# EXHIBIT K – User Manual


# FCC ID#  PEL640-0001

**Users Manual**

**Wireless LAN PC Card**

PRELIMINARY

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## Regulatory Information

### USA – Federal Communications Commission (FCC)

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

- This device may not cause harmful interference;

- This device must accept any interference received, including interference that may cause undesired operation.

### Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device and a low power transmitter, 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.  If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications.  However, there is not a 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 and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna;
- Increase the distance between the equipment and the receiver;
- Connect the equipment to 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.

### Canada – Industry Canada (IC)

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of Industry Canada (RSS 210).

Le présent appareil numérique n'émet pas de bruits radio-électriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dens le Règlement sur le brouillage radioélectrique édicté par l'Industrie (RSS210).

### Europe – EU Declaration of Conformity

This device complies with the specifications listed below, following the provisions of the EMC Directive 89/336/EEC:
ETS 300-826 General EMC requirements for Radio equipment
ETS 300-328 Technical requirements for Radio equipment

**CE Mark - Declaration of Conformance**

This is to certify that this product complies with ISO/IEC Guide 22 and EN45014. It conforms to the following specifications:

| EMC: | EN55022(1988)/CISPR-22(1985) | Class B |
| | IEC 61000-4-2(2000) | 4kVCD, 8kVAD |
| | IEC 61000-4-3(2000) | 3V/m |
| | IEC 61000-4-4(2000) | 1kV- (power line) |
| | IEC 61000-4-6(2000) | 3Vrms |
| | IEC 61000-4-11(2000) | 3Vrms |

This product complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC, and carries the CE Mark accordingly.

## Precautions

### Safety

- Operation of any radio transmitting equipment, including a Wireless LAN PC Card, may cause interference with the functionality of inadequately protected medical devices.
- Do not use the Wireless LAN PC Card on an aircraft.
- Do not use the Wireless LAN PC Card at a refueling point.
- Do not use the Wireless LAN PC Card near flammable materials or chemicals.
- Do not use the Wireless LAN PC Card where blasting is in progress.
- Do not use the Wireless LAN PC Card when the use of wireless device may cause interference or danger.
- Do not use the Wireless LAN PC Card where the use of cellular terminals is prohibited.
- Only qualified service personnel must repair the equipment.
- Use approved accessories only. Do not connect incompatible products.
- Use only accessories approved by the Wireless LAN PC Card manufacturer for use with this particular Wireless LAN PC Card. The use of any other types will invalidate any approval or warranty applying to the Wireless LAN PC Card, and may be dangerous.
- Use only the channel settings appropriate for the country where the Wireless LAN PC Card is used at the present time. Using the card with incorrect channel settings is prohibited and may be illegal.
- Do not drop or cause a mechanical shock to the Wireless LAN PC Card, as this may damage the unit.

### Installation

Do not place the Wireless LAN PC Card where it will be exposed to the following conditions:

• Unstable surface.
• High humidity or poor ventilation.
• Excessive dust.
• Direct sunlight or extreme heat.
• Closed cars.
• Magnetized location (near a magnets, speaker, or TV).

### Operation

- If the Wireless LAN PC Card is moved directly from a cold location to a warm one, or if it is placed in a very damp environment, moisture may condense on the parts inside. The Wireless LAN PC Card may not operate properly should moisture occur.
- Wireless LAN PC Card supports 3.3V notebook computers only.
- Microwave oven degrades the performance of wireless LAN drastically. So do not use the Wireless LAN PC Card in the environment where microwave oven is being used.

### Cleaning

Clean the casing with a soft cloth, lightly moistened with water or a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzene as it may damage the finish of the casing.

## Hardware Description

The Wireless LAN PC Card is an extended type II PC card (PCMCIA card). The Wireless LAN PC Card is for mobile, portable notebook computers, mobile data systems, and appliances. It is compatible with wireless inbuilding local area networks that are proliferating in general enterprise office computing, small office/home office, residential consumer, and public space markets.

The Wireless LAN PC Card is designed to be inter-operable with any wireless IEEE 802.11 and IEEE 802.11b LAN product that is based on Direct Sequence Spread Spectrum (DSSS) radio technology, and is compliant to the IEEE 802.11 Standard on Wireless LANs (Revision B), as defined and approved by the Institute of Electrical and Electronics Engineers.

### LED Indicator

The Wireless LAN PC Card includes one status LED indicator, whose operation is described in the following table.

| Mode | Status | Description |
| --- | --- | --- |
| Ad Hoc | Flashing | Indicates that the Wireless LAN PC Card is operating in Ad Hoc mode |
| Infrastructure | Flashing | Indicates that the Wireless LAN PC Card is browsing active access points. |
| Infrastructure | Steady (On) | Indicates a valid connection to an access point. |

### System Requirements

Prior to installing the Wireless LAN PC Card, please check your system for the following requirements:

- A computer with a PCMCIA Type II slot, and a PCMCIA card and socket services compliant with revision 2.10 of the PCMCIA specification.

- Windows 95/98/2000 (Please have the Windows installation CD-ROM available for use during installation).

- A minimum of 500K bytes of free disk space for installing the driver and utility programs.

## Hardware Installation

This chapter describes how to install your Wireless LAN PC Card into the PC Card slot of your computer.

### Preparation

Unpack your Wireless LAN PC Card kit and verify all items are present as described below.  If any items appear to be damaged or missing, please contact your supplier.

Your Wireless LAN PC Card comes with the following items:

- Wireless LAN PC Card (1)
- CD-ROM (set-up/driver disk, User Manual, and Customer License Agreement) (1)
- Quick Installation for Windows 95/98/2000 (1)
- Warranty Card (1)


### Installing the PC Card into your notebook

1. Locate available Type II or Type III PCMCIA slot on your notebook computer. Remove the PC Card slot protector from the computer. (Some computers contain the card slot protector to prevent damage to the slot when not in use.)

2. With the PCMCIA adapter's 68-pin connector facing the PCMCIA slot and the NextComm label facing up, slide the PC Card into the PCMCIA slot until it is firmly seated. If the card does not fit easily, do not force it.  Take the card out and try reinserting. Note that the PCMCIA slot allows you to "hot swap" PC Cards any time, even when the power of your computer is on.

Hardware installation is complete.


### To Remove the Wireless LAN PC Card

1. Close the software that uses the Wireless LAN PC Card.

2. Stop the PC Card Services on the system tray and Control Panel.

3. Remove the Wireless LAN PC Card, following the instructions in your computer's manual.

## Installation for Windows

### Introduction

This chapter describes the installation of the Wireless LAN PC Card Driver for the Microsoft Windows 95, 98, and 2000 operating systems.

Note:
Prior to copying or installing the software, you are advised to read the Customer License Agreement.  By installing, copying, or using the Wireless LAN PC Card software, you are consenting to be bound by this agreement.  If you do not agree to all the terms of the Customer License Agreement, do not download, copy, or install the Wireless LAN PC Card software.

### What You Need to Know

Installing a Wireless LAN PC Card requires the same level of expertise that you would need to install any other type of standard Ethernet network adapter card.  It is assumed that you have a working knowledge of standard Windows 95/98/2000 operations and of installing network adapter cards.

### Installing the Driver Software

1. Windows 95/98/2000 operating systems support "Plug and Play" for PC Cards. Once you insert the PC Card into your computer, Windows 98 will automatically identify the PC Card and prompt you to install the necessary driver (when the operating system cannot find the required driver). This will typically occur when inserting the Wireless LAN PC Card into your computer for the first time.  Place Driver CD-ROM into your CD drive and close the drive and click **Next** to proceed.

   NOTE:
   In some occasions Windows 95/98/2000 operating systems may not detect the new hardware. This may be the case in situations where:
   • The laptop computer into which you wish to install the Wireless LAN PC Card is a brand-new "out-of-the-box" computer, where the Windows 95/98/2000 operating system was already factory-installed.
   • Previous installation of a Wireless LAN PC Card was aborted before it was finished.

2. Make sure search for the best driver for your device is selected and click **Next**.

3. Make sure that Specify a location is selected and click **Browse**.

4. Windows will ask you to browse for the folder.  Simply select the Windows 95/98/2000 folder in which the driver is located and click **OK**.

5. You will be returned to the new hardware Wizard screen.  Verify that the correct folder is selected to install the driver and click **Next**.

6. Windows is now ready to install the driver.  Click the **Next** button to continue.

7. Before completely driver installation, the driver software will guide you through the configuration of your card.  Please see the User Guide for complete instructions on Configuration.

8. After completing configuration, the driver files will be copied.  Once this is completed, Windows will request that you insert the Windows 95/98/2000 CD.  Insert your Windows CD and select D:\win95, or D:\win98, or C:\win2000 from the drop down list.  Then click **OK**.

9. After Windows 95/98/2000 has copied files from your CD, you will be notified that installation has been completed. Click **Finish** to continue.

10. Windows will ask you to restart your computer.  Click the Yes button to restart.

Installation is complete.

## Wireless LAN Configurations

End users access the 802.11 wireless LAN through wireless-LAN adapters, which are implemented as PC cards in notebooks, palmtop computers, or Internet appliances and as PCI cards in desktop computers. The nature of the wireless connection is transparent.

At its most basic, two PCs equipped with wireless adapter cards can set up an independent network whenever they are within range of one another. This is called a peer-to-peer or ad-hoc network. Peer-to-peer networks require no administration or preconfiguration. Each client would only have access to the resources of the other client and not to a central server.



*A wireless peer-to-peer network*

In a typical 802.11 wireless LAN configuration, a transmitter/receiver (transceiver) device, called an access point, connects to the wired network from a fixed location using standard cabling. At a minimum, the access point receives, buffers, and transmits data between the wireless LAN and the wired network infrastructure. A single access point can support a small group of users and can function within a range of less than 35 meters to several hundred meters.

Installing an access point can extend the range of a peer-to-peer network, effectively doubling the range at which the devices can communicate. Since the access point is connected to the wired network, each client can have access to server resources as well as to other clients. Each access point can accommodate many clients; the specific number depends on the number and nature of the transmissions involved. Many real-world applications exist where a single access point services up to 250 client devices.



*Access Point*

*Client*

*Client and Access Point*

Access points have a finite range, on the order 35 meters indoor and 225 meters outdoors. In a very large facility such as a warehouse, or on a college campus, it may be necessary to install more than one access point.

A Residential Gateway provides the best utilization to multiple users by sharing a public IP address, in addition to providing connection to a DSL or cable modem. The embedded Network Address Translation (NAT) enables the use of private sets of IP addresses by translating to a single public IP address.

*Residential
Gateway*

*Client*

*Client and Residential Gateway*

<u>**Configuration and Diagnostic Utility**</u>

The Wireless LAN PC Card software provides management software for quick network configuration and easy diagnostics.

<u>**Using the Wireless LAN Utility**</u>

Once the installation is complete, the configuration utility can be accessed by selecting the "Configuration Utility" icon from the "802.11 Wireless LAN" folder.

Select "Start", then "Programs", then "PRISM 802.11 Wireless LAN, then "Configuration Utility".

This configuration software includes the following functions:

**Link Information**
Allow you to monitor network status.

**Configuration**
Allows you to configure parameters for the Wireless LAN PC Card.

**Encryption**
Provides WEP security control.

**Link Information Screen**

After starting the wireless LAN utility, the hardware information window is shown on the first folder of the utility windows as shown below. Click on **Link Info** tab to monitor the network status of the Wireless LAN PC Card, including the BSS ID, current channel, transmission rate used, throughput, link quality, and signal strength.
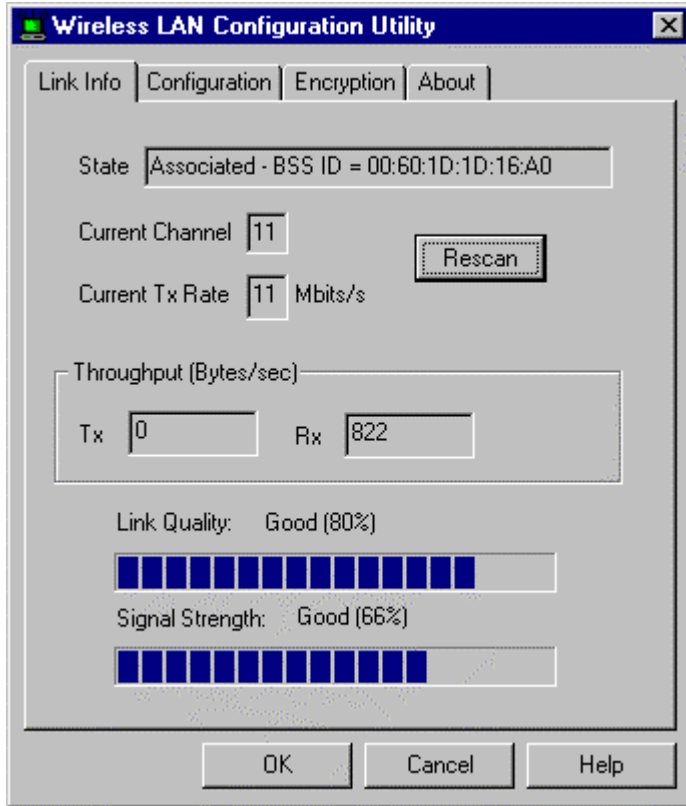
## Configuration Screen

The Configuration Screen allows you to check and modify the configuration of the Wireless LAN PC Card.  The user-definable parameters are shown below:
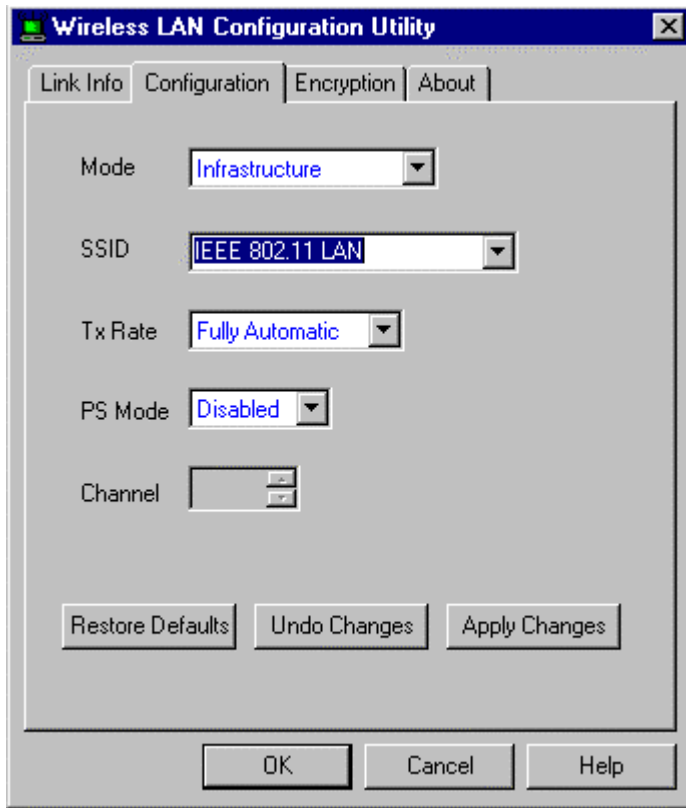


**Mode**
Set the station operation mode to:
AdHoc – network configuration that does not use access points
Infrastructure (Default) – configurations with access points

**SSID**
Input an SSID string that you want to connect to. "Any" is the default.

**TxRate**
Indicates the transmission rates.  Select appropriate transmission data rate to match your wireless LAN setting. "Fully Automatic" is default.
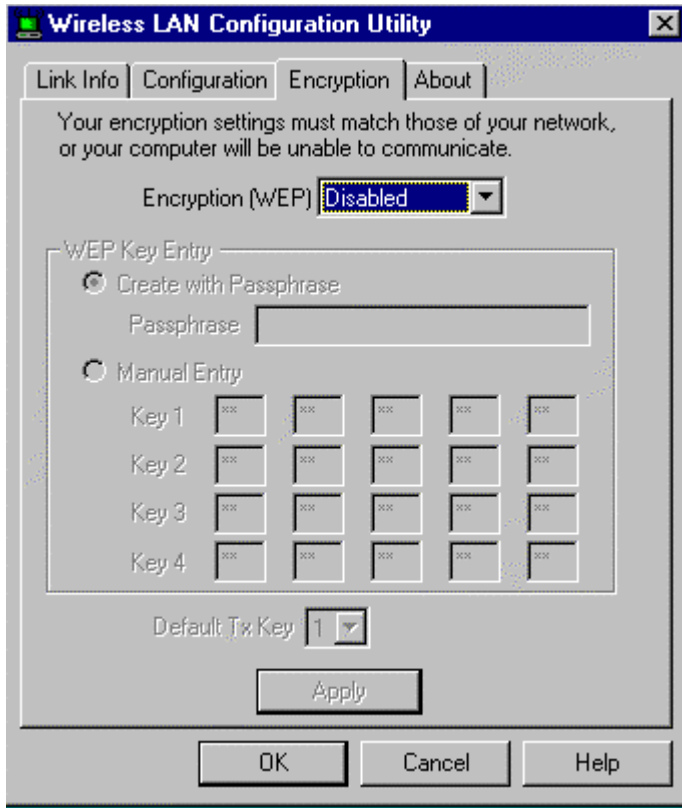
**PS Mode**
Enables the power saving mode to reduce power consumption. "Disabled" is default.

**Channel**
Ad-Hoc – set the channel number to the same channel as is being used by the other wireless clients in the group.
Infrastructure – the channel is automatically set to the access point that the Wireless LAN PC Card connects to.

<u>**Encryption Screen**</u>



**WEP**
For more secure data transmissions, select "64 bit" or "128 bit" setting to use WEP security.  The 128-bit setting gives a higher level of security, but all devices in the network must have this same setting.  For normal use, retain "Disabled" WEP. "Disabled" is default.

To use the WEP function, do the following:

1.  Select "64 bit" or "128 bit" for the Encryption field in the Encryption folder

2.  Enter your "Passphrase" and click on "apply" to create security keys.

<u>Specifications</u>

**Automatic Rate Selection**   11, 5.5, 2, or 1 Mbps

**Standards**   Compatible to IEEE 802.11b 11 Mbps and 5.5 Mbps standard and IEEE 802.11 Direct Sequence Spread Spectrum (DSSS) 1 Mbps and 2 Mbps standard

**Operating Range[1]**
Open Environment[2]   750 ft (225 m) @ 11 Mbps
1250 ft (380 m) @ 5.5 Mbps
1800 ft (550 m) @ 2 Mbps
2500 ft (775 m) @ 1 Mbps

Semi Open Environment[3]   225 ft (70 m) @ 11 Mbps
325 ft (100 m) @ 5.5 Mbps
420 ft (125 m) @ 2 Mbps
530 ft (160 m) @ 1 Mbps

Closed Environment[4]   115 ft (35 m) @ 11 Mbps
160 ft (50 m) @ 5.5 Mbps
180 ft. (55 m) @ 2 Mbps
225 ft (70 m) @ 1 Mbps

**Transmitted Output Power**   +20 dBm EIRP
(Maximum)

**Receiver Sensitivity**   -82 dBm @  11 Mbps
(Typical)   -87 dBm @  5.5 Mbps
-91 dBm @  2 Mbps
-94 dBm @  1 Mbps

**Frequency Range**   2412 MHz. to 2462 MHz

**Modulation**   DBPSK; DQPSK

**Coding Technique**   1 Mbps and 2 Mbps:      11 chip/bit Barker Coding
5.5 Mbps and 11 Mbps:  Complementary CodeKeying (CCK)

**Number of Channels**   USA/Canada (FCC/RSS)          11
Japan (JP)                              1
France (FR)                            4
Remainder of Europe (ETS)     13

**Security**   Secure information transmission with 40 and 128-bit Wired Equivalent Privacy (WEP) Data Encryption, RC4

**Antenna**   Integrated dual diversity antenna system

**Operating voltage**   3.3 V $\pm$ 5%

| **Environmental** | Operating | 32° to 95° F. (0° to 35° C.) |
| | | 95% humidity max, non condensing |
| | | |
| | Storage | -13° to 140° F. (-20° C. to 70° C.) |
| | | 95% humidity max, non condensing |

**Host Interface**   PC Card Type II

**Dimensions**   117.8 mm x 53.95 mm x 8.7 mm (PC Card)

| **Electromagnetic Compliance** | USA | FCC (47CFR) Part 15C, Section 15.247 |
| | Canada | ISC RSS-210 |
| | Europe: | ETS 300 328 and ETS 300 826 |

[1] Actual data transmissions rates may vary considerably depending on the number of users, type of usage (file sizes and frequency of up/down loading), speed of network, typical packet size, and distance from an access point or other mobile user. Walls, partitions, ceilings, racks, and merchandise, and the composition of the building's construction affect operating range inbuilding.
[2] In Open Office environments, antennas can "see" each other, i.e. there are no physical obstructions between them.
[3] In Semi-open Office environments, workspace is divided by shoulder-height, hollow wall elements; antennas are at desktop level.
[4] In Closed Office environment, workspace is separated by floor-to-ceiling masonry walls or equivalent.

**Radio Characteristics**

Wireless communication is often subject to local radio regulations. Although Wireless LAN PC Card has been designed for operation in the license-free 2.4 GHz band, local radio regulations may impose a number of limitations to the use of wireless communication equipment. To comply with such regulations, please select the channel-sets identified for your country or region in Supported Channels below.

**Supported Channels**

Subject to the radio regulations that apply in your country, your Wireless LAN PC Card may support a different set of channels.  Contact your authorized Wireless LAN PC Card reseller or NextComm main office for information about the radio regulations that apply in your country.

**IEEE 802.11 Channels**

| Frequency Range | 2400 MHz to 2485 MHz | | | | |
|---|---|---|---|---|---|
| Channel ID | FCC | ETSI | Spain | France | Japan |
| 1 | 2412 | 2412 | | | |
| 2 | 2417 | 2417 | | | |
| 3 | 2422 | 2422 | | | |
| 4 | 2427 | 2427 | | | |
| 5 | 2432 | 2432 | | | |
| 6 | 2437 | 2437 | | | |
| 7 | 2442 | 2442 | | | |
| 8 | 2447 | 2447 | | | |
| 9 | 2452 | 2452 | | | |
| 10 | 2457 | 2457 | 2457 | 2457 | |
| 11 | 2462 | 2462 | 2462 | 2462 | |
| 12 | | 2467 | | 2467 | |
| 13 | | 2472 | | 2472 | |
| 14 | | | | | 2484 |

## Frequently Asked Questions

### What are the benefits of wireless networking?
Wireless networking provides mobility, short and long-term cost savings, increased reliability, reduced installation times and easy installation in difficult areas.

### Does wireless LAN eliminate the wired LAN?
No. Through the deployment of access points or base stations, wireless LAN technology can be used to extend the reach of an existing wired LAN.

### What is the data rate for the NextComm 11 Mbps Wireless LAN Card?
Automatic data rate selection dynamically supports 11, 5.5, 2, and 1 Mbps for maximum availability and reliability of network connections.  The proper data rate is determined automatically permitting robust connectivity. The NextComm 11 Mbps Wireless LAN Card automatically steps down from 11 Mbps to 5.5 Mbps to 2 Mbps to 1 Mbps as a user moves away.

### What is the coverage area of the NextComm 11 Mbps Access Point?
Walls, partitions, ceilings, racks, and merchandise, and the composition of the building's construction affect operating range inbuilding.  Data transmission speed is also a factor that affects operating range.  Lower data transmission speed allows greater distance due to improved receiver sensitivity (A measurement of the weakest signal a receiver can receive and still correctly translate it into data.). Transmitted output power is another factor that effects operating range. As the transmitted output power increases, the operating range increases.

In Open Office environments where antennas can "see" each other (there are no physical obstructions between them) typical operating ranges are:
> 750 ft (225 m) @ 11 Mbps
> 1250 ft (380 m) @ 5.5 Mbps
> 1800 ft (550 m) @ 2 Mbps
> 2500 ft (775 m) @ 1 Mbps

In Semi-open Office environments where the workspace is divided by shoulder-height, hollow wall elements and antennas are at desktop level, typical operating ranges are:
> 225 ft (70 m) @ 11 Mbps
> 325 ft (100 m) @ 5.5 Mbps
> 420 ft (125 m) @ 2 Mbps
> 530 ft (160 m) @ 1 Mbps

In Closed Office environment where the workspace is separated by floor-to-ceiling masonry walls or equivalent, typical operating ranges are:
> 115 ft (35 m) @ 11 Mbps
> 160 ft (50 m) @ 5.5 Mbps
> 180 ft. (55 m) @ 2 Mbps
> 225 ft (70 m) @ 1 Mbps

### What is IEEE 802.11 standard?
The IEEE 802.11 Wireless LAN standards subcommittee, which is formulating a standard for the industry. The objective is to enable wireless LAN hardware from different manufacturers to communicate.

**What IEEE 802.11 features are supported?**
The product supports the following IEEE 802.1 1 functions:
- CSMA/CA plus Acknowledge protocol
- Multi-Channel Roaming
- Automatic Rate Selection
- RTS/CTS feature
- Fragmentation
- Power Management

**What is the Ad-hoc mode?**
In Ad-hoc (peer-to-peer) mode, several wireless stations (e.g. notebook computers) can get together in a local area (e.g. conference room) and form their own wireless network. Through peer-to-peer communication, they can share documents and devices.  This allows peer-to-peer communication without using an access point

**What is Infrastructure?**
An integrated wireless and wired LAN is called an Infrastructure configuration. Infrastructure is applicable to enterprise scale for wireless access to central database, or wireless application for mobile workers.

**What is Roaming?**
Roaming is the ability for a wireless user to move from room to room, or even building to building on a campus, and not loose their connection to the network.  Roaming is specifically defined as the ability to effortlessly move between access points that are on different channels but have the same network name.

Before using the roaming function, the workstation must make sure that it is the same channel number with the Access Point of dedicated coverage area. To achieve true seamless connectivity, the wireless LAN must incorporate a number of different functions. Each node and Access Point, for example, must always acknowledge receipt of each message. Each node must maintain contact with the wireless network even when not actually transmitting data. Achieving these functions simultaneously requires a dynamic RF networking technology that links Access Points and nodes. In such a system, the user's end node undertakes a search for the best possible access to the system. First, it evaluates such factors as signal strength and quality, as well as the message load currently being carried by each Access Point and the distance of each Access Point to the wired backbone. Based on that information, the node next selects the right Access Point and registers its address. Communications between end node and host computer can then be transmitted up and down the backbone. As the user moves on, the end nodes RF transmitter regularly checks the system to determine whether it is in touch with the original Access Point or whether it should seek a new one. When a node no longer receives acknowledgment from its original Access Point, it undertakes a new search. Upon finding a new Access Point, it then reregisters, and the communication process continues.

**What is BSS ID?**
The Basic Service Set (BSS) is the communication domain for each access point. Computers in a BSS must be configured with the same BSS ID.

### What is ESS ID?

An Infrastructure configuration could also support roaming capability for mobile workers. More than one BSS can be configured as an Extended Service Set (ESS). Users within an ESS could Roam freely between BSSs while served as a continuous connection to the network wireless stations and Access Points within an ESS must be configured with the same ESS ID and the same radio channel.

### What is ISM band?

The FCC and their counterparts outside of the U.S.A. have set aside bandwidth for unlicensed use in the ISM (Industrial, Scientific and Medical) band. Spectrum in the vicinity of 2.4 GHz, in particular, is available worldwide.

### What is Spread Spectrum?

Spread Spectrum technology is a wideband radio frequency technique developed by the military for use in reliable, secure, mission-critical communications systems. It is designed to trade off bandwidth efficiency for reliability, integrity, and security. In other words, more bandwidth is consumed than in the case of narrowband transmission, but the trade off produces a signal that is, in effect, louder and thus easier to detect, provided that the receiver knows the parameters of the spread-spectrum signal being broadcast.  Direct-sequence spread-spectrum (DSSS) generates a redundant bit pattern for each bit to be transmitted. This bit pattern is called a chip (or chipping code). The longer the chip, the greater the probability that the original data can be recovered. Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the radio can recover the original data without -the need for retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrowband receivers.

### Would the information be intercepted while transmitting on air?

WLAN features two-fold protection in security. On the hardware side, with Direct Sequence Spread Spectrum technology, it has the inherent security feature of scrambling. On the software side, WLAN series offer the encryption function (WEP) to enhance security and Access Control.

### What is WEP?

WEP is Wired Equivalent Protection, a data privacy mechanism ( RC4 encryption algorithm) based on four 10-bit keys for the 64-bit WEP setting or one 26-bit key for the 128-bit WEP setting, as described in the IEEE 802.11 standard. This WEP security protects your wireless LAN against eavesdropping and unauthorized access by hackers or unexpected intruders.

**Troubleshooting**

If you encounter difficulty using and/or installing your Wireless LAN PC Card, the error may be related to various causes:

- Out-of range situation, which prevents the Wireless LAN PC Card from establishing a wireless connection with the network.
- Configuration mismatch, which prevents the Wireless LAN PC Card from establishing a wireless connection with the (correct) network.
- Absence of, or conflict of the Wireless LAN PC Card Driver.
- A problem or conflict with the PC Card slot which prevents the PC Card from powering on.
- A conflict of the Wireless LAN PC Card hardware with another device.

This section describes how to solve common problems you may encounter when using your Wireless LAN PC Card. Many problems have simple solutions.

**My computer does not detect the Wireless LAN PC Card.**
- The Wireless LAN PC Card may not be properly inserted into the PC card slot of your computer. Check that the Wireless LAN PC Card is inserted in the proper direction, then push it in as far as it will go.

**Other computers on the wireless LAN are not displayed.**
- You did not enter the password when Windows started. Enter the user name and the password requested on Windows startup, then log onto the LAN.
- The windows environment is not properly set up. Follow the instructions in Setting up Windows environment to set it up properly.
- No other computers are logged onto the wireless LAN.

**The data transfer speed is slow.**
- There is radio interference with another Access Point. Try assigning another channel number using one of the Access Point setup utilities.
- There are too many clients logging on to the Access Point. Try later.

**The communication data rate is supposed to be 11 Mbps, but MPEG2 data transfer fails.**
- 11 Mbps is the gross transmission rate. The actual net transmission rate is approximately 4 to 5 Mbps. This occurs with almost all IEEE 802.11 compliant products. The high-speed stream transfer of MPEG2 using very short packets, may require a higher gross transmission rate.

**No communication is available even though my computer is located within 50 m (165 feet) of the Access Point.**
- The actual communication distance depends on the installation site and ambient conditions. Move your computer closer to the Access Point.

## Glossary

**Channel number**
The frequency used for wireless communications.
Wireless communications are available only among client computers and Access Points that use the same channel.

**Client**
A single computer on a wireless LAN.
It may be called a client computer as well.

**DHCP (Dynamic Host Configuration Protocol)**
DHCP lets network administrators centrally manage and automate assignment of IP addresses with a network environment.

**DNS (Domain Name System)**
A system that translates host names into IP addresses.
Networks that use the TCP/IP protocol, such as the Internet, use a set of numbers like 192.168.0.1 (IP address) to identify a computer. However, since the IP address is rather hard to remember, DNS was developed to allow a name like "www.nextcomminc.com" to identify a computer for convenience.
DNS servers manage these translations from host names into IP addresses.

**Encryption Key**
IEEE802.11-compliant security system.
Using the Encryption Key as the password, only client computers and Access Points that have the same ID and password may log onto the same wireless LAN for file sharing.

**LAN (Local Area Network)**
A network, which is accessible only to its members, unlike the Internet, which is open to an unlimited number of people.
A LAN may be built for different purposes. For example, you can build an office LAN that is accessible only to members of the same department or a home LAN that is accessible only to family members.

**NetBEUI (NetBIOS Extended User Interface)**
NetBEUT is part of the transport layer, not the NetBIOS programming interface. NetBEUI cannot be routed, so it is most appropriate in single subnet (continuous) network.

**Protocol**
The formal specifications that define the procedures for computers to follow when transmitting and receiving data.

**TCP/IP (Transmission Control Protocol/Internet Protocol)**
TCP is a connection-oriented protocol for establishing reliable, sequenced data transfer.
TCP ensures that data reaches its destination.
IP assembles and addresses data packets for transmission to their network destinations.

**WAN (Wide Area Network)**
A network that interconnects remote LANs through the Internet or telephone lines.

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