GC79

Sony Ericsson GPRS / Wireless LAN PC Card GC79

User's Guide

Sony Ericsson

Content

Sony Ericsson GPRS / Wireless LAN PC Card GC79

Fifth edition (June 2004)

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Introduction

Congratulations and thank you for buying the Sony Ericsson GPRS / Wireless LAN PC Card GC79.

The GC79 is a combined wireless LAN (WLAN) adapter and triple band GSM product that enables you to communicate wirelessly from your laptop on all five continents, in over one hundred and sixty countries. As the GC79 provides wireless communications you no longer need to carry cables, telephone jack converters, chargers and batteries. The GC79 is very simple to install and use; the software provided allows you to select the best data service available so that the GC79 is always available for data transfer.

The GC79 enables your laptop PC to:

- Connect to your corporate network
- Browse the Internet
- Send and receive e-mails
- Receive information services in real time
- Access files, databases and discussion groups
- Send and receive SMS text messages
- Edit SIM card entries

Note:
Before using your GC79 you MUST read *Guidelines for Safe and Efficient Use* on page 64.

The GC79 wireless LAN facilities can be used wherever there are connection "hotspots". Wireless LAN hotspots are becoming increasingly common in both public places, such as hotels and airports (allowing Internet connection), and within offices (providing connections to corporate networks).

The GC79 GSM/GPRS facilities provide almost worldwide portable modem access to the Internet or to corporate networks.

Hardware Overview

The GC79 is a standard 32 bit type II PC card with a 15mm extension which contains the GSM and WLAN antennas.

The amount of power drawn from the laptop battery is dependant upon a number of factors including status, frequency band, distance to GSM base station and number of timeslots used. See *Technical Specifications* on page 67 for a general guide to power consumption.

SIM Card

When you subscribe to a mobile network operator, you are issued with a SIM card (Subscriber Identity Module card). The SIM contains your personal subscriber data. You need a SIM to use your GC79.

Software Overview

Wireless Manager

You can use the Wireless Manager to:

- View GSM/GPRS and wireless LAN status information
- Create or modify connection settings
- Connect to the Internet or a corporate network
- Manage GC79 settings
- Manage SIM card and PC phone books
- Send and receive SMS messages

Using the GC79 with your Applications

Data Programs

You can use the GC79 as a connector to a wireless LAN access point or to provide Intranet/Internet connectivity for a wide range of applications.

The GC79 can also be programmed at command level by application developers; for more details see the *AT Commands Manual*.

Fax Programs

You can use the GC79 as a fax provided you have the correct software, e.g. Microsoft Fax (an option supplied with Windows 2000 and XP).

Documentation

The GC79's documentation is designed to enhance your understanding of its capabilities. The following guides are provided:

- A printed Quick Start Guide aimed at getting you operational as quickly as possible.
- An online User's Guide (this document) containing a comprehensive description of the GC79 functionality. You can read the guide on the computer screen or print it on to either European A4 or American Letter sized paper.
- An online AT Commands Manual, aimed at application developers, containing a full list of all the modem commands that can be used with GC79. The manual can be read online or printed in the same way as the User's Guide.

The User's Guide and the AT Commands Manual are located on the GC79 CD-ROM as Adobe Acrobat PDF files. The GC79 CD-ROM also contains Adobe Acrobat Reader® which you can install if necessary.

Illustrations

The illustrations in this manual were obtained using the GC79 on a Microsoft Windows® 2000 operating system. The dialogs that appear on your PC may differ depending on the version of Windows in use.

Getting Started

Checklist

Make sure the following items are in the box when you unpack it:

- **Protective case for storing the GC79**
- **GC79 PC Card**
- **Quick Start Guide**
- **CD-ROM**
  The CD contains: drivers, software, documentation and a readme file.

System Requirements

This section lists the network subscriptions, hardware and software requirements for running the GC79 PC Card.

Wireless LAN Connection

In order to use your GC79 as a wireless LAN adapter for a corporate network, you must have the appropriate access and log-on rights. Contact your corporate IT support function to arrange access.

For access to the Internet, you will require the appropriate subscription or one-off usage login from your service provider.

Network and Subscription

The network subscription you use in conjunction with your GC79 depends on the functions and features your network operator can provide. Contact your network operator or service provider to make sure the options you require are available. Make sure that data options are included in your subscription, as these are usually optional services.

Note:
Mobile operators often provide a number of connectivity options via GPRS such as WAP and Internet. Verify the service you require, such as Internet, email or corporate VPN (Virtual Private Network) service is available through your mobile operator and enabled on your subscription.

The functionality of the different subscriptions available from networks operators are discussed below:

Circuit Switched Data (CSD)

CSD is the original GSM network data transfer method, used in the past for WAP. Almost all GSM networks have this capability at 9.6 kbps. It is possible for the network to upgrade the speed to 14.4 kbps. The GC79 operates at this higher speed where available.

High Speed Circuit Switched Data (HSCSD)

HSCSD is an enchanced GSM network capability offered by some network operators. It enables circuit switched data connections to run at a higher data speed, using more than one wireless 'timeslot' for the data transmission. This is ideal for providing a faster connection to existing corporate or ISP dial-up facilities. The preferred connection speed is selected when you define the connection using the **Connection Wizard**.

General Packet Radio Service (GPRS)

GPRS is a new network connection which provides "always on" mobility. The connection set up is fast and, once connected, applications may send and receive data whenever required. In today's GPRS networks, the GC79 receives data at speeds up to 53.6 kbps and transmits at speeds up to 26.8 kbps.

Short Message Service (SMS)

The PC can send and receive SMS text messages using the SMS Messages screen in the Wireless Manager, see *Wireless Manager SMS Messages Screen* on page 51, for more details.

Hardware

You will need:

*   A PC that has the minimum specification recommended by Microsoft to run the version of Windows® installed on it.

*   A 32 bit type II PC Card slot.

*   Sony Ericsson GPRS / Wireless LAN PC Card GC79.

*   A SIM card.

Software

You will need:

*   Windows® 98SE, Me, 2000 (SP4) or XP.

*   Sony Ericsson Wireless Manager CD-ROM
    (you can download this from the Sony Ericsson support website: **www.sonyericsson.com**).

Services Available Over the Internet

The Sony Ericsson web site contains support to facilitate easy communications and rapid information retrieval, wherever you are. It gives you access to online customer services, online user manuals, software downloads, and useful information. The address is:

http://www.sonyericsson.com/support

Sony Ericsson's M2M home page address is:

http://www.sonyericsson.com/m2m

General information on wireless LAN can be obtained from:

http://www.wlana.org

Installation

The Wireless Manager CD-ROM contains the software required to operate your GC79. The software is simple to set up and operate.

The CD-ROM contains the following software:

• Wireless Manager

• User Documentation

• On-line Help

• ReadMe text file containing the latest information about the GC79

Before you Begin

Before you begin, you will need to ensure that you have access rights to your corporate network for wireless LAN connections.

You will also need to make sure that the GSM services you require are included on your SIM card subscription. For an explanation of the services that are available see *Network and Subscription* on page 8. Contact the organisation that supplied you with your SIM card and request that the specific services (GPRS, HSCSD, CSD or SMS) you require are added to your subscription.

Note:
If you are installing onto a Windows 98SE operating system, make sure you have your Windows installation CD-ROM as it may be required.

GC79 Hardware Set Up

1. Remove your GC79 card from its protective cover.

2. Place the SIM card into the slot on the back of the GC79.

   Note:
   The cut corner of the SIM card must be placed into the SIM slot as demonstrated below, the SIM contacts should face downwards.
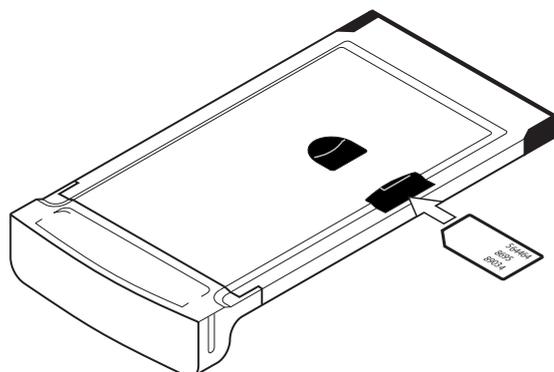
If you want to use your other PC card slot remove the GC79 whilst you insert the other card. See *Safe Removal of the GC79* on page 39 for more details.

When the GC79 isn't in use it is recommended that you store it in the protective carrier provided.

Installing the Software

1. Insert the Wireless Manager CD-ROM in your CD drive. After a few seconds a Sony Ericsson splash screen is displayed.

    Note:
    If the CD-ROM does not autorun, select **Start** ➡ **Run** and type *D:\Setup.exe* into the Run dialog. (Where *D* is your CD drive.)

2. The Wireless Manager is installed in the same language as your Windows installation, or English if your Windows language is not available. See *Supported Languages* on page 73 for more details.

3. During the installation you will be asked the question, **Run Wireless Manager when Windows starts**?

- Answering Yes means that Wireless Manager will run in the background when Windows is started and open as soon as the GC79 card is inserted.

- Answering No means you must always start Wireless Manager yourself.

4. The InstallShield Wizard for Sony Ericsson Wireless Manager opens; follow the instructions on screen. Installation will appear to pause at 65% whilst drivers are installed; do not cancel.When installation is complete click **Finish**.

5. Insert the GC79 PC Card. Make sure the GC79 is fully inserted.
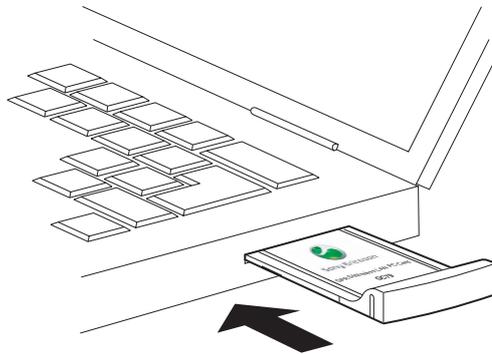
6. After a few seconds, the New Hardware Wizard opens and installs the necessary drivers onto your PC from the Wireless Manager CD. The wizard may require you to locate a specific driver file. If this happens a dialog opens, click Browse and select :

Component	GC79 CD-ROM Location
GPRS Drivers on a Windows 98SE or ME machine	D:\Driver\Driver9x
GPRS Drivers on a Windows 2000/XP machine	D:\Driver\Driver2k
Wireless LAN Driver (bcmwl5.inf) on a Windows 2000/XP/ME machine	D:\wlan
Wireless LAN Driver (bcmwl5a.inf) on a Windows 98SE machine	D:\wlan

In the above table D is referred to as your CD drive.

7. Select the driver file requested by the Wizard and click **Open**. The Hardware Wizard finishes the installation.

8. Select **Programs** ➡ **Sony Ericsson** ➡ **Wireless Manager** to start using your GC79. The GC79 and Wireless Manager are ready for use.

Note:
If you are prompted to reboot the laptop during software installation, you may find that the Wireless Manager attempts to start before all of the drivers are installed. The reason this occurs is the New Hardware Wizard is still busy installing the 3 device drivers. The Wireless Manager splash screen appears, followed by a warning dialog saying "*You must have a GC79 Wireless Modem installed to run this application. Please install a GC79 Wireless Modem and try again*". If this occurs:
1. Click Ok.
2. Wait for the New Hardware Wizard to complete the driver installation.
3. Reboot the laptop.
4. Start the Wireless Manager using the icon on the desktop or via **Programs** ➡ **Sony Ericsson** ➡ **Wireless Manager**.

Create a GPRS, HSCSD or CSD Connection

Predefined customised connection settings may have already been entered by your mobile operator or IT Manager. Check the connection drop-down menu for any existing entries, if they are available go to Using your Connection on page 23.

1. Click ★ or select **View** ➡ **Connection Wizard**. The Connection Wizard opens.

2. Select the radio button next to **Create a new connection**, enter a name, for example 'My Connection', click **Next**.

    Note:
    Your connection name should not exceed 16 characters for it to be fully visible in Wireless Manager.

3. The **Type of Connection** screen opens. From here you select the type of connection you require:

    *   For GPRS see steps 4 to 8

    *   For CSD/HSCSD see steps 9 to 12 (Certain network operators do not support CSD or HSCSD connections, even if they appear on the screen. If this option does not appear CSD and HSCSD are not available.)

GPRS Connection

4. Select **GPRS**. Select your Network Operator from the **Choose Network** drop down list. If your Network Operator isn't listed selected **<Other>**. Click **Next**. See *Network and Subscription* on page 8 for more information on GPRS.

    Note:
    Type the first letter of the Network Operator you require into the field to list all the operators that start with that letter.

5. If the Access Point Name dialog opens, check the APN displayed (for some operators it is deliberately blank). If you selected <Other> enter the APN for your operator. Contact your Network Operator if necessary to find out the correct APN. If you previously selected <other> the field will be blank and you must enter the APN provided by your mobile operator.

    The secondary APN is only used in a few specialised cases where it will be filled in automatically. Otherwise leave the tick-box unchecked and the Secondary APN field greyed.

    Note:
    Your network operator or IT Manager may have disabled display of the APN screen because the data is fixed in the database.

6. To modify the selected APN's settings, Click **Advanced...**. See *Appendix A - GSM Connection Parameters* on page 80, for descriptions of the updateable parameters in the Advanced dialog. Click **Apply** to save any changes before closing the dialog. Click **Next**.

7. If the username and password screen opens you can check and/or enter the username and password required for the connection. Password and username combinations can be:
    Blank: Many GPRS services require no username or password. Leave the fields blank and tick the **Save Password** box.

Fixed: The same fixed username and password for all users. Check or enter the username and password and tick the **Save Password** box.

Personal: You have a personal username and password. You may enter them here and tick the **Save Password** box. If you need to enter the password each time you connect (for example, you read the password from a separate hardware 'password generator') you can enter your username and leave the Save Password box un-ticked. Each time you connect, your username will be displayed and you can enter the password before continueing. You can leave all 3 fields blank and enter username and password each time you connect.

Click **Next.**

Note:
Some versions of Windows® deliberately change the number of asterisks that represent a password and place asterisks in the password field when the password is blank in order to make the display secure.

8. Click **Finish** to create your connection or **Back** to review your settings.

HSCSD or CSD Connection

9. Select CSD/HSCSD. Select your service provider from the **Choose Network** drop down list. If your service provider isn't listed selected **<Other>**. Click **Next**.

10. If you selected a Network Operator from the **Choose Network** drop down list, the telephone number screen should be automatically filled in.
If you selected **<Other>** from the **Choose Network** drop down list; enter the number you need to dial to connect to your Network Operator in the **Telephone Number** field; include your country and area code. Ensure **Use Area Code and Country Code** is de-selected.

Note:
Contact your Network Operator for a telephone number if necessary.

11. Click **Advanced....** To create a HSCSD connection you must specify your preferred network connection speed from the drop down list and the method you want to use to connect to the network, on the **Speed** tab of the **Advanced** dialog. Click **Next**.

Note:
If you are unsure which speed to choose from the **Speed** tab, start with Analogue 9600, and check to see if it works. Once your connection works on Analog, you can try the V110/V120 settings to see if faster speeds are available. V110/V120 also connects faster than analog. When roaming you may need to repeat this procedure to adapt your settings to the capability of the local network operator.

12. Select the **Options** tab in the **Advanced** dialog to specify a callback number, if required. Callback is a service that allows the call direction to be reversed. If you want to watch the progress of a callback in a terminal window click the **Show Terminal Window After Dialing** box.

See *Appendix A - GSM Connection Parameters* on page 80, for descriptions of the updateable parameters in the **Advanced** dialog. Click **Apply** to save any changes before closing the dialog.

13. If the username and password screen opens you can check and/or enter the username and password required for the connection. Tick the **Save Password** box if you want the connection to always use this username and password.

If you need to enter the password each time you connect (for example, you read the password from a separate hardware 'password generator') you can enter your username and leave the **Save Password** box un-ticked. Each time you connect, your username will be displayed and you can enter the password before continuing. You can leave all 3 fields blank and enter username and password each time you connect.

Note:
Some versions of Windows® deliberately change the number of asterisks that represent a password and place asterisks in the password field when the password is blank in order to make the display secure.

14. Click **Finish** to create your Dial-up or **Back** to review your settings.

Modify a Connection

1. Select **Modify a connection**. The **Select a connection** drop down menu is activated. Click on the menu and select the connection you want to modify.

2. Click **Next**.

3. Change settings as required.

Delete a Connection

1. Select **Delete a connection**. The **Select a connection** drop down menu is activated. Click on the menu and select the connection you want to delete.

2. Click **Next**. The Success screen is displayed. Click **Finish** to close the **Connection Wizard**.

Using your Connection

To Connect

1. Open Wireless Manager.

2. If requested enter your SIM Card PIN and click **OK**. The Status screen is displayed.

3. Select the connection you require from the drop down list and click **Connect**. Depending on your setup you may be prompted to enter your username and password.

   Tip:
   To see detailed connection information, including the speed allocated for an HSCSD connection, select **View** ➡ **Wireless Manager Information**.

To disconnect an active connection

1. Click **Disconnect** on the Status screen.

The Wireless Manager ends the connection.

Alternatively:

Right click on the **Wireless Manager** icon in the system tray and select **Disconnect**.

   Note:
   You can also use the Preferences dialog to set up auto connection when the Wireless Manager is opened. See *Wireless Manager GSM/GPRS Preferences* on page 35 for more details.

Browse the Internet via a GSM/GPRS Connection

You can connect to the Internet using a CSD/HSCSD or GPRS connection:

1. Open your preferred connection from the Status screen.
   See Using your Connection above for details on opening a connection.

2. Start your Internet browser. You are online and can browse the Internet.

Send and Receive Emails

You will need an email program installed on your PC in order to send and receive emails.
You can send and receive emails using a CSD/HSCSD or GPRS connection:

1. Open your preferred connection from the Status screen. See *Connection* on page 30 for details on opening a connection.

2. Start your email program. You are online and can send and receive emails.

Create a Wireless LAN Connection

To create a connection to a wireless LAN access point, follow the steps described below.

Note:
For details of how to create an ad hoc group connection, see *Setting up an Ad Hoc Group Network* on page 23.

1. Before you begin make sure a Wireless LAN access point is in range.

2. Click **Configure** in the WLAN pane of the Wireless Manager. Alternatively, for example when there is no SIM in the GC79, right click ⓦ and select **Open Utility**. The GC79 **Wireless Configuration Utility** opens.

3. The **Wireless Networks** tab is displayed.
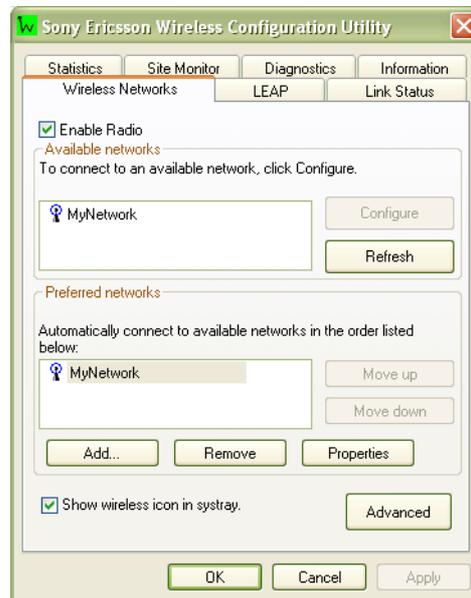
Note (XP Only):
If the tab doesn't display available and preferred networks:
Select **Start → Settings → Network and Dial-up Connections**. Right click the **Wireless Network Connection** and select **Properties**. Select the **Wireless Networks** tab and untick **Use Windows to configure my wireless network settings**. Click **OK**. Repeat steps 1, 2 and 3 above.

Note:
Clicking the Advanced button opens the Advanced dialog, use the dialog to specify the type of networks you want to access.

4. Click **Add**. The Wireless Network Properties screen is displayed.
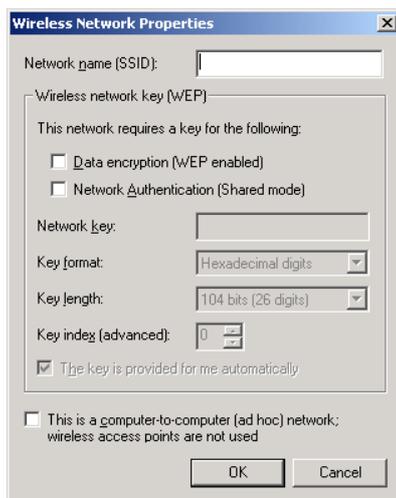
5. Type the network name in the **Network name (SSID)** field.

6. Clear the **This is a computer-to-computer (ad hoc) network; wireless access points are not used** check box.

7. From here you select the type of connection you require:

   • For connection to a LAN that does not require network key information, see steps 8 to 10.

   • For connection to a LAN that does require network key information, see steps 11 to 15.

WLAN Connections that do not require Network Key Information

8. If necessary, clear the **Data encryption (WEP enabled)** box.

9. Click **OK**. The network name and icon appear at the top of the **Preferred networks** list.

10. Click **Refresh** to activate the network connection (wait up to one minute for the network connection to be made). Your computer is connected to the selected network when you see a blue bubble on top of the icon for that network.

WLAN Connections that do require Network Key Information

11. Check the **Data encryption (WEP enabled)** box.

12. Clear the **The key is provided for me automatically** check box.

13. Type the network key in the **Network key** field. (You should obtain the key from the network administrator.)

Note:
You do not need to select the **Key format** or the Key length before typing the network key. These settings automatically change to the appropriate setting as you type the network key value. However, the key value you enter must be the correct length.

14. Click **OK**. The network name and icon appear at the top of the **Preferred networks** list.

15. Click **Refresh** to activate the network connection (wait up to one minute for the network connection to be made). Your computer is connected to the selected network when you see ♀ next to the network name.

WLAN Connections Using LEAP

To create a connection to a wireless LAN access point using LEAP:

1. Click on the Wireless Configuration Utility **LEAP** tab.

2. Check the **Enable LEAP** tick box.
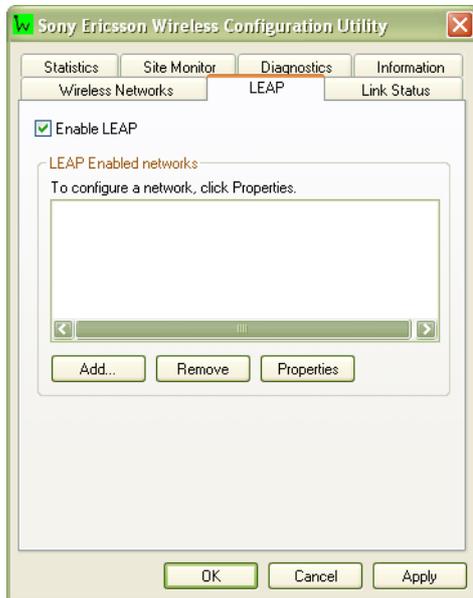
3. Click **Add**. The **LEAP Network Properties** dialog opens, enter the LEAP network details and click **OK**.

4. Click **Apply**.

Under Windows XP // Windows Zero Config, the following points should be noted to get LEAP working:

Configure CCX/LEAP support using the control panel (when WZC is managing the network) execute the following steps:

In the Sony Ericsson Wireless Configuration Utility (Right-click the W icon in the status tray and select Open Utility):

1. Add the network to the LEAP configuration page with appropriate username and password.

In the Wireless Zero Config control panel (Double-click the W icon in the status tray):

1. Disable 802.1x.

2. Enable WEP.

3. Uncheck the box that says "The key is provided for me automatically".

4. Provide a WEP key. The key can be anything at all and it can be at any WEP key index.
   The key is not used other than to prevent zero config from disassociating your network.

5. Click OK.

- If WZC is managing the network and the user is running CCX/LEAP, once CCX/LEAP is configured, if a user goes back to the "Wireless Networks" page and clicks OK, the CCX/LEAP configuration gets modified. Clicking OK causes WZC to repeat the initial system configuration, sets the infrastructure mode, and all of the dynamically assigned keys get cleared. The system eventually recovers. In the interim, all communication is lost.

Using a Connection

If your GC79-enabled computer is running at a location in which a wireless LAN is operating, and it is within range of the access point, the computer automatically connects to the network which is highest on the **Preferred networks** list on the Wireless Configuration Utility screen **Wireless Networks** tab. You can change the order in which networks appear in this list by using the **Move up** and **Move down** buttons.

Alternatively, if you have more than one network access profiles defined, you can specify the connection you want to use by clicking **W**. The Connect to Wireless Network screen is displayed.

The list shows all the connections you have defined which are within range of an access point. Highlight the one you want to use, enter a Network Key (if appropriate) and then click on **Connect**.

> **Note:**
> If you are using Windows XP some of the processes explained in this manual interact with the operating system differently, see your Windows XP help for more details.
> Once you have established a WLAN connection on an XP machine, Windows takes over, you will either have to use the standard Windows WLAN application to monitor your connection or specify that you want to use GC79 WLAN utility.

Viewing the Status of your Wireless Connection

The quality of the connection (signal strength and noise) of the particular network you are connected to is indicated by the horizontal bars and the decibel level values that are displayed at the bottom of the **Link Status** tab in the Wireless Configuration Utility.
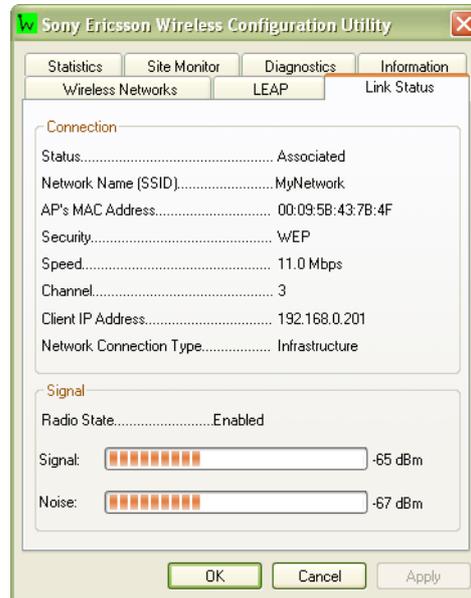
The signal strength is also indicated by the appearance of the ![W] icon in the system tray. The description of the signal strength appears when you hover the cursor over the icon.

The table below shows the signal strength and suggested action for improving the signal for each icon image that may be displayed. If the signal strength indications are anything other than very good or excellent, you should take the appropriate suggested action.

 A fully green icon indicates that the signal strength is very good or excellent.

 A partially green icon indicates that the signal is good or low.

Suggested action: Move closer to the access point.

A grey icon indicates that there is no signal being received.

Probable causes:

The computer is trying to establish an initial connection but has not yet succeeded.

You may have moved out of range of the access point.

Suggested action:

Wait.

Move closer to the access point.

An icon with a red bar indicates that there is no radio connection.

Suggested action: Enable the WLAN radio by right-clicking the icon and then selecting **Enable Radio**.

Disabling the Radio

To disable the GC79 wireless LAN radio, right click ![W icon] and select Disable Radio. To enable the radio, right click ![radio off icon] and select Enable Radio.

Alternatively, use the Disable/Enable button on the right hand side of the Wireless Manager Status screen or the option in the File menu.

Modify a Wireless Connection

1. Open the Wireless Configuration Utility, as described in *Create a Wireless LAN Connection* on page 17, and click on the **Wireless Networks** tab.
2. Select the network connection from the **Available networks** list and then click on **Configure**.
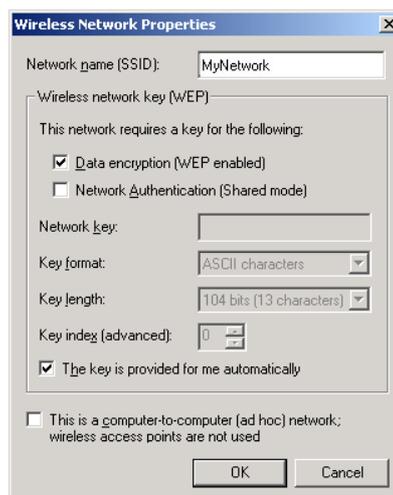
You can enable or disable data encryption and change the network name and the network key.

Advanced Wireless LAN Features

Setting up an Ad Hoc Group Network

In ad-hoc mode, a peer-to-peer network is created. An example might be networking laptops in a meeting room in order to share information. The network is set up at the start of the meeting and disappears when the last laptop is shut down. The following instruction explain how to set up an ad hoc network using two PCs, however you can network any number of PCs together, just make sure they have a unique IP number.

1. On laptop 1, select **Start** ➡ **Settings** ➡ **Control panel** ➡ **Network connections**, right click on Sony Ericsson 802.11b adaptor and select **Properties**.

2. The Wireless Network Connection Properties Window opens, in the **General** tab select **Internet Protocol (TCP/IP)** and click **Properties**.

3. The Internet Protocol (TCP/IP) Properties dialog opens. Click **Use the following IP address:**. Type a unique IP address into the field, for example, **192.168.0.1**

4. The subnet mask should be generated automatically, if it isn't use **255.255.255.0**

5. Make sure the **Use windows to configure my wireless network settings** isn't selected.

6. Click **OK**.

7. On laptop 2, select **Start** ➡ **Settings** ➡ **Control panel** ➡ **Network connections**, right click your Wireless Network Connection and select **Properties**.

8. The Wireless Network Connection Properties Window opens, in the General tab select **Internet Protocol (TCP/IP)** and click **Properties**.

9. The Internet Protocol (TCP/IP) Properties dialog opens. Click **Use the following IP address:**. Type a unique IP address, for example, **192.168.0.2**

   Note:
   IP address must be unique for each machine.

10. The subnet mask should be generated automatically, if it isn't use **255.255.255.0**

11. Make sure the **Use windows to configure my wireless network settings** isn't selected.

12. Click **OK**.

    Note:
    If the laptop is going to be connected to the company network again, you must remember it to change the **Use the following IP address:** back to Obtain an IP-address automatically in both laptops.

Perform steps 11 to 16 on both laptops.

13. Right click and select **Open Utility**. The **Sony Ericsson Wireless Configuration Utility** opens. The Wireless Networks tab lists all the available networks. If your new adhoc network isn't listed click **Add**, make sure you enter a name for the adhoc network in the **Network name (SSID)** field.

14. Complete the necessary fields and activate the **This is a computer-to-computer (ad hoc) network; wireless access points are not use** box. Click O**K**.

15. Click **Advanced** and select the appropriate radio button to specify the Networks the GC79 can access. You can select either; **Computer to computer (ad hoc) networks only** or **Any available network (access point preferred)**.
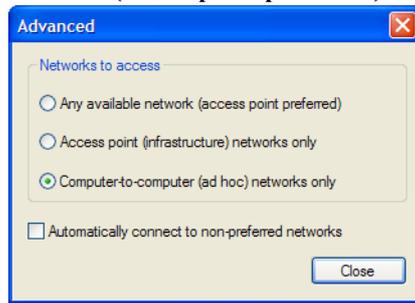
> **Note:**
> Once you create an AdHoc Wireless Network it will appear as available even if this is the only laptop on the network.

16. Restart all the laptops that are part of the ad hoc network to allow the new IP address settings to be approved.

17. Open Wireless Manager on all the laptops. Make sure the WLAN connection is enabled.

   If the WLAN icon in the system tray doesn't turn green right click W and check the radio is on (menu will display **Disable radio**).

> **Note:**
> Make sure that Firewall on the computers is setup to allow this type of connection or disabled. Ask your Network Administrator if you need assistance.

18. Right click W and select **Open utility**. Select the **Site Monitor** tab, tick the **Ad hoc network only** box. The Network Name (SSID) you specified should appear after a short delay. Click **OK**.

Connecting the PCs

1. Select one of the laptops, right click **My Computer** and select **Map Network Drive**.
   In the dropdown list select a free hardriver name that is not occupied by any other name.

2. Type **laptop name or IP address\C$** into the Folder field. In this example we would enter \\**192.168.0.1\C$** to connect to the 1st laptop we set up. C$ is specifying the drive on the laptop that you want to connect to.

> **Note:**
> To find a computers name; open a Command Prompt on the PC you want to find the name of. Type hostname and press return. The computer name is returned.

> **Note:**
> You can also use a Command Prompt to make sure you can see the other PC. Type **ping <IP address>** and press return (The IP address belongs to the PC you are trying to contact). In the example we would enter ping 192.168.0.1. PC 1 sends a small amount of data to PC 2, and if connection is established between the PCs, replies for each packet of data sent are returned to PC 1.

3. If you are required to log on to the PC before access is granted select **Connect using a different user name**. Make sure you have an alias and password set-up on the PC you are connecting to.

4. Enter your **User name** and **Password** into the Connect As... dialog.

5. Click **OK** and **Finish**.

After a while a new window should popup in PC2 showing the hardrive of PC1. It is also listed with your Network Drives.

Tip:
See your Windows documentation for further details on setting up a network of Windows PCs.

Caution!
Unwanted users may try to connect to your ad hoc network. Use of security features such as WEP is recommended.

Disable the WLAN

1. Right click ▣ and select **Disable radio**.

Sharing an Internet Connection

To connect a group of computers using a shared Internet connection, select one of the desktop computers to serve as the *host* computer (all other computers are called *clients*).

The host computer is the only computer that connects directly to the Internet. It is recommended that the desktop computer having the fastest microprocessor and the most memory is used as the host computer.

The host computer must be running either the Windows 2000 or Windows XP operating system.

Connection sharing requires that the host computer has either a modem or another network adapter in addition to the GC79. The modem or the additional network adapter is used to access the internet. The GC79 is used to share the connections with other clients.

Setting up Internet Connection Sharing (ICS) on the Host Computer

1. Connect the host computer to the internet.
2. Click the **Start** button.
3. Select **Settings** ⇒ **Control Panel**.
4. Double-click **Network and Dial-up Connections**.
5. If the host computer is connected to the internet using a dial-up connection, double-click **Dial-up Connection** ⇒ **Properties** ⇒ **Sharing**, and then ensure that both **Enable Internet Connection Sharing for this connection** and **Enabled on-demand dialing** are selected.

   If the host computer is connected to the internet using a cable or DSL modem, double-click **Local Area Connection** ⇒ **Properties** ⇒ **Sharing**, and then ensure that the **Enable Internet Connection Sharing for this connection** option is selected.

Note:
For Windows 2000, you must enable local network sharing and select the Local Area Connection relating to the Sony Ericsson 802.11b adaptor. You can check this by looking at the Device Name in the Network and Dial-Up Connections list. If your Sony Ericsson 802.11b adaptor is listed as Local Area Connection 3, then select Local Area Connection 3 in the 'For local Network' drop-down box.
For Windows XP, follow the Bridging instructions below.

Bridge connections on Windows XP

The network bridge allows you to connect network segments by selecting the appropriate network connection and bridging them together. The network bridge manages your network segments, and creates a single IP subnet for the entire network. There is no configuration required, and you do not need to purchase additional hardware such as routers or bridges. IP addressing, address allocation, and name resolution is highly simplified in a single subnet IP network.

Only one bridge may exist on a Windows XP computer, but it can be used to bridge as many different network connections as the computer can physically accommodate.

Before you begin make sure you are logged on to the computer as an administrator.

1. Select **Start** ➡ **Control Panel**, and then double-click **Network Connections**.

2. Under LAN or High-Speed Internet select each of the private network connections that you want to be part of the bridge.
   You must select at least two eligible network connections in order for Bridge Connections to create a bridge.

3. Right click one of the highlighted private network connections, and select **Bridge Connections**.
   You can create only one network bridge on a computer, but the bridge can accommodate any number of network connections.

   Caution!
   Do not use this method to share a corporate network connection without first agreeing security procedures with the network administrator.

   Note:
   • Adapters that have Internet Connection Sharing (ICS) or Internet Connection Firewall (ICF) enabled cannot be part of the network bridge and will not appear on the Network Bridge checklist. Similarly, the Add to Bridge menu command is available only for adapters that you can add as connections to Network Bridge.

   • Only Ethernet, IEEE-1394 adapters, or Ethernet compatible adapters such as wireless and home phoneline adapters (HPNA), can be part of the network bridge.

   • Do not create a bridge between the public Internet connection and the private network connection, or add the public Internet connection to an existing network bridge, if you do not have ICF or Internet Connection Sharing (ICS) enabled. To do so will create an unprotected link between your network and the Internet, and your network will be vulnerable to intrusions.

   • If you remove adapters from the network bridge, and less than two adapters remain, Network Bridge will not perform its intended function, but it will continue to use system resources.

   • Network adapters that previously appeared under LAN or High-Speed Internet, appear under Network Bridge when they are added as connections. Network adapters that provide Internet connectivity, such as DSL and cable modems, cannot be bridged and will always appear under LAN or High-Speed Internet.

   • Network bridges with wireless or IEEE-1394 connections support traffic using Internet Protocol version 4 (IPv4) only.

4. Internet Connection Sharing, Internet Connection Firewall, Discovery and Control, and Network Bridge are not available on Windows XP 64-Bit Edition.

   Caution!
   When sharing an internet connection, unwanted users within the reach of the wireless LAN may be able to use it too. It is recommended that you use of security features such as WEP network keys.

Creating profiles for ICS Client machines

Set up an ad hoc network on your host machine and each client. Follow the *Create a Wireless LAN Connection* on page 17.

Static IP Number Management

Some users may require a static IP number for the WLAN connection in the office and a dynamic IP number outside the office.

If you are using Windows 98SE/Me/2000 it is necessary to manually change the TCP/IP properties of the Sony Ericsson 802.11b Wireless LAN adaptor:

1. Select **Control Panel** ➡ **Network and Dial-up Connections**.

2. Right click the WLAN connection and select **Properties** ➡ **General** ➡ **Internet Protocol (TCP/IP)** ➡ **Properties**.

3. Enter the static IP address for use in the office or select **Obtain IP address automatically** for use outside.

Under Windows XP, this situation can be automated:

1. Go to **Control Panel** ➡ **Network Connections** ➡ **Wireless Network Connection** ➡ **General** ➡ **Internet Protocol (TCP/IP)** ➡ **Properties.**

2. In the **General** tab select **Obtain IP address automatically**".

3. In the **Alternate Configuration** tab select **User configured** and enter static IP address and any other network parameters that are required.

Wireless LAN Adapter Diagnostics

You can run a number of diagnostics on your GC79 wireless LAN adapter to verify its operational and functional status.

Note:
Your network connection is lost when you run the diagnostics. When the test run is over, your network connection is automatically re-established.

1. Open the Wireless Configuration Utility, as described in *Create a Wireless LAN Connection* on page 17, and click on the **Diagnostics** tab.
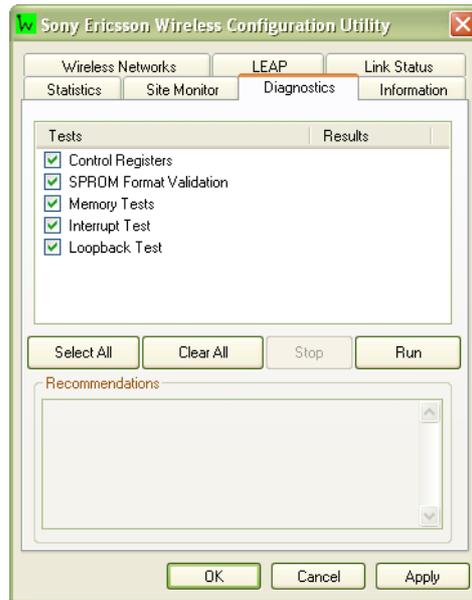
2. Select the tests you want to run. All tests are selected by default. To run an individual test or some but not all of the tests, clear the check box for those tests that you do not want to run.

3. Click **Run**.

GC79 WLAN Information

You can view detailed technical information about your GC79 WLAN connection by selecting the Information tab in the Sony Ericsson Wireless Configuration Utility. Your MAC number is list on this screen.

Concurrent WLAN and GPRS

The GC79 supports concurrent connections to GPRS and via WLAN, however this ability may have been disabled for security reasons.

Switching between GPRS and WLAN connection is not automatic, even if both are available or the WLAN connection is established automatically as you enter the hotspot. This is because the connections will have different IP numbers. You are advised to check your connections as you enter and leave hotspots. You may need to re-request a transaction (for example refresh a web page) or re-start an application.

Wireless Manager Status Screen

To view the Status screen either start Wireless Manager select **Start** ➡ **Programs** ➡ **Sony Ericsson** ➡ **Wireless Manager** or select your desktop shortcut [icon] or select **View** ➡ **Status**.
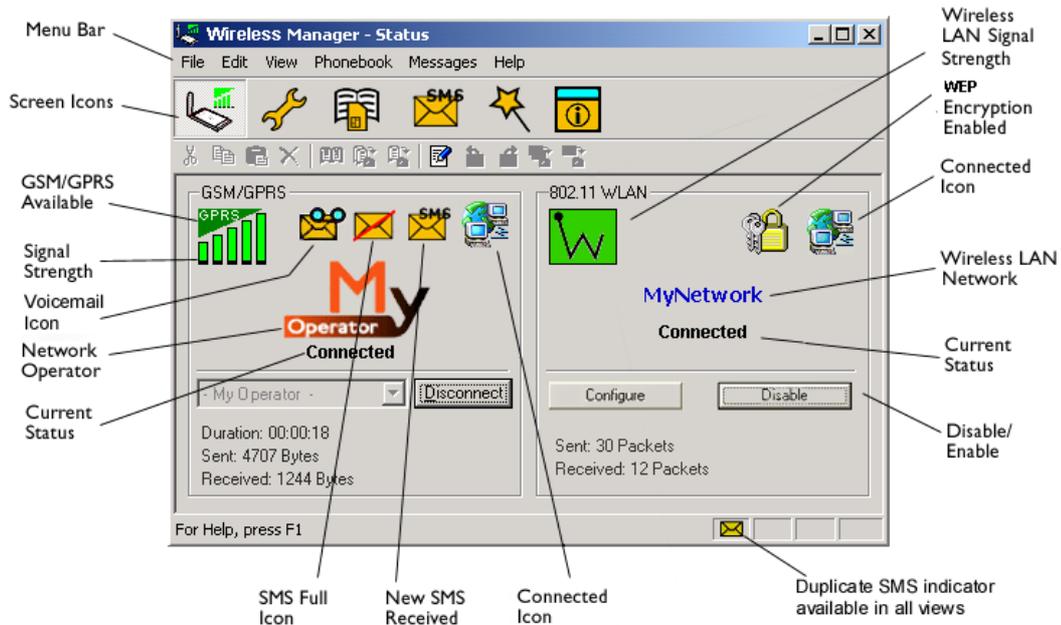
The Status screen shows information about your GSM and wireless LAN network connections. The body of the screen is divided into two.

GSM Connection Status

The left side of the screen shows information about your GSM connection, including icons representing:

- Receive signal strength
- GPRS service status
- Unread SMS Text Message [icon] status (or SIM Full indication [icon]).
  See *Wireless Manager SMS Messages Screen* on page 51 for more details.
- Connection status

The left side of the screen also displays:

- The current Network Status, e.g. searching, radio off
- The connection progress messages

When a connection is established, the connection statistics (duration, bytes transmitted, bytes received) are displayed and updated at regular intervals.

Note:
Statistics display is not supported on Window 98(SE) or Me platforms. To view statistic data when using these operating systems hover your mouse cursor over the standard Windows Dial-up Networking icon.

Connection

To connect, cancel or disconnect a GPRS or HSCSD/CSD data session use the Connect/Disconnect drop down menu. The menu displays all the connections you have defined, so you can quickly select the required connection.
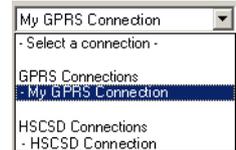
The **Control** button, located underneath the drop down menu, changes its appearance depending on the state of the GC79 connection. The button allows you to:

- Initiate a connection (**Connect**)
- Cancel connection attempt (**Cancel**)
- **Disconnect** (Hang-up) an existing session

To create a connection see *Create a GPRS, HSCSD or CSD Connection* on page 13.

Note:
You can also launch or terminate a CSD dialup networking sessions directly from the Windows Network Connections icon. A HSCSD networking session initiated outside Wireless Manager will require some additional settings to be added to your init string, see *Appendix D- Initiating a HSCSD Connection from Outside the Wireless Manager* on page 85.

Wireless LAN Connection Status

The right side of the **Status** screen shows information about your wireless LAN connection, including:

- Wireless LAN connection status
- Connection speed
- Signal strength
- Network name (SSID)

The **Disable/Enable** button allows you to switch the wireless LAN radio on and off.

Usage Statistics

Select **View** ➡ **Usage**, A dialog displays the total connection time, data received and data sent for GPRS, CSD/HSCSD and WLAN.

Click the **Reset** button to zero the counts. You may wish to reset the counters to correspond with your billing intervals.

Note:
Information in this dialog is indicative and may not correspond to the accurate billing information maintained by your network operator.

Start Using Wireless Manager

1. To start Wireless Manager select **Start** ➡ **Programs** ➡ **Sony Ericsson** ➡ **Wireless Manager** or select your desktop shortcut .

2. If requested, enter your SIM Card/Phone Lock PIN and click **OK**. It is only necessary to enter the PIN number once during a PC session.

   You are allowed three attempts to enter the correct PIN code. If you fail to enter the SIM PIN correctly, the SIM is blocked; and if you fail to enter the Phone Lock PIN correctly, your GC79 is locked. Contact your GSM network operator for details of how to unlock it.

   To set the SIM Card PIN and Phone Lock PIN, see *Locks* on page 41.

3. The Wireless Manager opens, displaying the **Status** screen. Connectivity details are displayed on this screen. *Wireless Manager Status Screen* on page 29, for more details.

4. The Wireless Manager icons are displayed in the system tray of your PC.

   Note:
   There must be a SIM card in the GC79 for the Wireless Manager application to operate. However, the Wireless LAN functions may be used without a SIM card. Click , in the status tray, to access the WLAN functions.

Wireless Manager Icons

The Wireless Manager icons, displayed in your desktop system tray, allow you to view the current status of the GC79. Simply place your mouse cursor over an icon to display text.

Some of these icons have menus associated with them. See *Icon Menus* on page 33 for details.

GSM/GPRS Icons

GSM/GPRS radio is disabled.

The GSM/GPRS radio transmitter is enabled, but there is no GSM or GPRS service available.

Wireless Manager is waiting for the GC79 card to be inserted.

The GC79 has GSM service and indicates a signal strength of 3 out of 5 bars. CSD, HSCSD, SMS and fax may be used, provided these are supported by the subscription. GPRS is not available.

The GC79 has GSM and GPRS service. GPRS, CSD, HSCSD, SMS and fax may be used, provided these are supported by the subscription.

Wireless LAN Icons

Wireless LAN radio is disabled.

The wireless LAN radio transmitter is enabled, but there is no network available.

The GC79 has made a wireless LAN network connection. The degree to which this icon is green indicates the signal strength.

Windows Icons

In addition, the following standard Windows® operating system icons also appear in the system tray when the GC79 is inserted in your PC and in use.

Active Windows dial-up or wireless connection. Hover your mouse over the icon or double click it to display information about the network connection (e.g. number of bytes sent/received). Up to two of these icons may be displayed; representing either Dial-up or GSM/GPRS, and wireless LAN connections.

Disconnected Windows Local Area Connection. Up to two of these icons may be displayed; representing GSM/GPRS and wireless LAN connections.

These icons allow you to edit your Windows Network dial-up connections. See *Making Windows Network Connections Visible* on page 35 for details.

PC Card icon. This indicates that a PC card is present. It allows you to see certain properties and also to stop / remove the card. See *Safe Removal of the GC79* on page 39 for details.

Icon Menus

GC79 GSM/GPRS menu

Right click one of the following icons to see the **GC79 GSM/GPRS** menu options.

The **GC79 GSM/GPRS** menu is displayed.

or

or

or

Open Wireless Manager
Turn Radio Off
Connect to MyGPRSservice
Help
About Wireless Manager
Hide to tray
Exit
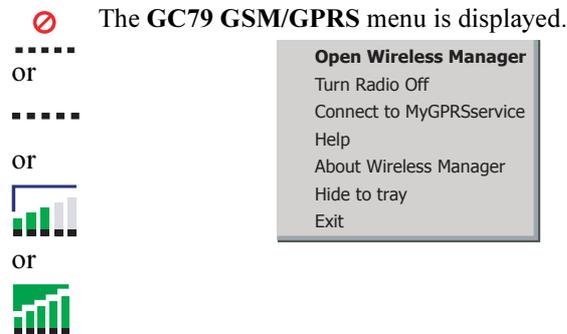
Note:
Some of the these menu options are disabled, depending on the current state of the GC79.

The **GC79 GSM/GPRS** menu options are described below.

Open Wireless Manager

Select **Open Wireless Manager** or double click on the Wireless Manager icon to open the **Wireless Manager**.

Radio Status (Turn GSM/GRPS Radio On/Off)

This menu option is dynamic. It monitors the current state of the GC79 GSM/GPRS radio transmitter and gives you the option to switch to the opposite state, for example, if your GC79 GSM/GPRS radio transmitter is on the menu option reads **Turn GSM/GPRS Radio Off**.

You can also set the status of the GSM/GPRS radio transmitter by selecting **Turn GSM/GPRS Radio On/Off** in the **Wireless Manager File** menu.

Connect/Disconnect

If you are currently disconnected the menu gives you the option to connect to the most recently used GC79 GSM/GPRS connection. If you are connected the menu gives you the option to disconnect.

Help

Opens the Wireless Manager Online Help. You can also launch the Online Help from the **Wireless Manager** Help Menu. Pressing **F1** in any of the **Wireless Manager** dialogs opens the relevant help screen.

About

Displays a dialog that contains Wireless Manager software information.

Hide to Tray

Select the **Hide to Tray** option to visually close Wireless Manager leaving only the icons visible in the system tray. Use the **Open Wireless Manager** option to view the software again.

Exit

Exits the **Wireless Manager** application completely.Use the stop/remove commands if you wish it to remain in the background. See *Wireless Manager GSM/GPRS Preferences* on page 35 for more details.

GC79 Wireless Control menu

Right click on one of the following icons to see the GC79 Wireless Control menu options.

The **GC79 Wireless Control** menu is displayed.

Help	▶
Country	▶
Open Utility	
Disable Radio	
Hide	

or

or

The GC79 Wireless Control menu options are described below.

Help

This menu option provides information about the GC79 Wireless Control Utility.

Country (Where provided)

This menu option allows you to select the operating characteristics that comply with the regulations that apply in a particular country. Before connecting to a wireless network, you should verify that the Country value is correct. If you travel to different countries, you must remember to change the Country as appropriate.

If the destination country is not listed, set the value to Worldwide.

Open Utility

Opens the Wireless Configuration Utility.

See *Create a Wireless LAN Connection* on page 17 for details.

> **Note:**
> Use this option to access the WLAN functions if there is no SIM in the GC79.

Radio Status (Enable / Disable Radio)

This menu option is dynamic. It monitors the current state of the GC79 wireless LAN radio transmitter and gives you the option to switch to the opposite state, for example, if your GC79 Radio transmitter is on the menu option reads **Disable Radio**.

You can also set the status of the wireless LAN radio transmitter by selecting Turn **Radio On/Off** in the Wireless Manager **File** menu.

Hide

This menu option allows you to hide the   icon from view on the system tray.

Making Windows Network Connections Visible

The Windows connection icons, displayed in the system tray, normally disappear once a connection is made. This means that you may not necessarily see a ⬛ icon corresponding to each of the ⬛ icons for your GSM/GPRS and wireless LAN connections.

Note:Windows 98SE does not support the feature described below

To make an ⬛ icon visible, follow the steps described below.

1. Right click the appropriate ⬛ icon and select **Open Network and Dial-up Connections**. Alternatively select **Start** ➡ **Settings** ➡ **Network and Dial-up Connections**.

2. A dialog opens displaying all the network connections available on your PC. Right click the one you want to edit.

3. Click the **Show icon in taskbar when connected** box. Click **OK** to close the dialog.
When you have an active connection use your mouse to hover over the icon to view connectivity details.

Wireless Manager GSM/GPRS Preferences

You can change the general GSM/GPRS behaviour of the Wireless Manager by selecting specific options in the **Preferences...** dialog.

1. Select **Preferences...** in the **File** menu. The Preferences dialog opens, the **Radio Power** tab is displayed.

Radio Power Tab

You can use this tab to manage the state of the radio transmitter.

Enable Radio immediately when card inserted	You should normally leave this checkbox turned off. When enabled, the Windows driver turns the radio transmitter on when the card is inserted and leaves it enabled even when the card is not in use. You should check this option if your Windows logon requires you to log on using a dial-up connection, see *Appendix B - Windows Log on using a GSM/GPRS Dial-up Connection* on page 82 for more details. When you click **OK** to activate this option the Wireless Manager displays the following dialog.

When this option is selected, the Wireless Manager radio power startup and shutdown choices are disabled.

On	The radio mode you specify at Wireless Manager start-up appears selected on the Radio tab. When the Wireless Manager is running in radio on mode it is registered to the GSM network and connections can be made and SMS sent and received. The radio can be enabled in several ways; • Select **Radio On** when the Wireless Manager starts. • Specify the required radio state in **Preferences ➡ Radio Power**. Your GC79 is set to **On** by default.
Off	**Radio Off** indicates that the GC79 will not register to the mobile GSM network. You may perform non-communication related activities such as phone book maintenance, but you must turn on the radio in order to make a connection or to send/receive SMS.
Ask Me	Triggers a dialog to be displayed every time the PC is turned on. The dialog asks you if the radio transmitter should be turned on or off during the active PC session. This is also called Aeroplane mode, because it prevents the radio transmitter automatically turning on. This is a useful feature in areas where radio transmitters are not allowed; aircrafts, hospitals or blasting areas.
Turn Radio Off	At shutdown the radio is turned off.
Reset card	Turns the radio off and resets the card.

Text Messaging Tab

You can use this tab to enable reception of specific message classes from the SMS Cell Broadcast service and to set the SMS received audio alarm to on or off. Select the radio buttons to activate the options.

Example of SMS Cell Broadcast message types:

Code:	Cell Broadcast Message
000	Index
010	News Flashes
020	Hospitals
030	Long-distance road reports
040	Weather

To enter multiple SMS Cell Broadcast message types separate each entry with a comma, for example, 000, 034, 076.

Note:
SMS Cell Broadcast message types are network specific. Contact your GSM network operator for more details.

This screen also allows you to set a validity period for the SMS messages that you are sending. If your message can not be delivered, for example, if the recipient hasn't inserted their GC79, the validity period tells your service centre how long to keep trying to send the message.

Notifications Tab

Click the **Notifications** tab. You can decide if you want to display a splash screen every time Wireless Manager is opened or closed and a program end confirmation box. Select the radio buttons to activate the options.

GPRS Connection Tab

Establish GPRS connection at startup

Select this option to automatically connect to your chosen GPRS connectionwhen Wireless Manager is started. Wireless Manager waits until GPRS is registered and then it establish the specified GPRS connection. Simply select the name of the connection to be established from the drop down list. To automatically connect when you start or restart your PC see the example below. If you need to connect at Windows log on see *Appendix B - Windows Log on using a GSM/GPRS Dial-up Connection* on page 82.

Example: If you want your GC79 to be available and a GPRS internet connection to be automatically established when you boot your laptop:
- Set **Preferences** ➡ **Misc** ➡ **Run this program when Windows Starts**
- Set **Preferences** ➡ **GPRS Connection** ➡ **Establish GPRS Connection At Startup** and select the GPRS connection required.

Miscellaneous Tab

Click the **Miscellaneous** tab.
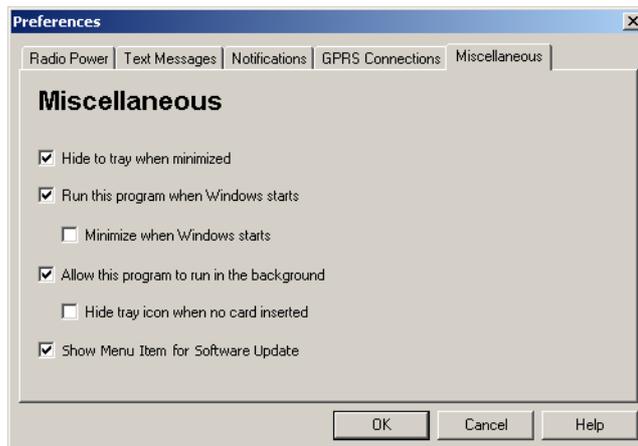
- **Hide to tray when minimized**
  If enabled, when the Wireless Manager is minimized, it removes any window from the taskbar, and only shows the small icon in the system tray. To re-open the main window, double-click the tray icon, or select **open** from the icon menu.

- **Run this program when Windows starts**
  If enabled, the Wireless Manager starts when Windows is started. If a GC79 PC Card is detected, the Wireless Manager runs. If not, the program closes (and runs in the background if permitted). When used with **Establish GPRS connection** at startup, this allows a GPRS session to be automatically connected when the user logs on, see *Appendix B - Windows Log on using a GSM/ GPRS Dial-up Connection* on page 82 for more details.

- **Minimize when Windows starts**
  If enabled, the Wireless Manager starts when a user logs on to Windows, it appears as an icon in the task bar only. If a GC79 PC Card is detected, the Wireless Manager runs and connects. If not, the program closes (and runs in the background if permitted).

- **Allow this program to run in the background**
  If enabled, the Wireless Manager runs in the background, waiting for a GC79 PC Card to be inserted. When the card is detected, the Wireless Manager automatically opens and begins normal operations. When the close box, or **File ➡ Exit** is selected, the Wireless Manager closes but does not exit. It releases control of the card, so it may be stopped and removed, and runs in the background. You can start the program again from the **Start** menu, double-clicking the system tray icon, or by re-inserting the GC79 PC Card.
  You can stop Wireless Manager running in the background by right clicking on the PC screen and selecting **Exit**.
  If you attempt to start Wireless Manager with no GC79 PC Card inserted a warning dialog is displayed, informing you that the GC79 PC Card is not present, and Wireless Manager switches back to background mode.

- **Hide tray icon when no card inserted**
  If this option is selected, Wireless Manager runs in background mode, the Wireless Manager icon is not displayed in the system tray. If the card is inserted, the icon reappears and the Wireless Manager is started.

- **Show menu item for Modem Software Update**

  If this option is checked, a **File** ➡ **Modem Software Update...** menu item is enabled. Selecting this menu command prepares the GC79 PC card to receive a software update from the Sony Ericsson Update Service. More information about this service can be found at http://www.sonyericsson.com

Examples: If you want to activate your GC79 when the laptop is booted, so that it is ready to make a connection and send/receive SMS:
- Set **Preferences** ➡ **Misc** ➡ **Run this program when Windows Starts**.

If you want your GC79 to be available and a GPRS internet connection to be automatically established when you boot your laptop:
- Set **Preferences** ➡ **Misc** ➡ **Run this program when Windows Starts**.
- Set **Preferences** ➡ **GPRS Connections** ➡ **Establish GPRS Connection At Startup**.
- Select the GPRS connection required.

If you remove the GC79 during usage and want it to be automatically reactivated when you re-insert it:
- Set **Preferences** ➡ **Misc** ➡ **Allow this program to run in the background**.
Note: If you have Establish GPRS connection at Startup set, then the connection will also be automatically established when you insert the card.

If you want to start the laptop with the GC79 removed and have it automatically activated when it is later inserted:
- Set **Preferences** ➡ **Misc** ➡ **Run this program when Windows Starts**.
- Set **Preferences** ➡ **Misc** ➡ **Allow this program to run in the background**.

Class 0 SMS Messages

Class 0 messages contain current information and are replaced frequently, for example, traffic reports. The GC79 will display any messages that are sent out whilst it is registered on a GSM network. See *Text Messaging Tab* on page 37 for further details.

Safe Removal of the GC79

You must stop the GC79 before attempting to remove it.

1. Close any active GC79 Networking Connections.

2. Exit Wireless Manager.

3. Click on the **PC Card** icon. A list of currently connected PC Cards is displayed. Select **Safely remove Sony Ericsson GC79 Wireless Modem**.

4. A dialog is displayed telling you it is safe to remove the card. Click **OK**.

5. The GC79 Card can now be removed safely.

   Important!
   Incorrect removal of the GC79 can damage the card.

Wireless Manager Telephony Settings Screen

The Telephony Settings screen allows you view and change the GSM and wireless LAN settings of the GC79.

The functions of the Telephony Settings screen are very similar to the settings that you have access to via a mobile phone's display. A **Wireless 802.11** option provides access to the **Sony Ericsson Wireless Configuration Utility**.

> **Note:**
> Your GC79 has to be connected to your computer to make changes to the settings.

1. Click 🔧 or select **View** ➡ **Telephony Settings**.
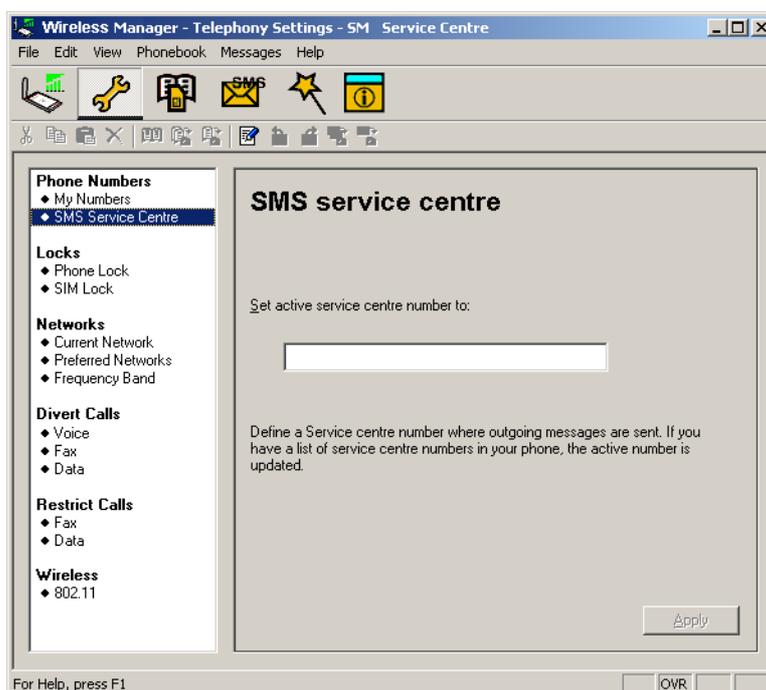
The window is divided into two areas: the navigation area on the left and the information area on the right.

When you have selected a setting in the navigation area, Wireless Manager retrieves the current setting information from the GC79 and displays the information in the right area.

Phone Numbers

My numbers

You can list all your own numbers here. The numbers are for personal reference only and have no operational effect on the GC79.

Voice line 1 and 2:

The voice number or numbers issued with your SIM card that you use for normal voice calls. If you have line 2 (alternate line service) enter in the **Voice Line 2 number** field.

Data:

The number used to make a data call to the GC79 (Mobile Terminated).

Fax:

The number used to send a fax to the GC79.

Click **Apply** when you have finished, to transfer the changes back to your GC79. This may take a few seconds.

SMS Service Centre

When you send a text message it goes to your operator's service centre, they then forward it to the correct recipient. The SMS service centre is identified by a telephone number.

Note:

The SMS Service Centre number is normally read automatically from your SIM card.

To Set or change the service centre address:

1. Enter your operator's service centre phone number in the Number text box.
2. Click **Apply** to transfer the setting to your GC79.

Locks

Phone lock

The phone lock protects the GC79 against unauthorized use if it is stolen and used with another SIM card. Phone Lock is not activated when you buy the GC79.

You can use this screen to change the default security code (0000) to any four to eight digit personalized code.

You can set the Phone Lock Status to one of the following states:

- **On** - A brief message *Phone locked* is displayed each time you turn on the computer. The **Enter phone lock code** dialog opens. Enter your code into the dialog and click **OK**.

- **Off** - The GC79 is not locked.

- **Automatic** - If the Automatic setting is selected, the message *Phone locked* only appears when a different SIM card is inserted into the GC79. After the security code has been entered correctly, the GC79 can be used with the new SIM card.

Note:

The Phone Lock code has four to eight digits and is shown as asterisks upon entry in the dialog.

To Change the Phone Lock code:

1. Click [Change Phone Code].

2. The **Change the Phone Lock Code** dialog opens. Make the required changes and click **OK**.

3. Click **Apply** when you have finished, to transfer the changes back to your GC79. This may take a few seconds.

SIM lock

Some SIM cards are protected with a PIN (Personal Identity Number) at the time of purchase. If the SIM card lock is activated, you have to enter the PIN every time you turn on your PC and open Wireless Manager. If you enter your PIN incorrectly three times in succession, the SIM card is blocked and you need a PUK code, from your network operator, to unblock the SIM card.

- To activate the SIM card lock, select the **On** radio button.

  Caution!
  Only activate the SIM card lock if you know the PIN code.

- To cancel the SIM card lock, select the **Off** radio button.

  Note:
  You have to use your PIN code to turn the SIM card lock off.

To Change the PIN Code:

1. Click [Change Pin Code...].

2. Enter your old PIN code, followed by your new four to eight digit PIN code. Confirm the new code by entering it again.

3. Click **OK**.

  Note:
  The SIM card lock only protects your subscription and not your GC79 from unauthorized use.
  If you change your SIM card, the GC79 will still work with a new SIM card.

4. Click **Apply** when you have finished to transfer the changes back to your GC79. This may take a few seconds.

Networks

Current Network

You can select which network you want to use by going to **Networks** and then choosing **Current Network**.

Searching for the available networks:
- Click **Retrieve**, the current network appears in the box with all the other currently available networks.

The available networks will fall into one of the following three categories:

- The home network, the one with which you have subscription.

- Available networks, networks that your home mobile operator has a roaming agreement with.

- Forbidden networks, you can't use these networks except for emergency calls. If your home network and a forbidden network come to an agreement that allows you to use the forbidden network, you can select this network even though it is forbidden.

Choosing another network:

1. Uncheck the **Automatically choose a network for me**.

2. Select the network that you want to use.

3. Click **Apply** to transfer the setting to your GC79.

The message *Please wait* appears briefly on the screen. If you are not allowed to use the network that you have chosen, *Forbidden* is displayed.

Note:
HSCSD is not available in every GSM network and requires a supplementary roaming agreement between mobile operators for visiting users to use HSCSD. Check with your home operator regarding the country or region in which you want to roam.

GPRS is commonly available in GSM networks, but fewer roaming agreements are in place. You may therefore need to explicitly select one of the available networks in order to use GPRS when abroad. Check with your home operator to find out which networks are GPRS roaming partners in the country or region in which you want to roam.

Preferred (network)

Function support is network operator dependant.

A list of preferred networks is stored on the SIM card. This is typically set up by your mobile operator as part of SIM manufacture. Preferred roaming partners are placed in the list so that you have the greatest range of available services whilst roaming. When the home network is not available, the GC79 will check the available networks against the preferred network list and select the one placed highest. Automatic network selection must be enabled.

If you want to add a new network:

1. Click **Add**, a new dialog with all the networks known to the GC79 appears on the screen.

2. Select the network that you want to add and click **OK**.

3. Click **Apply** to transfer the setting to your GC79 SIM card.

If you want to delete a network from the list:

1. Select the network that you want to delete.

2. Click **Remove**.

3. Click **Apply** to transfer the setting to your GC79 SIM card.

If you want to re-arrange the order of the networks listed:

1. Select the network that you want to move.

2. Click the **Up** or **Down** arrows to rearrange the order.

3. Click **Apply** to transfer the setting to your GC79 SIM card.

Note:
If the list of preferred networks is full, the **Add** button is disabled (grey).

Frequency Band

GSM operates in a number of different frequency bands, where available. 900 and 1800 MHz are used in Europe, Asia, Australasia and Africa, whilst the 1900 MHz band is used in North and South America. By default your GC79 operates in 'tri-band' mode and automatically finds available networks in any of these frequency bands. It is not recommended to change this setting. See *GSM Performance and technical characteristics* on page 68 for a list of GSM frequency ranges.

Forward (Divert) Calls

Note:
The GC79 does not make or answer voice calls. The forward function enables you to send a voice call to an alternative number where it can be answered. For example, the mobile network voicemail service. However you can make and answer fax and data calls, providing you have appropriate software on your PC to handle them.

Voice

You can use the Call forward service to forward your voice calls to another phone number.

Note:
The Call forward service may not be available on all networks.

Selecting a call forward setting:

1. To obtain your current call forwarding settings from the network, click **Retrieve**.

2. Make your changes and select in which situation you want to forward your incoming calls. You can select from four different forwarding options:

   – **Always**: this forwards all incoming calls to the phone number that you have entered in the text box

   – **When busy**

   – **No reply**

   – **Not reachable**: for example, when your phone is turned off

3. If you know which phone number to forward your calls to, type the number in the text box next to the forward option you have chosen.
   Or

   Click ⌐…⌐ to choose a phone number from your phone book.

4. Click **Apply** to transfer them to your GC79. This may take a few seconds.

Your Line 1 forward setting has now been stored in the network.

Fax

If you want to route your incoming fax calls to another number, you can use the Call forward service.

Note:
The Call forward service may not be available on all networks. Also, if you are using the Call restricting function, this may influence Call forward.

Selecting a fax forwarding setting:

1. To obtain your current fax forwarding settings from the network, click **Retrieve**.

2. Select **Always** if you want to forward all the incoming calls to a specific phone number.

3. If you know which phone number to forward your calls to, type the number in the text box next to **Always**.
Or

   Click [...] to choose a phone number from your phone book.

4. Click **Apply** to transfer your settings to your GC79. This may take a few seconds.

Your fax forward setting has now been stored in the network.

Data

If you want to route your incoming data calls to another number, you can use the Call forward service.

> **Note:**
> The Call forward service may not be available on all networks. Also, if you are using the Call restricting function, this may influence Call forward.

Selecting a data forwarding setting:

1. To obtain your current data forwarding settings from the network, click **Retrieve**.

2. Select **Always** if you want to forward all the incoming calls to a specific phone number.

3. Select the **Always** check box and enter the destination number or click [...] to choose a phone number from your phone book. Click **OK**.

4. Click **Apply** to transfer your settings to your GC79. This may take a few seconds.

Your data forward setting has now been stored in the network.

Restrict Calls

Restricting a certain type of call means that this type of call cannot be made to or from your GC79. You can restrict different types of outgoing and incoming calls.

The following call types can be restricted:

- all outgoing calls.
- all outgoing international calls.
- all outgoing international calls except to your own country.
- all incoming calls.
- all incoming calls when you are abroad (when roaming).

A password, issued with your subscription, is required to turn a call restrict on or off.
Contact your network operator for further information.

Restricting Fax and Data Calls

To Change the call restrict status for fax and data calls:

1. To get your current call restrict settings from the network, click **Retrieve**.

2. Tick the boxes next to the call types that you want to restrict.
   Only select one outgoing and one incoming option.

3. When you have finished, click **Apply**.

4. Type your restriction password into the dialog and click **OK**.

Your call restrict settings have now been changed and stored in the network.

Wireless

802.11

To configure, monitor and control your GC79 wireless LAN connections, click on the **Launch Wireless Control Panel** button.

The Wireless Configuration Utility is displayed. See *Create a Wireless LAN Connection* on page 17 for details.

Wireless Manager Phone Book Screen

The Wireless Manager Phone Book screen helps you to organize your GC79's SIM Phone Book.

The Phone Book Screen

A SIM Phone Book can easily become disorganised; you can use the Phone Book screen to manage your SIM Phone Book entries.

You can add new numbers, edit existing numbers and export and import entries.

1. Click to display the Phone Book screen.

2. Icons appear in the left pane representing the SIM Phone Book and Saved Phone Book . You can manage your Phone Book entries by copying entries to the SIM Phone Book or the Saved Phone Book.

3. Click on the icon to display the Phone Book entries in the right pane.

   Note:
   Your GC79 must be inserted to display this information.

Phone Book Functionality

To Add a Number:

1. Select **Add new** in the Phone Book menu or click on the toolbar or key **Ctrl** and **N**.

2. The **New Phone Book Entry** dialog opens.
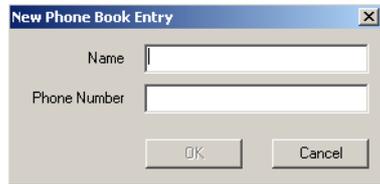
3. Enter the name and phone number.

4. Click **OK** to save the entry or **Cancel** to close the dialog.

   Note:
   Phone Book numbers are limited to 20 digits (including +) and names are limited to 18 alphanumeric characters.

   New entries are added to the next available SIM index position.

To Modify a number:

1. Select the number you want to modify.

2. Select **Modify...** in the Phone Book menu.

3. The **Edit Phone Book Entry** dialog opens.

4. The fields in the dialog display the current entry's name and number.

5. Edit the information.

6. Click **Save** to close the dialog and save your changes.
   If the modified entry is in the SIM Phone Book the changes are automatically sent to the SIM.

To Find Entries:

1. Select **Find** in the Phone Book menu or key **Ctrl** and **F**.

2. The **Find** dialog opens. Enter the text or number you want to search for in the **Look for** field. The entry can be complete or incomplete.

3. Click **Find**. The Wireless Manager searches both Phone Books, when a match is found it is displayed in the right pane. Click **Find Next** to search again.

4. Click **Close** when you have finished searching.

To Copy an Entry:

1. Select an entry from the SIM Phone Book or the Saved Phone Book.

2. Select **Copy To** in the Phone Book menu. The **Copy To** option is followed by the name of the Phone Book you haven't selected the entry from.

3. A duplicate entry is made in the specified Phone Book. The new entry is assigned the next available position in the destination Phone Book.

To Move an Entry:

1. Select an entry.

2. Select **Move To** in the Phone Book menu. The **Move To** option is followed by the name of the Phone Book you haven't selected the entry from.

3. The entry is moved from its current Phone Book and placed in the selected one. The new entry is assigned the next available position in the destination Phone Book.

To Import an Entry or Phone Book:

1. Select **Import** from the Phone Book menu.
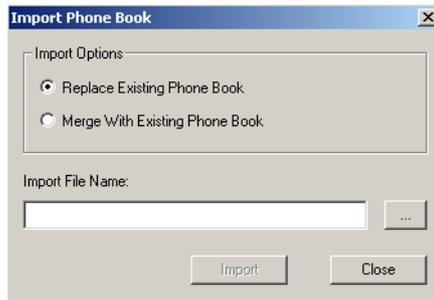
2. Select the **Replace With Existing Phone Book** or **Merge with existing Phone Book** radio button.

3. Click ⋯ and browse to find the file you want to import.

   Note:
   The file must be a text file in comma separated value (CSV) format. Any invalid lines or files will be ignored.

4. Click **OK** in the browse dialog. The path and file name are displayed in the **Import File Name** field.

5. Click **Import** to complete the import procedure.

To Export an Entry or Phone Book:

1. Highlight the entries or open the Phone Book you want to export.

2. Select **Export** from the Phone Book menu.

3. Select **All** to export the entire Phone Book or **Selected Items** to export the highlighted entries.

4. Type a name for the file into the **Export File Name** field.

5. Click ⋯ and identify the save location.

Note:
The file will be saved as a text file in comma separated value (CSV) format.

6. Click **OK** in the browse dialog. The path and file name are displayed in the **Export File Name** field.

7. Click **Export** to complete the procedure.

Delete a number

1. Select the number that you want to delete.

2. Select **Delete**, from the Edit menu.

3. A confirmation dialog opens, click **Yes** to delete the number.

   Note:
   If you want to delete all numbers, select **Select All** from the Edit menu before clicking **Delete**.

To Send a New SMS Message:

1. Select an entry from a Phone Book.

2. Select **Create New Message** from the Messages menu.

3. A new SMS Message dialog is opened and pre-addressed with the selected entries details.

Wireless Manager SMS Messages Screen

The Wireless Manager's SMS Messages screen enables you to view, compose, edit, save, copy, delete, reply or forward SMS messages from your GC79 to other mobile devices.

Note:
To use Message functionality SMS must be included in your subscription, contact your network operator for more details.
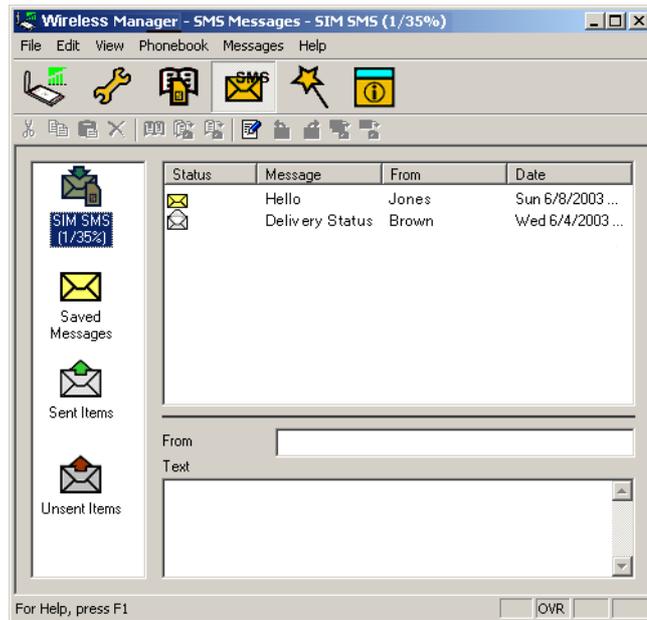
The SMS Messages screen is split in to a left and right area.

The left area displays the folders; SIM SMS, Saved Messages, Sent Items and Unsent Items.

The right area displays the contents of the selected folder. The top half of the right pane displays a list of received messages, sorted by date and the bottom half of the screen displays the content of a selected message, this is referred to as the **Information View**.

The folders and their names are static, you can not change them.

Click to display the contents of the SIM Inbox. When Wireless Manager is opened any new SMS in the SIM Inbox are uploaded to the PC automatically.
A status flag indicates whether a message is read or unread.

If a new SMS arrives when the Wireless Manager is open is displayed on the Status screen and the SMS audio sound is played, if enabled in the **Setting** dialog. See *Wireless Manager GSM/GPRS Preferences* on page 35.

If you want to keep an SMS, use the copy or move menu options to place it in the Saved folder. Click on the folder icon to display the contents of the Saved folder.

A copy of each SMS that you have sent is stored in this folder. Click on the folder icon to display them.

Any composed messages that have not been sent are displayed when you click on this icon.
SMS stored in this folder can be edited or sent when the GC79 is connected.
Any SMS that fail during transmission are also stored here, you can resend them at any time.

Each time the SMS Messages screen receives a new SMS message from the SIM it checks the status of the SIM Inbox. If the SIM Inbox is full, a SIM Full icon is displayed in the left pane of the screen, see *SIM Inbox is Full:* on page 54.

Note:
For all the SMS Messages screen menu options to operate the GC79 must be registered successfully on a network. You must have a GSM signal to **Send** SMS, the button is disabled (grey) if you don't have a signal.

Class 0 messages

If you receive a Class 0 message, it will appear in a pop-up dialog, which you can save or dismiss. If you choose to save the message it will be stored in you Saved Messages folder.

SMS Manager Functionality

To Send an SMS:

1. Select **Create New Message...** from the Messages menu or click ✎.

2. The **New Message** dialog opens.

3. Enter the recipient's mobile phone number in the **To:** field or select a number from a phone book by clicking **Lookup...**.
   To send an SMS to multiple numbers, hold down **Ctrl** when selecting the numbers from the phone book.

4. Type your message into the **Message:** field.

5. If required you can click the **Calculate SMS blocks** to see how many SMSs your message will be split into. Also you can check the **Request Status Report** to get confirmation when the SMS arrives at its destination (if this service is supported by your network).

6. Click **Send** to send the SMS or **Cancel** to close the dialog without sending the SMS.

To Edit a Message:

When you are working with a message, you can edit the text by cutting, copying and pasting.

Moving Text:

1. Select the text you want to move, the text can be in another PC application.

2. Select **Cut** from the Edit menu or **Ctrl** and **X** on the keyboard.

3. Place the cursor where you want to insert the text and select **Paste** from the Edit menu or **Ctrl** and **V** on the keyboard.

Note:
If you want to copy text, select **Copy (Ctrl** and **C)** from the Edit menu instead of **Cut (Ctrl** and **X)**.

Reply to an SMS:

1. Select the folder where the message is located.

2. From the list, select the message you want to reply to. The contents of the message are displayed in the information view.

3. Select **Reply** in the Messages menu. A dialogue appears. The **To:** field is automatically filled in and the original message is displayed in the **Message:** field.

4. If required you can click the **Calculate SMS blocks** to see how many SMSs your message will be split into. Also you can check the **Request Status Report** to get confirmation when the SMS arrives at its destination.

5. Type your reply and click **Send**.

To Forward an SMS:

1. Select the folder where the message is located.

2. From the list, select the message you want to forward. The contents of the message are displayed in the information view.

3. Click **Forward**, a dialogue opens.

4. Enter the phone number in the **To:** field or click **Lookup...** to select a number from a phone book. To send an SMS to multiple numbers, hold down **Ctrl** when selecting the numbers from the phone book.

5. If required you can click the **Calculate SMS blocks** to see how many SMSs your message will be split into. Also you can check the **Request Status Report** to get confirmation when the SMS arrives at its destination.

6. Click **Send**.

Delete an SMS:

1. Select the folder where the message is located.

2. From the list, select the message you want to delete. The contents of the message are displayed in the information view.

3. Select **Delete** from the Edit menu, or press the **Delete** button on your keyboard.

4. A confirmation message box opens, click **Yes** to delete the message.

> **Note:**
> To delete all messages, click **Select All** from the Edit menu before you select **Delete**.

Folder Management:

Sorting SMS:
1. Select the folder where the messages you want to sort are located.

2. Click the **Date** column heading to sort the SMS in ascending or descending date order.

Moving SMS:
1. Select the folder where the message you want to move is located.

2. From the list, select the message. The contents of the message are displayed in the information view.

3. Click **Move to Saved Messages** from the **Messages** menu. A progress dialog is displayed informing you that the SIM card is being updated.

4. The selected message is moved.

Note:
To move all messages, click **Select All** from the Edit menu before you select **Move to Saved Messages**.

Copy an SMS:

1. Select the folder where the message you want to copy is located.

2. From the list, select the message. The contents of the message are displayed in the information view.

3. Click **Copy to Saved Messages** from the **Messages** menu. A progress dialog is displayed informing you that the SIM card is being updated.

4. The selected message is copied.

Note:
To copy all messages, click **Select All** from the Edit menu before you select **Copy to Saved Messages**.

SIM Inbox is Full:

When the Wireless Manager detects the SIM SMS storage is full, it displays on the Status screen and in the SMS Messages screen. You must move or delete some SMS from the SIM Inbox to free storage space so that you can continue receiving new SMS from the network. To do this you can either:

- Move your SMS from SIM SMS to Saved Messages
- Right click on an SMS in SIM SMS and select delete.

Wireless Manager Online Services Screen

Online Services is a customised service offered by a network operators. This service is network or subscription dependant. The Online Services screen provides a mechanism that allows applications that exist on the SIM to interact and operate with the GC79. Typical services offered by network operators include:

- sports scores
- news
- financial data
- horoscopes
- interactive text game messages

Online Services are placed on your SIM card by your operator. Wireless Manager detects if these services are on the SIM card and displays the 🔲 icon if they are.

1. Click 🔲 to display the Online services screen. You can also select to display the Online Services screen from the View menu.
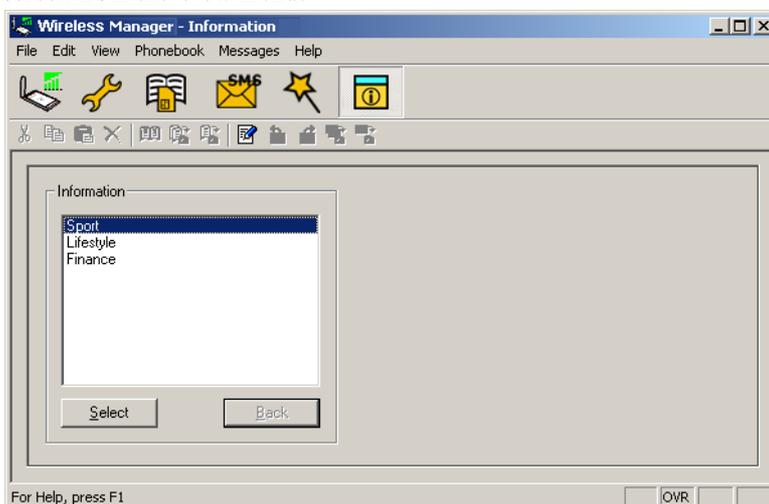
The screen displays a menu of the online services offered by your network operator.

Click on the category you require and click **Select**.

More detailed choices are sometimes displayed, if necessary select the required option and click **Select**.

The response may take various forms, depending on the network operator. For example, the news headlines might be sent as an SMS, which will be delivered to the SMS inbox.

Online Services menus are sometimes used to provide a list of voice-based services such as directory enquiries. If one of these is selected, you will not be connected because the GC79 does not support voice calls.

> **Note:**
> Contact your operator to find out which services are available for your account.

Troubleshooting

This chapter lists some problems that you might encounter while using your GC79. Some problems require you to contact your service provider, but most of the problems you can easily correct yourself.

Status Information

View ➡ **Wireless Manager Information** displays a dialog box containing useful information about connection status.

Status Log

The Wireless Manager creates a status log that can be used for customer support and field diagnostic assistance.

Each time the Wireless Manager runs, it creates a text file in the Windows temp folder, called Wireless Manager_Log.txt. If the file is already present, it is overwritten.

An example of the contents of the log file is shown below:

03/05/01 14:17:56 - Signal Strength: 0
03/05/01 14:17:56 - Provider Name: MyOperator
03/05/01 14:17:57 - Radio State: 1
03/05/01 14:17:57 - GSM Registration: Searching
03/05/01 14:17:57 - GPRS Registration: Searching
03/05/01 14:17:57 - Network Operator:
03/05/01 14:18:06 - GSM Registration: Home Network
03/05/01 14:18:06 - GPRS Registration: Home Network
03/05/01 14:18:06 - Network Operator: MyOperator
03/05/01 14:18:21 - User: Connect: operatorinternet.apn
03/05/01 14:18:21 - Connection: Port successfully opened
03/05/01 14:18:21 - Signal Strength: 4
03/05/01 14:18:25 - Connection: Established: operatorinternet.apn
03/05/01 14:18:25 - Signal Strength: 4
03/05/01 14:18:32 - User: Disconnect
03/05/01 14:18:32 - Connection: Starting disconnect
03/05/01 14:18:34 - Connection: Disconnected
03/05/01 14:18:34 - Connection: Bytes Transmitted : 156
03/05/01 14:18:34 - Connection: Bytes Received : 468
03/05/01 14:18:34 - Signal Strength: 3
03/05/01 14:18:35 - User: Close Program
03/05/01 14:18:39 - User: Exit

> **Tip:**
> To easily locate the temp folder, enter %TEMP% in the **Start** ➡ **Run** dialog, or in the address bar of Windows Explorer.

Wireless Manager Icon Errors

---✕ appears in the task bar	GC79 isn't present, please insert.
⊘ **▪▪▪▪▪ appears in the task bar**	Indicates that the GSM/GPRS radio is turned off. Right-click the icon and select **Turn GSM/GPRS Radio On**.
▪▪▪▪▪ appears in the task bar	Indicates that the GC79 cannot find a GSM network, there is no network within range or the received signal is too weak. You have to move to get a stronger signal.
A signal is present but you can't connect to the GPRS network	Indicates that a GSM network is present, but no GPRS service is available. This can be caused by; no GPRS service in the area, you are trying to roam on a network for which no GPRS roaming agreement exists or there is a temporary fault on the network. Contact your network operator for more details.
appears in the task bar	Indicates that the wireless LAN radio is turned off. Right-click the icon and select **Enable Radio**.
W appears in the task bar	Indicates that the GC79 cannot find a wireless network, there is no network within range or the received signal is too weak. You have to move to get a stronger signal.

Software Errors

Grey menu options in the software applications	Grey text indicates a function that is temporarily unavailable, for example due to your subscription or due to a certain setting which has not been turned on.

GSM/GPRS Error Messages

General

Modem not responding.... Error	Check that the radio is turned on.
Dial-Up fails	Try to connect again.

SIM Card Errors

Wrong PIN/ Wrong PIN2	You have entered your PIN or PIN2 incorrectly. Enter the correct PIN or PIN2, and click **OK**. See *SIM lock* on page 42.
Codes do not match	When you want to change a security code (for example your PIN) you have to confirm the new code by entering it again. This error occurs when the two codes, that you have entered do not match. See *Phone lock* on page 41.
PIN blocked/ PIN2 blocked	You have entered your PIN or PIN2 incorrectly three times in succession. To unblock, see *SIM lock* on page 42.
PUK blocked – contact operator	You have entered your personal unblocking key code (PUK) incorrectly 10 times in succession. Contact your network operator or service provider.

Wireless LAN Error Messages

Medium Cable Disconnected	A number of possible causes: • You have moved out of range of the wireless LAN signal. Move back closer to the hotspot. • The wireless LAN is switched off. Right-click the 🚫 icon and select **Enable Radio**. • The network transmission has been interrupted. Contact the Network Administrator.

Wireless LAN Performance and Connectivity Problems

Data transfer is sometimes very slow

Microwave ovens and some cordless phones operate at the same radio frequency as the GC79 wireless LAN adapter. When the microwave oven or cordless phone is in use, it interferes with the wireless network.

Therefore, check for possible sources of interference in the path between the GC79 and the network access point (AP).

Data transfer is always very slow

Some homes and most offices are steel-framed structures. The steel in such buildings may interfere with your network's radio signals, thus causing a slowdown in the data transmission rate. Try moving your computers to different locations in the building to see if performance improves.

Computer is not communicating with the network

If your network has a wireless LAN access point, check all cables and make sure the power LED on the front of the AP is green. Verify that all of the wireless network properties settings are correct; see *Create a Wireless LAN Connection* on page 17.

Also, make sure that your computer is receiving a good signal from the access point; see *Viewing the Status of your Wireless Connection* on page 21.

Network performance is really slow when the system is docked to a docking station that has an active Ethernet port

This condition occurs if you dock your system into a docking station that has an active Ethernet port while your GC79 is still active and connected to a wireless LAN access point. This is because Windows must now handle two active network connections.

You must either disconnect the Ethernet cable from your docking station, or disable the wireless LAN radio on your GC79.

To disable the GC79 wireless LAN radio, right-click the ![W] icon and then select **Disable Radio**.

> **Note:**
> The radio is not automatically enabled when your computer next starts. To enable the radio, right-click the ![icon] icon and then select **Enable Radio**.

Windows Error Codes

Windows® 98

Error 619: **The port is** **disconnected** **during dial-up**	An ISDN mode (V110 or V120) has been selected when creating a connection, but is not supported by the network. Select Analogue mode when creating the connection in the **Connection Wizard**.
Error 629: **The port was** **disconnected** **by the remote** **machine during** **dial-up**	Telephony settings are set to pulse dialling, change to tone dialling. Check the dialling settings for the current location (In **Control Panel** ➡ **Phone and Modem Option** ➡ **Dialling Rules** ➡ **Location** ➡ **Edit**) and change the **Dial using** setting to tone, or (if Pulse is a necessity), create a new location called **GC79 Anywhere** and set the dialling to Tone. **GC79 anywhere** locationshould then be used whenever you use the GC79.
Error 630: **The port was** **disconnected** **due to hardware** **failure during** **dial-up**	A Dial-up networking connection is already connected. Close the connected dial-up and try again.
Error 645: **Internal** **authentication** **error during** **dial-up**	Incorrect APN or CID selected for network. Modify your Dial-up Connection, see *Create a GPRS, HSCSD or CSD Connection* on page 13 for more details. Make sure that the APN file contains the name of the access point your network operator is using. See the support section on **www.sonyericsson.com** site for a full list of network operator APNs.
Error 650: The **Remote Access** **server is not** **responding** **during dial-up**	Incorrect User ID and/or password. Re enter correctly.
Error 678: **Computer you** **are dialling is** **not responding** **during dial-up**	Either: Service is not supported by SIM (usually for CSD/HSCSD) or the computer is not answering. 1 Check SIM settings with your service provider if necessary, 2 Make sure that the server you are dialling is OK, 3 Make sure that Analogue mode has not been selected with 57.6kbps data rate (V110 or V120 mode must be selected and supported by the network).
Error 720: **No PPP control** **protocols** **configured** **during dial-up**	The service is not supported by the SIM, usually appears when you are trying to connect to GPRS Internet. Contact service provider to enable GPRS Internet access on SIM card.

Windows® 2000

Error 619: **The port is disconnected during dial-up**	An ISDN mode (V110 or V120) has been selected when creating a connection, but is not supported by the network. Select Analogue mode when creating the connection in the **Connection Wizard**.
Error 678: **Computer you are dialling is not responding during dial-up**	Either: Service is not supported by SIM (usually for CSD/HSCSD) or the computer is not answering. 1 Check SIM settings with your service provider if necessary. 2 Make sure that the server you are dialling is OK. 3 Make sure that Analogue mode has not been selected with 57.6 kbps data rate (V110 or V120 mode must be selected and supported by the network).
Error 691: **Access denied, user name and password incorrect on the domain during dial-up**	The domain name entry is incorrect. Correct the domain name entry or delete if not required.
Error 718: The card was unable to dial during dial-up	This error indicates a PPP conversation started, but it was terminated because the remote server did not respond within an appropriate time. This can be caused by poor line quality or a problem with the server (ISP). This error can occur when your modem has connected to the ISP and has sent a username and password, but there is no response from the server. Wait a few minutes and try again.

All Windows® Operating Systems

Error 734: The PPP link control protocol was terminated during dial-up	The APN entry is incorrect, the signal is weak or the connection is lost whilst dialling. See the support section on **www.sonyericsson.com** site for a list of network operator APNs.
Error 678: Computer you are dialing is not responding during dial-up	Either: Service is not supported by SIM (usually for CSD/HSCSD) or the computer is not answering. Check SIM settings with your service provider if necessary. Make sure that the server you are dialing is OK. If you are unsure which speed to choose from the **Speed** tab, start with Analogue 9600, and check to see if it works. Once your connection works on Analog, you can try the V110/V120 settings to see if faster speeds are available. V110/V120 also connects faster than analog. When roaming you may need to repeat this procedure to adapt your settings to the capability of the local network operator.

Connection Failed or Activation Failed. Please contact your Service Provider.	No specific reason for failure is available. Wait a few minutes and try again. If you continue to get this error check your connection settings or call your service provider for help.
Connection Failed. Invalid APN. Please check and enter the APN again.	The APN entry is incorrect, the signal is weak or the connection is lost whilst dialing. See the support section on **www.sonyericsson.com** site for a list of network operator APNs or contact your service provider.
Connection Failed. Invalid User Name or Password. Please check and enter the User Name and/or Password in your connection profile.	Choose to modify your connection in the *Connection Wizard*. Go to the *User ID* screen and re enter the User Name and Password given to you by your service provider. If you were not supplied with a User Name and Password leave the fields blank. Contact your service provider if you continue to have problems.
Connection Failed. Invalid Profile. Please check and re-enter your connection profile information, and try again. If the problem continues please contact your Service Provider.	Your service provider doesn't recognise you. Check the setting you have entered to create your connection. If you still get the error contact your service provider and check you have GPRS Internet enabled on your subscription and then setting you should enter to create a connection.
Disconnected from Network	You have been disconnected from the network. Wait a few minutes and try again. If the problem persists contact your service provider.
Connection failed. Temporary Network problem. Please try again. If the problem continues please contact your Service Provider.	This error indicates a PPP conversation started, but it was terminated because the remote server did not respond within an appropriate time. This can be caused by poor line quality or a problem with the server (ISP). This error can occur when your modem has connected to the ISP and has sent a username and password, but there is no response from the server. Wait a few minutes and try again
Connection Failed. Not authorised to access network. Please contact your Service Provider.	Your service provider doesn't think your authorised to access their network. Check the setting you have entered to create your connection. If you still get the error contact your service provider and check your subscription.
Connection Failed. SIM is invalid for GPRS service. Please contact your Service Provider.	Contact your service provider and request the GPRS Internet subscription is activated for your SIM.
Connection Failed. Access to network not allowed. Please contact your Service Provider.	Your service provider is not allowing you to access their network. Check the setting you have entered to create your connection. If you still get the error contact your service provider and check your subscription.
Connection Failed. Roaming not allowed. Please contact your Service Provider.	Contact your service provider to get your roaming activated.

Connection Failed. Please try again. If the problem continues please contact your Service Provider.	You couldn't connect to the network. Wait a few minutes and try again. If the problem persists contact your service provider.
Connection Failed. Service not supported. Please try again. If the problem continues please contact your Service Provider.	Your service provider is not allowing you to access their network. Contact your service provider and check you have the subscriptions required activated for your SIM.
Connection Failed. Network Problem. Please try again. If the problem continues please contact your Service Provider.	You couldn't connect to the network. Wait a few minutes and try again. If the problem persists contact your service provider.

Additional Information

Sony Ericsson Support Web Site

At **www.sonyericsson.com** if you select support you can find help and tips in a few clicks. The support site gives you access to:

- the latest software updates
- tips on how to use your GC79 efficiently
- function guides
- additional help

Guidelines for Safe and Efficient Use

Please read this information before using your GC79.

Recommendations

- Always treat your product with care and keep it in a clean and dust-free place.
- Do not expose your product to liquid or moisture or humidity.
- Do not expose your product to extreme high or low temperatures.
- Do not expose your product to open flames or lit tobacco products.
- Do not drop, throw or try to bend your product.
- Do not paint your product.
- Do not use your product near medical equipment without requesting permission.
- Do not use your product when in, or around aircraft, or areas posted "turn off two-way radio".
- Do not use your product in an area where a potentially explosive atmosphere exists.
- Do not place your product or install wireless equipment in the area above your car's air bag.
- Do not attempt to disassemble your product. Only Sony Ericsson authorised personnel should perform service.

Antenna

Only use an antenna that has been specifically designed by Sony Ericsson for your GC79. Use of unauthorised or modified antennas could damage your GC79 and may violate regulations, causing loss of performance and SAR levels above the recommended limits (see below).

Efficient Use

Do not cover the antenna when in use, as this affects call quality and may cause the GC79 to operate at a higher power level than needed, thus shortening talk and standby times.

Radio Frequency (RF) Exposure and SAR

Your PC Card is a low-power radio transmitter and receiver (transceiver). When it is turned on, it emits low levels of radio frequency energy (also known as radio waves or radio frequency fields).

Governments around the world have adopted comprehensive international safety guidelines, developed by scientific organizations, e.g. ICNIRP (International Commission on Non-Ionizing Radiation Protection) and IEEE (The Institute of Electrical and Electronics Engineers Inc.), through periodic and thorough evaluation of scientific studies. These guidelines establish permitted levels of radio wave exposure for the general population. The levels include a safety margin designed to assure the safety of all persons, regardless of age and health, and to account for any variations in measurements.

Specific Absorption Rate (SAR) is the unit of measurement for the amount of radio frequency energy absorbed by the body when using a transceiver. The SAR value is determined at the highest certified power level in laboratory conditions, but the actual SAR level of the transceiver while operating can be well below this value. This is because the transceiver is designed to use the minimum power required to reach the network.

Variations in SAR below the radio frequency exposure guidelines do not mean that there are variations in safety. While there may be differences in SAR levels among mobile phones, all Sony Ericsson PC Cards are designed to meet radio frequency exposure guidelines.

Before a PC Card is available for sale to the public, it must be tested and certified to the FCC that it does not exceed the limit established by the government-adopted requirement for safe exposure. The tests are performed in positions and locations as required by the FCC for each model. For body worn operation, this PC Card has been tested and meets FCC RF exposure guidelines for fixed and mobile use when the PC Card is installed in a PCMCIA card slot of a standard Laptop PC with the original antenna.

Sony Ericsson has not measured, and makes no representation about, the body worn SAR levels when the PC Card is used in any portable host equipment or when any changes to the original product has been made.

More information on radio frequency exposure and SAR can be found on: www.sonyericsson.com.

Personal Medical Devices

GC79s may affect the operation of cardiac pacemakers and other implanted equipment. If a minimum distance of 15 cm (6 inches) is kept between the GC79 and the pacemaker, the risk of interference is limited. If you have any reason to suspect that interference is taking place, immediately turn off your GC79. Contact your cardiologist for more information.

For other medical devices, please consult the manufacturer of the device.

Children

DO NOT ALLOW CHILDREN TO PLAY WITH YOUR GC79 OR ITS ANTENNA. THEY COULD HURT THEMSELVES OR OTHERS, OR COULD ACCIDENTALLY DAMAGE THE GC79 OR ANTENNA. YOUR GC79 OR ITS ANTENNA MAY CONTAIN SMALL PARTS THAT COULD BE DETACHED AND CREATE A CHOKING HAZARD.

Disposing of the Product

Your GC79 should not be placed in municipal waste. Please check local regulations for disposal of electronic products.

Emergency Calls

GC79s manufactured by Sony Ericsson do not support voice calls, hence their use for essential communications (e.g. medical emergencies) is not possible.

Inserting and removing the SIM card – precautions against electrostatic discharge (ESD)

Do not touch the SIM card connectors. As a precaution, always make sure that the GC79 is already in your hand before you insert or remove the SIM card.

Technical Specifications

Product name	GC79
PC Card Type	32-bit Cardbus
System	WLAN 2.4GHz ISM band E-GSM 900 GSM 1800 GSM 1900
Services supported	**WLAN**: 802.11b **GSM**: CSD, HSCSD, GPRS, SMS, Fax Speech services are not supported
SIM Card	Small plug-in card, 3V type SIM Lock supported Regular (non-GPRS-aware) and GPRS-aware SIMs supported
Type Number	FAE-1021011-BV

Exterior Description

Size	PC Card Type II **Card part**: 85.6 mm x 54.0 mm x 5.0 mm **Extension part**: 15.4 mm x 54.0 mm x 10.5 mm
Weight	43g excluding SIM card
Battery	Powered via the PC card slot; uses laptop battery
Antenna	WLAN and GSM antenna integrated in the 15 mm card extension

Ambient Temperatures

Operating	-10 to 55 degrees C
Storage	-20 to 65 degrees C

Electrical Characteristics

Supported Voltages	3.3V ± 10%
Nominal Operating Voltage	3.3V
Standby Current	4.2mA

Operating System Support

Supported Operating Systems	Microsoft Windows® 98SE Microsoft Windows® Me Microsoft Windows® 2000 (SP4) Microsoft Windows® XP
Minimum PC Specification	Processor size as recommended by Microsoft for the version of Windows® in use 30 MB free disk space
Drivers	Microsoft WHQL-approved for Windows 2000 and XP

Supplied Software (on CD-ROM)

Wireless Manager	Status, SMS, Address Book and Settings
Documentation	User Manual AT Command Reference

GSM Performance and technical characteristics

Dimension	GSM 900/ E-GSM 900	GSM 1800	GSM 1900
Frequency Range	TX: 880 – 914 MHz RX: 925 – 959 MHz	TX: 1710 – 1785 MHz RX: 1805 – 1880 MHz	TX: 1850 – 1910 MHz RX: 1930 – 1990 MHz
Channel Spacing	200 kHz	200 kHz	200 kHz
Number of Channels	175 Carriers * 8 (TDMA)	374 Carriers * 8 (TDMA)	299 Carriers * 8 (TDMA)
Modulation	GMSK	GMSK	GMSK
TX Phase Accuracy	5 degrees (RMS) 20 degrees (Peak)	5 degrees (RMS) 20 degrees (Peak)	5 degrees (RMS) 20 degrees (Peak)
Duplex spacing	45 MHz	95 MHz	80 MHz
Frequency Stability	0.1ppm	0.1ppm	0.1ppm
Transmitter RF Power Output	33 dBm Class 4 2 W peak	30 dBm Class 1 1 W peak	30 dBm Class 1 1 W peak
Transmitter Output Impedance	50Ω	50Ω	50Ω
Transmitter Spurious Emission	According to GSM specification	According to GSM specification	According to GSM specification

Receiver RF Level	-102 dBm	-102 dBm	-102 dBm
Receiver RX Bit Error Rate	<= 10^{-4} (Static Ch.) <= 3% (EQ50 ch)	<= 10^{-4} (Static Ch.) <= 3% (EQ50 ch)	<= 10^{-4} (Static Ch.) <= 3% (EQ50 ch)

GSM Features Supported

ME SIM Lock	Yes
Online Services	SIM-AT Class 1b (Class 2 without call control.)
Speech Coding	Not applicable (GC79 does not support speech services)

CSD technical data

Standards	AT commands industry standard ETSI 07.05, 07.07 and 07.10, V.25ter command set supported
CSD Data Rates	9.6 kbps or 14.4 kbps depending on the GSM network
Compression	MNP5 (Increases data rate up to 2x depending on data type) V.42bis (Increases data rate up to 4x depending on data type) GSM network support required for compression
Error Correction	End to End MNP2 and LAPM (V.42) RLP Requires GSM Network support
GSM/ISDN	According to V.110 and V.120

HSCSD Maximum Data Rates (kbps)

		9.6 kbps per timeslot	14.4 kbps per timeslot
4 + 1	RX	38.4	57.6
	TX	9.6	14.4
3 + 2	RX	28.8	43.2
	TX	19.2	28.8

The speeds given are maximums, Sony Ericsson cannot guarantee how fast your network will operate.

GPRS technical data

GPRS Specification SMG	SMG31bis
Data Rates	Multislot class 10 supported (see table below). Coding schemes: CS-1, CS-2, CS-3 and CS-4
Mode of Operation	Class B (attaches to both GSM and GPRS at the same time; data connection is established using CS (CSD/HSCSD) or GPRS) The user may select CSD, HSCSD or GPRS modes via Dial-Up Networking configurations in Windows®
R Reference Point	Physical layer: RS232 virtual COM port Authentication mechanisms PAP and CHAP supported
Attach Modes	GPRS attach GPRS detach Combined attach (CS+GPRS) (CCCH) Combined detach (CCCH) Combined attach (CS+GPRS) (PCCCH) Combined detach (PCCCH)
Network Modes	Network Modes 1, 2 and 3
R Reference Point	Physical layer: RS232 virtual COM port Authentication mechanisms: PAP and CHAP supported
IP Connectivity	PDP type IP is supported IPv4, terminated in Windows® DUN
SMS over GPRS	Mobile Originated and Mobile Terminated
QoS	Support for all 4 classes QoS negotiation
PDP Context	Up to 10 PDP context details are stored in Wireless Manager. PDP Context description edited via supplied Wizard or AT-command Simultaneous PDP contexts not supported Network initiated PDP context activation, modification and deactivation Collision of MS and network-initiated PDP context activation
SIM	Support for GPRS aware as well as non-GPRS-aware SIMs
Compression	TCP/IP Header Compression V42bis
GPRS Encryption	GEA1
GPRS Frequency Hopping	Supported
GPRS IP allocation	Dynamic Static

GPRS Maximum Data Rates

		CS-1 9.05 kbps	CS-2 13.4 kbps	CS-3 15.6 kbps	CS-4 21.4 kbps
4 + 1	**RX**	36.2	53.6	62.4	85.6
	TX	9.05	13.4	15.6	21.4
3 + 2	**RX**	27.15	40.2	46.8	64.2
	TX	18.1	26.8	31.2	42.8

Speed achieved depends on the Coding Scheme supported by the GSM Network. The speeds given are maximums, Sony Ericsson cannot guarantee how fast your network will operate.

At the time of writing, CS-2 is the most commonly used coding scheme.

SMS Technical Data

Concatenated SMS	Yes
SMS Cell Broadcast	Supported in Wireless Manager and by AT Commands (excluding Cell ID)
SMS Immediate Display	Supported in Wireless Manager and by AT Commands.
Character Sets	Unicode support for Chinese
SMS interface	Wireless Manager

Software Upgrade

PC Card software upgrade	Via secure internet download (Sony Ericsson Update Service) or at a Sony Ericsson Service Point.
PC Wireless Manager	Internet download.

Fax Technical Data

Machine groups	Class 2, Group 3 and 4
Speed	9.6kbps
Verified applications	Microsoft Fax (Windows 2000 and XP; may require installing), Symantec® and Winfax® PRO 10® (not supplied).

WLAN Technical Data

Standard	IEEE 802.11b
Maximum speed	11Mbps
Frequency band	2.4GHz ISM band
Modes	Infrastructure (connect to an Access Point) Ad-hoc (connect in an informal network of machines)
Security and Authentication	WEP: 40 and 104 bits 802.1X (TLS and TTLS) EAP-TLS, EAP-LEAP, EAP-PEAP, EAP broadcast key, EAP MID-5 challenge EAP-SIM solutions supported with +CSIM AT- command and PC/SC driver, but an EAP-SIM client is needed for the function. Firmware upgrade may be required. AT+CSIM command support

Radio power output

GSM900	Class 4	2 W
GSM1800	Class 1	1 W
GSM1900	Class 1	1 W

Supported Languages

Quick Start Guide **PC Software** **User's Guide (PDF)**	English (EN) Brazilian-Portuguese (PB) Danish (DA) Dutch (NL) Finnish (FI) French (FR) German (DE) Greek (EL) Hungarian (HU) Italian (IT) Norwegian (NO) Polish (PL) Portuguese (PT) Russian (RU) Spanish (ES) Swedish (SV) Thai (TH) Turkish (TR) Traditional Chinese (ZT) Simplified Chinese (ZS)
AT Command **Reference (PDF)**	English

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Limited Warranty

Sony Ericsson Mobile Communications AB, S-221 88 Lund, Sweden, (Sony Ericsson), provides this Limited Warranty for your PC Card and original accessory delivered with your PC Card (hereinafter referred to as "Product").

Should your Product need warranty service, please return it to the dealer from whom it was purchased, or contact your local Sony Ericsson Customer Care Centre (national rates may apply) or visit www.sonyericsson.com to get further information.

Our Warranty

Subject to the conditions of this Limited Warranty, Sony Ericsson warrants this Product to be free from defects in design, material and workmanship at the time of its original purchase by a consumer, and for a subsequent period of one (1) year.

What We Will Do

If, during the warranty period, this Product fails to operate under normal use and service, due to defects in design, materials or workmanship, Sony Ericsson authorised distributors or service partners, in the country/region* where you purchased the Product, will, at their option, either repair or replace the Product in accordance with the terms and conditions stipulated herein.

Sony Ericsson and its service partners reserve the right to charge a handling fee if a returned Product is found not to be under warranty according to the conditions below.

Please note that your personal settings/downloads might be lost when the Product is repaired or replaced.

Conditions

1. The warranty is valid only if the original proof of purchase issued to the original purchaser by an, for this Product, Sony Ericsson authorised dealer, specifying the date of purchase and serial number**, is presented with the Product to be repaired or replaced. Sony Ericsson reserves the right to refuse warranty service if this information has been removed or changed after the original purchase of the Product from the dealer.

2. If Sony Ericsson repairs or replaces the Product, the repaired or replaced Product shall be warranted for the remaining time of the original warranty period or for ninety (90) days from the date of repair, whichever is longer. Repair or replacement may involve the use of functionally equivalent reconditioned units. Replaced parts or components will become the property of Sony Ericsson.

3. This warranty does not cover any failure of the Product due to normal wear and tear, or due to misuse, including but not limited to use in other than the normal and customary manner, in accordance with the Sony Ericsson instructions for use and maintenance of the Product. Nor does this warranty cover any failure of the Product due to accident, software or hardware modification or adjustment, acts of God or damage resulting from liquid. A rechargeable battery can be charged and discharged hundreds of times. However, it will eventually wear out – this is not a defect. When the talk-time or standby time is noticeably shorter, it is time to replace your battery. Sony Ericsson recommends that you use only batteries and chargers approved by Sony Ericsson.

4. Since the cellular system on which the Product is to operate is provided by a carrier independent from Sony Ericsson, Sony Ericsson will not be responsible for the operation, availability, coverage, services or range of that system.

5. This warranty does not cover Product failures caused by installations, modifications, or repair or opening of the Product performed by a non-Sony Ericsson authorised person.

6. The warranty does not cover Product failures which have been caused by use of accessories or other peripheral devices which are not Ericsson or Sony Ericsson branded original accessories intended for use with the Product.

7. Tampering with any of the seals on the Product will void the warranty.

8. THERE ARE NO EXPRESS WARRANTIES, WHETHER WRITTEN OR ORAL, OTHER THAN THIS PRINTED LIMITED WARRANTY. ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE DURATION OF THIS LIMITED WARRANTY. IN NO EVENT SHALL SONY ERICSSON OR ITS LICENSORS BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS OR COMMERCIAL LOSS, TO THE FULL EXTENT THOSE DAMAGES CAN BE DISCLAIMED BY LAW.

Some countries/states do not allow the exclusion or limitation of incidental or consequential damages, or limitation of the duration of implied warranties, so the preceding limitations or exclusions may not apply to you.

The warranty provided does not affect the consumer's statutory rights under applicable legislation in force, nor the consumer's rights against the dealer arising from their sales/ purchase contract.

* European Union (EU)

If you have purchased your Product in an EU country you can have your Product serviced, under the conditions set out above, within the warranty period in any EU country where an identical Product is sold by an authorised Sony Ericsson distributor. To find out if your Product is sold in the EU country you are in, please call the local Sony Ericsson Customer Care Centre. Please observe that certain services may not be possible elsewhere than in the country of original purchase, for example due to the fact that your Product may have an interior or exterior which is different from equivalent models sold in other EU countries. It may not be possible to repair SIM-locked Products.

** In some countries/regions additional information is requested. If so, this is clearly shown on the valid proof of purchase.

Vendor warrants the media on which the Software is provided, to be free from defects in materials and workmanship under normal use for ninety (90) days after the date of your cash receipt/proof of payment. The Vendor's and its suppliers' entire liability and your exclusive remedy under this warranty will at Vendor's option be (and provided you return the Software to an authorized reseller/supplier together with a copy of your cash receipt/proof of payment), to replace the disc(s)/ diskette(s) or refund the purchase price and terminate this Agreement including the License.

Except for the above express limited warranties, Vendor and its suppliers do not provide nor do you receive any warranties or conditions whether express, implied, statutory or otherwise and Vendor and its suppliers specifically disclaim any implied warranties of satisfactory quality and/or fitness for a particular purpose. If your jurisdiction does not allow limitations on implied warranties to consumers, the above limitation may not apply to you.

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The Software shall be used in accordance with the instructions and for its intended use and purpose only. The Software or part thereof may not be used in e.g. life support systems, nuclear facility applications, nor for the purposes of missile technology, chemical or biologized industry, flight navigation or communication of air, ground support equipment or other similar business or for any other purpose where any failure by the Software to perform may result in personal injury, death, damage to tangibles or the environment.

Limitation of liability

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The validity, construction and performance of this Agreement shall be governed by the laws of Sweden. All disputes, differences or questions between the parties with respect to any matter arising out of or relating to this Agreement shall be finally settled under the Rules of Conciliation and Arbitration of the International Chamber of Commerce, in Stockholm, by three (3) arbitrators appointed in accordance with the said Rules. The proceeding shall be conducted in the English language.

Declaration of Conformity

We, **Sony Ericsson Mobile Communications AB** of

Nya Vattentornet

S-221 88 Lund, Sweden

declare under our sole responsibility that our product,

Sony Ericsson type FAE-1021011-BV,

and in combination with our accessories, to which this declaration relates is in conformity with the appropriate standards 3GPP TS 51.010-1, EN 301489-7 and EN 60950, following the provisions of, Radio Equipment and Telecommunication Terminal Equipment directive **99/5/EC** with requirements covering EMC directive **89/336/EEC**, and Low voltage directive **73/23/EEC**.

$C\!E$ 0682

Basingstoke, August 2003
Place and date of issue

Anders Franzén
Corporate Vice President M2M Com

FCC Statement

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) The device must accept any interference received, including interference that may cause undesired operation.

FCC-ID: PY7F1021011

IC: 4170B-F1021011

WiFi Certificate

Appendix A - GSM Connection Parameters

General Connection Parameters for CSD/HSCSD and GPRS

Required	Useful information
Telephone number or Access Point Name (APN)	Number you need to dial to reach your service provider. Use the full number including country code and area code, e.g. +46 33 555 2525. Or The APN server resource to contact, for example, Interent.operator.net - to connect to the Internet via the mobile operator's or your corporate Intranet via a VPN.
Bearer capability: CSD, HSCSD or GPRS?	You will need to know the bearer capability provided by your service provider, so you can select the appropriate option during set up.
CSD Network Speed	If you intend to create connections via CSD contact your network operator and check the supported speeds.
HSCSD Network Speed	If you intend to create connections via HSCSD contact your network operator and check the supported speeds.
Username	The username your service provider gave you when the account was set up. Some dial-up accounts do not require a Username, in this case leave the field blank.
Password	Password associated with the username, given to you by the service provider. Some dial-up accounts do not require a Password, in this case leave the field blank.
IP assignment: Server / Static	An 'address' that the service provider knows you by and uses to route information to and from your GC79. Your IP address will either be: Server - assigned by the service provider when you connect. Static - assigned once by the service provider or the IT Manager. If your IP address is Static you must enter it into Own IP address fields which is available when you select Details in the Connection APN dialog.
DNS assignment: Server / Static	This tells the GC79 where to find the service provider's DNS Service. DNS translates addresses such as www.sonyericsson.com to the numeric IP address so that the information can be accessed. Like IP assignment above, the DNS can be static or allocated by the service provider when you connect. If static is selected additional fields need to be completed containing the static information.

Own IP address	Only required if the IP assignment is static. Format example: 123.9.45.3 Do not enter any leading 0s when typing in IP address.
Primary DNS	Only required if the DNS assignment is static. Format example:123.9.45.2
Secondary DNS	Only required if the DNS assignment is static. Format example: 123.9.45.1
Access Point Name (APN)	If the APN is set to default you will have to enter the name of the access point your network operator is using.

CSD/HSCSD Specific Parameters

Required	Useful information
Preferred Connection Speed (bits/s)	Select your preferred network connection speed from the drop down list provided: 9600, 14400, 19200, 28800, 38400, 43200* or 57600*
Connection Mode	Select the method you want to use to connect to the network from the options provided: analogue, ISDN V.110 or ISDN V.120
Compression	Use to speed up data transfer. You can select to **Enable Data Compression** and **Header Compression**.
Callback Number	Enter the number the a callback should be made to. You can only use Callback if you are connecting to a source that gives permission for callbacks to be made, for example your company server.

* Only available with ISDN V.110 or V.120 connection mode.

Appendix B - Windows Log on using a GSM/GPRS Dial-up Connection

The GC79 PC Card supports the Windows **Log on using dial-up connection** feature. To log on to Windows using a GSM or GPRS dial-up connection the GC79 PC Card must be inserted and the radio enabled before you log on. To enable the radio prior to logon, select **Enable radio immediately when card inserted** checkbox on the **Radio Power** preferences tab, see *Radio Power Tab* on page 36 for more details.

> **Important!**
> Never start your PC in this mode if you are in a location where mobile devices shouldn't be used, for example, on an aeroplane, in hospital or near a blast site.

Only check this option if you need to log on to a Windows Domain via a wireless dial-up connection. This will permit the GC79 to register with the GSM network and establish a connection when the Windows logon screen is displayed.

> **Note:**
> It is not possible to display network status or signal strength during the Windows logon procedure, so you should allow enough time for the GC79 to find and register with the network prior to attempting to log on.

The dial-up connections available to the Windows Logon must have been created by a user account with *Administrator* privilege and designated *For all users*. This must be done using the **Windows Network Connection Wizard**, because the **Wireless Manager** can only create connections for the current user ID. Normally the Windows Logon using dial-up connection will be using a CSD/HSCSD session to a corporate network, so that the logon credentials can be validated by a Windows Domain Server.

> **Note:**
> A HSCSD networking session will require some additional settings to be added to your ini string, see *Appendix D- Initiating a HSCSD Connection from Outside the Wireless Manager* on page 85.

There may be special circumstances where a GPRS dial-up connection is required for logon.
To create a GPRS dial-up connection, follow these steps:

1. Create the Windows dial-up connection using the **Windows Network Connection Wizard**. For the telephone number, use *99***3#.

2. Set the GPRS context parameters in the GC79 PC Card.
   Open a Windows Hyperterminal session on the same port as the GC79, running at 115Kbps, and type in the following AT Command.

   AT+CGDCONT=3,"IP","<AccessPointName>","",0,0
   where <AccessPointName> is the name of the special GPRS access point for your corporate GPRS service.

> **Note:**
> In this example, we used GPRS Context 3. There are 1-10 possible contexts supported by the GC79 PC Card (1..8). Context ID 2 is reserved for connections created by the Wireless Manager.

Refer to the GC79 AT Commands Manual or contact your service provider for further assistance.

Appendix C - Changing the GC79 Wireless LAN Adapter Properties

1. Click the **Start** button.

2. Select **Settings** ➡ **Control Panel**.

3. Click **System**.

4. Select the **Hardware** tab.

5. Select **Device Manager** ➡ **Network adapters** ➡ **802.11b Network Adapter** ➡ **Advanced**.

To change the value for any of the listed properties, click the property and then change the value in the **Value** box by either selecting a new value from the drop-down list or by typing in a new value, as appropriate.

> **Note:**
> It is strongly recommended that the values are only changed by network administrators or technicians with wireless LAN experience.

Item	Useful information
IBSS Channel Number	Selects the independent basic service set (IBSS) channel number on which to operate. The GC79 comes preset for use on channels 1-11. These values are legal in most countries. Some countries allow use on more channels. If you travel to one of these countries, you may change the value for IBSS Channel Number to 12 or 13.
Locale	Selects the operating characteristics that comply with the regulations that apply in a particular country. Before connecting to a wireless network, you should verify that the Locale value is correct. If you travel to different countries with your GC79, you should change the Locale value to suit. If the destination country is not listed, change the Locale value to Worldwide. Reset the Locale value after returning. Residents of both Canada and the United States should use the value USA. For details of an easier way of changing this value, see *GC79 Wireless Control menu* on page 34.
Radio Enable/ Disable	Enables or disables the GC79 wireless LAN radio. This may be necessary necessary at times to turn off the radio to comply with restrictions prohibiting the emission of radio signals, such as during takeoff and landing onboard a commercial aircraft. For details of an easier way of changing this value, see *GC79 Wireless Control menu* on page 34.
Rate	Sets the transmission rate. The default value is **Use best rate**. This automatically adjusts the data rate to the optimal rate based on the capabilities of the other clients and access points.
Fragmentation Threshold	The threshold at which the IEEE 802.11 adapter breaks the packet into multiple frames.
Locally Administered MAC Address	This is used to override the MAC address of the GC79 wireless LAN network adapter.
PLCP Header	This is used to set the header type used for CCK rates. The type can be long, or auto (short / long).
Power Output	Sets the percentage of the maximum available output power to be used.

Power Save Mode	This is used to put the GC79-enabled computer into the IEEE 802.11 Power Save mode. In Power Save mode, the radio is periodically powered down to conserve power. When in Power Save mode, packets are stored in the AP until the PC comes on.
RTS Threshold	If the number of frames in the data packet is at or above the RTS Threshold, a request to send/clear to send handshake is turned on before sending the data packet. The default value is 2347.

Appendix D- Initiating a HSCSD Connection from Outside the Wireless Manager

The HSCSD speed is normally entered in the Wireless Manager Connection Wizard. The specified speed is requested when the **Connect** button is pressed in the Status screen of the Wireless Manager.

In exceptional cases you may need to initiate an HSCSD call from outside the Wireless Manager (for example, *Safe Removal of the GC79* on page 39 and *Connection* on page 30) the HSCSD speed must be specified by placing additional commands in the GC79 Wireless Modem properties.

> **Note:**
> GC79 Wireless Modem properties settings will override any settings for connections initiated from the Wireless Manager.

1. To access the GC79 Wireless Modem properties, select **Start** ➡ **Settings** ➡ **Control Panel** ➡ **Phone and Modem Options**.

2. Select the Modems tab.

3. Select the **Sony Ericsson GC79 Wireless Modem** and click **Properties**.

4. Click the **Advanced** tab and enter the HSCSD setting into the **Extra initialization commands:** field.

5. To set the connection to analog 28.8 place +CBST=7,0,1;+CHSN=4,0,0,12 in this field, Click **OK**.
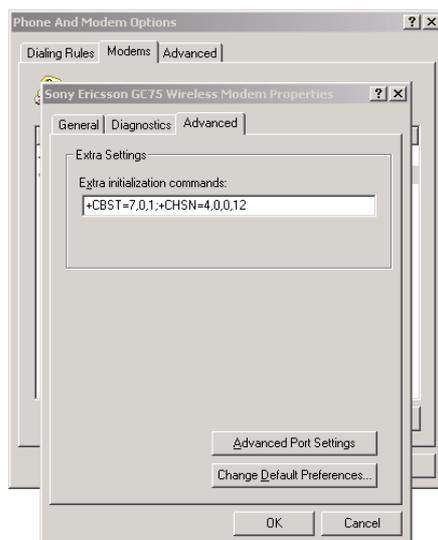
The table below shows the AT Commands for each speed and bearer:

Speed	+CBST	+CHSN
Analog mode		
9.6	7,0,1	1,0,0,12
14.4	7,0,1	2,0,0,12
19.2	7,0,1	3,0,0,12
28.8	7,0,1	4,0,0,12
38.4	7,0,1	5,0,0,12
ISDN mode V.110		
9.6	71,0,1	1,0,0,12
14.4	75,0,1	2,0,0,12
19.2	79,0,1	3,0,0,12
28.8	80,0,1	4,0,0,12
38.4	81,0,1	5,0,0,12
43.2	81,0,1	6,0,0,12
57.6	81,0,1	7,0,0,12
ISDN mode V.120		
9.6	39,0,1	1,0,0,12
14.4	43,0,1	2,0,0,12
19.2	47,0,1	3,0,0,12
28.8	48,0,1	4,0,0,12
38.4	49,0,1	5,0,0,12
43.2	50,0,1	6,0,0,12
57.6	51,0,1	7,0,0,12

Note:
Speeds relate to the receive (downlink) speed. When connected at 43.2 or 57.6, uplink (transmit) speed will be 14.4 maximum. At lower receive speeds, transmit speed can be up to 28.8.

Appendix E- IT Manager Customisation

The Wireless Manager may be customised prior to deployment in a large organisation. Irrelevant connection information can be removed from the pre-set list in the Connection Wizard. Company-specific connection details can be set up to be automatically available in the connection drop-down list; the user does not have to use the Connection Wizard first in order to set up the connection. This is especially useful where a company-specific APN is in use.

Furthermore, the APN and Username/Password screens of the Connection Wizard can be disabled in order to prevent accidental changes to fixed data

The settings are contained in the DefGPRS.CSV file in C:\Program Files\Sony Ericsson\Wireless Manager. Simply edit the file as required.

To make customised distribution for installation to laptops, simply substitute your edited DefGPRS.CSV file for the one on the distribution CD-ROM and make your own CDs or ZIP file

Future updates are possible by distributing a new DefGPRS.csv file.

CSD/HSCSD settings are defined in DefCSD.CSV. Similar pre-loaded settings can be defined there for dial-up access points.

Glossary

802.11

A standard developed by the IEEE. The 802 family of standards relates to local and wide area networks. 802.11 refers to WLAN standards.

802.11b

The IEEE standard relating to WLAN operating at 2.4GHz and having a maximum speed of 11Mbps.

802.1X

802.1X is the security layer in the 802 standard.

802.3

The IEEE standard for Ethernet based wired networks.

AP

Access Point. A device which provides wireless 802.11 access to a wired network (typically 802.3 Ethernet). The user can see available APs in the vicinity and (depending on security/authentication requirements) connect to the internet or intranet services they offer. A group of APs can be networked to provide service in a wider area, or to break down traffic into smaller hotspots.

APN

Access Point Name. Used in GPRS to define services to which the terminal can connect. For example, Internet, WAP, MyCompany.

Bearer

Path over which data flows. Specifically in CSD and HSCSD, the type of telephony link from the GSM network to the server - V PSTN or ISDN.

bps

Bits per second - rate of data flow.

COM Port

Defines a serial/RS-232 port within the Windows® environment. May be physical (COM1 port on the rear of the PC) or virtual (COM5 port communicating with a PC card modem)

CS

Circuit Switched. Connection from A to B which has a fixed bandwidth and is maintained over a period of time, for example a voice telephone call.

CS-1 to CS-4

Coding Scheme. Determines the data rate per timeslot in GPRS.

CSD

Circuit Switched Data. CSD is a GSM service providing a CS data connection at a rate of 9.6 or 14.4 kbps.

DUN

Dial-Up Networking.

e-GSM

Extended GSM. New frequencies specified by the European Radio Communications Committee (ERC) for GSM use when additional spectrum is needed (Network-dependent). It allows operators to transmit and receive just outside GSM's core 900 frequency band. This extension gives increased network capability.

ETSI

European Telecommunications Standards Institute. www.etsi.org

GGSN

Gateway GPRS Support Node

GPRS

General Packet Radio Services.

GSM

Global System for Mobile Communications. GSM is the world's most widely-used digital mobile phone system, now operating in over 160 countries around the world.

GSM 900

The GSM system family includes GSM 900, GSM 1800 and GSM 1900. There are different phases of roll-out for the GSM system and GSM phones are either phase 1 or phase 2 compliant.

GSM 1800

Also known as DCS 1800 or PCN, this is a GSM digital network working on a frequency of 1800 MHz. It is used in Europe and Asia-Pacific.

GSM 1900

Also known as PCS. Refers to a GSM system running in the 1900MHz band. Used in the USA and Canada, for instance.

Hotspot

An area in which a WLAN service exists.

HSCSD

High Speed Circuit Switched Data.

HTML

HyperText Markup Language.

HTTP

HyperText Transfer Protocol.

IEEE

Institute of Electrical and Electronic Engineers.

ISDN

Integrated Services Digital Network. Can provide circuit-switched data connections in multiples of 64 kbps.

ISP

Internet Service Provider.

kbps

Kilobits per second - rate of data flow.

LAN

Local Area Network.

MAC

Media Access Control

ME

Mobile Equipment.

MO

Mobile Origination. For example, an SMS message sent from a mobile terminal.

MMI

Man-Machine Interface.

MS

Mobile Station.

MT

Mobile Termination.

NDIS

Network Driver Interface Specification. A Windows device driver interface enabling a single NIC to support multiple network protocols. For example, TCP/IP and IPX.

NIC

Network Interface Card.

OTP

One Time Password. A security procedure where the user is given a new password for each login.

PC

Personal Computer.

PCS

Personal Communications Services, often used to describe GSM1900 networks.

PC Card

A card having physical and electrical characteristics specified by PCMCIA providing extra functionality when inserted into a laptop PC. Typical examples are modems and network cards. Type refers to the thickness of the card. The GC79 is type II.

PCMCIA

Personal Computer Memory Card International Association – defines specifications for PC Cards. www.pcmcia.org

PDP

Packet Data Protocol.

Phone book

A memory in the SIM card where phone numbers can be stored and accessed by name or position.

PSTN

Public Switched Telephone Network, for example ordinary analogue phone line for speech and/or computer modem.

RADIUS

Remote Access Dial-In Service. Facility at the ISP or corporation to manage remote data connections.

RAS

Remote Access Service.

RX

Receive

SC

Service Centre (for SMS).

Service Provider

A company that provides services and subscriptions to GC79 users.

SIM card

Subscriber Identity Module card – a card that must be inserted in any GSM-based mobile terminal. It contains subscriber details, security information and memory for a personal directory of numbers. The card can be a small plug-in type or credit card-sized, but both types have the same functions. The GC79 uses the small plug-in card.

SMS

Short Message Service. Allows messages of up to 160 characters to be sent and received via the network operator's message centre to a GC79.

TCP/IP

Transmission Control Protocol/Internet Protocol.

TCP/IPv4

TCP/IP Version 4. Most widely implemented form of TCP/IP today having a 4 byte address format such as 212.161.127.136.

TCP/IPv6

Updated version of TCP/IP, having a much larger address space and many enhancements.

TE

Terminal Equipment. Generic term for GSM terminals such as phones and PC cards.

Terminal Adaptor

Generic term for the equipment terminating a digital comms line such as an ISDN2 line. The GC79 is a Terminal Adaptor since it interfaces to GSM digital data services.

TLS

Transport Layer Security. Used by Web browsers, for example.

TX

Transmit

Type II

Refers to thickness of a PC Card as defined in the specification from PCMCIA.

URL

Uniform Resource Locator.

USSD

Unstructured Supplementary Services Data. Narrow-band GSM data service. For example entering *79*1234# might return the stock price for stock 1234.

V.110

ETSI standard for data over an ISDN circuit.

V.120

ETSI standard for data over an ISDN circuit.

VPN

Virtual Private Network.

WECA

Wireless Ethernet Compatibility Alliance. Also known as the WiFi Alliance. A trade body for promotion of 802.11 technologies and which tests and certifies products for WiFi inter-operability.

www.weca.net

WEP

Wired Equivalent Privacy. An encryption service built in to many 802.11 products intended to make the connection secure.

WiFi

Wireless Fidelity. The popular name for 802.11 technologies that have passed WiFi Certification Testing, for which WECA is responsible.

WiFi Alliance

See WECA.

WLAN

Wireless LAN (Local Area Network)

WML

Wireless Markup Language. A markup language used for authoring services, fulfilling the same role as HTML does on the world-wide web. In contrast to HTML, WML has been specifically designed to suit small hand-held devices.

WWW

World Wide Web.

XML

Extensible Markup Language.

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