Flarion

PC 1000 Wireless Network Card

User Guide

Make the Internet Move™

Table of Contents

About Flarion

Company

The PC 1000 wireless network card is produced by Flarion Technologies, Inc. of Bedminster, New Jersey (USA). Flarion is a privately-held firm, which was founded in 2000 when its original research & development team and technology were spun out of Bell Labs / Lucent Technologies. Flarion is backed by a strong group of investors that include Bessemer Venture Partners, Charles River Ventures, Cisco Systems, Equitek Capital, New Venture Partners, Nassau Capital, Pequot Capital, and SK Telecom.

Technology

Flarion's patent-pending flash-OFDM™ technology was invented at Bell Labs in 1998 by a team of distinguished scientists, led by Flarion's founder, Dr. Rajiv Laroia. It is a digital spread-spectrum based technology that divides its wireless signal into equally spaced frequency tones, each of which carries a portion of a user's transmitted data. A tone can be thought of as a frequency, in the same way each key on a piano represents a unique frequency. The flash-OFDM signal has a special property that allows its receiver to clearly interpret each tone – without interference from the other tones. The result is a breakthrough in wireless performance and a truly broadband connection for mobile data communications.

Products

Flarion has incorporated its flash-OFDM technology into its flagship products, the PC 1000 Wireless Network Card for end users and the RadioRouter™ Network for wireless service providers. The company's PC 1000 wireless network card enables users' laptops, PDAs and other PCMCIA-compatible devices to connect wirelessly with their service provider's RadioRouter network at average speeds of 1.5 Megabits per second. Flarion's system provides truly broadband access to the Internet with cellular-like coverage and mobility.

PC 1000 Card Basics

Introduction

The PC 1000 wireless network card is plug-and-play compatible with a standard Type II PCMCIA card slot available on computing devices such as notebooks, PDAs and IP-based digital cameras. And because the PC 1000 is based on the flash-OFDM technology, which was designed around the Internet Protocol, no changes are required to device operating systems, applications or content.

PC 1000 provides users high-speed access to company networks, email, instant messaging, and the Internet, with the freedom and flexibility of fully mobile, wireless connectivity.

Features

- Based on patent-pending flash-OFDM wireless technology
- True broadband data rates
- Wide area network coverage
- Supports full vehicular mobility with speeds up to 200 mph
- Compatibility with devices, operating systems, applications, and content
- Flarion Mobility Manager software provides status and help guides
- Low power consumption
- Optional high gain antenna

Operating Systems Supported

Notebook PCs
Windows® 98SE, Me, 2000, and XP

Personal Digital Assistants and Handheld PCs
Pocket PC 2000, Pocket PC 2002, Handheld PC 2000

Package Contents

Your PC 1000 card package contains the following components:

- PC 1000 wireless network card
- Flarion flexible "pen" antenna
- Flarion high-performance antenna and cable
- PC card software and this user guide
- Quick Start Guide
- Customer Service Contact Information Card

Getting Started

To get started, you need to install the PC 1000 card software.

PC 1000 Software

The PC 1000 card comes with the following software:

- An application called Flarion Mobile Manager (FMM) that allows you to manage and monitor your connections
- Driver software that allows interfacing between the network card and operating system (e.g. Windows 98SE).

The Flarion Mobile Manager software should be installed before you insert the PC 1000 card for the first time.

See Installing the PC 1000 Management Software on pages XX, XX and XX for further details.

Care and Maintenance

As with any electronic device, the PC 1000 card should be handled with great care:

1. The PC 1000 card should fit easily into card slot. Do not force PC 1000 card into slot, as damage may occur to connector pins
2. Keep antenna perpendicular to the card. Do not forcefully bend the antenna.
3. When storing or transporting your notebook PC, remove the antenna and store it in a safe location
4. Keep PC 1000 card away from liquids, excessive heat and dust.
5. Store the PC 1000 in a safe place when not in use

Installation on Notebook PCs

System Requirements

The PC 1000 card is supported on the following operating systems:

- Windows 98SE
- Windows Me
- Windows 2000
- Windows XP

To install the PC 1000, the following system requirements must be fullfilled:

Card Slots-	Type II PCMCIA card slot
Disc Drives-	CD-Rom
Ports-	One Communication Port needed
Memory-	32 MB
Hard Disc Space-	5 MB
I/O Resources-	1 IRQ, 256 bytes I/O space

Installing the Flarion Mobile Manager and PC 1000 Card Driver

Follow these instructions to install the Flarion Mobile Manager software and the PC 1000 Wireless PC Card driver (if they are not pre-installed). *Do not insert the PC 1000 Wireless PC Card until you have reached the appropriate step in the instructions.*

1. Close any Windows programs that are running and insert the PC 1000 Flarion Installation CD into your CD-ROM drive. If the CD does not start automatically, select **Start** > **Run** from the task bar and enter **D:\Setup.exe** where **D** is your CD-ROM drive letter.

2. The Flarion Mobile Manager Wizard guides you through the installation of Flarion Mobile Manager and the driver. (Use the **Next** > and < **Back** buttons to navigate the wizard and click **Finish** on the final window).

3. You can now insert the PC 1000 Wireless PC Card.
   With the color logo facing up, insert the PC 1000 into an unused card slot (do not force the PC card into the slot as this may damage the connector pins). See more

4. Insertion of the card triggers Windows to search for and load a device driver for the card. The **Found New Hardware** wizard will appear.

   - For Windows 98SE, the wizard will recognize the PC 1000 Card. Then it will prompt you to insert the PC 1000 Installation CD. Make sure the

PC 1000 Installation CD is still in the CD-ROM drive, click **OK**, then select **D:** to copy files (where **D** is your CD-ROM Drive). Click **OK**. Then it prompts for 98 Second Edition CD-ROM. Insert 98SE CD-ROM in the CD-ROM drive, click **OK,** select **D:\WIN98** to copy files, and click **OK**. At this point the driver installation is completed.

- For Windows Me, the wizard recognizes the PC 1000 Card. Then it will prompt you to insert the PC 1000 Installation CD. Make sure the Flarion CD is still in the CD-ROM drive, click **OK**, then select **D:** to copy files (where **D** is your CD-ROM Drive). Click **OK**. At this point the driver installation is completed.

- For Windows 2000, the wizard will recognize the PC 1000 Wireless Network Card. When the **Digital Signature Screen** appears, click on **Yes**. Windows will complete the driver installation.

- For Windows XP, click **Next** on the first screen of the wizard. When the **Digital Signature Screen** appears, click **Continue Anyway**. Click **Finish** on the final screen to complete the wizard and driver installation.

5. Depending on your operating system, you may be prompted to restart your PC. If prompted, restart your PC by leaving the PC card in the slot.

Your PC 1000 Card has been pre-activated - It is ready for use as soon as software and drivers are installed. Just plug and play!

PC Card Insertion and Removal

The PC 1000 should be inserted into the PC card slot with the label facing up.

Insertion

When you insert the PC 1000, the following should occur:

- The notebook PC light will blink until it connects to the network
- The PC card icon appears
- Flarion Mobile Management software is launched

Removal

To remove the PC 1000 card:

- Close the Flarion Mobile Manager (if it is still open)
- Click the PC 1000 card icon to display the option of stopping the card
- Click on "Stop"
- A dialog box will appear notifying you that it is safe to eject the card
- Use the Ejector to remove the PC 1000 card

Installation on Handhelds & Pocket PCs

System Requirements

The PC 1000 card is supported on the following systems:

- Pocket PC 2000
- Pocket PC 2002
- Handheld 2000

To install the PC 1000, the following resources are required:

Card Slots-	PCMCIA Jacket Accessory (with single card slot) if Pocket PC. Many handheld PCs have card slot.
Connector to Host Computer-	USB Autosync Cable or Serial Autosync Cable
Memory-	900 k of storage memory

The host computer (desktop or notebook) must have:

- Necessary port to connect to handheld/Pocket PC
- CD-Rom Drive
- Windows 98 SE, Me, 2000 or XP
- ActiveSync version 3.1 or 3.5 installed

Installing the Flarion Mobile Manager and PC 1000 Card Driver

For Pocket PCs, you will be installing Flarion Mobile Manager software and the driver in the host PC, then downloading the software and driver to your Pocket PC.
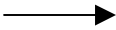
Installing in the Host

1. Close any Windows programs that are running and insert the PC 1000 Installation CD in your CD-ROM drive. If the CD does not auto-run and display a menu, select **Start > Run ...** from the task bar and enter **D:\setup.exe** where **D** is your CD-ROM drive letter.

2. Select the option appropriate to your operating system:

   This launches the FT 1000 wizard that guides you through the software installation.

FT1000 Wizard

→

Welcome to FT1000

Flarion Technologies FT1000

Welcome to the FT1000 Setup, that will install Flarion Technologies FT1000 software in your computer.

This setup program will copy files onto your hard disk to be installed on your Windows CE device now or the next time it establishes a connection. Click the Next button to continue or click the Cancel button to exit.

WARNING: This program is protected by copyright law and international treaties.

Click Next to continue, or Cancel to exit Setup.

[Next >] [Cancel]

Downloading to the Pocket PC

3. When installation occurs in the host computer, connect your Pocket PC to the host to launch ActiveSync (note: you do not need to establish a partnership to download the software). ActiveSync prompts you when there is software to download.

4. Click on **Yes** to "Install Flarion Technologies FT1000 using the default application install directory."

5. Attach the PCMCIA card sleeve/jacket to the Pocket PC

    • With the color logo facing up, insert the PC 1000 Card into the PCMCIA Sleeve/Jacket card slot (do not force the modem into the slot as this may damage the connector pins).

6. Insertion of the card triggers Pocket PC to search for and load a device driver for the card.

7. Remove and re-insert the PC Card.

Your PC 1000 Card has been pre-activated – it is ready for use as soon as the software and driver are installed. Just plug and play!

9

PC Card Insertion and Removal

Insertion

To insert the PC card into your Pocket PC:

1. If the PCMCIA jacket accessory is not already attached, slide the Pocket PC bottom first into the jacket. It should click into place.
2. Attach the antenna to the copper circle connector on the end of the PC 1000. Do not force.
3. With the label facing towards the front of the Pocket PC , insert the network card into the slot at the top of the jacket.

Removal

To remove the PC 1000 card:

Use the Ejector to remove the PC 1000 card

To uninstall Flarion Mobile Manager software from the mobile device, go to Settings/Remove Hardware, highlight FT1000 and click **Remove.**

Use of the PC 1000 Network Card

Applications

The PC 1000 allows for "plug and play" broadband access to your company network, email, instant messaging, and the Internet, with the freedom and flexibility of fully mobile, wireless connectivity. The following are just a few of the many applications enabled by the PC 1000 card:

- Email (even with large file attachments)
- Web Browsing
- VPN
- File Transfer
- Online gaming (Quake, Everquest)
- Streaming video
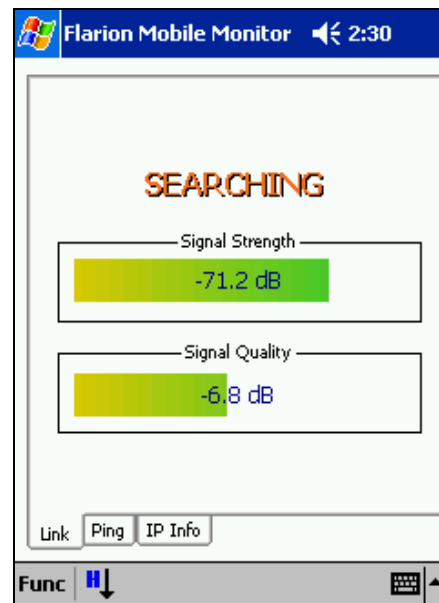- Streaming audio
- Push-to-talk service

If you would like to monitor your PC 1000, use the Flarion Mobile Manager program that was installed during set-up. It will allow you to manage everything from signal strength to the amount of bytes transmitted.

Flarion Mobility Management (FMM) Window and Indicators

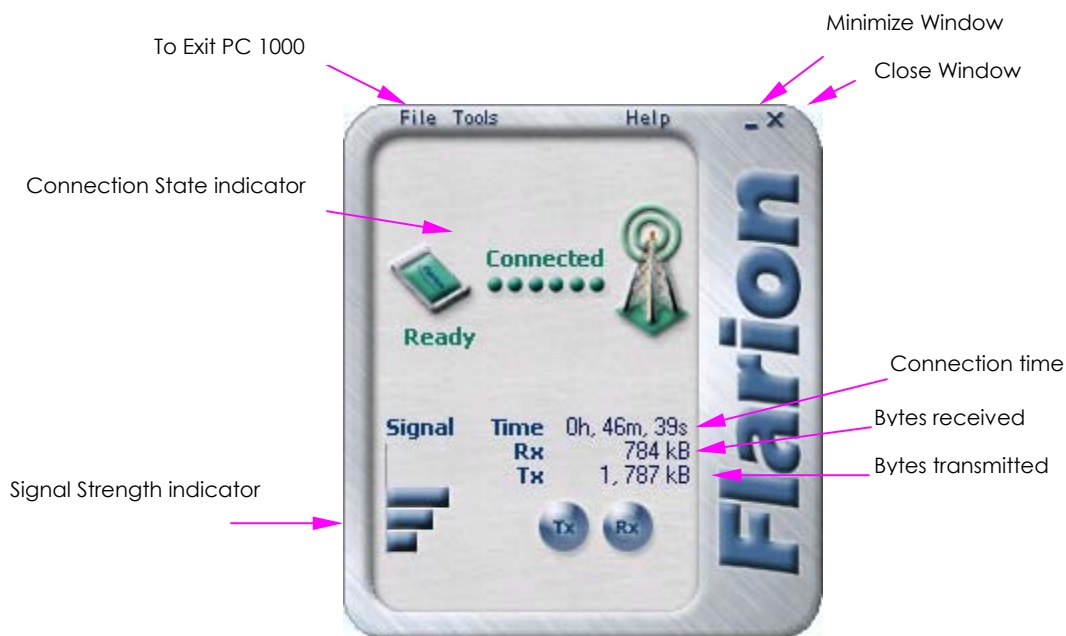For Notebook PCs   For Handheld/Pocket PCs

Basic Features

The Flarion Mobile Manager (FMM) is a Microsoft windows-based software application that presents information about a Flarion mobile session to the user in a graphical format.

The FMM software works by constantly monitoring the state of your Flarion mobile through the Ethernet cable that connects your computer to the mobile.
The FMM window provides information about:

- connection state
- connection time
- bytes transmitted
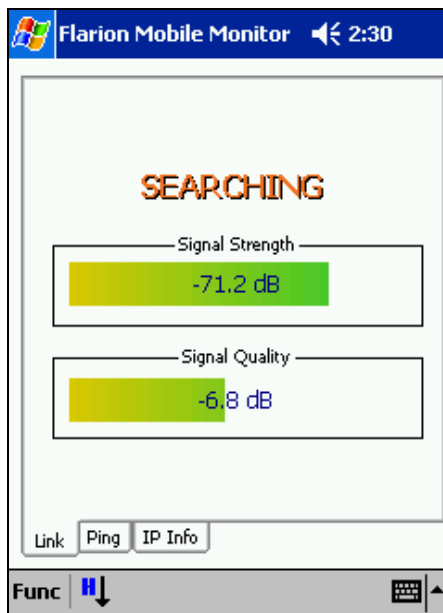- bytes received
- signal strength (Rx signal power)

When connected, the PC card icon appears in the lower, right corner of screen

For Pocket/Handheld PCs

Click the FMM icon in the menu bar to show the Flarion Mobile Manager screen.

FMM Menu Icon

Connection State indicator

Signal Strength indicator

Signal Quality indicator

Connection State and Connection Time Indicators

The Flarion Mobile Manager will say **Searching** when the PC 1000 card is attempting to locate the network. In addition, the light on the side of the card will blink until a connection is made.
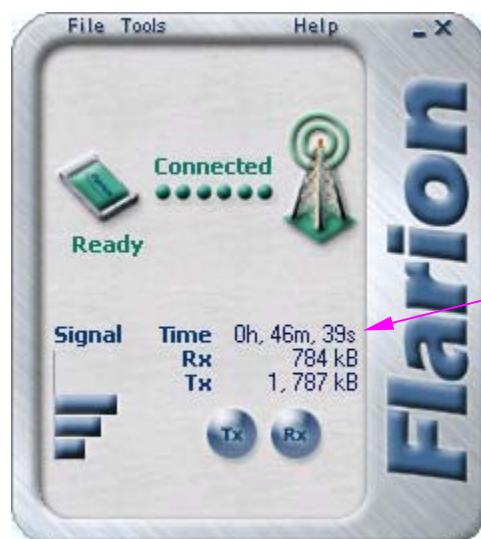
Connection State indicator

If it does not **Connect** after several seconds, you should check that:

1) The PC 1000 Card is fully inside the card slot
2) Antenna is raised and inserted properly
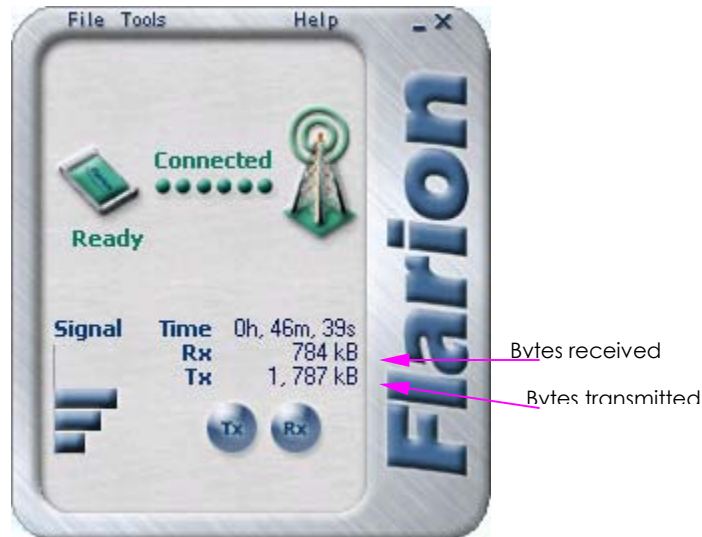3) You are in an area that has coverage

The **Connection Time** Indicator shows how long your mobile has been connected to the basestation during a particular session. When you end a session, these values are both reset to zero.
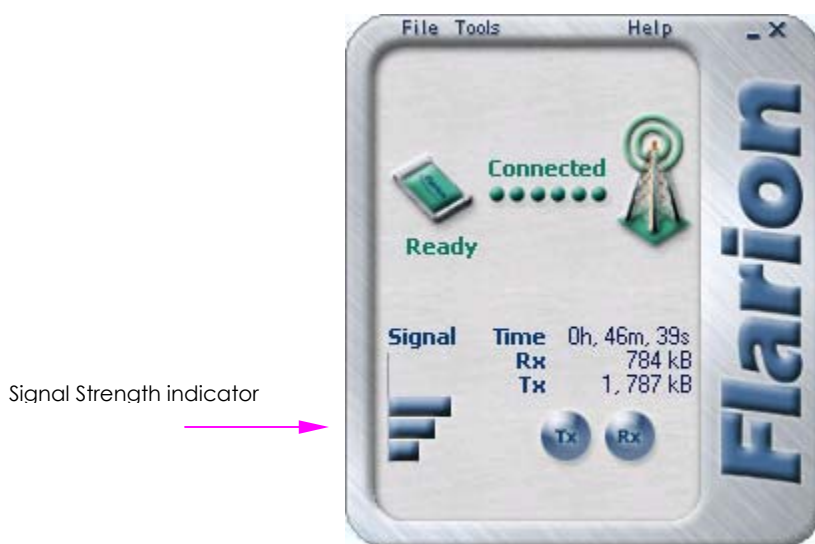
Connection Time Indicator

Bytes Transmitted (Txd)/Received (Rxd)

These areas indicate how many Bytes of data you have transmitted (Txd) or Received (Rxd) in the current connection. When you end a session, these values are both reset to zero.

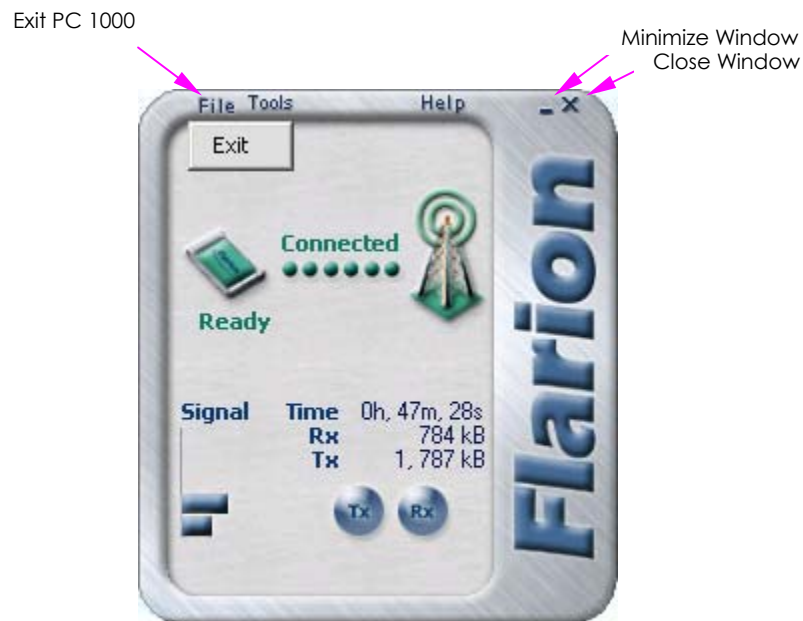Bytes received

Bytes transmitted

Signal Strength Indicator

The signal strength indicator provides information about the received signal. The signal strength indicator shows the power level of the signal being received from a basestation. When signal is strongest, there are a total of four bars shown. When it weakest, only one bar is seen. Signal strength has a major impact on performance.
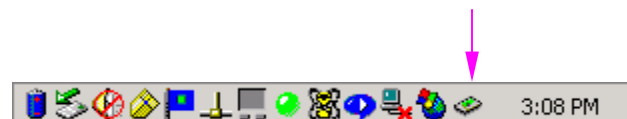

Signal Strength indicator

Minimize/Close/Exit Buttons

To minimize the Flarion Mobile Manager window, click on the Minimize button. To close the window, but still keep the PC 1000 card operating, click on the Close button. To exit the PC 1000 card program, click on File/Exit. You will need to

Exit PC 1000

Minimize Window
Close Window

When you want to reopen the Flarion Mobile Manager window (after you have closed the window), click on the PC card icon in lower, right corner of screen

Reopen Window

or click on the PC card icon on your desktop

Flarion Mobile Manager.lnk

Troubleshooting Tips (Notebook PCs)

Problems, Causes and Suggestions

When properly installed and used, the PC 1000 is a highly reliable product. Problems that arise are likely a result of:

- The wrong driver being installed
- System resources necessary for the PC 1000 to function are being used by other devices
- Network coverage is not available

Problems	Possible Causes	Suggestions
The FMM screen is frozen	If rebooting your PC does not solve the problem, you may have a resource conflict	See section on "Resource Conflicts"
FMM displays the following: "Searching for PC card modem.."	1. PC 1000 is not correctly inserted into card slot 2. The incorrect driver is installed 3. There is a resource conflict	1. Eject and reinsert 2. See section on "Reinstalling driver" 3. See section on "Resource Conflicts"
FMM displays the message "Not in Service"	1. You are outside the network coverage area 2. Your antenna is not attached 3. You may be in a spot that causes interference	1. Ensure antenna is attached 2. Verify that you are in coverage area (see map card for more information) 3. Change your location or reposition the antenna

If these solutions do not help you, please contact Customer Care at XXX-XXX-XXXX

Help Desk/CRM

Flarion's help desk and customer relation management center is available from 8 am to midnight, 7 days a week. Please contact them at customercare@flarion.com or XXX-XXX-XXXX.

Troubleshooting Tips (Handheld/Pocket PCs)

Problems, Causes and Suggestions

When properly installed and used, the PC 1000 is a highly reliable product. Problems that arise are likely a result of:

- The wrong driver being installed
- Network coverage is not available

Problems	Possible Causes	Suggestions
The software is installed and the handheld/Pocket PC has been connected to the host (PC). ActiveSync launches but does not prompt that there is software to download. This disallows you from completing installation process.	A failure occurred in the host installation process or ActiveSync has failed to detect that there is software to download.	Uninstall the software and start the installation process again.
FMM displays the following: "Searching for PC card modem.."	1. PC 1000 is not correctly inserted into card slot 2. The incorrect driver is installed 3. There is a resource conflict	1. Eject and reinsert 2. See section on "Reinstalling driver" 3. See section on "Resource Conflicts"
FMM displays the message "Not in Service"	1. You are outside the network coverage area 2. Your antenna is not attached 3. You may be in a spot that causes interference	1. Ensure antenna is attached 2. Verify that you are in coverage area (see map card for more information) 3. Change your location or reposition the antenna

If these solutions do not help you, please contact Customer Care at XXX-XXX-XXXX

Uninstalling the Software

To uninstall the PC 1000 card software from the host PC:

1. Disconnect Handheld/Pocket PC from host
2. On the host, open the Control Panel by selecting Start>Settings>Control Panel
3. Double click the Add/Remove Programs icon
4. Click to select PC 1000 card Pocket PC
5. Double click the Add/Remove button
6. Confirm that you want to delete the program by clicking OK
7. Click Finish

To remove the software from the Pocket PC:

1. Eject the PC 1000 card
2. Tap Start>Settings
3. Tap the System Tab

4. Tap the Remove Programs icon
5. Tap PC 1000 card and tap the Remove button
6. Confirm that you want to remove the program by tapping Yes

To remove the software from a handheld PC:

1. Eject the PC 1000 card
2. Open the Control Panel by selecting Start>Settings>Control Panel
3. Double tap the Remove Programs icon
4. Select PC 1000 card handheld and tap the Remove button
5. Confirm that you want to delete the software by tapping Yes

Technical Specifications
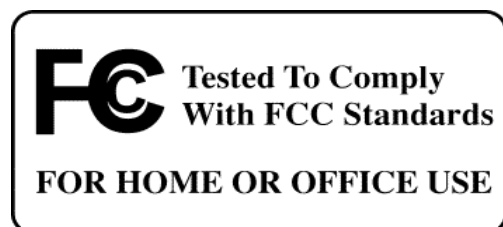
Radio Frequency and Electrical Specifications

Current	Peak Transmit Current Draw: 790mA Typical Current Draw: 390mA Session Hold and Sleep States significantly reduce current draw depending on user activity
Transmit	Cellular: 824 to 849 MHz PCS: 1850 to 1910 MHz
Receive	Cellular: 869 to 894 MHz PCS: 1930 to 894 MHz
Channel Spacing	1.25 MHz
Signal Characteristics	Downlink Modulation: 16 QAM, QPSK Uplink Modulation: QPSK
Frequency Stability	+/- 150 Hz

Environmental Specifications

Operating Temp	-30 to +60°C
Storage Temp.	-30°C to +85°C
Humidity	95%

Regulatory Information

Manufacturer's Federal Communication Commission Declaration of Conformity Statement

Models:
PC 1000

FCC Certification Number:
QZX_____

Manufacturer: Flarion Technologies, Inc.
135 Route 202/206 South
Bedminster One
Bedminster, NJ 07701

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

1. This device may not cause harmful interference
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and radiates radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference. However, there is no guarantee that interference will not occur. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one of the following measures:

1. Reorient or relocate the receiving antenna
2. Increase separation between the equipment and receiver
3. Connect the equipment to an outlet on a circuit different from which the receiver is connected
4. Consult the dealer or an experienced radio/TV technician

⚠️ Caution   The Part 15 radio device operates on a non-interference basis with other devices operating at this frequency. Any changes or modification to said product not expressly approved by Flarion could void the user's authority to operate this device.