution to prevent data collisions. Enabling RTS Threshold may cause redundant network overhead that could negatively affect the throughput performance.

Fragment Threshold

The field allows you to set enable or disable. When the field is set to Enabled, you can adjust the value between **256 to 2346**. Fragmentation mechanism is used for improving the efficiency when **high traffic flows** along in the wireless network. If your wireless devices often transmit large files in wireless network, you can enable the Fragmentation Threshold and the mechanism will **split the packet** to send.

2.2.2 Encryption

The **Encryption** tab is used to equip an additional measure of security on your wireless network, which can be achieved by using **WEP (Wired Equivalent Privacy)** encryption. To prevent unauthorized wireless stations from accessing data transmitted over the network, WEP can support high secure data encryption. WEP encrypts each frame transmitted through the radio by using one of the **Keys** entered from this panel. When an encrypted frame is received, it will only be accepted if it decrypts correctly. This will only happen if the receiver has the same **WEP Key** used by the transmitter. The **Encryption** tab contains some fields as below.

Encryption [WEP security]

The field allows you to select Disabling, 64-bit and 128-bit. When setting 64bit, or 128 bits, it means WEP security is used.

WEP Key

You can choose "**Create Keys Manually**" or "**Create Keys with Pass-phrase**" method to enter encryption keys. It allows the entry of **four keys for 64-bit and 128-bit key** according to WEP function select. To be written to the driver and registry, each key must consists of correct digits and letters allowed. The detailed descriptions will be shown as below for these two kinds of methods:

Create Key Manually

For 64-bits encryption:

- Five alphanumeric characters in the range of "a-z", "A-Z" and "0-9". (e.g. MyKey)
- 10 digit hexadecimal values in the range of "A-F" and "0-9". (e.g. 11AA22BB33).

For 128-bits encryption:

- 13 alphanumeric characters in the range of "a-z", "A-Z" and "0-9". (e.g. WEPencryption).
- 26 digit hexadecimal values in the range of "A-F" and "0-9". (e.g. 11AA22BB33123456789ABCDEFF)

Create Keys with Pass-phrase

A Pass-phrase can be entered which is used as a "seed" to randomly generate the four keys. This saves considerable time since the same keys must be entered into each node on the wireless network.

Key1, Key2, Key3, Key4

These four fields can be used to manually enter the keys. This may be necessary if you wish this node to match keys which is set in a different vendor product. These fields also display the keys when they are generated using a Pass-phrase.

Use WEP key

This field updates the driver with the four keys displayed in Key1 through Key4. These keys are also written to the registry for permanent storage.

3. Survey Tab

The **Survey** tab supports powerful Site-Survey tool to discovery all active wireless devices in the radio range. While selecting this wireless device displayed on the screen, users can press "**Connect**" button to quick connect the wireless device chosen by users and simultaneously modify the **"Default" profile** automatically. If users want to update the survey result, they can press "**Rescan**" button again. Each row of the information contains the following columns:

Number of Discoveries

The total number of wireless LAN devices discovered by this Site-Survey. ST refers to the discovered device by which the client device is correctly connecting to.

SSID

The ESS ID stands for Extended Service Set Identification, and it presents the SSID of the access point. In the peer-to-peer device discovered, all clients should share the same SSID for communication.

BSSID

The BSS ID stands for Basic Service Set Identification. During infrastructure mode, it represents the MAC address of the access point.

Mode

The discovered device is an access point (AP) or a peer-to-peer (P2P) device.

WEP

The discoverable device is encryption enable or disable in this column.

Signal Level

The signal measurement for each discovered device within the radio range. A higher percentage means that this discovered device has stronger signal strength. If the device you want to connect to has lower signal level, you can move it closer to this device or vice versa.

Channel

This field shows the current channel used by the discovered device.

4. Statistics Tab

The **Statistics** tab is used to monitor **TX and RX traffic** of the wireless network. It also offers the detailed information on error wireless packets that the other wireless LAN device transmits and receives. Each time users switch to this page will trigger the statistics to start counting from zero. Users can press "**Reset**" button if they want to restart the counter again. If users want to temporarily freeze the current showing counters, they can press "Pause" button to do that easily. The detailed **Statistics** information contains some fields as below.

TX Count
Bytes

The total bytes number of any kind of wireless packets.

Fragments

The total number of successfully delivered/received MPDUs of type Data or Management

Unicast Packets

The number of wireless unicast (point to point) TX packets.

Single Retries

The number of MSDUs successfully transmitted after one (and only one) retransmission.

Multiple Retries

The number of MSDUs successfully transmitted after more than one retransmission.

Retry Limit Exceeded

The number of times a MSDU was not transmitted successfully because the retry limit (7 for short frame and 4 for long frame) was reached, due to no acknowledgment or CTS received.

Deferred Transmissions

The number of MSDUs for which one or more transmission attempt(s) was deferred to avoid a collision.

RX Count

Bytes

The total bytes number of any kind of wireless packets.

Fragments

The total number of successfully delivered/received MPDUs of type Data or Management.

Unicast Packets

The number of wireless unicast (point to point) RX packets

WEP Undercryptable

The number of received MPDUs, with the WEP subfield in the Frame Control field set to one, that were discarded because either it should not have been encrypted, or due to the receiving station not implementing the privacy option.

No Buffer Discard

The number of received MPDUs that were discarded because of the lack of buffer space on the NIC

5. About Tab

The About tab is used to show Frequency Domain, Wireless Client Management Utility version, Serial Number and MAC Address of this Network Interface Card, Network Interface Card Driver version and Network Interface Card firmware version. Users need to use these version numbers when reporting their problems to technique support.

Frequency Domain

Frequency range for country

Utility Version

WLAN Management Utility version

Driver Version

Device Driver version and date

Primary Firmware Version

Primary Firmware version and file name.

Secondary Firmware Version

Secondary Firmware version and file name.

Network Card Serial Number

NIC serial number

Network Card MAC Address

NIC MAC address

2.3 Uninstall the WLAN Utility / Driver

1. To exit the WLAN Utility, you should click the right bottom on the
Utility icon in the working bar and select "Close".

2. To uninstall the WLAN Utility and Driver, you can move to Start –
Programs –WLAN Management Utility, and click "Un-installation".

3. You will be asked if you want to uninstall the WLAN Utility and all of its components.

4. Click "Remove" option and " Next" button.

5. Click "OK" to remove or click "Cancel" to exit.

4.   Performing "uninstall" option.

6.   Now the un-installation is completed. Please click "Finish".

3. Troubleshooting

If you encounter some problems installing the WLAN PC card, refer to below the
procedure after you have installed the card.

a. Check the Various Properties of the Card

Click the "Control Panel" and check whether there is a WLAN card in one of the
sockets or not.

If there are yellow signs on network card, please check the followings:

    1) Check if your notebook supports 3.3V Card.

    2) Check that you have inserted the right card and have installed the proper driver.

    3) Check if your notebook has installed some other wireless LAN card driver.

If you do not know the reason why, please contact agency that provide you WLAN card.

b. Plug device first and then install the driver/ Utility

1. When you plug device in USB port, operating system will detect automatically.

2. Search the driver.

3. Select CD-ROM drives and click Next.

4. Driver installation is completed.

5. If you want to install the Utility, double click the in CD-ROM.

c. If your notebook or PC has default WLAN card, it cannot configure WiFi WLAN card

Change the setting of TCP/IP protocol component inside the content of Local Area Connection (in Network Neighborhood).

--The End --