

# **802.11b Wireless PCI Card**

## **User Manual**

# REGULATORY STATEMENTS

## FCC Certification

The United States Federal Communication Commission (FCC) and the Canadian Department of Communications have established certain rules governing the use of electronic equipment.

### Part 15, Class B

This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interface, and
- 2) This device must accept any interface received, including interface that may cause undesired operation. 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 off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - ▶ Reorient or relocate the receiving antenna.
  - ▶ Increase the distance between the equipment and receiver.
  - ▶ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

### CAUTION:

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

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## Introduction

The **802.11b Wireless PCI Card** is a powerful 32-bit PCI Card that plugs quickly and easily into your Desktop PC for wireless network applications without wires or cables. Based on the IEEE 802.11b standard, it offers a transferring data rate of 11Mbps in a wireless LAN environment. Once connected with other networked PC's, it allows you to share hard disk drives, DVD drives, CD drives, printers, and the likes.

The **802.11b Wireless PCI Card** allows you to take full advantage of your PC's mobility with access to real-time information and online services anytime and anywhere. Plus, with the network installation simplicity and flexibility, you can eliminate the need to pull cable through walls and ceilings. Exploring WWW and augmenting networks can never be done more easily.

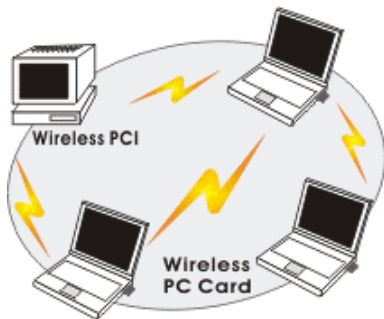
## Features

- Compliant with IEEE 802.11b standard for 2.4GHz Wireless LAN
- Compliant with PCI Standard
- Works with all existing network infrastructure.
- Compatible with specific wireless products and services
- Capable of up to 128-Bit WEP Encryption Protocol
- Freedom to roam while staying connected
- 11 Mbps High-Speed Transfer Rate
- Rich diagnostic LED indicators.
- Lower power consumption
- Easy to install and configure

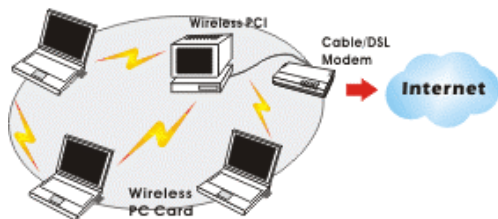
## Wireless Network Options

### The Peer-to-Peer Network

This network installation lets you set a small wireless workgroup easily and quickly. Equipped with wireless PCI or wireless PC Cards, you can share files and printers between each PC and laptop.

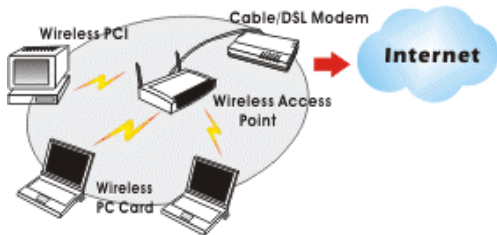


Or you can use one computer as an Internet Server to connect to a wired global network and share files and information with other PCs via a wireless LAN.



## The Access Point Network

The network installation allows you to share files, printers, and Internet access much more conveniently. With wireless PCI Cards, you can connect wireless LAN to a wired global network via an **Access Point**.



## LED Indicators

### Link: Green (On/Off)

*Glow* – linking to an Access Point or Peer-to-Peer mode.

### Act: Green (Blink)

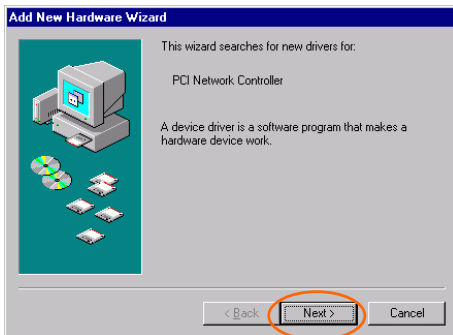
*Blink* – Transmitting/receiving wireless data.

## Install the Device

1. Before installing the device, make sure the computer is turned off.
2. Remove the expansion slot cover from the computer.
3. Carefully slide the wireless PCI card into an available PCI slot, push it evenly and firmly and ensure it is screwed securely in place using the mounting screw.
4. Once the device has been connected to your computer, Windows will detect the new hardware automatically.

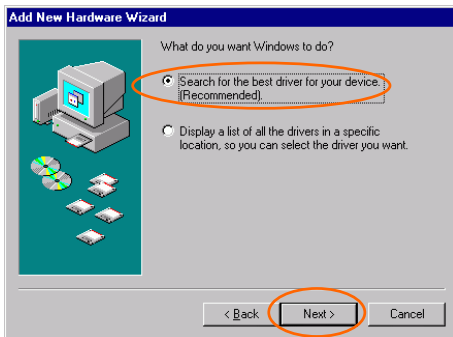
### In Windows 98

1. In **Add New Hardware Wizard**, click **Next**.

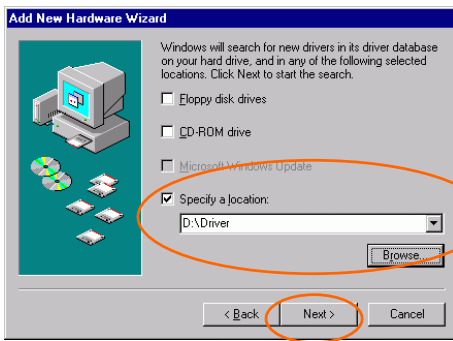


2. Select **Search for the best driver for your device (Recommended)**. Click **Next**.

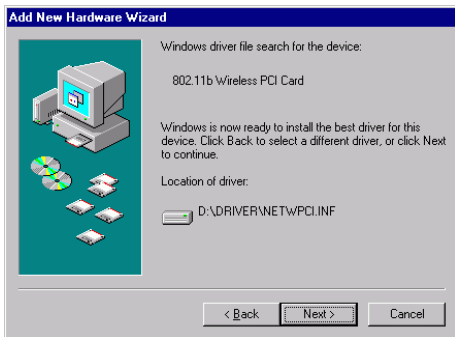




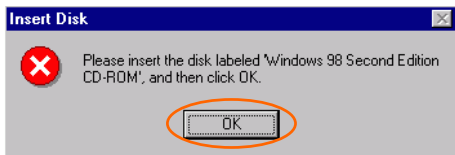
3. Insert the device driver CD-ROM into the CD-ROM drive. Select **CD-ROM** and **Specify a location:** and click **Browse** to provide the appropriate path (e.g. **D:\Driver**). Click **Next**.



4. Click **Next**, Windows will copy all the necessary files to your system.



5. Insert **Windows 98** CD-ROM, and then click **OK**.



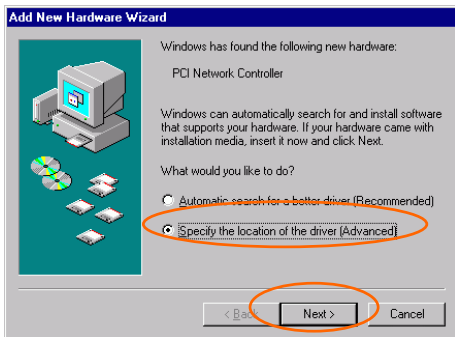
6. Click **Finish** to complete the installation.



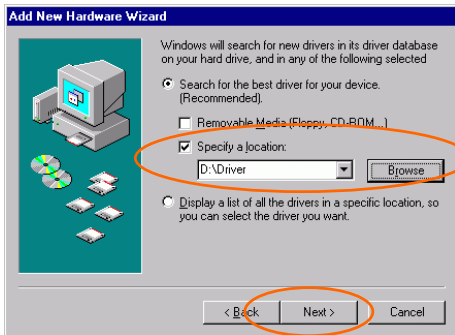
7. When Windows prompts you to restart your computer, click **Yes**.

## In Windows ME

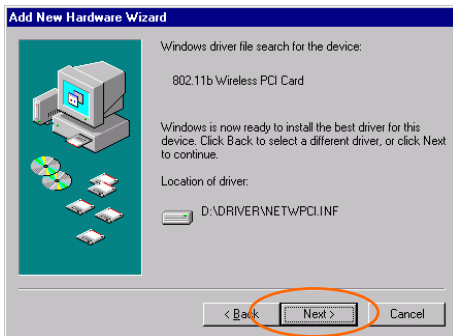
1. Select **Specify the location of the driver (Advanced)**, click **Next**.



2. Insert the device driver CD-ROM into the CD-ROM drive. Select **Search for the best driver for your device (Recommended)** and click **Browse** to provide the appropriate path (e.g. **D:\Driver**). Click **Next**.



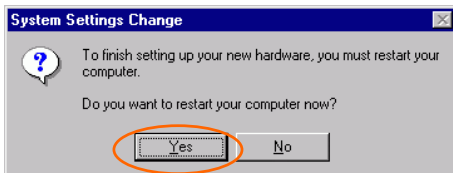
3. Click **Next**, Windows will copy all the necessary files to your system.



4. Click **Finish** to complete the installation.



5. When Windows prompts you to restart your computer, click **Yes**.

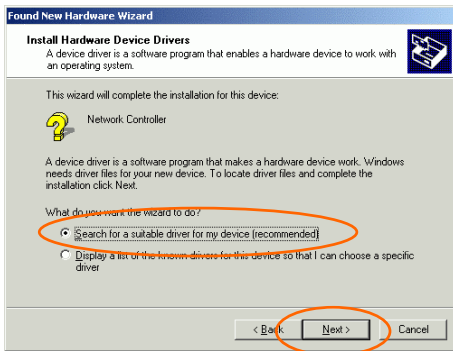


## In Windows 2000

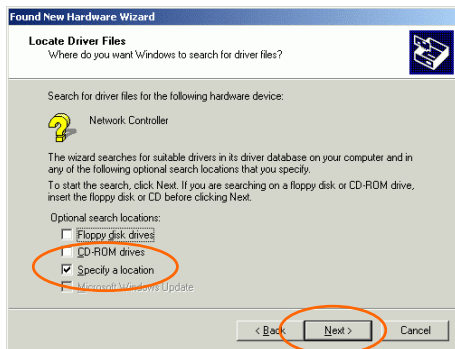
1. In **Found New Hardware Wizard**, click **Next**.



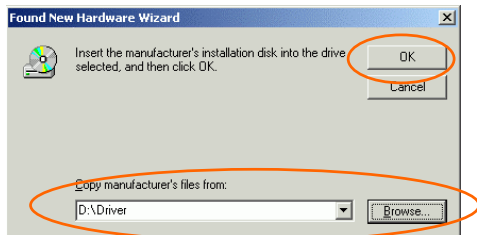
2. In **Install Hardware Device Drivers**, select **Search for a suitable driver for my device (recommended)**, click **Next**.



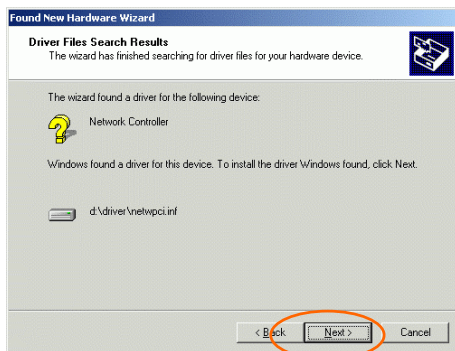
3. Insert the device driver CD-ROM into the CD-ROM drive. Select **CD-ROM drivers** and **Specify a location**, click **Next**.



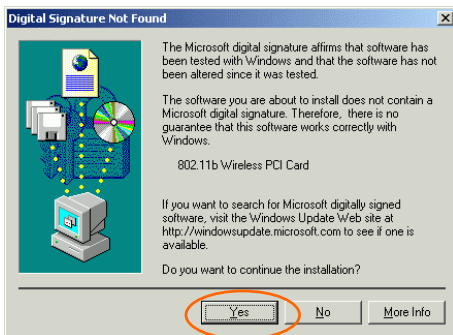
4. Click **Browse** to provide the appropriate path (e.g. **D:\Driver**). Click **OK**.



5. Click **Next**, Windows will copy all the necessary files to your system.



6. In **Digital Signature Not Found** window, click **Yes** to continue.



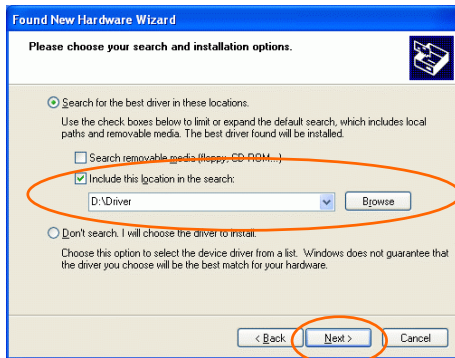
7. Click **Finish** to complete the installation.

## In Windows XP

1. Select **Install from a list or specific location (Advanced)** and click **Next**.



2. Insert the device driver **CD-ROM** into the CD-ROM drive. Select **Include this location in the search:** and click **Browse** to provide the appropriate path (e.g. **D:Driver**). Click **Next**.



3. Click **Continue Anyway** to proceed. Windows will copy all the necessary files to your system.



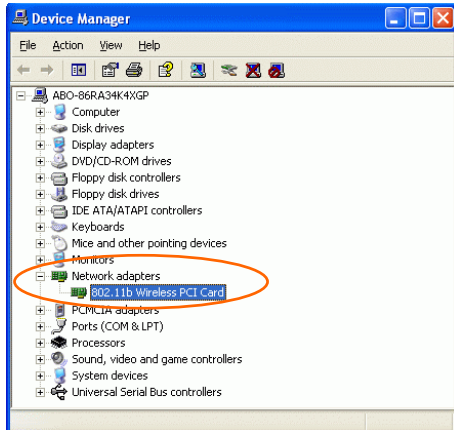
4. Click **Finish** to complete the installation.





## Verify

To verify if the device exists in your computer and is enabled, go to **Start** → **Settings** → **Control Panel** → **System (→ Hardware)** → **Device Manager**. Expand the **Network adapters** category. If the **802.11b Wireless PCI Card** is listed here, it means that your device is properly installed and enabled.



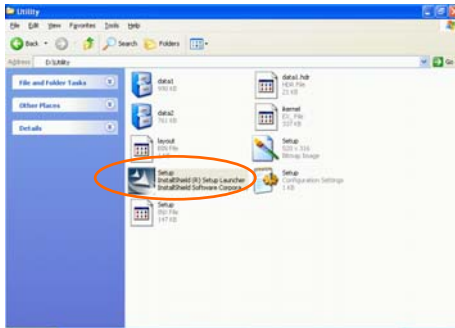
# Install the Utility

## Precaution for Windows XP users:

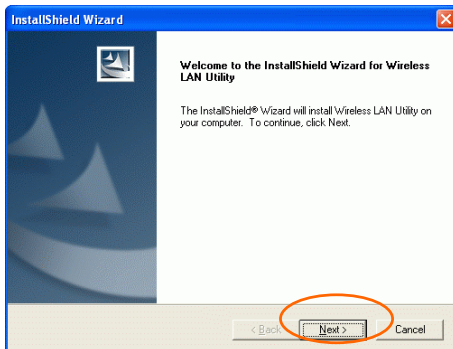
There are two options for you to choose:

- ① Follow below instructions to install the utility.
- ② Skip to [Use Windows XP's Wireless Configuration Utility](#) section to configure the Wireless settings.

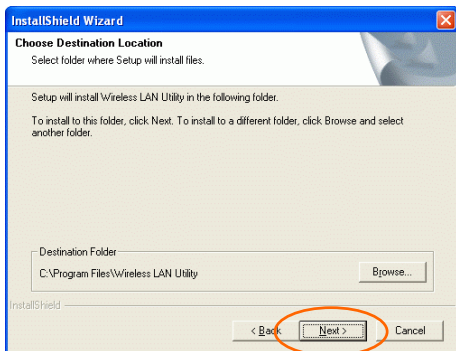
1. Insert the **Setup Utility CD-ROM** into the CD-ROM drive. Open the **Utility** folder then double click on **Setup.exe** to install the **Wireless LAN Utility**.



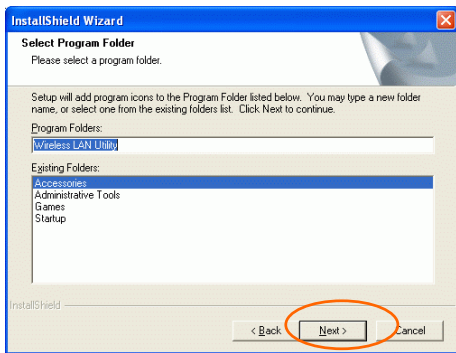
2. When the Welcome screen appears, click **Next** to continue.



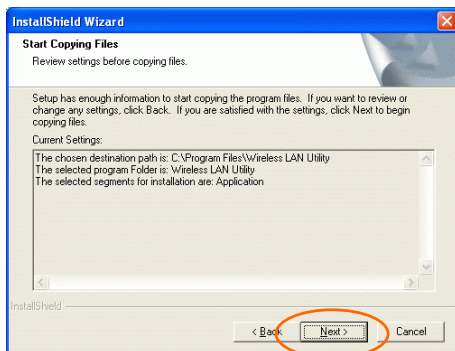
3. The **Choose Destination Location** screen will show you the default destination chosen by the utility. Click **Next** to continue.



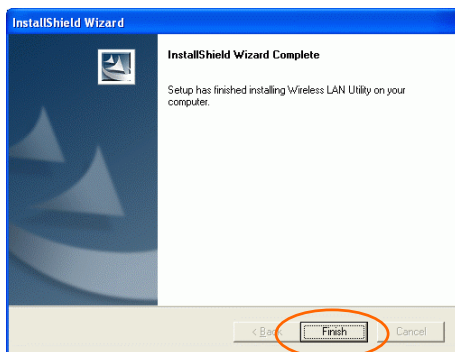
4. Follow the instruction to select the program folder. Click **Next** to continue.



5. In **Start Copying Files**, click **Next** to continue.



## 6. Click **Finish**.

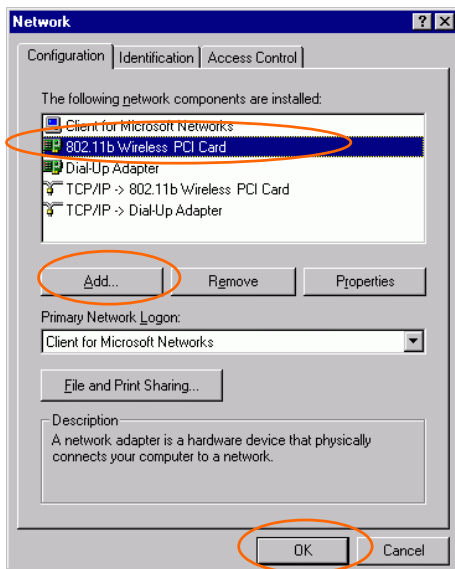


## Network Connection

Once the driver has been installed, you must make some changes to your network settings.

### In Windows 98/ME

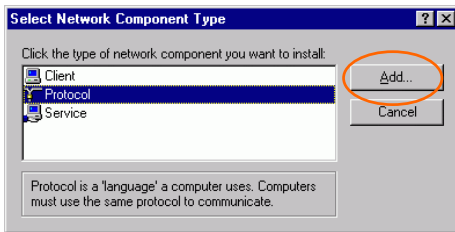
1. Go to **Start** → **Settings** → **Control Panel** → **Network**.
2. Make sure that the following components are installed.



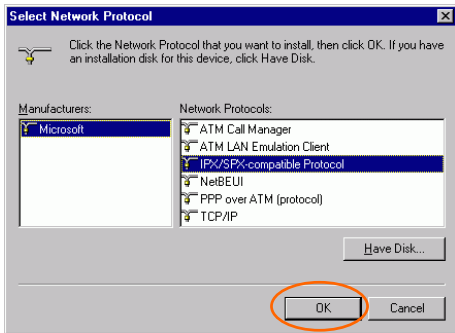
- **802.11b Wireless PCI Card**
- **IPX/SPX-compatible Protocol**
- **NetBEUI**
- **TCP/IP**

If any components are missing, click on the **Add** button to add them in. All the protocols and clients required and listed above are provided by Microsoft.

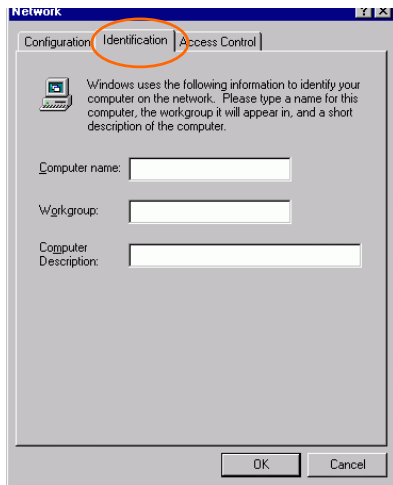
3. After clicking **Add**, highlight the component you need, click **Add**.



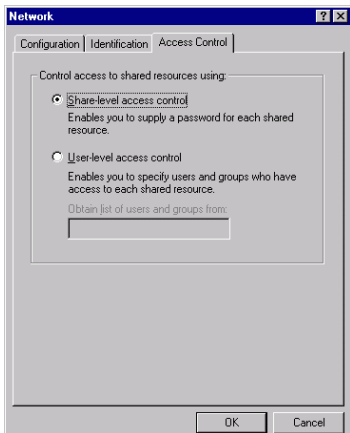
4. Highlight **Microsoft**, and then double click on the item you want to add. Click **OK**.



5. For making your computer visible on the network, enable the **File and Print Sharing**.
6. Click the **Identification** tab. Make up a name that is unique from the other computers' names on the network. Type the name of your workgroup, which should be the same used by all of the other PCs on the network.

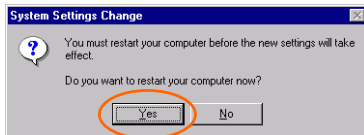


7. Click the **Access Control** tab. Make sure that “**Share-level access control**” is selected. If connecting to a Netware server, share level can be set to “**User-level access control**.”



8. When finished, restart your computer to activate the new device.





9. Once the computer has restarted and Windows has booted up, a **Logon** window will appear and require you to enter a username and password. Make up a username and password and click **OK**. Do not click the **Cancel** button, or you won't be able to log onto the network.
10. Double-click the **Network Neighborhood** icon on the windows desktop, and you should see the names of the other PCs on the network.

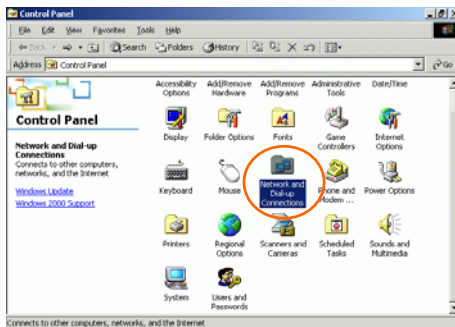
## In Windows 2000/XP

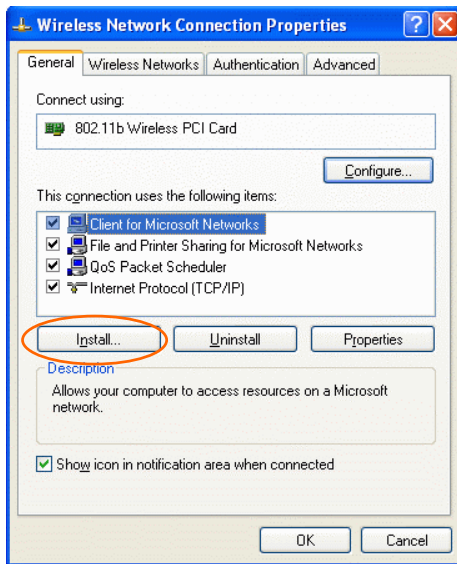
1. (In **Windows 2000**)

Go to **Start** → **Settings** → **Control Panel** → **Network and Dial-up Connections** → **Local Area Connection** → **Properties**.

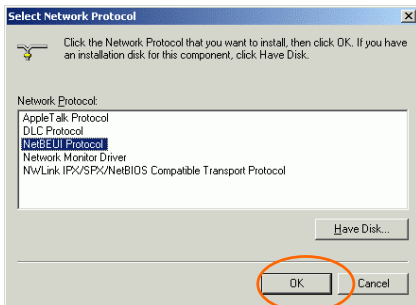
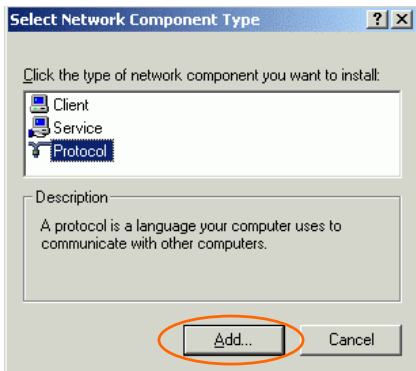
(In **Windows XP**)

Go to **Start** → **Control Panel** → **Network Connections** → **Wireless Network Connection Enabled 802.11b Wireless PCI Card** → **Properties**.





2. Make sure that you have all the following components installed.
  - **Client for Microsoft Networks**
  - **NWLink NetBIOS**
  - **NWLink IPX/SPX/NetBIOS Compatible Transport Protocol**
  - **Internet Protocol (TCP/IP)**
3. If any components are missing, click on the **Install...** button to select the **Client/Service/Protocol** required. After selecting the component you need, click **Add...** to add it in.



4. For making your computer visible on the network, make sure you have installed **File and Printer Sharing for Microsoft Networks**.
5. When finished, you must restart your computer to complete the installation.

# Configuration

**Note:** For Windows XP users, you have two options to configure the Wireless settings:

## 1) Use **Manufacturer's Configuration Utility**

Please refer to [Step 4](#) of [Use Windows XP's Wireless Configuration Utility](#) section to disable the Windows XP's wireless configuration.

2) Use **Windows XP's Wireless Configuration**. Please go to [Use Windows XP's Wireless Configuration Utility](#) section to use the configuration.

## Use Manufacturer's Configuration Utility

After disabling the **Windows XP's Wireless Configuration Utility**, the **Network Status** icon will appear in the task bar. You can open it by double-clicking the icon.










If the icon doesn't appear automatically, go to **Start** → **Programs** → **Wireless LAN Utility** → **Wireless LAN Utility**, it will appear in the task bar.

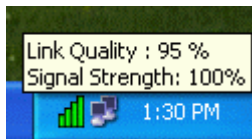


# Network Status Icon

## The Status Icon

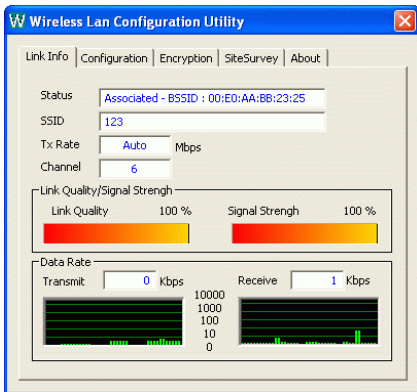
Icon	Link Status
	<b>Access Point mode. (Green)</b> (Please refer to below table for the exact link quality)
	<b>Peer-to-Peer mode. (White)</b>
	<b>No connection. (Red)</b>

Icon	Signal Strength
	Excellent link quality.
	Good link quality.
	Fair link quality.
	Poor link quality.



## Link Info

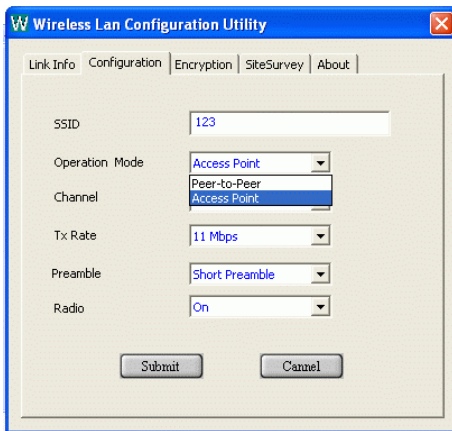
The **Link Info** tab will display the current status of the Wireless Network Adapter.



Item	Description
Status	It displays the information about the status of the communication (the BSSID of the Access Point to which the card is associated).
SSID	The <b>SSID</b> is the unique name shared among all points in your wireless network. The name must be identical for all devices and points attempting to connect to the same network. It shows the current SSID setting of the Wireless Network Adapter.
Tx Rate	It shows the current transfer rate. ( <b>1, 2, 5.5, or 11Mbps or Auto</b> )
Channel	It shows the selected channel that is currently used. (There are 14 channels available, depends on the country.)
Link Quality	It displays the link quality of the connection between the Wireless Network Adapter and the Access Point it connects.
Signal Strength	It displays the signal strength of the connection between the Wireless Network Adapter and the Access Point it connects.
Data Rate	It displays the current transmitting and receiving rate.

## Configuration

You can change advanced configuration settings, such as the **SSID**, **Operation Mode**, **Tx Rate**, **Preamble Type** and **Radio**.

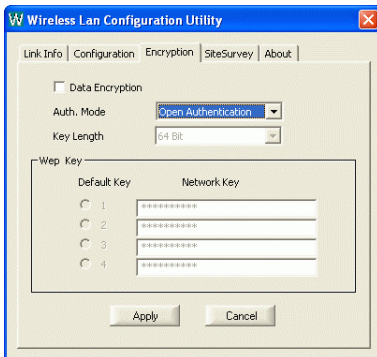
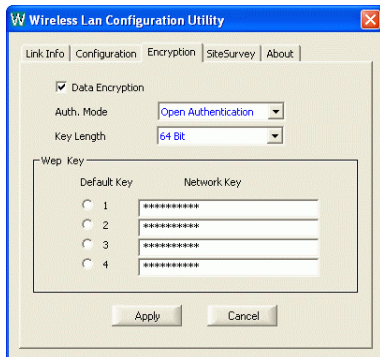


Item	Description
<b>SSID</b>	<b>SSID</b> is the unique name shared among all points in your wireless network. It must be identical for all points in the network. It is case-sensitive and must not exceed 32 characters. Make sure that all points in the network are set the same.
<b>Operating Mode</b>	It displays the current operating mode. ( <b>Access Point</b> or <b>Peer-to -Peer</b> ).
<b>Channel</b>	Select the appropriate channel from the list provided to correspond with your network settings. All devices in the wireless LAN must be configured to share the same radio channel in order to work correctly. (There are 14 channels available, depends on the country.)
<b>Tx Rate</b>	Select ( <b>1</b> , <b>2</b> , <b>5.5</b> , or <b>11Mbps</b> or <b>Auto</b> ) from the pull-down list to change the current transfer rate.

Item	Description
<p><b>Preamble</b></p> <p><input checked="" type="radio"/> <b>Auto</b></p> <p><input checked="" type="radio"/> <b>Long Preamble</b></p> <p><input checked="" type="radio"/> <b>Short Preamble</b></p>	<p>A preamble is a signal used in wireless environment to synchronize the transmitting timing including Synchronization and Start frame delimiter. (<b>Note:</b> If you want to change the Preamble type into <b>Long</b> or <b>Short</b>, please check the setting of AP. Some Access Points do not support <b>Auto</b> Preamble.)</p> <p>Select <b>Auto</b> for the Network adapter to select the Preamble type automatically depending on the Access Point Preamble type.</p> <p>If in a "noisy" network environment, the Preamble Type should be set to <b>Long Preamble</b>.</p> <p>The <b>Short Preamble</b> is intended for applications where minimum overhead and maximum performance is desired. If in a "noisy" network environment, the performance would be decreased.</p>
<p><b>Radio</b></p>	<p>Select <b>On/Off</b> from the pull-down list to <b>enable/disable</b> the Radio Module function of the Wireless Network Adapter.</p>

## Encryption

**WEP (Wired Equivalent Privacy)** encryption can be used to ensure the security of your wireless network.



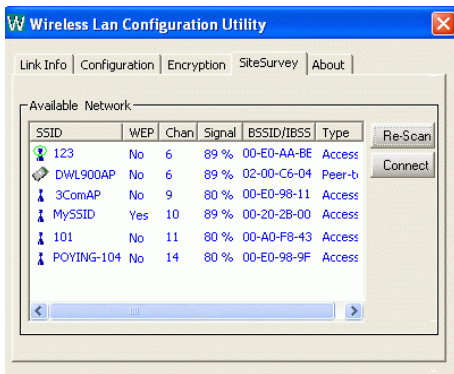




Item	Description
<b>Data Encryption</b>	WEP is a data privacy mechanism based on a 64 Bit/128 Bit shared key algorithm. Check this box to enable WEP encryption.
<b>Auth. Mode</b>  <b>Open Authentication</b>  <b>Shared Authentication</b>  <b>Auto</b>	The authentication mode defines configuration options for the sharing of wireless networks to verify identity and access privileges of roaming wireless network cards. You may choose between <b>Open Authentication</b> , <b>Shared Authentication</b> , and <b>Auto</b> . If the Access Point is using " <b>Open Authentication</b> ", then the wireless adapter will need to be set to the same authentication mode. <b>Shared Authentication</b> is when both the sender and the recipient share a secret key. Select <b>Auto</b> for the network adapter to select the Authentication mode automatically depending on the Access Point Authentication mode.
<b>Key Length</b>	<b>64 Bit or 128 Bit.</b>
<b>WEP Key</b> <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4	This setting is the configuration key used in accessing the wireless network via WEP encryption. Fill in the appropriate value/phrase.
<b>Apply</b>	Click <b>Apply</b> to save the changes.
<b>Cancel</b>	Click <b>Cancel</b> to exit the application.

**Note:** You must use the same value/phrase or WEP key settings for all wireless computers in order for the wireless network to function well

## Site Survey

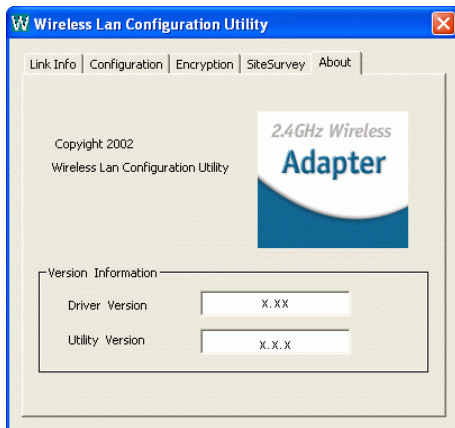
The **Site Survey** tab shows all the available Access Points/Peer-to-Peer Modes and their features.



Item	Description
<b>SSID</b>	It displays the current SSID setting of the Wireless Network Adapter.
<b>WEP</b>	It displays the status of WEP Encryption.
<b>Channel</b>	It displays the selected channel that is currently used.
<b>Signal</b>	It displays the signal strength of the connection between the Wireless Network Adapter and the Access Point it connects.
<b>BSSID/IBSSID</b>	A set of wireless stations is referred to as a Basic Service Set (BSS). Computers in a BSS must be configured with the same BSS ID.
<b>Type</b>	It displays the type of Basic Service Set. (  Access Point or  Peer-to-Peer)
<b>Re-Scan</b>	Search for all available networks. Clicking on the button, the device will start to rescan and list all available sites.
<b>Connect</b>	Select one from the list to connect.

## About

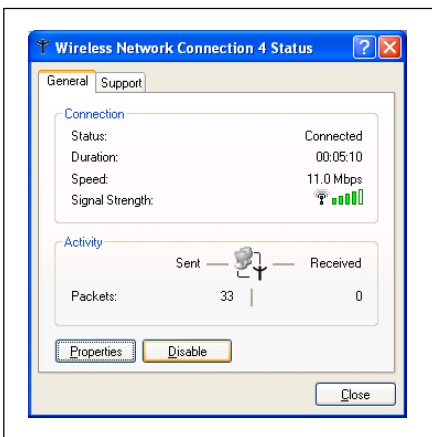
You can view basic information about the Utility like the **Driver** and **Utility** Version.



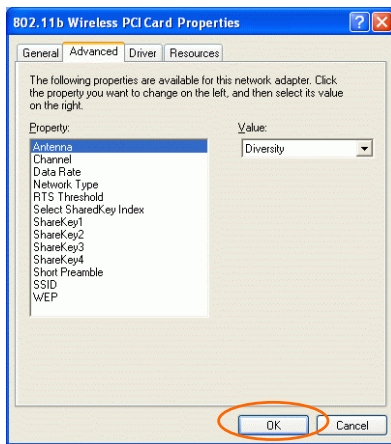
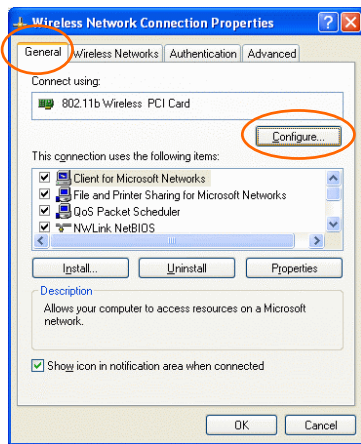
## Use Windows XP's Wireless Configuration Utility

1. Go to **Start** → **Control Panel** → **Network Connections**.
2. In **Network Connections** window, right-click the **Wireless Network Connections** icon, and select **Properties**.

*Note:* Double-click the **Wireless Network Connection** icon and you can see the status of the Wireless PCI Card as described below.



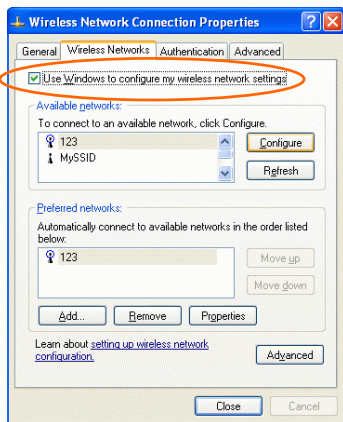
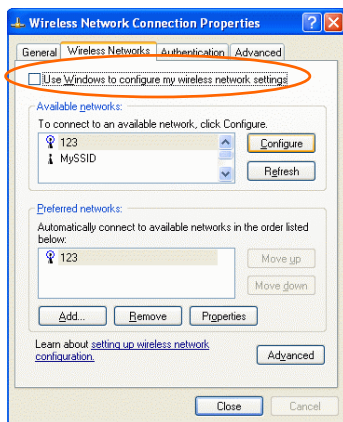
3. In **Wireless Network Connection Properties** window, select the **General** tab. Click **Configure** to enable Windows configuration.



Property	Description
<b>Antenna</b>	<b>(Diversity, Antenna A or Antenna B):</b> These settings determine which antenna will be used to transmit or receive.
<b>Channel</b>	Select the appropriate channel from the list provided to correspond with your network settings. All devices in the wireless LAN must be configured to share the same radio channel in order to work correctly. (There are 14 channels available, depends on the country.)
<b>Data Rate</b>	Select <b>(1, 2, 5.5, or 11Mbps or Auto)</b> from the pull-down list to change the current transfer rate.
<b>Network Type</b>	Select the appropriate Network Type from <b>802.11 AdHoc Mode (Active), 802.11 AdHoc Mode (Passive) or Infrastructure</b> . In AdHoc mode, <b>Active</b> mode is recommended since it can generate/pass beacon packets automatically.
<b>Preamble</b>	A preamble is a signal used in wireless environment to synchronize the transmitting timing including Synchronization and Start frame delimiter. <b>(Note: Please check the setting of AP first.)</b>

<b>Ⓒ Auto</b>	Select <b>Auto</b> for the Network adapter to select the Preamble type automatically depending on the Access Point Preamble type.
<b>Ⓒ Long Preamble</b>	If in a "noisy" network environment, the Preamble Type should be set to <b>Long Preamble</b> .
<b>Ⓒ Short Preamble</b>	The <b>Short Preamble</b> is intended for applications where minimum overhead and maximum performance is desired. If in a "noisy" network environment, the performance would be decreased.
<b>RTS Threshold</b>	This value should remain at its default setting of <b>2347</b> . Should you encounter inconsistent data flow, only minor modifications of this value are recommended.
<b>Select SharedKey Index</b>	Select from <b>1, 2, 3, 4</b> or <b>No selection</b> .
<b>Sharekey1 Sharekey2 Sharekey3 Sharekey4</b>	This setting is the configuration key used in accessing the wireless network via WEP encryption. Fill in the appropriate value/phrase.
<b>SSID</b>	<b>SSID</b> is the unique name shared among all points in your wireless network. It must be identical for all points in the network. It is case-sensitive and must not exceed 32 characters. Make sure that all points in the network are set the same.
<b>WEP</b>	WEP is a data privacy mechanism based on a 64 Bit/128 Bit shared key algorithm. Select <b>WEP key 128bit</b> or <b>WEP key 64bit</b> to enable WEP encryption.

4. In **Wireless Network Connection Properties** window, select the **Wireless Networks** tab.



**Use Windows to configure my wireless network settings**

- Disable the check box to use Manufacturer's Configuration Utility.
- Enable the check box to use Windows to configure.

**\* Use Manufacturer's Configuration Utility**

**Note:** If you want to use the manufacturer's configuration utility to configure the wireless settings. Make sure the check box is **NOT** enabled, and then the Network Status icon will appear in the taskbar. You can open it by double-clicking the icon.



**\* Use Windows to configure**

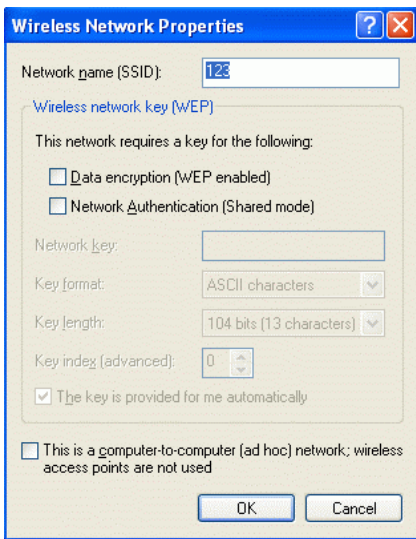
**Note:** If you want to use Windows XP's Wireless Configuration Utility to configure the wireless settings, make sure this item is enabled. The Network Status icon in the taskbar will disappear, and then you can use Windows to configure the wireless settings.

## **Available networks**

Displays all available networks.

## **Configure**

Click the button to set up a new network or WEP configuration as illustrated as below.



## **Refresh**

Click the button to refresh and search for all available networks.

## **Preferred networks**

From available network(s) listed above, you can select preferred one(s) in an order that you can arrange.

The marked one is the currently used network.



### **Move up**

Move the selected network forward one position.

### **Move down**

Move the selected network back one position

### **Add...**

Click the button and the **Wireless Network Properties** window will appear. In the **Network name** field, enter your desired network name listed in the above **Available networks** box, and click **OK**.

*Note: The new settings will be active only after you click on **OK** in the **Wireless Network Connection Properties** window.*

### **Remove**

Highlight the unwanted network listed in the **Preferred networks** box, and click the button to remove it.

### **Properties**

Highlight the network listed in the above **Preferred networks** box, and click the button to display its properties.

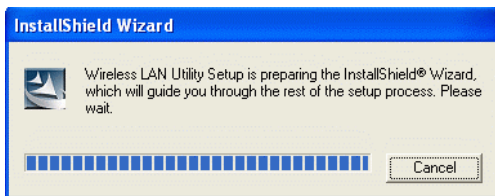
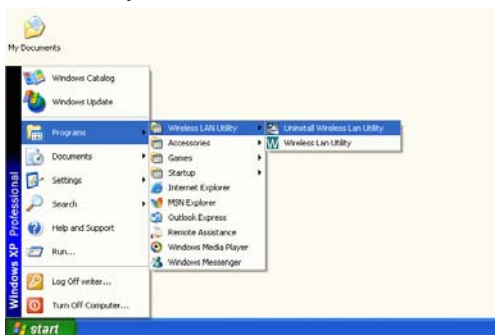
Once network configuration is done, make sure to click **OK**. The new parameters will be saved and active only after doing so.

# Uninstallation

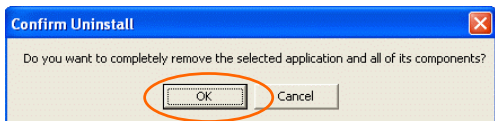
In case you need to uninstall the Utility or device, please refer to below sections.

## Uninstall the Manufacturer's Configuration Utility

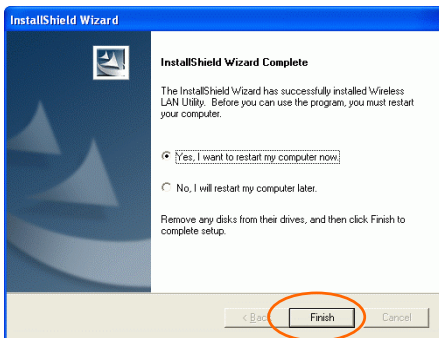
1. Go to **Start** → **Programs** → **Wireless LAN Utility** → **Uninstall Wireless LAN Utility**.



2. Click **OK** to continue.

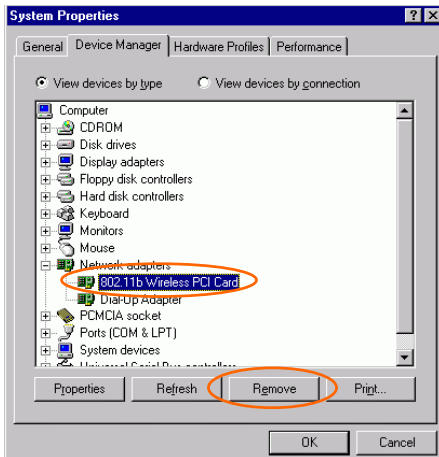


3. Select **Yes, I want to restart my computer now**, and then click **Finish** to complete the uninstalled procedure.

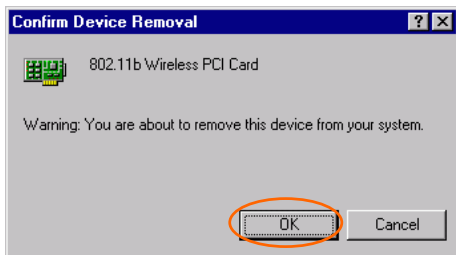


## Uninstall the device

1. Right-click **My Computer** → **Properties** → **Hardware** → **Device Manager**.
2. Right-click **802.11b Wireless PCI Card** then click **Uninstall** (or **Remove**).



3. Click **OK**.



4. The system will prompt you to restart your computer. Click **Yes**.

# Specifications

<b>Standard</b>	IEEE 802.11b, Wi-Fi compliant
<b>Host Interface</b>	PCI 2.2
<b>Antenna</b>	Dipole Antenna
<b>LED Indicators</b>	<ul style="list-style-type: none"> <li>▪ LINK: Green (ON)</li> <li>▪ ACT: Green (Blink)</li> </ul>
<b>Frequency Range</b>	2.412GHz-2.4835GHz
<b>Number of Selectable Channels</b>	<ul style="list-style-type: none"> <li>▪ USA, Canada: 11 channels</li> <li>▪ Europe: 13 channels</li> <li>▪ Japan: 14 channels</li> </ul>
<b>Data rate</b>	1/2/5.5/11 Mbps
<b>Modulation Technique</b>	Direct Sequence Spread Spectrum (CCK, DQPSK, DBPSK)
<b>Security</b>	0/64/128 bit WEP
<b>Bit Error rate</b>	Better than $10^{-5}$
<b>Media Access Protocol</b>	CSMA/CA (Collision Avoidance) with ACK
<b>Power Requirement</b>	<p>Operating Voltage: 5V</p> <ul style="list-style-type: none"> <li>▪ TX consumption: 430mA (Max)</li> <li>▪ RX consumption: 300mA (Max)</li> <li>▪ Sleep Mode: 25mA</li> </ul>
<b>Physical Specifications</b>	<ul style="list-style-type: none"> <li>▪ Weight: 50g</li> <li>▪ Dimension: 119.9 (L) x 46.7(W) mm</li> </ul>
<b>Environment Specifications</b>	<ul style="list-style-type: none"> <li>▪ Operating Temperature: 0~65 °C ambient temperature</li> <li>▪ Storage Temperature: -20~75 °C ambient temperature</li> <li>▪ Operating humidity: 95% maximum (non-condensing)</li> <li>▪ Storage humidity: 95% maximum (non-condensing)</li> </ul>

<b>Supported OS</b>	<ul style="list-style-type: none"><li>▪ Windows 98</li><li>▪ Windows ME</li><li>▪ Windows 2000</li><li>▪ Windows XP</li></ul>
<b>EMC Certification</b>	<ul style="list-style-type: none"><li>▪ FCC Part 15 in US</li><li>▪ EN300328 and EN300826 (EN301489-17) in Europe</li></ul>