Wireless LAN 11Mbps USB

User Manual

Version 1.1 – March. 2001

Copyright statement

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.

FCC Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this 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.

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R&TTE Compliance Statement

This equipment complies with all the requirements of the DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of 9 March 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE).

The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8, 2000.

Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this manual and of the computer manufacturer must therefore be allowed at all times to ensure the safe use of the equipment.

EU Countries intended for use

The ETSI version of this device is intended for home and office use in Austria, Belgium, Denmark, Finland, France (with Frequency channel restrictions), Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden and United Kingdom.

The ETSI version of this device is also authorized for use in EFTA member states Iceland, Liechtenstein, Norway and Switzerland.

Contents

2. Introduction

Thank you for purchasing your Wireless LAN, Wireless LAN 11 Mbps USB. This manual will assist you with the installation procedure.

The package you have received should contain the following items:

- Wireless LAN 11 Mbps USB
- User manual
- Diskette or CD rom containing Wireless LAN Management utility and drivers
  Note: if anything is missing, please contact your vendor

The diskette contains the drivers and the program **Configuration Utility** that is used for managing the Wireless LAN Card and establishing the wireless connection with your Local Area Network.

3. Wireless LAN Basics

Wireless LAN (Local Area Networks) systems offer a great number of advantages over a traditional, wired system. Wireless LANs (WLANs) are more flexible, easier to setup and manage and often more cost effective than their wired equivalence.

Using radio frequency (RF) technology, WLANs transmit and receive data over the air, minimizing the need for wired connections. Thus, WLANs combine data connectivity with user mobility, and, through simplified configuration, enable movable LANs.

With wireless LANs, users can access shared information without looking for a place to plug in and network managers can set up or augment networks without installing or moving wires. Wireless LANs offer the following productivity, convenience and cost advantages over traditional wired networks:

- Mobility - Wireless LAN systems can provide LAN users with access to real-time information anywhere in their organization. This mobility supports productivity and service opportunities not possible with wired networks.

- Installation Speed and Simplicity - Installing a wireless LAN system can be fast and easy and can eliminate the need to pull cable through walls and ceilings.

- Installation Flexibility - Wireless technology allows the network to go where wires cannot go.

- Reduced Cost-of-Ownership - While the initial investment required for wireless LAN hardware might be higher than the cost of wired LAN hardware, overall installation expenses and life-cycle costs will be significantly lower. Long-term cost benefits are greatest in dynamic environments requiring frequent moves, adds, and changes.

- Scalability - Wireless LAN systems can be configured in a variety of topologies to meet the needs of specific applications and installations. Configurations are easily changed and range from peer-to-peer networks suitable for a small number of users to full infrastructure networks of thousands of users that allows roaming over a broad area.

4. Installation for Windows platform

The following section will assist you to in installing wireless LAN USB successfully. You will first install software (driver) and then connect the Wireless LAN USB, and finally set the network properties to accommodate resource sharing and select the type of wireless network that you wish to install. The Wireless LAN can easily be installed and used, without bothering to connect cables for keeping your computer to use network resources, as in case of wired LAN.

4.1. Installation Overview

Here are some steps you will perform in establishing your wireless network connection:

- Install the Access Point at first. AP is needed in case of Infrastructure network mode.
- Install the software using the Installation Diskette or CD rom.
- Install the Wireless LAN USB.
- Install the network protocol(s) required to communicate on your network. Most likely you will need the TCP/IP protocol.

4.2. Installation Procedure for Windows 98 / ME

Please follow the following steps one by one in order to install the WLAN USB successfully.

1. Power on your computer and allow **Windows 98 / ME** to load fully.

2. Be sure that there is no **USB** connect to computer yet.

3. Insert the given **Installation CD** and then click on the **Setup.**

4. Accept the license agreement.

5. Give the path of the destination folder. To set the path of your choice click on **Browse** and then click **Next.**

6. Setup will add program icon to the Program Folder. You may type a new folder name, or select one from the existing Folder list..

7. It takes a few seconds for copying the utility files and then clicks on Finish. Then connect **WLAN USB**   to PC.

8. Then wizard will found new hardware **Wireless LAN 11 Mbps USB Adapter,** choose **Display a list of the known drivers for this device so that I can choose a specific driver** , then click on **Next** .

9. Select Hardware types, click on **Next,** then one click **Wireless LAN 11 Mbps USB**, click **Have disk** then enter the path name **E:** (where E is the CD rom drive of your Notebook or PC)**.** It copies the driver files.

10. Right click on the **Network Neighborhood** using the mouse.

11. Select **Properties** from the pop up menu. The network box appears and you see three main tables: **Configuration**, **Identification**, and **Access Control**.

12. Click on the **Configuration** tab and then click on the **Add** button. Select Network Component Type box appears. Click on the **Protocol** the click the **Add** button.

13. Select Network Protocols box appears. From the list of manufactures, click on **Microsoft**. From the list of network protocols list, select **NetBEUI**, then click **OK**.

14. The **NetBEUI** protocol is now installed. After clicking on **OK** return back to Network Component Type box.

15. Repeat the step 13 and 14 to add IPX/SPX protocol.

16. Repeat the step 13 and 14 to add TCP/IP protocol.

17. Click on the **TCP/IP** option for setting the **IP** address for your computer. You can select either **Static** or **DHCP** setting. If you use the static IP setup then enter the **IP** value, **Subnet** masking, **DNS**, **Domain**/ **Workgroup** name, and **Gateway** Address values. After setting these parameter appropriately, click OK to return to Network Component Type and you can select the **File and Printer Sharing** options as well as the **Access** to your computer like other users connected to that network by setting the computer sharing options. Click on **OK**.

18. Screen message **do want to restart your Computer** will pop up. Select **Yes**. It will shut down your computer and will restart.

Important: **Restart your computer to make the changes effective before you reinstall the driver.**

4.3. Uninstallation Procedure for Windows 98

If you want to uninstall the **11Mbp Wireless LAN s USB** under Win 98, please follow the steps as below:

1. Start →Setting → Control Panel → Add / remove → remove **11Mbps Wireless LAN USB adapter.**
2. Start → Program → Windows Explorer → Disk C → Windows → INF file → other , then remove the USB inf file.
3. Start → Run → type " regedit " commend, → Local machine → Enum → USB → remove file "VID-03EB&PID7602".
4. Start → Run → type " regedit " commend, → Local machine → system → current control set → services→ Class → Net → remove USB file.
5. Start → Setting → Taskbar & Start Menu → Start Menu Program → remove → choose **11Mbps Wireless LAN USB** →remove**.**

4.4. Uninstallation Procedure for Windows ME

1. Start →Setting → Control Panel → Add / remove → remove **11Mbps Wireless LAN USB adapter.**
2. Click My Computer using right click of mouse → Properties → Device Manager→ Network adapter, then remove **11Mbps Wireless LAN USB adapter.**
3. Start → Run → type " regedit " commend, → Local machine → system → current control set → services→ Class → Net → remove USB file.
4. Start → Run → type " regedit " commend, → Local machine → Enum → USB → remove file "VID-03EB&PID7602".

Important: Restart your computer to make the changes effective before you reinstall the driver.

4.5. Installation Procedure for Windows 2000

Please follow the following steps one by one in order to install the Wireless-LAN 11Mbps USB successfully.

1. Power on your computer and allow **Windows 2000** to load fully.
2. Be sure that there is no **USB** connect to computer yet.
3. Insert the given **Installation CD** and then click on the **Setup.**
4. Accept the license agreement.
5. Give the path of the destination folder. To set the path of your choice click on **Browse** and then click **Next.**
6. Setup will add program icon to the Program Folder. You may type a new folder name, or select one from the existing Folder list..
7. It takes a few seconds for copying the utility files and then click on Finish. Then connect **WLAN USB** to PC.
8. Then wizard will found new hardware **11 Mbps Wireless LAN USB Adapter,** choose **Display a list of the known drivers for this device so that I can choose a specific driver** , then click on **Next** .
9. Select Hardware types **Network adapters**, click on **Next,** then one click **Wireless LAN 11 Mbps USB**, click **Have disk** then enter the path name **E:** (where E is the CD rom drive of your Notebook PC)**.** It copies the driver files.
10. Right click on the **My Network Places** using the mouse.
11. Select **Properties** from the pop up menu. Click **Local Area connection** →Properties
12. Click on the **TCP/IP** option for setting the **IP** address for your computer. You can select either **Obtain an IP address automatically** or set your own IP address. If you use the IP setup then enter the **IP** value, **Subnet** masking, **DNS** server, and **Default gateway** Address values. After setting these parameter appropriately, click OK to return to Network Component Type and you can select the **File and Printer Sharing** options as well as the **Access** to your computer like other users connected to that network by setting the computer sharing options. Click on **OK**.
13. Screen message **do want to restart your Computer** will pop up. Select **Yes**. It will shut down your computer and will restart.

Important: **Restart your computer to make the changes effective before you reinstall the driver.**

4.6. Uninstallation Procedure for Windows 2000

1. Right click on the mouse of **My Computer** → Properties, click Hardware tab → Device Manager

2. Click Network adapters, then remove 11Mpbs Wireless LAN USB.

3. Click Windows explorer → C:\ Program Files → remove 11Mpbs Wireless LAN USB.

4. Start → Run → type " regedit " commend, → Local machine → system → current control set → Enum→ remove USB.

> **Important**: **Restart your computer to make the changes effective before you reinstall the driver.**

5. Configuration Utility

Wireless LAN 11 Mbps Wireless LAN USB uses its own management software. All functions controlled by user are provided by this application. Usually this application starts automatically, Use Start, Programs, Wireless LAN 11 Mbps Wireless LAN to start the Manager application.

A new icon - should appear in your Icon tray. If the icon is in red, it means that Wireless LAN 11 Mbps NIC configuration is invalid or incomplete. Sometimes icon can be colored in red. This can happen when driver is in Pseudo BSS mode, and the radio channel, which is used for communication is defined incorrectly.

Figure 1 Icon tray with a new icon

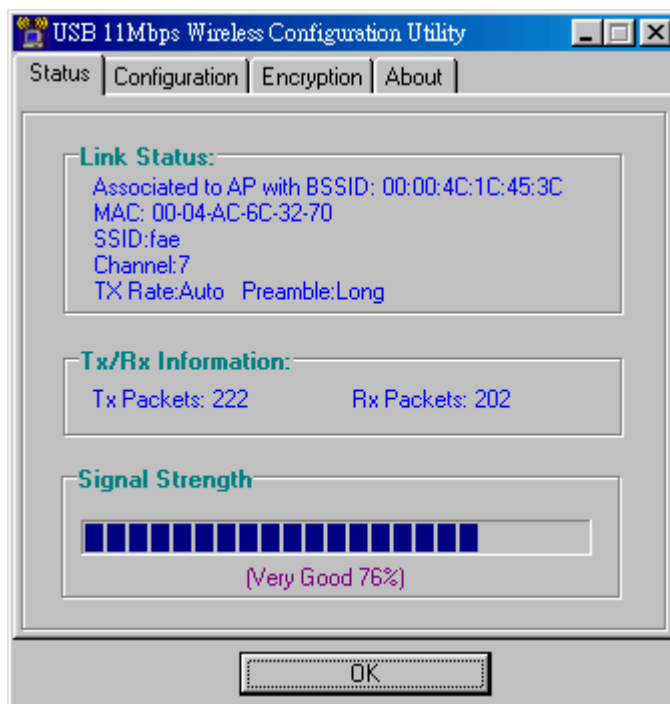Double clicking on that icon will show you the screen as shown below.

Figure 2 Management window with "Status" tab open

User can navigate through "sheets", by clicking or tapping them with a stylus. "OK" button will minimize window, and "X" button (right upper corner) will close application. Here we explain the use and meanings of the various screen messages.

Status

Link Status
The field shows associated to available AP with BSSID, MAC ID of USB.   When the state is "Associated " means normal flow of operation in Infrastructure mode. The PC is connected to access point. BSSID is shown in the form of hex digits. Networking is available.

Tx/Rx Rate Information
This display the instantaneous wireless Receive and Transmit throughput displayed in bytes per second. These values are updated every two seconds.

Signal Strength
The Link Quality bar graph is only active when the node is in Infrastructure Mode. The bar graph displays the quality of the link between the node and its Access Point. A label summarizes the quality of the link over the bar graph, which can take on one of the following values:

"No Traffic"
"Poor"
"Good"
"Very Good"
"Excellent"

The driver will start looking for a better Access Point if the Link Quality becomes "Poor". Link Quality is a measure of receives and transmits errors over the radio.

"CONFIGURATION" tab

The Configuration Tab contains several fields where operating parameters of the driver can be viewed or changed. Changes to any of the parameters in this panel can be applied to the driver without the need to reboot the PC.
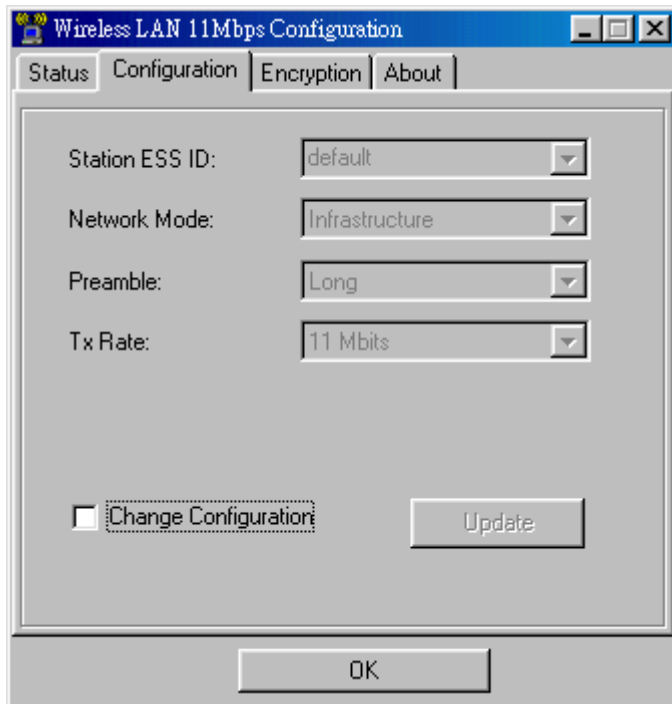

Figure 3 Management window with "CONFIGURATION" tab open

Station ESS ID

Extended Service Set Identifier (Wireless Network Identifier) 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 , which has the same ESS ID.

Network Mode

This field allows you to select from a list of supported Network "Modes". The modes displayed will have two values: " Ad Hoc", and "Infrastructure".

 Ad Hoc   **-** This is the 802.11 peer-to-peer mode of operation. In 802.11Ad Hoc only one wireless "cell" is supported for each different SSID. All communication is done from Client to Client without the use of an Access Point. 802.11 Ad Hoc networking use the same SSID for establishing the wireless connection.

 Infrastructure **-** This mode of operation requires the presence of an 802.11 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.

Preamble

Two different preambles and headers are defined: the mandatory supported Long Preamble and header, which inter-operates with the current 1 Mbit/s and 2 Mbit/s DSSS specification (as described in IEEE Std 802.11, and an optional Short Preamble and header. The optional Short Preamble and header is intended for applications where maximum throughput is desired and interoperability with legacy and non-short-preamble capable equipment is not a consideration. That is, it is expected to be used only in networks of like equipment, which can all handle the optional mode.

TX Rate

The transmission rate at which the data packets are transmitted by client of AP. You can set this to fixed 1Mbps, fixed 2 Mbps, fixed 5.5 Mbps or fixed 11 Mbps.

"Update" button

This button becomes active only when one of the fields has been modified. Pressing this button applies the changed values to the driver and saves them to the registry for the next time the PC boots up.
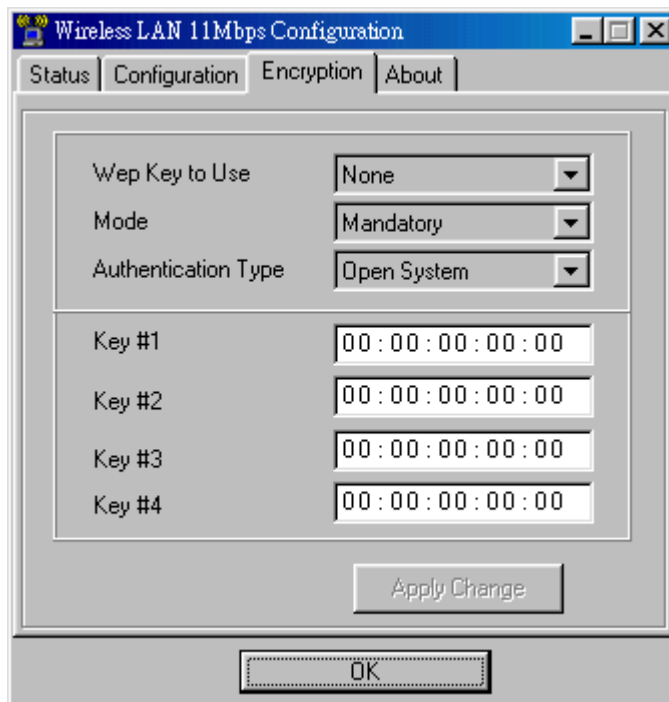
"ENCRYPTION" tab

Figure 4 Management window with "Encryption" tab open

You may desire an additional measure of security on your wireless network, which can be achieved by using WEP (Wired Equivalent Privacy) encryption.   WEP encrypts each frame transmitted from the radio 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 WEP Key used by the transmitter.

To be written to the driver and registry, each key must consists of hex digits which means that only digit 0-9 and letters A-F are valid entries. If entered incorrectly program will not write keys to a driver.

- **Key 1 – Key 4**

  These four fields can be used to manually enter the keys. This may be necessary if you wish this node to match keys in a different vendor's product.

Mode

Mandatory:

The WEP encryption will be used, and other station also needs to use WEP encryption in order to establish a communication with your station. This mode is required to compliant with the IEEE 802.11b standard.

Optional :

This mode allows your station to communicate with other stations regardless if they use WEP encryption or not.

Authentication Type

Open System :

Open System is the default authentication algorithm.
Open System authentication is not required to be successful as a STA may decline to authenticate with any particular other STA.

Shared Key:

Shared Key is only available if the WEP option is implemented.
Shared Key authentication supports authentication of STAs as either a member of those who know a shared secret key or a member of those who do not. IEEE 802.11 Shared Key authentication accomplishes this without the need to transmit the secret key in clear; requiring the use of the WEP privacy mechanism.

- **Apply Change**

  This button updates the driver with the four keys displayed in Key field. The keys are also written to the registry for permanent storage. This button clears all the bytes in the four keys, useful when manually entering and you wish to start over.
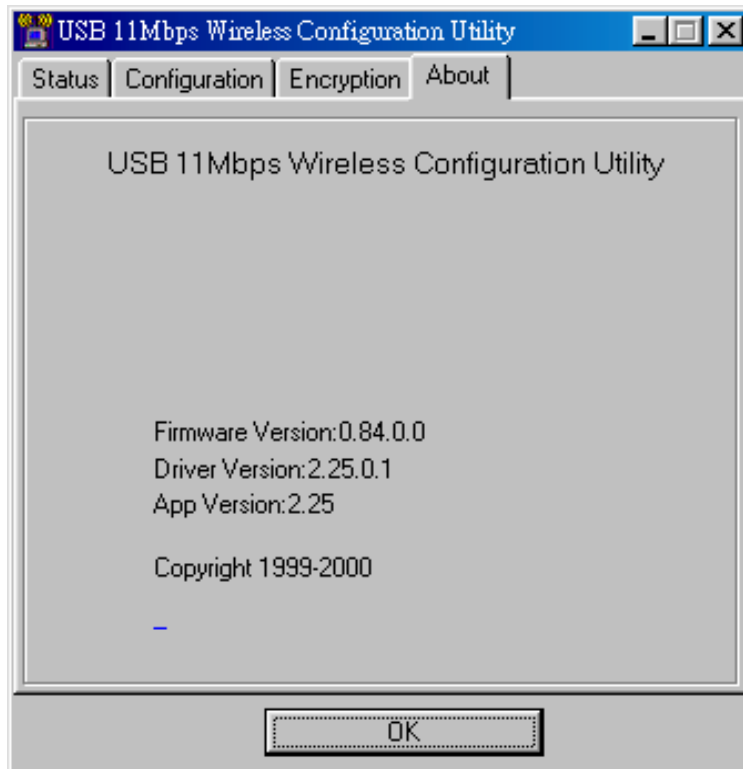
"**ABOUT**" tab

Figure 5 Management window with "ABOUT" tab open

About tab shows the product version including the detail of Driver, Configuration Utility, and NIC firmware version. Users must use this version number when reporting their problems to tech support.

6. Technical specifications of Wireless LAN

Hardware compatibility

- IBM-compatible computer with a PC Card Type II

Driver support

- Windows 98

- Windows 2000

- Windows ME

Standards supported

- IEEE 802.11 standard for Wireless LAN

- All major networking standards (including TCP/IP, IPX)

Environmental

Operating temperature (ambient):

- 0°C to 40°C (Operating),-20 to 70°C (Storing)

- Max. Humidity:95% Non-condensing

Power specifications

Operating voltage:

- +5 V

- Nominal Temp Range: 17 dBm

- Extended Temp Range: 14 dBm min.

- Transmit Power, 2.7v to 3v: 14 dBm min.

Radio specifications

Range:

- per cell indoors approx. 35-80 meters or more

- per cell outdoors up to 100-300 meters

Frequency range:

- 2.4-2.4835 GHz, direct sequence spread spectrum

Number of Channels:

- Europe: 1-13

- US: 1-11

- France: 10-13

- Japan: 1-14

Specific features

Supported bit rates:

– 11 Mbps

– 5.5 Mbps

– 1 Mbps

– 2 Mbps

Data encryption:

– 64 bit WEP Encryption

Utility Software:

– Configuration utility software

Specific features