Gemtek Technology Co., Ltd.

11Mbps Wireless LAN CF Card

WL-672F

User's Manual

Mar. 26, 2002

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Printed in Taiwan, Mar. 2002

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.

The product was tested to comply with FCC standards, and it is for home and office use.

Caution:

FCC RF Radiation Exposure Statement:

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 2.5 centimeters between the radiator and your body.

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

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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

EU Countries Not intended for use

None.

Potential restrictive use
France: Only channels 10,11,12, and13

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1. Introduction

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

The package you have received should contain the following items:

- 11Mbps Wireless LAN CF Card
- User's manual
- CD containing Wireless LAN Management utility and drivers
  Note: if anything is missing, please contact your vendor

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

2. 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 to full infrastructure networks, also allow roaming over a broad area.

3. Installation for Windows platform

The following section will assist you to in installing wireless LAN CF Adapter successfully. You will first install software (Utility) and then insert the Wireless LAN CF Adapter, 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 CF card can easily be installed and used, without bothering to connect cables for keeping your computer to use network resources.

3.1. Installation Overview

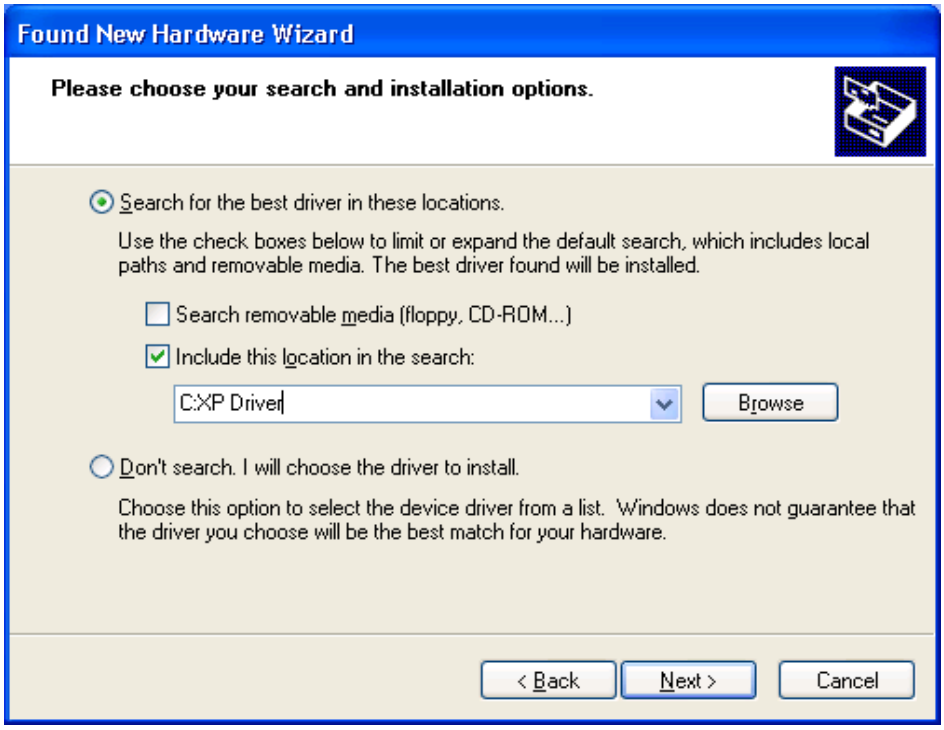
Here are some steps you will perform in establishing your wireless network connection:

- Install the Access Point at first. AP is needed in case of Infrastructure network mode.
- Install the software using the Install CD.
- Install the Wireless LAN CF Card (WIRELESS LAN 11Mbps CF Adapter).
- Install the network protocol(s) required to communicate on your network. Most likely you will need the TCP/IP protocol.

3.2. Install Procedure for Windows XP

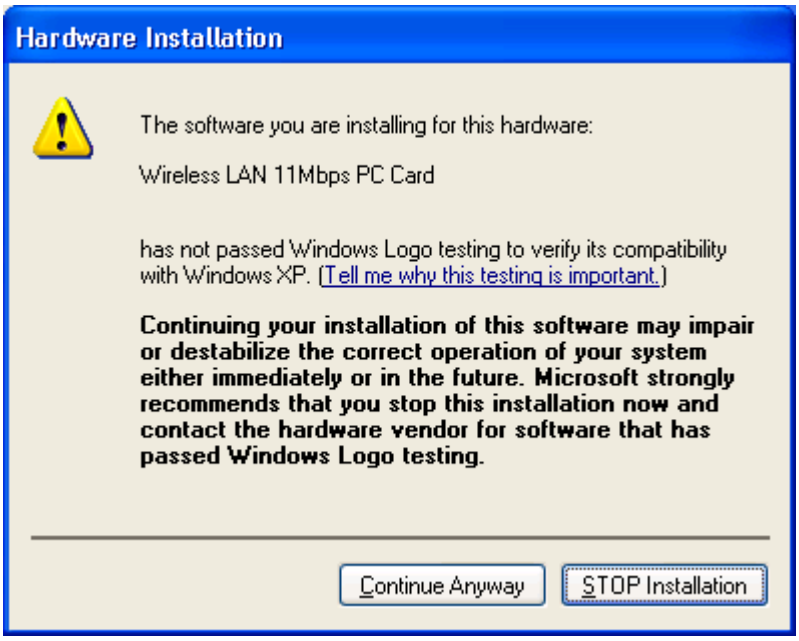
1. Insert your CF card into PCMCIA slot of your system, and then system will detect new hardware.

Select **"Install from a list or specific location (Advanced) "**, then click **Next** to continue.

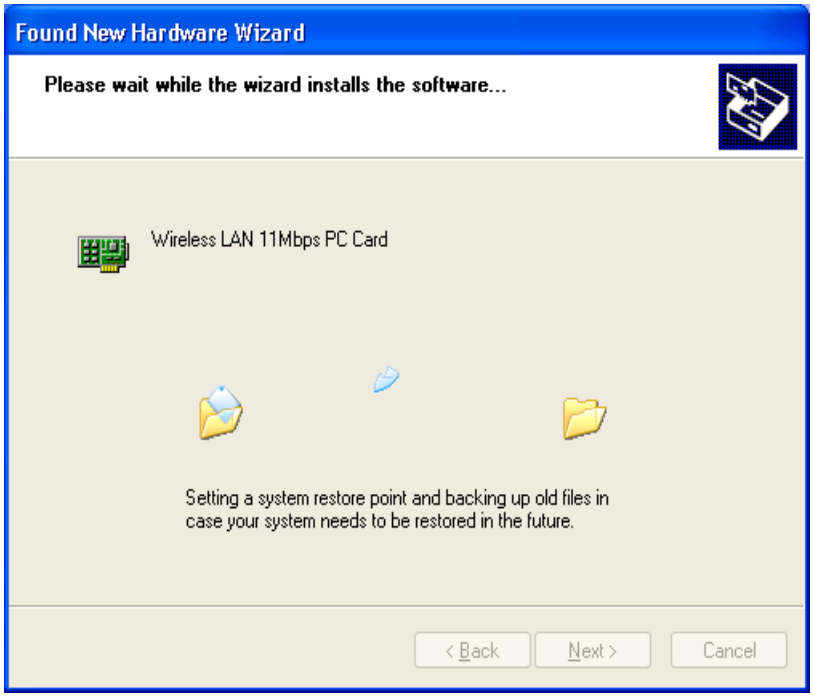


Give the directory where you have stored the Win XP driver. Click **Next** to continue.

Once your system detected the driver, Microsoft will show a warning message as below.



Click **“ Continue Anyway ”** for next step.



After copy the file to your system, then the setup is finish.

3.3. Install Procedure for Windows 98/ME/2000

Note: Do not insert the **WLAN CF Adapter** until you are asked to do so, failure of which may result in unsuccessful installation of your **WLAN device.**

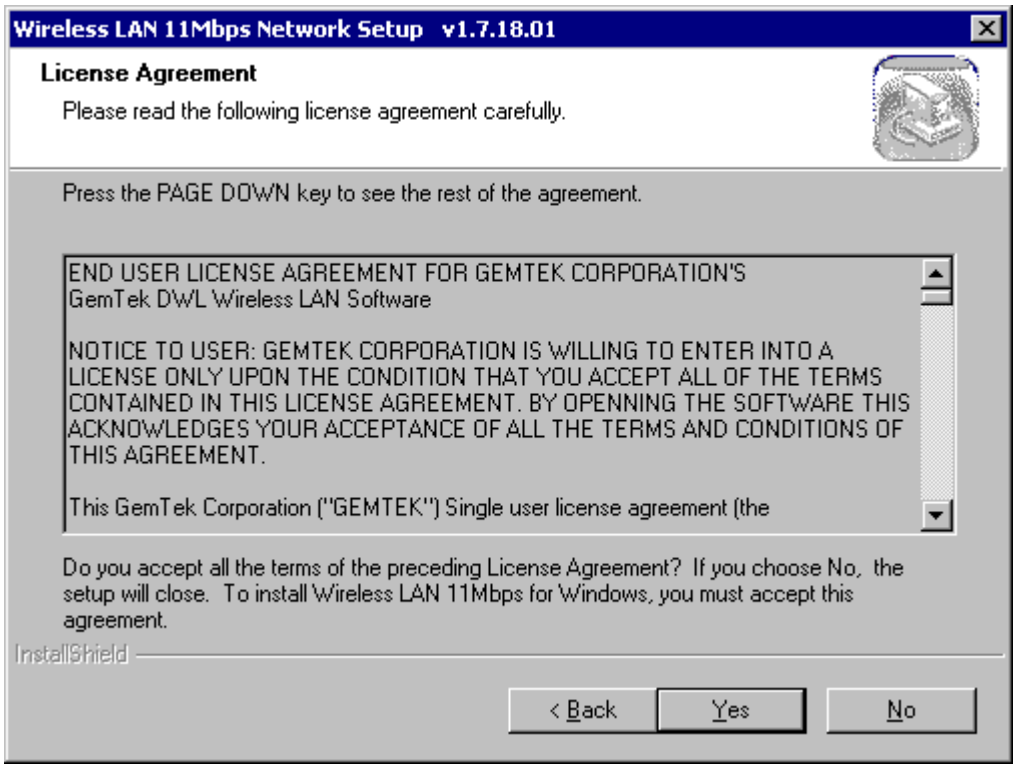
Please follow the following steps one by one in order to install the WLAN CF Adapter successfully.

Note: Install WLAN CF card on your laptop PC must add additional PCMCIA adapter.

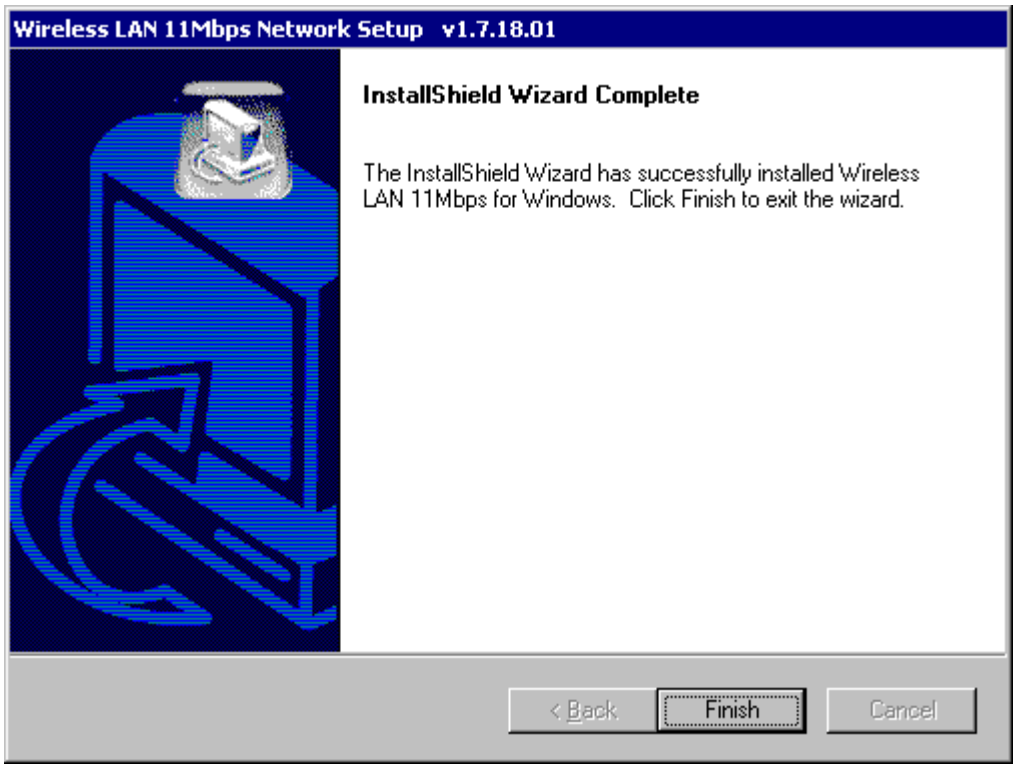
1. Power on your computer and allow Windows 98/ME/2000 to load fully.
2. Be sure that there is no Wireless LAN 11Mbps CF Adapter inserted yet.
3. Insert the given Installation CD in the CD-ROM and then click on the **Setup.**

At the “ Welcome” window, Click **Next.**

4. Accept the license agreement.



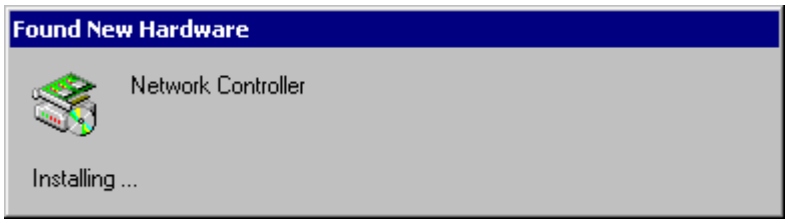
Accept the license agreement. Click **Yes** to accept.



Setup is complete. Click **Finish.**

5. Insert **Wireless LAN 11 Mbps CF Adapter** into slot

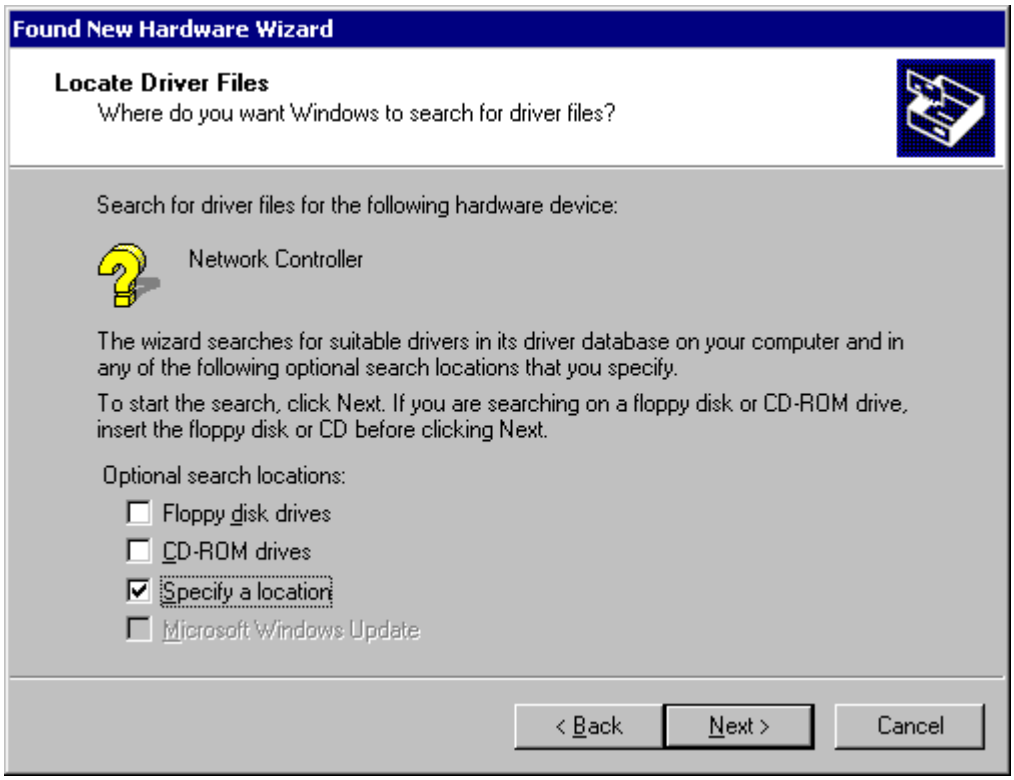
Windows will recognize the WLAN adapter and auto detect the driver, if the system did not find the driver automatically, please install the driver manually.



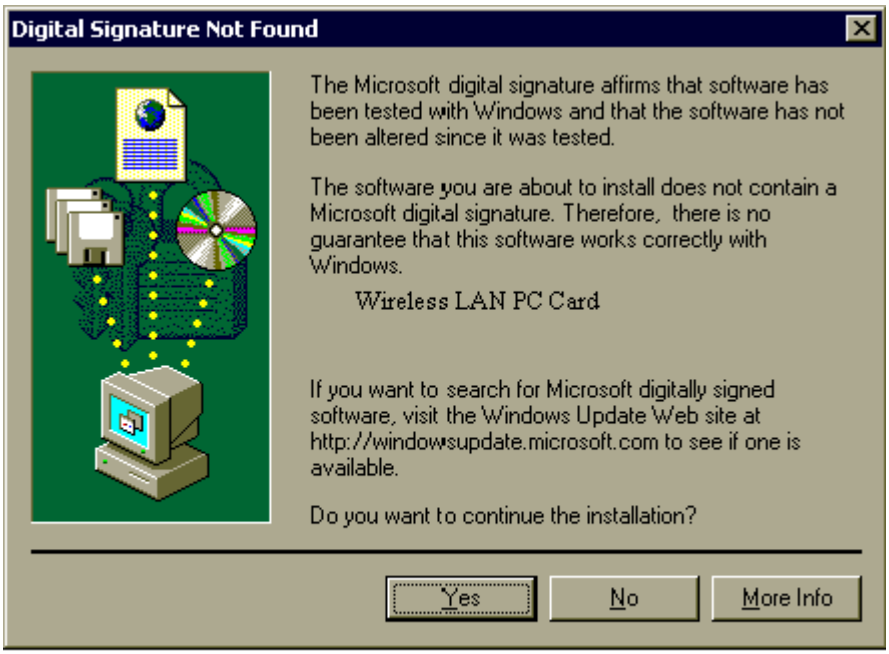
.

Click **Next** .

Click **Next** .

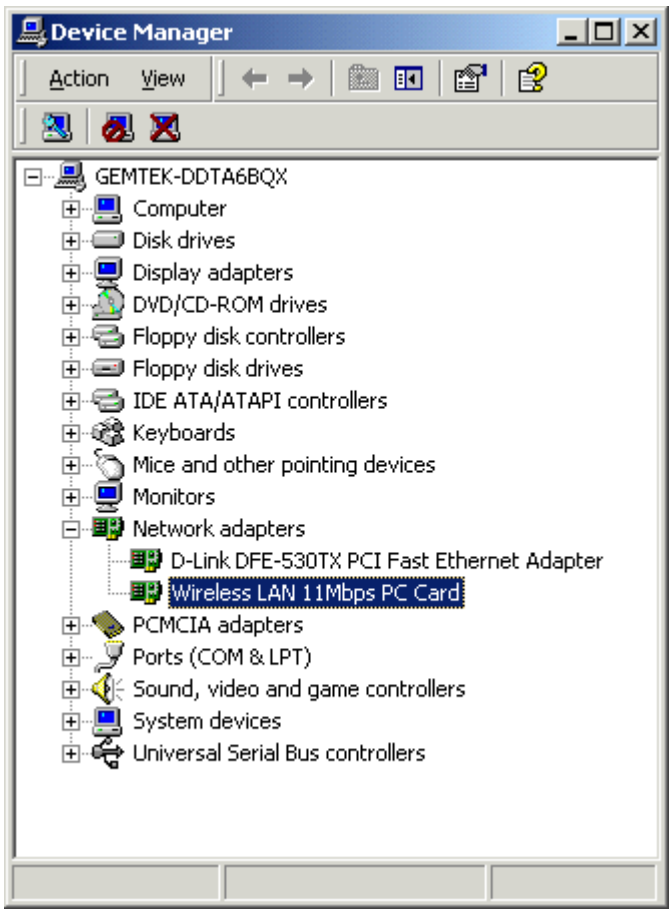


Click **Next.**



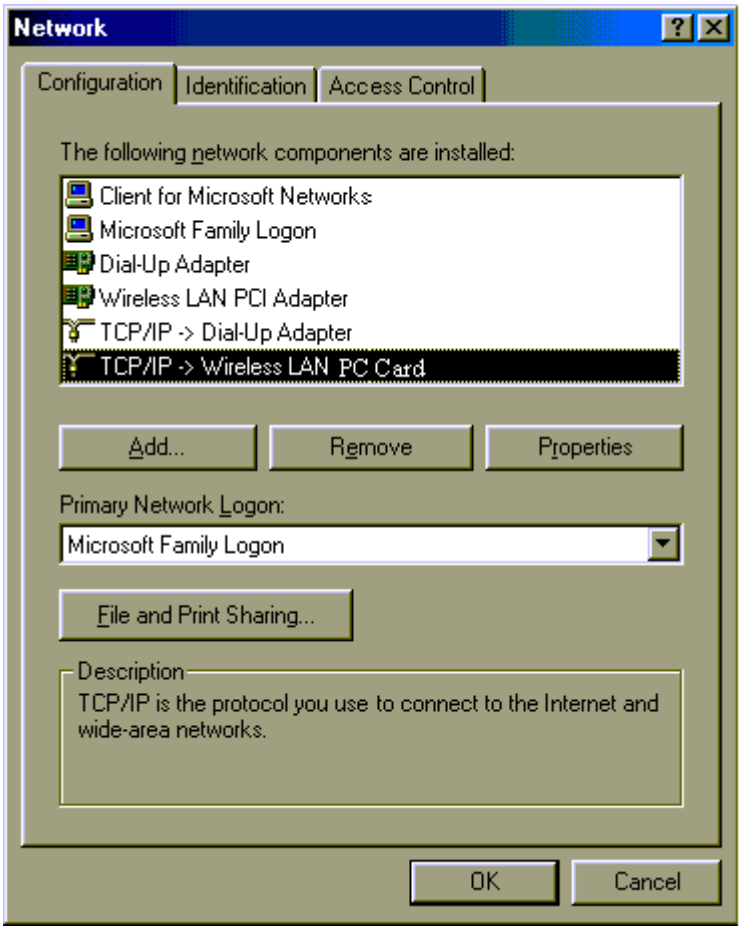
Click **Yes** to finish the setup & restart the computer.

6. Click the right button of mouse on **My Computer → Properties → Device Manager**.
   Check whether it has WLAN adapter in one of the sockets or not. If you find **Wireless LAN 11Mbps Adapter** in one of the sockets, it means the card is detected properly.



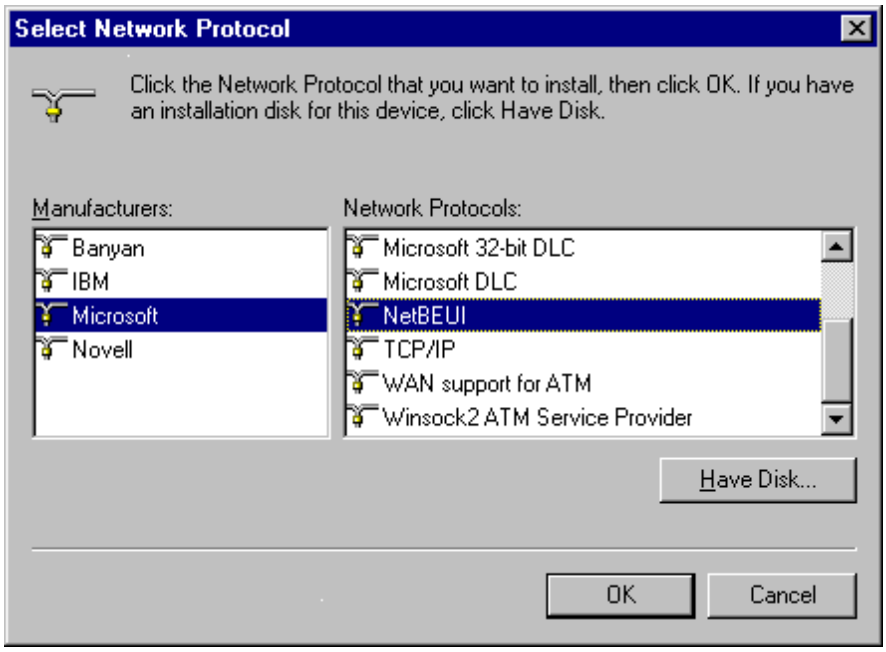
7. Click right button of mouse on the **Network Neighborhood** .

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

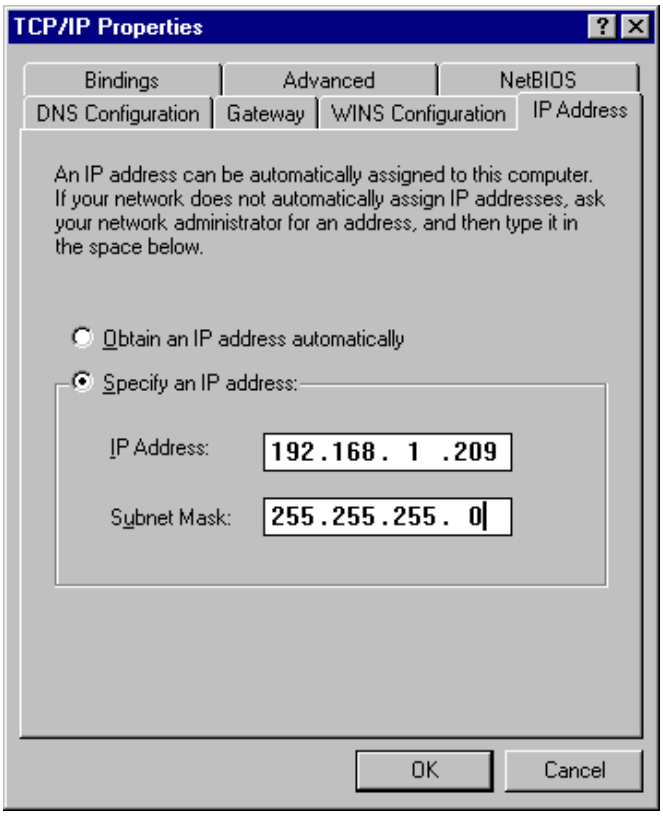


9. Click on the **Configuration** tab and then click on the **Add** button. Select Network Component Type box appears. Click on the **Protocol** the click the **Add** button.

10. 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**.



11. The **NetBEUI** protocol is now installed. After clicking on **OK** return back to Network Component Type box.
12. Repeat the step 15 and 16 to add IPX/SPX protocol.
13. Repeat the step 15 and 16 to add TCP/IP protocol.
14. 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 parameters 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**.



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

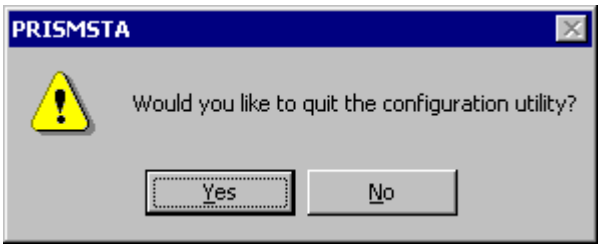
<u>Important</u>: Restart your computer to make the changes effective before you reinstall the driver.

Uninstall Procedure

If you want to uninstall the WLAN adapter, please follow the steps as below,

Step 1:

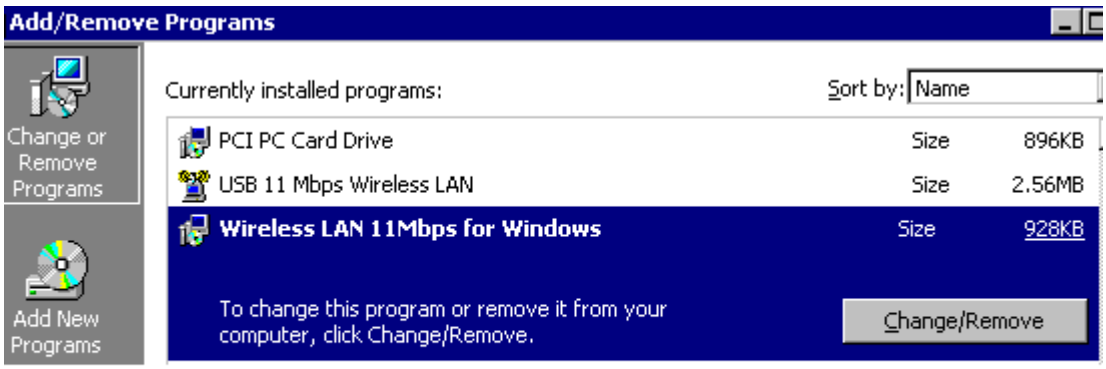
From right bottom corner of system bar, click right button of mouse on ,
then will show a window as below



Click **Yes.**

Step 2:

From **Start** menu → **Settings** → **Control Pannel** → **Add / Remove Programs**
Remove " Wireless LAN 11Mbps for Windows."



Click **Change /Remove**

Step 3:

From **System Properties → Hardware → Device Manager → Network adapters**
Click **right** button of mouse on **Wireless LAN 11Mbps Adapter**
→ Uninstall…

then will show a message

Click **OK.**

The Uninstallation is complete.

Step 4:

Restart your Computer.

3.4. CE Install Procedure

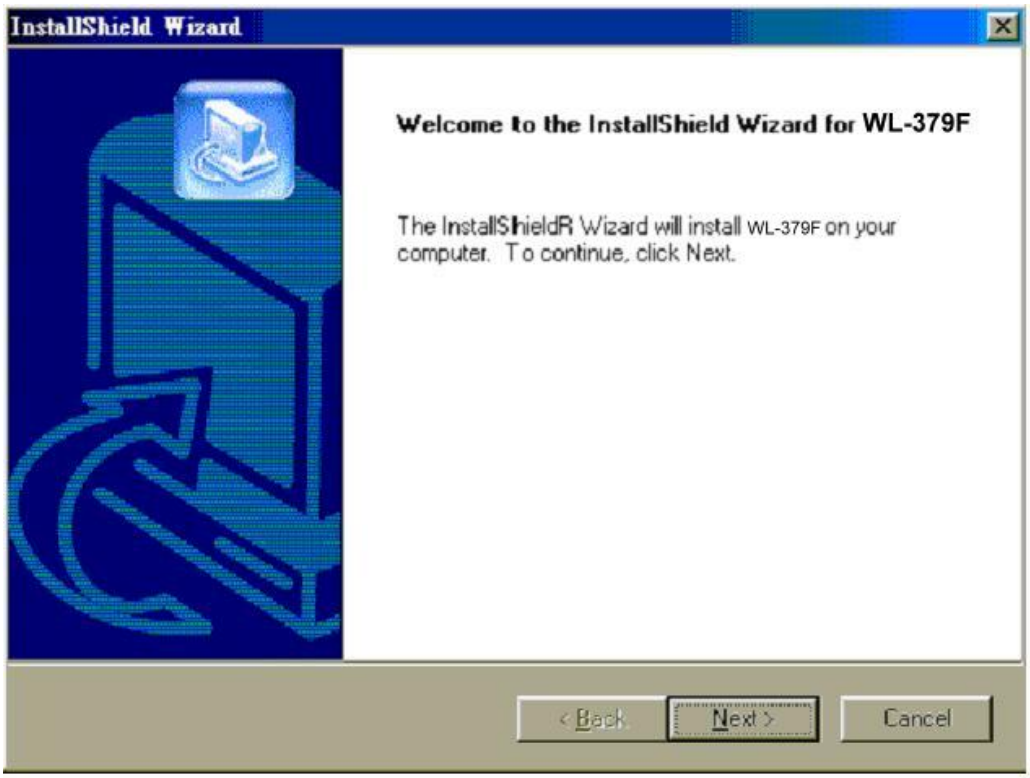
Please be note that the current version of driver only supports Strong ARM processor.

Note: Be sure that your PC or Notebook has installed software such as **Active Sync** for transmit data to your PDA / handhold PC.

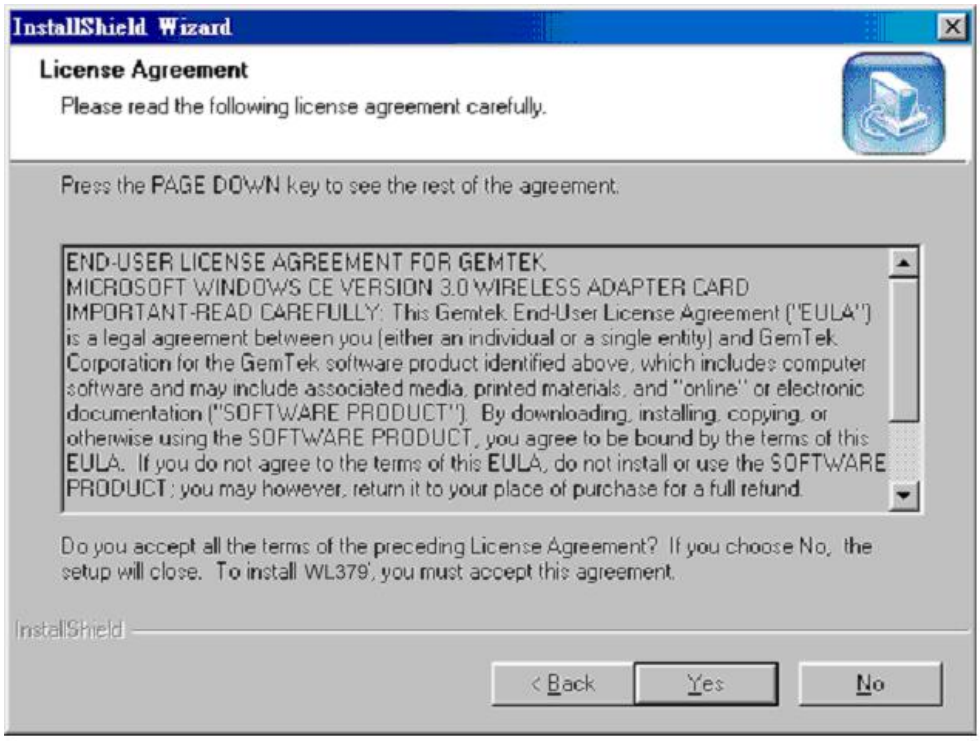
We assume that you have installed Windows CE Services on your desktop PC and that you have connected the PC to PDA or handheld PC with a serial connection.

Note: The CF card shall not be plugged into PDA/handheld PC if not stated.

1) Run the **Gemtek 1718_for WinCE300 PPC.exe** from the CD. This will bring up installation screen:

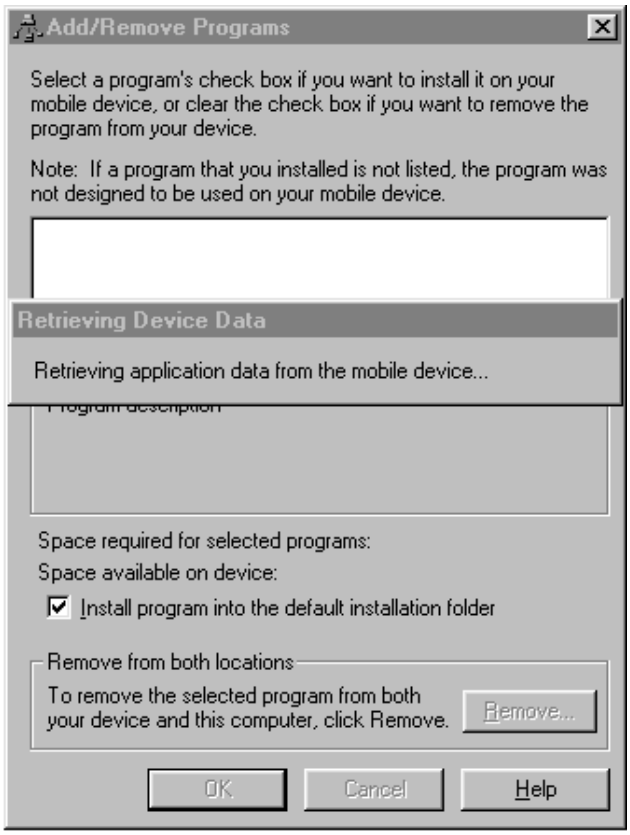


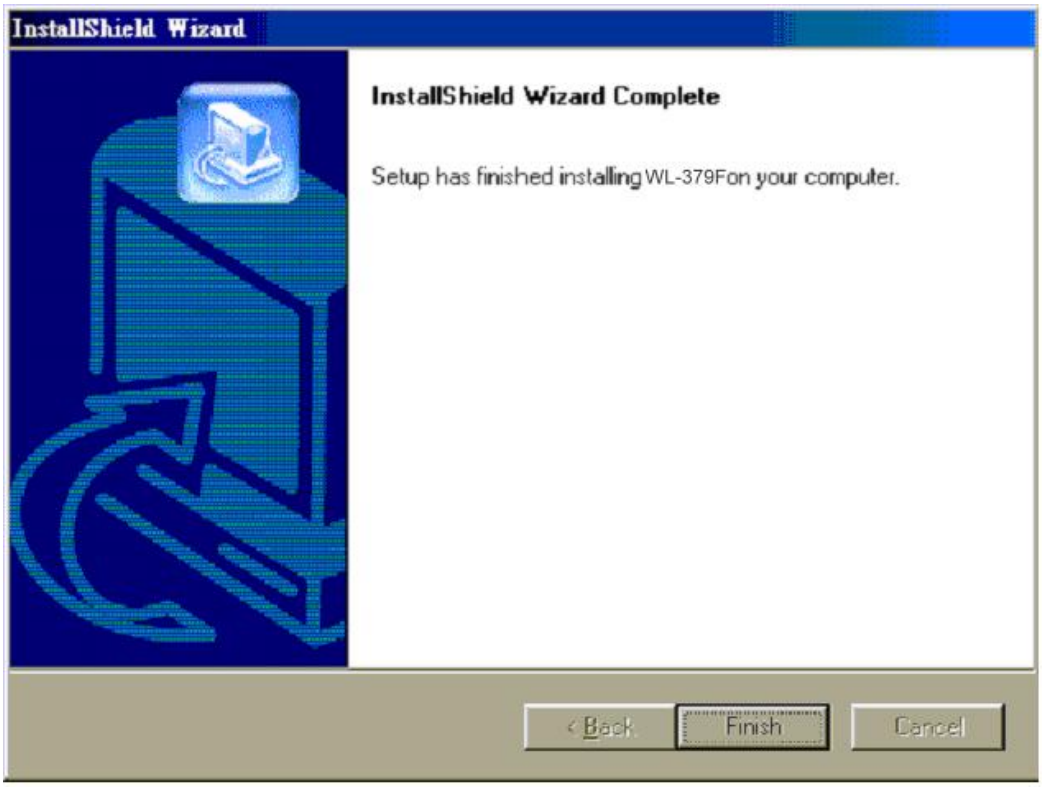
If you would continue go through the process by pressing “Next” button, otherwise select “Cancel” if you wish to stop the installation process.



Accept license agreement by click “Yes” button. If you disagree with terms of stated, then press “No” & exit the installation.

When software license agreement is accepted, system will bring you user info dialog.





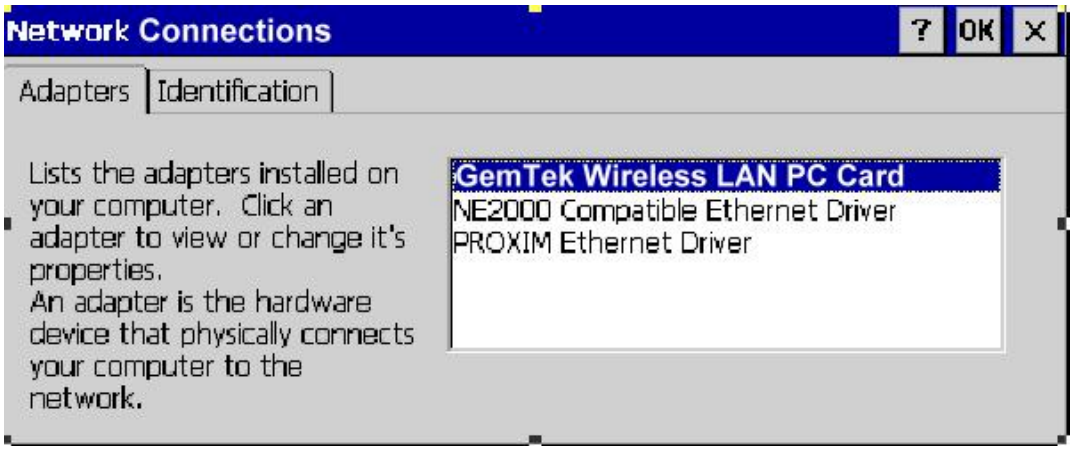
Click **Finish** to complete the installation.

2) Plug-in the Wireless LAN CF/PC card into the card slot of your PDA/handhold PC

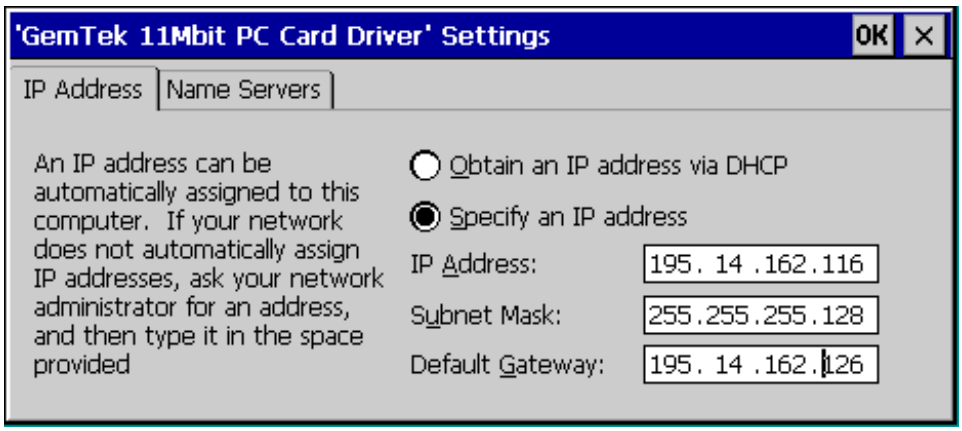
.

3) Go to the **Start** menu, select **Settings** subfolder. Then select **Connections** tab from the bottom of the page.

4) In the Setting page, tap on **Network** icon. This step will open **Network Connections** dialog

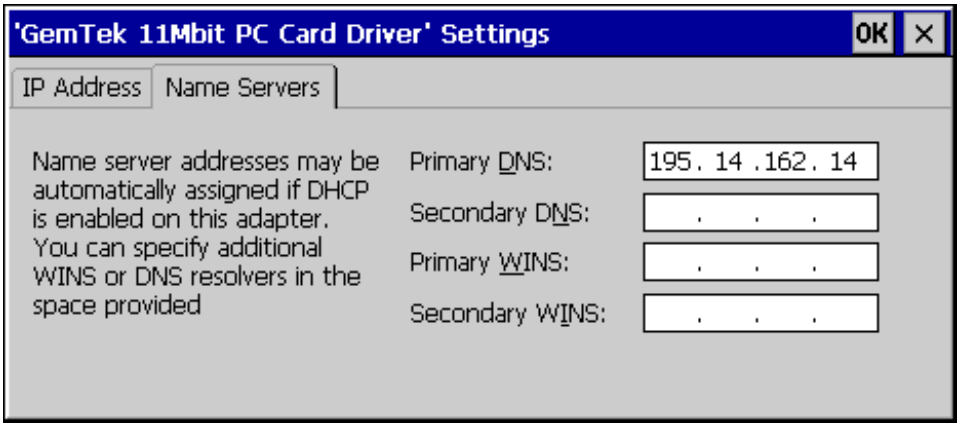


On the Network Configuration dialog select **Gemtek Wireless LAN PC/CF Card Driver** and double tap on it, this will bring you to **IP Settings** dialog.



5) If your network supports **DHCP** server, select the first button. Otherwise enter static IP in the field. If you are not sure about the values of these fields, ask your Internet Service Provider for detail.

6) Select **“Name Servers”** page for DNS settings.



Enter **Domain Name Server** (DNS) address & WINS (sometimes it is assigned through **DHCP** services automatically) in appropriate tab.

NOTE: If Domain Name Server address is not set, networking using Explorer will not work EVEN if the user enters IP addresses. This is due to internal Windows CE architecture.

CE uninstall procedure

Tap on the **Start** Menu, select **Settings** tab. Tap on **System** tab from the bottom of the page, Tap on the on the **Remove Programs**. Select **Gemtek WL-379F** and tap on the **Remove** button will uninstall the program.

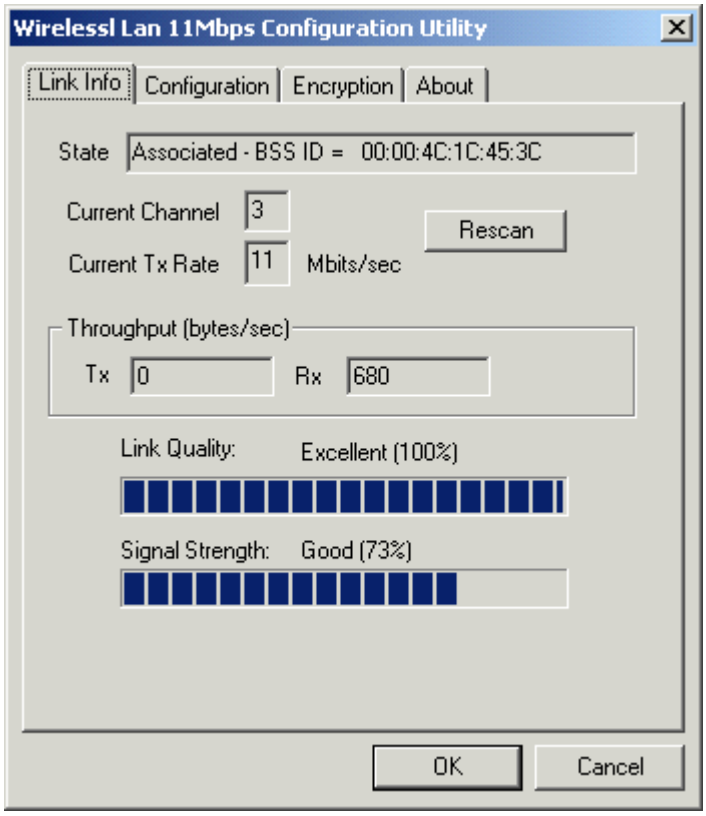
4. Configuration Utility

11Mbps Wireless LAN CF Card uses its own management software. All functions controlled by user are provided by this application. Usually this application starts automatically,

or click icon from control pannel to start the Manager application.

A new icon - should appear in your Icon tray. If the icon is in red, it means that 11Mbps Wireless LAN CF Card NIC configuration is invalid or incomplete. Sometimes icon can be colored in red. This may happen when driver is in Pseudo BSS mode or communication is defined poor connection or incorrectly.

Figure 1 Icon tray with a new icon



User can navigate through “sheets”, by clicking tabs. “OK” button will minimize window, and “Cancel” (or X button) will close application. Here we explain the use and meanings of the various screen messages.

4.1 Link Info

- **State**

This field is used to display the current state of the driver. 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.

A state of “Scanning ” means that the node is searching for available access point and unable detects the SSID for an available access point within range.

This field will also display an error message if for some reason the driver failed to initialize.

- **Rescan**

Pressing the rescan button causes the driver to restart and begin its Connection Procedure. The connection procedure differs depending on the Mode of the driver.

Infrastructure Mode - The driver will scan all available channels continuously until it finds one or more Access Points that matches its SS ID. At that point it will try and authenticate and associate with the Access Point.

802.11Ad Hoc Mode - The driver will scan for 5 seconds looking for an existing Ad Hoc network using the same SS ID.

- **Current Channel and Tx Rate**

Shows the channel of the radio and transmit rate are being currently used for an active connection. This value has no meaning when the radio is “Scanning”

- **Throughput**

These two fields display the instantaneous wireless Receive and Transmit throughput displayed in bytes per second. These values are updated every two seconds.

- **Link Quality**

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:

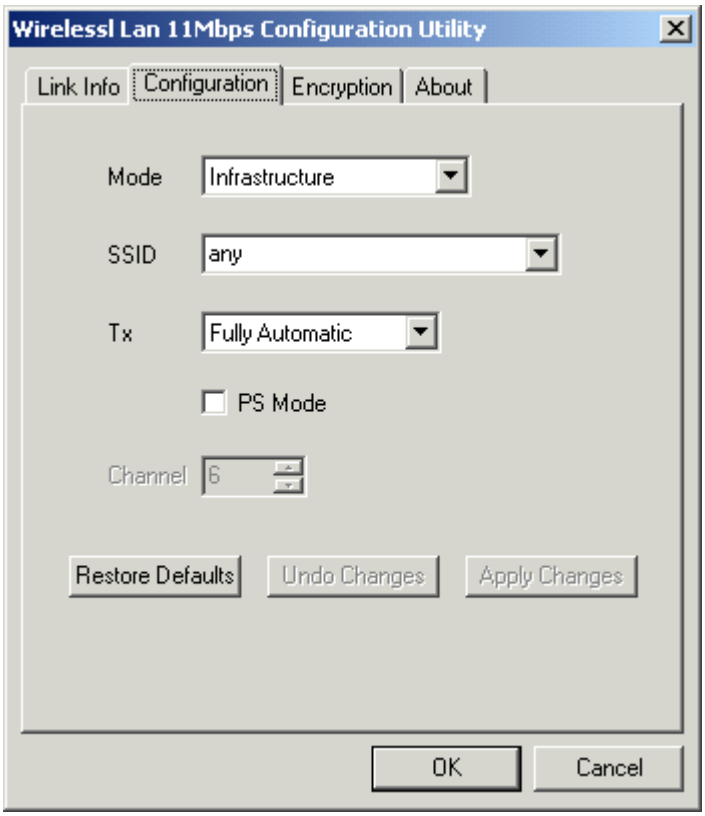
“Poor”
“Weak”
“Fair”
“Good”
“Excellent”

- **Signal Strength**

The Signal Strength bar graph is only active when the node is in Infrastructure Mode. The bar graph displays normalized signal strength as reported by the radio, averaged over all frames over 100 bytes long that are received from the Access Point.

4.2 CONFIGURATION

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.



Restore Defaults:Pressing this button restores each field in the panel to its default value. The Apply Changes button or OK must be pressed before the default values are saved to the driver and registry.

Undo Changes: Pressing this button reverts all fields in the panel back to their original values that were present when the Configuration Utility was opened from the Task Bar.

Apply Changes: 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.

- **Mode**

This field allows you to select from a list of supported Network “Modes”. The modes displayed will have two values: “802.11Ad Hoc” and “Infrastructure”.

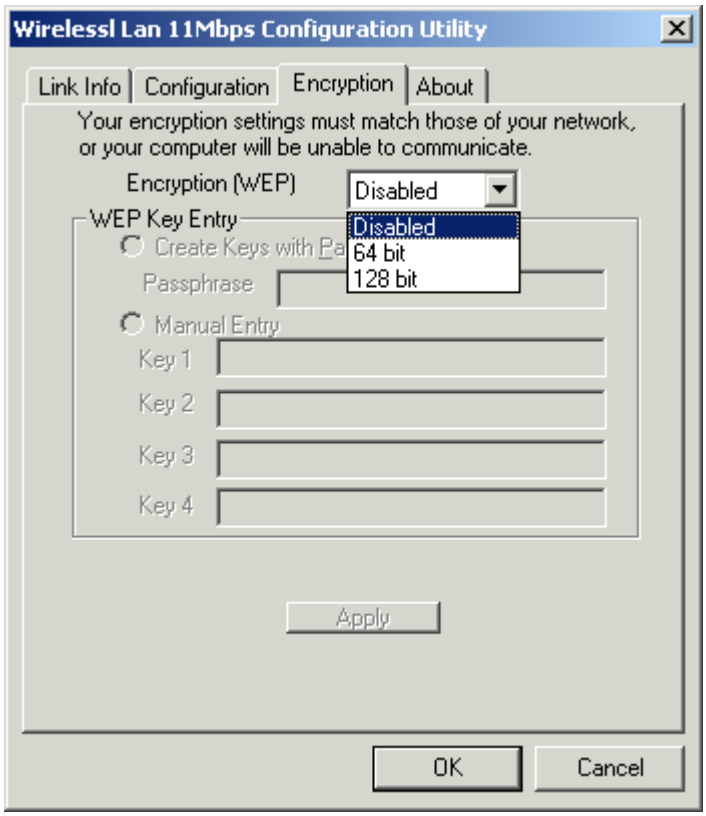
802.11 Ad Hoc - This is the 802.11 peer-to-peer mode of operation. In 802.11Ad Hoc only one wireless “cell” is supported for each different SSID. All communication is done from Client to Client without the use of an Access Point. 802.11 Ad Hoc networking uses the same SSID for establishing the wireless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

TX Rate – The transmission rate at which client of AP transmits the data packets. You may set this to fixed 1Mbps, fixed 2 Mbps, fixed 5.5 Mbps or 11 Mbps.

PS Mode - Power saving mode.

4.3 ENCRYPTION



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.

This panel allows the entry of four keys for 64/128-bit encryption according to WEP function select. To be written to the driver and registry, each key must consist 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.

Alternatively 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.

- **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. These fields also display the keys when they are generated using a Pass-phrase.

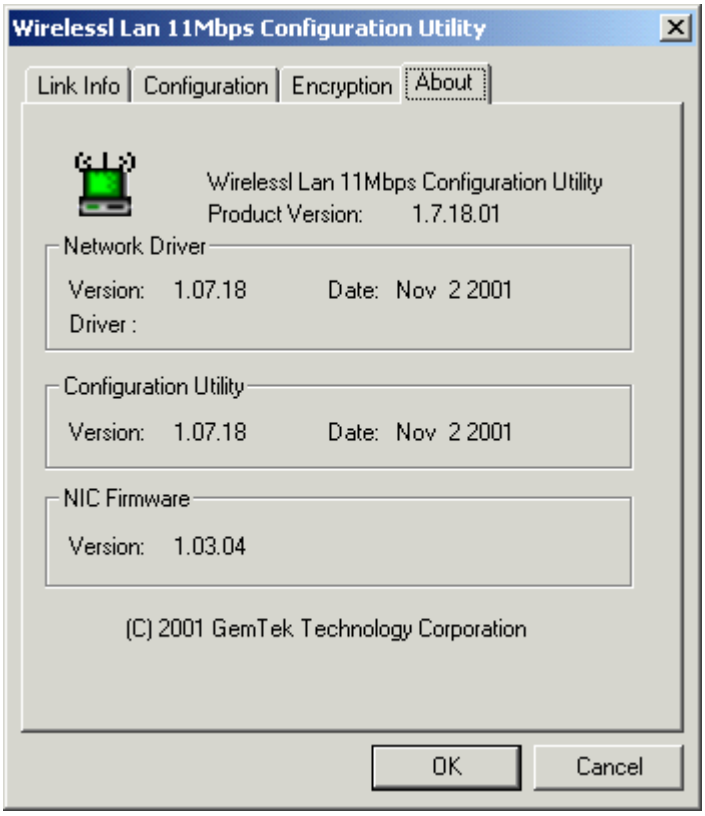
- **Default Tx Key**

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

Apply

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.

4.4 ABOUT



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 technical support.

5. Troubleshooting

If you encounter any problems during the installation, or to confirm that the WLAN 11Mbps device is installed properly, please read the following troubleshooting section.

In Windows 98:

To check that the **WLAN 11Mbps device** is installed properly, please do the following:

1. Go to **START>SETTINGS>CONTROL PANEL>NETWORK.** Choose the **Configuration Tab**. If you find the **WLAN 11Mbps Adapter**, it means the card is installed properly. If you see the **Yellow Question-mark (?)** means the resources are conflicting. (Please read further in this section for solutions.)

-or-

2. Right click on **My Computer** and select **Properties.** Select the **Device Manager** and click on the **Network Adapter.** You will find the **WLAN 11Mbps Adapter** if it is installed successfully. If you see the **Yellow** sign, the resources are conflicting. Click on the PCMCIA Card and then on the PCMCIA Card Service, you can see the status of the PC card. If there is a yellow sign either on the adapter or the PC card, please check the following.

    1. Check to see if your computer supports **3.3V** Card.
    2. Check to see if your computer has a free **IRQ.** If not, make an IRQ free by assigning the same IRQ to some devices, for example COM 1, COM 2 can be assigned the same IRQ values.
    3. Check that you have inserted the right card and have installed the proper driver.

Troubleshooting (Continued)

In Windows 2000:

1. Check the **Windows 2000 Diagnostics.** See if there is any conflict in the **resource** allocation or the **I/O Address, IRQ** allocations. If you find that the **IRQ** or **I/O Addresses** are already assigned to some other devices, you must change that value. **I/O Address** needs 40h byte length.

2. Go to the **Control panel.** Double click on the **PCMCIA Card** and you will see **WLAN Adapter.** Double clicking on that will show you the **Card Information,** driver name and the driver **file.** You must confirm the name of the driver and the driver file as **"prismnic.inf"** and **"prismnds.sys".** If you do not find the names listed above, there are some problems and the driver is not installed properly. Reinstall the driver.

Note: Check the PnP BIOS setup menu and select **no** in case of the **WLAN Adapter** installation.

6. Technical specifications of Wireless LAN

Hardware compatibility

– Compact Flash Type II

Driver support

- Windows XP
– Windows 98
– Windows 2000
– Windows ME
- WinCE (Strong ARM platform)

Standards supported

– IEEE 802.11 standard for Wireless LAN
– All major networking standards (including TCP/IP, IPX)

Environmental

Operating temperature (ambient):

– -10°C to 50°C (Operating),-20 to 70°C (Storing)
– Max . Humidity*:* 95% Non-condensing

Power specifications

Operating voltage:

– +3.3V DC ±5%
– Nominal Temp Range: 15 dBm
– Extended Temp Range: 14 dBm min.
– Transmit Power, 2.7v to 3v: 14 dBm min.

Radio specifications

Range:

– per cell indoors approx. 35-100 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: 13 (1-13)
– US: 11 (1-11)
– France: 4 (10-13)
– Japan: 14 (1-14)

Antenna system:

- Internal patch antenna supporting diversity.

Mobility:

- Seamless roaming across cell boundaries with handover

Specific features

Supported bit rates:

- 11 Mbps
- 5.5 Mbps
- 2 Mbps
- 1 Mbps

Data encryption:

- 64 /128 bit WEP Encryption

Utility Software:

- Management utility software

Physical Dimensions

58x42.8x7.15mm