

10 Settings



• PROFILES

Your phone has a group of profiles that allow you to personalize the tone settings of your phone and to activate a profile for different events and environments. Available profiles are **General**, **Silent**, **Meeting**, **Outdoor**, **My style 1** and **My style 2**.

Select **Menu > Settings > Profiles** and select a profile. Choose from the following options:

- To activate the selected profile, select **Activate**.
- To activate the profile for a certain amount of time up to 24 hours, select **Timed** and set the end time. When the timed profile expires, the previous profile that was not timed, becomes active.
- To personalize the profile, select **Personalize**. Select the setting that you want to change and make the changes.
The settings can also be changed in the **Tone settings** menu, see "Tone settings" on page 61 on.
- To rename a profile, select **Profile name**. The **General** profile cannot be renamed.
- To change your presence status, select **My presence**. The menu is available if you have set **Synchronize with profiles** to **On**, see "My presence" on page 54. Select **My availability** to change your availability status and **My presence message** to edit your status message.



Note: To quickly change the profile in the standby mode, press the **Power** key, scroll to the profile that you want to activate and press **Select**.

• CHAT AND MY PRESENCE SETTINGS

For the settings required for IM, contact your network operator or service provider. To receive the IM and presence settings over the air, see "Over-the-air settings service" on page 22.

KEYING IN THE SETTINGS MANUALLY

- 1 Select **Menu > Settings > Chat and my presence settings > Active chat and presence settings**.
- 2 Scroll to the set you would like to activate and select **Activate**.
You need to activate the connection set where you want to save the settings. A connection set is a collection of settings required to make a connection to the chat and presence services.
- 3 Select **Edit active chat and presence sett..**

Select each of the settings one by one and key in all the required information that you have received from your network operator or service provider.



Note: The connection settings are in the **Connection settings** menu.

• TONE SETTINGS

You can find the same settings in the **Profiles** menu. The settings you make change the settings in the active profile

Select **Menu > Settings > Tone settings**, and select:

- **Incoming call alert** and select how the phone notifies you of an incoming voice call.
- **Ringing tone** to select a tone for incoming voice calls. To select ringing tones that have been saved in the **Gallery**, select **Open gallery** from the ringing tone list.
- **Ringing volume** to set the tone level for incoming voice calls and incoming messages.



Note: If you download a ringing tone or receive one using OTA, you can save it in the **Gallery**.

- **Vibrating alert** to set the phone to vibrate for incoming voice calls and incoming messages. The vibrating alert does not work when the phone is connected to a charger, a desktop stand, or a car kit.
- **Message alert tone** to set the alert tone for incoming messages.
- **Keypad tones** to adjust the tone level of keypad.
- **Warning tones** to set the phone to sound tones, for example when the battery is running out of power.
- **Alert for** to set the phone to ring only on calls from phone numbers that belong to a selected caller group. Scroll to the caller group that you want or **All calls** and select **Mark**.

• DISPLAY SETTINGS

Select **Menu > Settings > Display settings**, and select

- **Wallpaper** to set the phone to display a background image, known as wallpaper, when the phone is in the standby mode. Some images are provided in the **Gallery** menu. You can also receive images, for example through a multimedia message, or use PC Suite to transfer them from your PC and then save them in **Gallery**. Your phone supports JPEG, GIF, WBMP, BMP and PNG formats, but not necessarily all variations of these formats. Select:
 - **Select image** to open an image folder. Scroll to the desired image you want to set as wallpaper, select **Options > Set as wallpaper**.
 - **On or Off** to activate/deactivate the wallpaper. (The wallpaper is not displayed

when the phone activates the screen saver.)

- **Color schemes** to change the color of some display components, for example icons and signal bars.
- **Menu view** to select how the main menu items are displayed on the phone. Select **List** or **Grid**.
- **Operator logo** to set the phone to show or hide the operator logo. If you have not saved any operator logos, the **Operator logo** menu is dimmed.
The operator logo is not displayed when the phone activates the screen saver.
- **Screen saver timeout** and select the timeout after which the screen saver will be activated. The length of the timeout can vary from 5 seconds to 60 minutes.
The digital clock screen saver is used for power saving in the standby mode. It is activated when no function of the phone has been used for a certain length of time while the keyboard is closed. Press any key to deactivate the screen saver or open the keyboard. The screen saver is also deactivated when the phone is out of the network coverage area. The screen saver overrides graphics and texts on the display in the standby mode.
- **Display brightness** to change the brightness level of the phone display. Move the joystick to the left to decrease and to the right to increase the brightness level, and select **OK** to accept it

• TIME AND DATE SETTINGS

Select **Menu > Settings > Time and date settings**, and select:

- **Clock > Show clock** or **Hide clock** to show or hide the time on the top right of the display in the standby mode. Select **Set the time** to adjust the clock to the correct time, and **Time format** to select 12-hour or 24-hour time format.
The clock is also used for the functions **Messages**, **Call register**, **Alarm clock**, **timed Profiles**, **Calendar**, **Notes**, and screen saver for example.
If the battery is removed from the phone for a long time, you may need to reset the time.
- **Date > Show date** or **Hide date** to show or hide the date on the display in the standby mode. Select **Set the date** to adjust the date. You can also select the date format.
- **Auto-update of date & time (network service)** to set the phone to automatically update the time and date according to the current time zone, select **On**. To set the phone to ask for confirmation before the update, select **Confirm first**.
The automatic update of date and time does not change the time you have set for the alarm clock, calendar or the alarm notes. They are in local time. Updating may cause some alarms that you have set to expire.

• PERSONAL SHORTCUTS

You can select the function for the **Right selection** key displayed in the standby mode.

You have also a list of phone functions which can be activated by saying a voice tag. Up to five voice tags for the voice commands can be added.

Select **Menu > Settings > Personal shortcuts**, and select:

- **Right selection key** to view the list of available functions for the **Right selection** key. Scroll to the function that you want and select it.
- **Voice commands** and select the command folder you want, scroll to the command to which you want to add a voice tag. Select **Options > Add command**. If the command already has a voice tag, the icon  is shown. For adding and activating a voice command, see "Voice dial" on page 57.
During a call or when an application using the EGPRS connection is sending or receiving data, you cannot activate or add a voice command.

• CONNECTIVITY

You can connect the phone to a compatible device using an IR or Bluetooth connection. You can also define the settings for EGPRS dial-up connections. Bluetooth connections and infrared connections cannot be active at the same time.

Bluetooth technology(technical reviewers-plse check profiles over carefully)

The phone supports Bluetooth wireless technology which allows you to connect the phone to a compatible Bluetooth device within 10 meters. The Bluetooth connection can be subject to interference from obstructions such as walls or other electronic devices.



Note: There may be restrictions on using Bluetooth devices in some locations. Check with your local authorities or service provider.

The Nokia 6820 phone is designed to be compliant with and adapt to Bluetooth Specification 1.1. Compatibility between the phone and other products with Bluetooth wireless technology depends also on the profiles and protocols used by the devices. The current profiles supported by the Nokia 6820 are:

- SAP (Sim Access Profile)
- OPP (Object Push Profile) as a client and server
- FTP (File Transfer Profile) as a server
- DUN (Dial-up Networking Profile) as a gateway
- HSP (Headset Profile)
- HFP (Hands-free Profile) as an audio gateway
- SDP (Service Discovery Profile)

- GAP (Generic Access Profile)
- SPP (Serial Port Profile) with the PC connectivity software
- GOEP (Generic Access Exchange Profile)

When a profile is active, the profile is shown on the phone display, such as **Remote SIM**, to indicate that the phone is disconnected from the GSM network, thereby deactivating all phone functions.

For compatibility between your phone and another Bluetooth device, consult the documentation for the device and your Nokia dealer. In some countries, there may be restrictions on using Bluetooth devices. Check with your local authorities.



Note: Using Bluetooth features, or allowing them to run in the background while using other features, increases the demand on battery power and reduces the battery life.

Set up a Bluetooth connection

When you activate the Bluetooth application for the first time, you are asked to provide a Bluetooth name for your phone. This is the name that will be seen by other Bluetooth users.

Use the following steps to activate your Bluetooth connection.

- 1 Select **Menu > Settings > Connectivity > Bluetooth**.
- 2 Select **Bluetooth > On**.

The active Bluetooth connection is indicated by  at the top of the display.



Note: If you do not plan to use the Bluetooth feature for an extended time period, deactivate it to save power.

- 3 Select **Search for audio enhancements** to search for compatible Bluetooth devices.
- 4 Select the device that you want to connect to the phone.
- 5 Enter the Bluetooth passcode of the device to associate (or *pair*) and connect the device. (You only need to give this passcode when you connect to the device for the first time.)

Set up Bluetooth name and visibility

Select **Menu > Settings > Connectivity > Bluetooth > Bluetooth settings** to define how your phone is shown to other Bluetooth devices. Select:

- **My phone's visibility and Shown to all** to show the phone to all other Bluetooth devices or **Hidden** to show the phone only to the paired devices.
- **My phone's name** to change the Bluetooth device name for your phone.

Start a Bluetooth connection

Select **Menu > Settings > Connectivity > Bluetooth**, and select:

- **View active device** to check which Bluetooth connection is currently active. If you want to close the connection to the selected device, select **Disconnect**.

- **View paired devices** to view a list of Bluetooth devices that are currently paired with the phone. Scroll to the desired device. If you want to delete the pairing to the device, select **Delete**.

Select **Options** to access some of the following functions. (This list may change depending on the status of the device and the Bluetooth connection.)

Connect—to connect to the selected device.

Assign short name—to give a nickname (visible to you only) to the selected device.

Request conn. authorization—to set up authorization. Select **No** if you want the phone to connect to the selected device automatically, or select **Yes** if you want the phone to ask for your permission first.

Infrared

The phone has an IR port that you can use for connecting your phone to another IrDA compliant device. You can send or receive data such as business cards and calendar notes to or from a compatible phone or data device, such as a computer.



Warning: Do not point the IR (infrared) beam at anyone's eye or allow it to interfere with other IR devices. This device is a Class 1 Laser product.

Send and receive data using IR

- Ensure that the IR ports of the sending and receiving devices are pointing at each other and that there are no obstructions between the devices. The preferable distance between the two devices in an infrared connection should be one meter at most.
 - To activate the IR port of your phone, select **Menu > Settings > Connectivity > Infrared**.
 - The user of the sending phone selects the desired IR function to start data transfer.
- If the data transfer is not started within two minutes after the activation of the IR port, the connection is cancelled and has to be started again.

IR connection icon

- When  appears continuously, the IR connection has been activated and your phone is ready to send or receive data using its IR port.
- When  blinks, your phone is trying to connect to the other device or a connection has been lost.

The IR connection deactivates automatically.

EGPRS

GPRS (general packet radio service) is a network service that allows mobile phones to be used for sending and receiving data over an Internet Protocol (IP)-based network. GPRS is a data bearer that enables wireless access to data networks as the Internet.

EGPRS (enhanced GPRS), also known as EDGE (enhanced data rates for global evolution) is similar to GPRS but the connection is faster. For more information on availability of EGPRS and data transfer speed, contact your network operator or service provider.



Note: The Nokia 6820 is 3GPP GSM Release 99 terminal supporting EGPRS service, and is designed to support also Release 97 GPRS networks. However, proper functionality in all Release 97 GPRS networks cannot be guaranteed. For more information, contact your service provider or local Nokia dealer.

The applications that may use EGPRS are multimedia, chat and text messaging, browsing sessions, e-mail, remote SyncML, Java application downloading and the PC dial-up (for example, Internet and e-mail).

Before you can use EGPRS technology:

- Contact your network operator or service provider for availability and subscription to the EGPRS service.
- Save the EGPRS settings for each of the applications used over EGPRS.

For information on pricing, contact your network operator or service provider.



Note: When you select GPRS as a data bearer, the phone uses EGPRS instead of GPRS, if this is available in the network. You cannot select between EGPRS and GPRS but for some applications you may be able to select either GPRS or GSM data (CSD, Circuit Switched Data).

EGPRS CONNECTION

Your phone supports three simultaneous EGPRS connections. For example, you can at the same time browse XHTML pages, receive multimedia messages and have an ongoing PC dial-up connection.

Select **Menu > Settings > Connectivity > GPRS > GPRS connection**.

- Select **Always online** to set the phone to automatically register to an EGPRS network when you switch the phone on. When the GPRS connection is established, the icon  is shown on the top left of the display. When you start an application using EGPRS, the connection between the phone and the network is established, and data transfer is possible. When you end the application, the EGPRS connection is ended but the registration with the EGPRS network remains. If you receive a call or a text message, or make a call during a GPRS connection, the icon  will be shown on the top right of the display to indicate that the EGPRS connection has been suspended (on hold). The GPRS and EGPRS connection are indicated by the same icons.
- If you select **When needed**, the EGPRS registration and connection are established when required by an application using GPRS and closed when you end the application.

• EGPRS MODEM SETTINGS

You can connect the phone to a compatible PC using infrared, Bluetooth or a data cable connection and use the phone as a modem to enable EGPRS connectivity from the PC.

Select **Menu > Settings > Connectivity > GPRS > GPRS modem settings**. Select **Active access point** to activate the desired access point. Select **Edit active access point** to change the access point settings.

- Select **Alias for access point**. Key in the name that you would like for the activated access point and select **OK**.
- Select **GPRS access point**. Key in the Access Point Name (APN) to establish a connection to an EGPRS network. Contact your network operator for the APN.

You can also set the (E) GPRS dial-up service settings (Access Point Name) on your PC using the Nokia Modem Options software. See "PC Suite" on page 96. If you have set the settings on both your PC and on your phone, the settings for the PC are used.

• CALL SETTINGS

Select **Menu > Settings > More settings > Call settings**, and select

- **Call divert** (network service) to direct your incoming calls, for example to your voice mailbox number. Divert options that are not supported by your SIM card or your network operator may not be shown. Contact your service provider for details. For example, select **Divert if busy** to divert your voice calls when your number is busy or when you reject an incoming call. To set the divert setting to on, select **Activate** and then select the timeout after which the call is diverted, if this is available for the call divert option. To set the call divert to off, select **Cancel**. To check whether the call divert is activated or not, select **Check status** if this is available for the divert option. Several divert options may be active at the same time. To see the divert icons in the standby mode, see "Icons in the standby mode" on page 19.
- **Anykey answer** and select **On** and you can answer an incoming call by briefly pressing any key, except the **Power** key, **Left selection** key, **Right selection** key, and **End** key.
- **Automatic redial** and select **On** and your phone will make a maximum of ten attempts to connect a call after an unsuccessful call attempt.
- **Speed dialing** and select **On** and the names and phone numbers that are assigned to the speed dialing keys, from 2–9 with the keyboard closed, or the corresponding number keys of the keyboard, can be dialed by pressing and holding the corresponding number key.
- **Call waiting** and select **Activate** and the network will notify you of an incoming call while you have a call in progress (network service). See "Call waiting" on page 24.
- **Summary after call** and select **On** and after each call the phone will briefly display the

duration and cost (network service) of the call.

- **Send my caller identity** and select **Yes** and your phone number will be displayed to the person you are calling (network service). Select **Set by network** and the setting agreed upon with your service provider is used.
- **Line for outgoing calls** (network service) to select the phone line 1 or 2 for making calls, for example you can use line 1 for personal calls and line 2 for business calls. For more information on availability, contact your network operator or service provider. If you select **Line 2** and have not subscribed to this network service, you will not be able to make calls. However, calls on both lines can be answered regardless of the selected line.
If supported by your SIM card, you can prevent the line selection by selecting the **Lock** option.



Note: In the standby mode, you can switch from one line to the other by pressing and holding the * key.

• PHONE SETTINGS

Select **Menu > Settings > More settings > Phone settings**, and select:

- **Phone language** to set the language for the display texts. If **Automatic** is selected, the phone selects the language according to the information on the SIM card.
- **Memory status** to view the amount of free, used and total amount of memory for each function. You may also find memory information in the menus of some functions, for example in the **Applications** menu.
- **Security keyguard** to lock the keypad of the phone with a security code, see "Security code (5 to 10 digits)" on page 70.
 - Key in the security code and select **OK**.
 - To set the security keyguard, select **On**. The keypad lock remains active, if you open the keyboard.

To activate the security keyguard, select **Menu** and the * key within 1.5 s., when the keyboard is closed. To deactivate the keyguard when the keyboard is open, select **Unlock > OK**; then key in the security code. If the keyboard is closed, select **Unlock** and the * key within 1.5 s.; then key in the security code.

When the keypad is locked,  appears on top of the display. If you have activated the security keyguard, it does not protect your phone data from PC Suite access.

- **Cell info display** and select **On** to set the phone to indicate when it is used in a cellular network that is based on Micro Cellular Network (MCN) technology.
- **Welcome note** and key in the note that you would like to be shown briefly when the phone is switched on. To save the note, select **Save**.
- **Network selection** and **Automatic** and the phone automatically selects one of the cellular networks available in your area.

If you select **Manual**, you can select a network that has a roaming agreement with your home network operator. If **No network access** is displayed, you must select another network. The phone stays in manual mode until the automatic mode is selected or another SIM card is inserted into the phone.

- **Confirm SIM service actions.** See “SIM services” on page 95.
- **Help text activation** to set the phone to show the help topics.
- **Start-up tone** to set the phone to play a start-up tone when it is switched on.

• ENHANCEMENT SETTINGS

The enhancement settings menu is only shown if the phone is or has been connected to some mobile enhancements (accessories), for example to chargers or hands-free units.

Select **Menu > Settings > Enhancement settings**. Then select an appropriate enhancement from a list, if the corresponding enhancement is or has been connected to the phone. Select:

- **Default profile** to automatically activate the desired profile when you connect to the selected enhancement. You can select another profile while the enhancement is connected.
- **Automatic answer** to set the phone to automatically answer an incoming call after five seconds. If the **Incoming call alert** is set to **Beep once** or **Off**, automatic answer will not be used.
- **Lights** to set the lights permanently to **On**. Select **Automatic** to set the lights on for 15 seconds after a keypress. The **Lights** option is available only when **Handsfree** is selected.
- When the phone is connected to the full car kit, select **Ignition detector** and **On** to automatically switch off the phone approximately 20 seconds after you have switched off the ignition.
- For **Text phone**, select **Use text phone** and select **Yes** to use the text phone settings instead of headset or loopset settings.

• SECURITY SETTINGS

To work with security settings, select **Menu > Settings > More settings > Security settings**, and select the setting you would like to modify.



Note: When security features that restrict calls are in use (call barring, closed user group and fixed dialing), calls may be possible to certain emergency numbers in some networks.

PIN code request

Select **PIN code request** to set the phone to ask for your PIN code every time the phone is switched on. Some SIM cards do not allow the PIN code request to be turned off.

Call barring service (network service)

Select **Call barring service** (network service) to restrict incoming calls to and outgoing calls from your phone. A barring password is required.

Fixed dialing

Select **Fixed dialing** to restrict your outgoing calls and text messages to selected phone numbers if this function is supported by your SIM card. The PIN2 code is required.

When the fixed dialing is on, GPRS connections are not possible except while sending text messages over a GPRS connection. In this case, the recipient's phone number and the message centre number must be included in the fixed dialing list.

Closed user group

Closed user group is a network service that specifies the group of people whom you can call and who can call you. For more information, contact your network operator or service provider.

Security level

Security level instructs the phone to ask for the security code whenever a new SIM card is inserted into the phone.

Memory

Select **Memory** to set the phone to request the security code when the SIM card memory is selected.

Access codes

Select **Access codes** to change the security code, PIN code, PIN2 code or barring password. Codes can only include numbers from 0 to 9. Refer to the following items when changing access codes.

SECURITY CODE (5 TO 10 DIGITS)

The security code protects your phone against unauthorized use. The preset code is 12345. When you have changed the code, keep the new code secret and in a safe place separate from your phone. To change the code, and to set the phone to request it, see "Security settings" on page 69.

If you key in an incorrect security code five times in succession, the phone may display **Code error**. Wait for five minutes and key in the code again.

PIN AND PIN2 CODES (4 TO 8 DIGITS), MODULE PIN, AND SIGNING PIN

The PIN (Personal Identification Number) code protects your SIM card against unauthorized use. The PIN code is usually supplied with the SIM card. To set the phone to request the PIN code each time the phone is switched on, see "Security settings" on page 69.

The PIN2 code may be supplied with the SIM card and is required to access some functions.

The module PIN is required to access the information in the security module. See "Security module" on page 93. The module PIN is supplied with the SIM card if the SIM card has a security module in it.

The signing PIN is required for the digital signature. See "Digital signature" on page 94. The signing PIN is supplied with the SIM card if the SIM card has a security module in it.

If you key in an incorrect PIN code three times in succession, the phone may display **PIM blocked** or **PIN code blocked** and ask you to key in the PUK code.

PUK AND PUK2 CODES (8 DIGITS)

The PUK (Personal Unblocking Key) code is required to change a blocked PIN code. The PUK2 code is required to change a blocked PIN2 code.

If the codes are not supplied with the SIM card, contact your network operator or service provider.

BARRING PASSWORD (4 DIGITS)

The barring password is required when using the **Call barring service**. You can obtain the password from your service provider.

WALLET CODE (4 TO 10 DIGITS)

The wallet code is required to access the wallet services. If you key in an incorrect wallet code several times, the wallet application is blocked for five minutes. For further information, see "Wallet" on page 79.

• RESTORE FACTORY SETTINGS

To reset the menu settings to their original values, select **Menu > Settings > More settings > Restore factory settings**. Key in the security code and select **OK**.



Note: The data you have keyed in or downloaded, for example the names and phone numbers saved in contacts, are not deleted.

11 Gallery



In the **Gallery** menu you can manage images, photos, recordings, tones and video clips that you have, for example, received in multimedia messages.

Your phone supports usage rights system to protect acquired content. A piece of content, for example ringing tone, can be protected and associated with certain usage rules, for example number of usage times and a certain usage period. The rules are defined in the usage rights for the content which can be delivered either together with the content or independently depending on the service provider. You may be able to update these rights. Always check the delivery terms of any content and usage rights before acquiring them, as they may be subject to a fee.

The gallery uses shared memory. For more information, see “Shared memory” on page 7.

- 1 Select **Menu > Gallery**.
A list of folders is shown. **Graphics, Photos, Video clips, Record** and **Tones**, and are the original folders on the phone.
- 2 Scroll to the desired folder and select **Open** to view a list of files in the folder, or select **Options** for one of the following options that may be available:
 - **Add folder, Delete folder, Move, Rename folder, Details, Type of view, Sort** and **Gallery downloads**
You cannot delete, rename or move the original folders on the phone.
 - **Type of view** to select how the folders are displayed.
 - **Gallery downloads** to download more images and tones. Select **Image downloads** or **Tone downloads**. The list of available browser bookmarks is shown. Select **More bookmarks** to access the list of bookmarks in the **Services** menu.
Select the appropriate bookmark to connect to the desired site. If the connection fails, you may not be able to access the page from the service whose connection settings are currently active. In this case, enter the **Services** menu and activate another set of service settings. Try again to connect to the site.
For availability of different services, pricing and tariffs, contact your network operator and/or the service provider. Download content only from the sources you trust.
- 3 If you opened a folder in step 2, select the file you want to view and select **Open**. Or, select **Options** and use one of the following functions that may be available for the selected file:
 - **Delete, Send, Move, Rename Set as wallpaper, Set as ring tone, Edit image, Details, Type of view, Sort, Delete all, View in sequence, Play, Zoom, Mute audio (Unmute audio), Set contrast.**
 - **Send** to send the selected file using MMS, a Bluetooth connection, or an IR

connection.

- **Delete all** to delete all the files in the selected folder.
- **Edit image** to insert text, a frame or clip-art into the selected picture.
- **View in sequence** to view the files in the folder one by one.
- **Play** to listen to or to view a sound or image file that is contained in the message.
- **Zoom** to increase the size of the image that is contained in the message.
- **Mute audio (Unmute audio)** to mute (unmute) the sound file.
- **Set contrast** to adjust the contrast level of the image.
- **Update rights** to update the usage rights of the selected file. The option is only shown if the rights update is supported by the file.

Copyright protections may prevent some images, ringing tones, and other content from being copied, modified, transferred or forwarded.

12 Camera



You can take photos and record video clips with the built-in camera. The camera lens is on the back of the phone, and the display of the phone works as a viewfinder. The camera produces pictures in JPEG format and the video clips in H.263 (SubQCIF) format. You cannot use the camera, if the keyboard is open.

The camera includes a self-timer if you want to be included in the photo. The timer allows you 10 seconds before the camera takes the photo.

If there is not enough memory to take a new photo or record a video clip, you need to free some by deleting old photos or other files from **Gallery**. The camera uses shared memory. For more information, see “Shared memory” on page 7.



Note: Obey all local laws governing the taking of pictures.

• CAMERA SETTINGS

Use this procedure to choose your camera settings.

Select **Menu > Camera > Settings**. Choose the settings for the following:

- **Image quality** to define how much the photo file will be compressed when saving the image. Select **High**, **Normal** or **Basic**. The **High** setting provides the best image quality but takes more memory.
- **Video clip length** to select the length for video clips recorded with the camera. Select **Default** if you intend to send the file as a multimedia message.
- **Camera sounds** to set the shutter sound and the self-timer tone to **On** or **Off**.
- **Default title** to define the prefix the camera should use to name the photo files. If you select **Automatic**, the camera uses the prefix **Image** with an incremental number (such as **Image001**, **Image 002**). If you select **My title**, you can key in a prefix for a series of photos and the camera numbers the photo files for you. For example (**PoolParty001**, **PoolParty002**).

• TAKE A PHOTO

- 1 Select **Menu > Camera** and choose from the following:

- **Standard photo**—to take a basic photo using landscape orientation.
- **Portrait photo**—to take a photo using portrait orientation.
- **Night mode**—to take a photo when the lightning is dim.



Note: To quickly access the camera the standby mode (with standard photo view), move the joystick up.

The image appears on the display, and you can use the display as a viewfinder.

2 Select **Capture**.

The phone saves the photo in the **Photos** folder of the **Gallery** menu. The saved photo appears on the display.

3 Select **Back** to take another photo, or select **Options** and select from the following:

- **Zoom**—to enlarge the view. Use the joystick to reposition the picture in the viewfinder window.
- **Send**—to send the photo using MMS, IR or Bluetooth technology.
- **Rename**—to change the name of the photo.
- **Open Gallery**—to view the folders in the **Gallery** menu.
- **Set contrast**—to adjust the contrast for the photo.
- **Set as wallpaper**—to save the photo as background wallpaper on your phone.
- **Details**—to see the name, size, resolution, date created, format, and copyright information.

4 To use the viewfinder options, select **Options** and select from the following:

- **View Previous**—to view the previous photo.
- **Open Gallery**—to view the folders in the **Gallery** menu.
- **Change mode**—to change the type of photo or video.
- **Self-timer**—to take a photo using a delay.

To use the self-timer, select **Start** and, after the timeout period (approximately 10 seconds) the camera takes the photo and saves it in the **Gallery** menu. While the self-timer is running, a beeping sound is heard(needsverificationxxxx).

• RECORD A VIDEO CLIP

Select **Menu > Camera > Video > Record**. The red  icon and the remaining recording time are shown at the top of the display.

To stop the recording, select **Stop** and the video clip is saved in the **Video clips** folder of the **Gallery** menu.

To pause the recording, select **Pause**. To resume the recording, select **Continue**.

Select **Options** to select, for example, an option to set the desired operation mode, mute or unmute the microphone, or access the gallery.

13 Organizer



• ALARM CLOCK

The alarm clock uses the time format that has been set for the clock. The alarm clock works even when the phone is switched off.

Select **Menu > Organizer > Alarm clock**.

- Select **Alarm time**, key in the alarm time and select **OK**.
To change the alarm time, select **On**.
- Select **Alarm tone**, and you can select a default alarm tone, personalize your alarm tone by selecting one from the ringing tone list or from the gallery.

When the alarm time expires, the phone sounds an alert tone, and flashes **Alarm!** along with the current time on the display.



Note: If the alarm time is reached while the phone is switched off, the phone switches itself on and starts sounding the alarm tone. If you select **Stop**, the phone prompts you to activate the phone for calls by displaying the option **Switch the phone on?** Select **No** to switch off the phone or **Yes** to make and receive calls.

Select **Stop** to stop the alarm. If you let the alarm continue for a minute or if you select **Snooze**, the alarm stops for about ten minutes and then resumes.



Note: Do not select **Yes** when wireless phone use is prohibited or when it may cause interference or danger.

• CALENDAR

The calendar helps you to keep track of reminders, calls that you need to make, meetings, and birthdays.

The calendar uses shared memory. For more information, see "Shared memory" on page 7.

- 1 Select **Menu > Organizer > Calendar**.



Note: To quickly view the current **Calendar** month, move the joystick to the right in the standby mode.

- 2 Scroll to the day that you want and select **View**.
The current day is indicated by a frame around the day. If there are any notes set for the day, the day is shown in bold type.
- 3 To view a single note, scroll to the desired note, and select **View**. You can scroll to view the entire note.
- 4 To perform other tasks, select **Options** and choose from the following:
 - **Make a note**—to create a note.

- **Delete, Edit, or Move options**—to erase, change, or move a note.
- **Go to date**—to go directly to a new date.
- **Send note**—to send the note to a compatible phone calendar using IR, calendar, text message, MMS, or Bluetooth technology.
- **Copy**—to copy the note to another day.
- **Settings**—to set the date, time, date or time format, or the first day of the week. In the **Auto-delete** option you can set the phone to automatically delete old notes after a specified time. However, the repeated notes, for example birthday notes, will not be deleted.
- **Go to to-do list**—to take a shortcut to the to-do list.

Add a calendar note

For information on keying in letters and numbers, see "Tips for writing text" on page 28.

Select **Menu > Organizer > Calendar** or move the joystick to the right in the standby mode to go to the monthly view. Scroll to the date that you want, and select **View**. Select **Add note** if there are no notes for the day, or select **Options > Make a note** and select:

-  **Calendar**—Key in the note and select **Save**. (or select **Options** and search for the name in contacts and select **OK**). Key in the location of the meeting, select **Save**. Key in the start time for the meeting and select **OK**, and then key in the end time and select **OK**. To set the alarm for the note, select **With tone** or **Silent** (no alarm tone) and then set the alarm time.
-  **Call**—Key in the phone number, and select **Save**. Key in the name, select **Save**. (Instead of keying in the phone number, search for the name and number in contacts). Key in the time for the call and select **OK**. To set the alarm for the note, select **With tone** or **Silent** (no alarm tone) and then set the alarm time.
-  **Birthday**—Key in the name (or select **Options** and search for it in contacts) and select **Save**. Then key in the year of birth and select **OK**. To set the alarm for the note, select **With tone** or **Silent** (no alarm tone) and then set the alarm time.
-  **Note**—Key in the note, and select **Save**. Key in the end day for the note and select **OK**. To set the alarm for the note, select **With tone** or **Silent** (no alarm tone) and set the alarm time.
-  **Reminder**—Key in the subject for the reminder, and select **Save**. To set the alarm for the note, select **Alarm on** and set the alarm time.

When you have set the alarm, the icon  is displayed when you view the notes.

When the phone sounds an alarm for a note

The phone beeps and displays the note. When a call note icon  is shown on the display, you can call the displayed number by pressing the **Send** key. To stop the alarm and view the note, select **View**. Select **Snooze** to phone returns to the standby mode. To stop the alarm without viewing the note, select **Exit**.

• TO-DO LIST

In the to-do list, you can save notes for tasks that you have to do and manage the tasks in different ways.

The to-do list uses shared memory. For more information, see "Shared memory" on page 7.

Select **Menu > Organizer > To-do list**.

- To add a new note when the task list is empty, select **Add note**, or select **Options** and select **Add** if you have saved tasks. Select **Save** and select the priority for the note **High**, **Medium**, or **Low**. The phone automatically sets the deadline without an alarm for the note. To change the deadline, view the note and select the option for deadline.
- In the task list, you can select **Options**, and select an option for, example to sort the tasks by priority or by deadline, send them to another phone, save them as a calendar note, or access the calendar.
- To view a task, scroll to the desired task on the list and select **View**. To edit the displayed task, select **Edit**.

• NOTES

You can use the **Notes** application for writing and sending notes using IR, SMS or MMS. The Notes application uses shared memory. For more information, see "Shared memory" on page 7.

- 1 Select **Menu > Organizer > Notes**, or type a character when the messaging keyboard is open.
The phone will ask you to set the date and time, if they have not already been set when you start to write a note.
- 2 To add a new note, select **Add note**, if the list of notes is empty, or select **Options > Make a note**.
To view a note, scroll to the desired note on the list and select **View**. To edit the displayed note, select **Edit**.
- 3 Key in the note and select **Save**.
If you select **Options**, you can select **Insert time & date** to add the current time and date to the note. If there is not enough space for time and date, the phone will ask you to delete the appropriate number of characters from your note.

You can also send the note using IR, Bluetooth connection, MMS, or as a text message (SMS) to another compatible phone. If the note is too long to be sent as a text message, the phone will ask you to delete the appropriate number of characters from your note.

• WALLET

You can use the wallet to pay for your purchases made from the browser. You can save your personal information, such as credit card numbers and addresses in the wallet, and then use the data that are saved in the wallet during browsing. You can also save access codes to mobile services that request a user name and password.

The data in the wallet is protected with a wallet code that you can define when you access the wallet for the first time. At **Create wallet code**: key in the code and select **OK** to confirm it and at **Verify wallet code**: key in the code again and select **OK**.

To delete all the contents of the wallet and the wallet code, key in *#7370925538# (*#res wallet# in letters) in the standby mode. You also need the security code for the phone. See "Access codes" on page 70.

Access the wallet

Select **Menu > Organizer > Wallet**. Key in your wallet code and select **OK**. You then can choose from the following options:

Wallet profiles—to create card combinations, for example, for different services. A wallet profile is helpful if the service asks you to fill in many data items. You can select the appropriate wallet profile instead of selecting different cards separately.

Cards—to save personal card information. You can save payment card, loyalty card and access card information, including information such as user name and password combinations for different services.

Tickets—to save notifications of e-tickets that you have bought using your mobile service. To view the tickets, scroll to the desired ticket and select **View**.

Receipts—to save receipts for mobile purchases.

Personal notes—to save all kinds of personal information that you want to protect by the wallet PIN code.

Settings—to manage your wallet settings. For more information, see "Wallet settings" on page 81.

Save card details

- 1 Select **Menu > Organizer > Wallet > Cards**.
- 2 Scroll to one of the following card types to save the details, and select **Select**:
 - **Payment card** for credit and debit cards.
 - **Loyalty card** for membership cards.
 - **Access card** for personal user names and passwords to online services.
 - **Address card** for basic contact information for home/office.
 - **User info card** for customized personal preferences for online services.

- 3 If there are no cards in the folder, select **Add new** to create a new card.
To view saved details of the card, scroll to the desired card and select **View**.
- 4 Fill in the fields for the details and select **Done**.

You can also receive card information to your phone over the air from a card issuer or service provider. You will be notified as to which category the card belongs to. Save or discard the received card. You can view, but not edit the saved card. For availability of receiving card information over the air, contact the card issuer or service provider.

Add personal notes

You can save personal notes, for example, account numbers, passwords, codes or notations. Access the wallet and select **Personal notes**. To create a new personal note, select **Add new**. To view a note, scroll to the desired note on the list and select **View**. To edit the displayed note, select **Edit**.

When viewing a note, you can select the following options **Send via text msg.**, **Copy to calendar** or **Use detail**.

Create a wallet profile

When you have saved your personal card details, you can combine them together to create a wallet profile. You can use the wallet profile to retrieve wallet data from different cards while browsing.

- 1 Access the wallet and select **Wallet profiles**.
- 2 To create a new wallet profile, select **Add new**.
- 3 Fill in the following fields and select **Done**. Some of the fields contain data that are selected from the wallet. You need to save the data before you can create a wallet profile.
 - **Wallet profile name:** enter a name for the profile.
 - **Select payment card next**—select a card from the payment card list.
 - **Select loyalty card next**—select a card from the loyalty card list.
 - **Select access card next**—select a card from the access card list.
 - **Select user info card next**—select a card from the user data card list.
 - **Select billing address next**—select an address from the address card list.
 - **Select shipping address next**—select an address from the address card list.
 - **Select receipt delivery address next**—select an address from the address card list.
 - **Select receipt delivery method next**—select the way to deliver the receipt, **Receipt to phone number** or **Receipt to e-mail address**.

Wallet settings

Access the wallet and select **Settings**. Select

- **Change code** to change the wallet code.
- **Phone ID** to set the RFID code.

Guidelines for wallet purchases

To do your shopping, access the desired service site that supports the wallet. The service needs to support the Electronic Commerce Language specification. See "Connect to a service" on page 90.

Choose the product that you want to buy and read carefully all provided information before your purchase.



Note: The text may not fit within a single screen. Therefore, make sure to scroll through and read all of the text before you purchase.

- To pay for the items, the phone asks whether you want to use the wallet or not. The phone also asks for your wallet PIN code.
- Select the card you want to pay with from the Payment cards list. Provided that the data form you receive from the service provider supports the Electronic Commerce Modeling Language specification, the phone automatically fills in the credit card information or the wallet profile from the wallet.
- Approve the purchase, and the information is forwarded.
- You may receive an acknowledgement or a digital receipt of the purchase.
- To close the wallet, select **Close wallet**. If you do not use the wallet for 5 minutes, it will be automatically closed.



Note: If you have tried to access or have accessed confidential information requiring passwords (for example, your bank account), empty the cache of your phone after each use.

• SYNCHRONIZATION

Synchronization allows you to save your calendar and contacts data on a remote Internet server or on a compatible PC. If you have saved data on the remote Internet server, you can synchronize your phone by starting the synchronization from the phone. Synchronizing to the remote server is a network service. You can also synchronize your contact and calendar data to correspond with the data on your compatible PC by starting the synchronization from your PC. The contact data in your SIM card will not be synchronized.



Note: Answering an incoming call during synchronization will end the synchronization process and you will need to restart it.

Synchronize from your phone

Before synchronizing from your phone, you may need to do the following:

- Subscribe to a synchronization service. For more information on availability and the synchronization service settings, contact your network operator or service provider.
- Retrieve the synchronization settings from your network operator or service provider.
- Set the connection settings you need for synchronization. See "How to set up the phone for a service" on page 89.

To start the synchronization from your phone, use the following steps:

- 1 Activate the connection settings that you need for synchronization. See "How to set up the phone for a service" on page 89.
- 2 Select **Menu > Organizer > Synchronization > Settings > Active Internet sync. settings.**
- 3 Scroll to the set you wish to activate and select **Activate.**
- 4 Mark the data to be synchronized.
- 5 Select **Menu > Organizer > Synchronization > Synchronize.**
The marked data in the active set will be synchronized after confirmation.



Note: Synchronizing for the first time or after an interrupted synchronization may take up to 30 minutes to complete, if contacts or calendar are full.

Obtain synchronization settings

You may receive the synchronization settings as an over the air message from the network operator or service provider. To receive the settings over the air, see "Over-the-air settings service" on page 22.

To key in the settings manually, use the following steps:

- 1 Select **Menu > Organizer > Synchronization > Settings.**
- 2 Select **Active Internet sync. settings.** Scroll to the set you wish to activate, and select **Activate.**
You need to activate the set where you want to save the synchronization settings. A set is a collection of settings required to make a connection to a service.
- 3 Select **Edit active Internet sync. settings.** Select each setting one by one and key in all the required settings.
 - **Settings' name.** Key in the name for the set and select **OK.**
 - **Data to be synchronized.** Mark the data you want to synchronize, **Contacts** and/or **Calendar**, and select **Done.**
 - **Database addresses.** Select **Contacts database** and/or **Calendar database.**
 - **User name.** Key in the user name and select **OK.**
 - **Password.** Key in the password and select **OK.**

- **Synchronization server.** Key in the name of the server and select **OK**.
- **Connection settings** to define connection settings required for synchronization.
Select each of the settings one by one and key in all the required settings. Contact your network operator or service provider for the settings.
Select **PC sync. settings** to key in the settings for server alerted synchronization. Select and key in **User name** and **Password**.

Synchronize from your PC

To synchronize contacts and the calendar from your PC, use an IR or Bluetooth connection, or a data cable. You also need the PC Suite software of your phone installed on your PC. Start the synchronization from your PC using PC suite.

14 Applications



• GAMES

The games use shared memory. For more information, see “Shared memory” on page 7.

About photosensitive seizures

A very small percentage of people may experience a seizure when exposed to certain visual images, including flashing lights or patterns that may appear in video games. Even people who have no history of seizures or epilepsy may have an undiagnosed condition that can cause photosensitive epileptic seizures while watching video games. These seizures may have a variety of symptoms, including lightheadedness, altered vision, eye or face twitching, jerking or shaking of arms or legs, disorientation, confusion, or momentary loss of awareness. Seizures may also cause loss of consciousness or convulsions that can lead to injury from falling down or striking nearby objects.

Immediately stop playing and consult a doctor if you experience any of these symptoms. Adults who allow teenagers (or children) to play the games should watch for or ask their children about these symptoms as they are more likely than adults to experience these seizures. The risk of photosensitive epileptic seizures may be reduced by playing in a well-lit room and by not playing when you are drowsy or fatigued. If you or any of your relatives have a history of seizures or epilepsy, consult a doctor before playing.

Play safely

Take a break from playing games at least every half hour. Stop playing immediately if you begin to feel tired or if you experience an unpleasant sensation or pain in your hands or arms. If the condition persists, consult a doctor.

How to play games

Select Menu > Applications > Games. Select:

- **Select game** and scroll to a game or a game set (the name depends on the game) and select **Open** to launch a game. For functions that you can access by selecting **Options** in the game list, see “Other options for an application or application set” on page 85.
- **Game downloads** to download a game to the phone.
- **Memory** to view the amount of memory that is available for game and application installations.
- **Settings** to set sounds, lights and shakes for the game.



Note: Running some games may consume the battery faster (and you may need to connect the phone to the charger).

• APPLICATIONS

The applications use shared memory. For more information, see "Shared memory" on page 7.

Select **Menu > Applications > Applications**. Select from the following options:

- **Select application** and scroll to an application or application set (the name depends on the application) and select **Open** to launch an application. For functions that you can access by selecting **Options** in the applications list, see "Other options for an application or application set" on page 85.
- **App. downloads** to download an application to the phone.
- **Memory** to view the amount of memory that is available for game and application installations.



Note: Running some applications may consume the battery faster and you may need to connect the phone to the charger.

Other options for an application or application set

- **Delete** to delete the application or application set from your phone.
If you delete a pre-installed application or an application set from your phone, you may download it again to your phone from the Nokia Software Market, www.softwaredownload.nokia.com.
- **Web access** to restrict the application from accessing the network. Select **Ask first** and the phone will ask you for net access, **Allowed** to allow the net access, or **Not allowed** not to allow the net access.
- **Update version** to check if a new version of the application is available for download from the services (network service).
- **Web page** to provide further information or additional data for the application from an Internet page. This is a network service and the menu is shown only if an Internet address has been provided with the application.
- **Details** to give additional information about the application.

Download a game or an application

Your phone supports J2ME™ Java games and applications. Make sure that the application or a game is compatible with your phone before downloading it. You can download new Java applications in different ways:

- Select **Menu > Applications > Applications > App. downloads** or select **Menu > Applications > Games > Game downloads**.
The list of available browser bookmarks appears. Select **More bookmarks** to access the list of bookmarks in the **Services** menu.
Select the appropriate bookmark to connect to the desired site. If the connection fails, you may not be able to access the page from the service whose connection settings are currently active. In this case, enter the **Services** menu and activate another set of service settings. (See "Connect to a service" on page 90. (Try again to connect to the

site.

For the availability of different services, pricing and tariffs, contact your network operator and/or the service provider.

- Select **Menu > Services > Download** links to download an appropriate application or game.
- Use the Nokia Application installer from PC Suite to download the applications to your phone.

When downloading a game or an application, it may be saved in the **Games** menu instead of the **Applications** menu.



Note: Nokia does not warrant for applications from other sites. If you choose to download Java applications from them, you should take the same precautions, for security or content, as you would with any site.

• EXTRAS

Voice recorder

You can record pieces of speech, such as a name and phone number to write them down later. The recorder cannot be used when a data call or connection is active.



Note: Obey all local laws governing recording of calls.

Make a recording

- 1 Select **Menu > Applications > Extras > Voice recorder**.
- 2 To start the recording, select **Record**. To start the recording during a call, select **Options > Record**. While recording a call, all parties to the call will hear a faint beeping sound.
When recording, hold the phone in the normal position near to your ear.
- 3 To end the recording, select **Stop**. The recording will be saved in the **Recordings** folder of the **Gallery** menu.
- 4 To listen to the last recording, select **Replay last**. To send the recording as a multimedia message, select

List of recordings

Select **Menu > Applications > Extras > Voice recorder > Recordings** list. The list of folders in the **Gallery** appears. Scroll to **Recordings**, select **Open** and you can select some of the options for files in the **Gallery**.

Calculator

The calculator in your phone adds, subtracts, multiplies, divides, calculates the square and the square root, and converts currency values.

- 1 Select **Menu > Applications > Extras > Calculator**.
- 2 When '0' is displayed on the screen, key in the first number of the calculation, press the **#** key for a decimal point or the corresponding symbol on the keyboard, if the keyboard is open.
- 3 Select **Options > Add, Subtract, Multiply, Divide, Square, Square root or Change sign**. If the keyboard is open, you can also use the corresponding calculation symbols of the keyboard, if available.



Note: Alternatively, press the ***** key once to add, twice to subtract, three times to multiply or four times to divide, if you are using the calculator with the keyboard closed.

- 4 Key in the second number.
- 5 For the total, select **Equals**. Repeat steps 3 to 5 as many times as is necessary.
- 6 To start a new calculation, press and hold **Clear**.



Note: This calculator has a limited accuracy and is designed for simple calculations.

Convert currency

- 1 Select **Menu > Applications > Extras > Calculator**.
- 2 To save the exchange rate, select **Options > Exchange rate**. Select either of the displayed options. Key in the exchange rate, press the **#** key for a decimal point, and select **OK**. The exchange rate remains in the memory until you replace it with another one.
- 3 To perform the currency conversion, key in the amount to be converted, select **Options > In domestic or In foreign**.

You can also perform the currency conversion in the standby mode. Key in the amount to be converted, select **Options > In domestic or In foreign**.



Note: When you change base currency, you must key in the new rates because all previously set exchange rates are set to zero.

Countdown timer

Select **Menu > Applications > Extras > Countdown timer**. Key in the time in hours and minutes and select **OK**. If you wish, write a note that will be displayed when the time expires, and select **OK** to start the countdown timer.

To change the countdown time, select **Change time**, or to stop the timer, select **Stop timer**.

If the alarm time is reached when the phone is in the standby mode, the phone sounds a tone and shows the note, if available or **Countdown time up**. Stop the alarm by pressing any key. If no key is pressed, the alarm stops automatically within 30 seconds. To stop the alarm and to delete the note, select **OK**.

Stopwatch

You can measure time and take split or lap times using the stopwatch. During timing, the other functions of the phone can be used. To set the stopwatch to run in the background, press the **End** key.



Note: Using the stopwatch or allowing it to run in the background when using other features increases the demand on battery power and reduces the battery life.

Take split times or lap times

- 1 Select **Menu > Applications > Extras > Stopwatch**. Select **Split timing** or **Lap timing** and select **Start**. You can select **Continue** if you have set the stopwatch to run in the background.
- 2 select **Split** to take a split time, **Lap** to take a lap time or **Stop** to stop the timing. You can scroll through the split or lap times shown below the overall time.
- 3 select **Save** to save the lap or split times as a set of times. To reset the times or to continue timing, select **Options > Reset** or **Start**.

View and delete times

Select **Menu > Applications > Extras > Stopwatch**.

If the stopwatch has not been reset, you can select **Show last** to view the most recent measured time. Select **View times** and a list of names or the final times of the time sets is shown. Select the time set that you want to view.

To delete the saved times, select **Delete times**. Select **Delete all** and select **OK**, or select **One by one**, scroll to the times that you want to delete, select **Delete** and select **OK**.



15 Services

You can access various services with the multi-mode browser, such as weather reports, news, flight times, financial information and entertainment.

Check the availability of these services, pricing and tariffs with your network operator and/or the service provider whose service you wish to use. Service providers will also give you instructions on how to use their services.

With the multi-mode browser you can view the services that use wireless mark-up language (WML) or extensible hypertext markup language (XHTML). Since the phone display area and the memory capacity are much smaller than in a computer, Internet content is displayed differently on the phone. You may not be able to view all details of the Internet pages.

• MAIN STEPS FOR USING SERVICES

- 1 Save the service settings that are required to access the service that you want to use.
- 2 Make a connection to the selected service.
- 3 Start browsing the pages of the service.
- 4 Once you are finished browsing, end the connection to the service.

• HOW TO SET UP THE PHONE FOR A SERVICE

You may receive the service settings as an over the air message from the network operator or service provider that offers the service that you want to use. You can also key in the settings manually or add and edit the settings using PC Suite.

For more information and for the appropriate settings, contact the network operator or service provider that offers the service that you want to use.

To receive the service settings over the air, see "Over-the-air settings service" on page 22.

Key in the service settings manually

- 1 Select **Menu > Services > Settings > Connection settings > Active service settings**.
- 2 Scroll to the connection set that you would like to activate and select **Activate**.
You need to activate the connection set where you want to save the service settings. A connection set is a collection of settings that are required to connect to a service.
- 3 Select **Edit active service settings**.
Select each of the settings one by one and key in all the required settings according to the information you have received from your network operator or service provider. Bearer-related settings are in the **Bearer settings** menu.

Connect to a service

First, make sure that the service settings of the service that you want to use have been activated. To activate the settings:

- 1 Select **Menu > Services > Settings > Connection settings > Active service settings**.
- 2 Scroll to the set you want to activate and select **Activate**.

Next, make a connection to the service. There are three ways to connect:

- Open the start page of the service, for example the home page of the service provider: select **Menu > Services > Home**, or in the standby mode, press and hold the **0** key. If the keyboard is open, press the corresponding number key.
- Select the bookmark of the service:
Select **Menu > Services > Bookmarks**, and select a bookmark.
If the bookmark does not work with the current active service settings, activate another set of service settings and try again.
- Key in the address of the service:
Select **Menu > Services > Go to address**. Key in the address of the service, and select **OK**. It is not necessary to add the prefix **http://** in front of the address since it will be added automatically.

Browse the pages of a service

After you have made a connection to the service, you can start browsing its pages. The function of the phone keys may vary in different services. Follow the text guides on the phone display. For more information, contact your service provider.

If EGPRS is selected as the data bearer, the icon  is shown on the top left of the display during browsing. If you receive a call or a text message, or make a call during an EGPRS connection, the icon  appears on the top right of the display to indicate that the EGPRS connection has been suspended (on hold). After the call the phone tries to reconnect the EGPRS connection.

USE THE PHONE KEYS WHILE BROWSING

- Move the joystick up or down to browse through the page.
- To select a highlighted item, press the joystick briefly or press the **Send** key.
- To enter letters and numbers, press the keys **0-9** and to enter special characters, press the key the ***** key. When the keyboard is open, you can key in letters and numbers normally.

OPTIONS WHILE BROWSING

select **Options** to view the following options that may be available. The service provider may also offer other options. Select

- **Home** to return to the home page.
- **Bookmarks**. See "Bookmarks" on page 92.
- **Download links** to show the list of bookmarks for downloading.

- **Add bookmark** to save the page as a bookmark.
- **Shortcuts** to open a new list of options that are, for example, specific to the page.
- **Other options** to show a list of other options, for example, options for the wallet and some security options.
- **Reload** to reload and update the current page.
- **Quit.** See "Disconnect from a service" on page 91.



Note: If you access confidential information requiring passwords, such as your bank account, empty the cache of your phone after each use. (See "Cache memory" on page 93.)

DIRECT CALLING

The multi-mode browser supports functions that you can access while browsing. You can make a voice call, send DTMF tones while a voice call is in progress, and save a name and a phone number from a page.

Disconnect from a service

To quit browsing and to end the connection, select **Options > Quit**. When **Quit browsing?** is shown, select **Yes**.

Alternatively, press the **End** key twice. The phone ends the connection to the service.

Appearance settings of the multi-mode browser

While browsing, select **Options > Other options > Appear. settings**, or in the standby mode, select **Menu > Services, Settings > Appearance settings**. Select:

- **Text wrapping** and select **On** if you want the text to continue on the next line or select **Off**, if you want it to be abbreviated if it is too long to be shown on one line.
- **Show images** and select **No**, if you do not want the pictures on the page to be shown. This can speed up the browsing of pages that contain a lot of pictures.
- **Font size** and select **Small, Normal** or **Large**.
- **Alerts** and select **Alert for unsecure connection** and **Yes** to set the phone to alert when a secure connection changes to an unsecure one during browsing. Select **Alert for unsecure items** and **Yes** to set the phone to alert when a secure page contains an unsecure item.
- **Encoding** and select an option in **Content encoding** to change the encoding for the web page content. The default value is **Western**. Select **UTF-8 URLs** and **On**, if you want the phone to send an URL as an UTF-8 encoding.

Cookies

A cookie is data that a site saves in the browser cache memory of your phone. The data can be, for example, your user information or your browsing preferences. Cookies will be saved until you clear the cache memory, see "Cache memory" on page 93.

- 1 While browsing, select **Options > Other options > Security > Cookies**, or in the standby mode, select **Menu > Services > Settings > Security settings > Cookies**.
- 2 Select **Allow** or **Reject** to allow or prevent the phone receiving cookies.

Bookmarks

You can save addresses as bookmarks in the phone memory.

- 1 While browsing, select **Options > Bookmarks**, or in the standby mode, select **Menu > Services > Bookmarks**.
- 2 Select the desired bookmark or press the joystick briefly to make a connection to the page associated with the bookmark.
- 3 To manage bookmarks, select **Options** and select **View, Edit, Delete, Send, or New bookmark**.

Your phone may have some pre-installed bookmarks for sites that are not affiliated to Nokia. Nokia does not guarantee or endorse these sites. If you choose to access them, you should take the same precautions for security and content as you would with any Internet site.

RECEIVING A BOOKMARK

When you have received a bookmark as an Over The Air (OTA) message, select **Save** to add it to the bookmark list, or select **Options > View** or **Discard**.

Downloads

- 1 To download more tones, images, games or applications to your phone, select **Menu > Services > Download links**.
- 2 Select **Tone downloads, Image downloads, Game downloads** or **App. downloads** to download tones, images, games or applications, respectively.

Download content only from sources you trust.

Service inbox

The phone is able to receive service messages (pushed messages) from your service provider.

To set the phone to receive service messages, select **Menu > Services > Settings > Service inbox settings > Service messages > On**.

- To view a received service message, select **View**. If you select **Exit** the message is moved to the **Service inbox**. To view the service message later, select **Menu > Services > Service inbox**.
- While browsing, select **Options > Other options > Service inbox**. Scroll to the message that you want and select **Retrieve** to download the marked content from the web page, or select **Options > Details** or **Delete**.

Cache memory

The information or services you have accessed are stored in the cache of your phone. A cache is a buffer memory, which is used to store data temporarily.

To empty the cache while browsing, select **Options > Other options > Clear the cache**.

To empty the cache in the standby mode, select **Menu > Services > Clear the cache**.

Browser security

Security features may be required for some services, such as banking services or shopping on a site. For such connections you need security certificates and possibly a security module, which may be available on your SIM card. For more information, contact your service provider.

IMPORTANT INFORMATION ABOUT CERTIFICATES

While the use of certificates makes the risks involved in remote connections and software installation considerably smaller, they must be used correctly in order to benefit from increased security. The existence of a certificate does not offer any protection by itself. The certificate manager must contain correct, authentic, or trusted certificates for increased security to be available.

Certificates have a restricted lifetime. If *Expired certificate* or *Certificate not valid yet* is shown (even if the certificate should be valid), check that the current date and time in your phone are correct.

Before changing these settings, make sure that you really trust the owner of the certificate and that the certificate really belongs to the listed owner.

SECURITY MODULE

The security module can contain certificates as well as private and public keys. The security module may improve the security services for applications requiring browser connection, and allows you to use a digital signature. The certificates are saved in the security module by the service provider.

Select **Menu > Services > Settings > Security settings > Security module settings**.
Select:

- **Security module details** to show the security module title, its status, manufacturer and serial number.
- **Module PIN request** to set the phone to ask for the module PIN when using services that are provided by the security module. Key in the code and select **On**. To disable the module PIN request, select **Off**.
- **Change module PIN** to change the module PIN, if allowed by the security module. Key in the current module PIN code; then key in the new code twice.
- **Change signing PIN**. Select the signing PIN that you want to change. Key in the current PIN code; then key in the new code twice.

CERTIFICATES

There are three kinds of certificates: server certificates, authority certificates and user certificates.

- The phone uses a server certificate to improve security in connection between the phone and the gateway. The phone receives the server certificate from the service provider before the connection is established and its validity is checked using the authority certificates that are saved on the phone. Server certificates are not saved. The security icon  is displayed during a connection if the data transmission between the phone and the gateway (identified by the IP address in the Edit active service settings) is encrypted. However, the security icon is not an indication that the data transmission between the gateway and the content server (place where the requested resource is saved) is secure. It is up to the service provider to secure the data transmission between the gateway and the content server.
- Authority certificates are used by some services, such as banking, for checking the validity of other certificates. Authority certificates can be either saved in the security module by the service provider, or they can be downloaded from the network, if the service supports the use of authority certificates.
- User certificates are issued to users by a Certifying Authority. User certificates are required, for example, to create a digital signature and they associate the user with a specific private key in a security module.

DIGITAL SIGNATURE

You can create digital signatures with your phone. The signature can be traced back to you through the private key in the security module and the user certificate that was used to create the signature. Using the digital signature may be considered to be equal to a normal signature on any legal document.

To create a digital signature, select a link on a page, for example, the title of the book you want to buy and its price. The text that needs to be signed (possibly including amount, date, etc.) will be shown.

Check that the header text is **Read** and that the digital signature icon  is shown.



Note: If the digital signature icon does not appear, there is a security breach and you should not enter any personal data such as your signing PIN.

To add the digital signature to the text, read all of the text first and then you can select **Sign**. The text may not fit on a single screen. Therefore, make sure to scroll through and read all of the text before signing.

Select the user certificate that you want to use. Key in the signing PIN and select **OK**. The digital signature icon will disappear and the service may display a confirmation of your purchase.

16 SIM services



In addition to the functions that are available on the phone, your SIM card may provide additional services that you can access in **Menu 10**.

Menu 10 is only shown if it is supported by your SIM card. The name and contents of the menu depend entirely on the service available.



Note: For availability, rates and information on using SIM services, contact your SIM card vendor.

You can set the phone to show you the confirmation messages that are sent between your phone and the network when you are using the SIM services by selecting the option **Yes Confirm SIM service actions** in **Phone settings**.



Note: Accessing these services may involve sending a text message (SMS) or making a phone call for which you may be charged.

17 PC Connectivity

You can send and receive e-mail, and access the Internet when your phone is connected to a compatible PC using an IR or Bluetooth connection, or a data cable. You can use your phone with a variety of PC connectivity and data communications applications. With PC Suite you can, for example synchronize contacts, calendar, to-do notes and notes between your phone and the compatible PC.

You can find more information and downloadable files on the Nokia Website, www.nokia.com/support/phones/6820.

• PC SUITE

The PC Suite contains the following applications:

- Nokia Application Installer to install Java applications from the compatible PC to the phone.
- Nokia Image Converter to create images in supported formats for portrait images, multimedia messages, or wallpapers, and to transfer them to your phone.
- Nokia Sound Converter to edit polyphonic ringing tones in supported formats to be compatible with your phone and transfer them to your phone.
- Nokia Content Copier to copy data or back-up data from your phone to a compatible PC or to another compatible Nokia phone.
- Nokia Settings Manager to edit and send your browser bookmarks or update the connection sets to your phone.
- Nokia Phone Editor to send text messages (SMS) and edit the contacts in your phone.
- Nokia Phone Browser to view the contents of the Gallery folder of your phone on a compatible PC. You can browse picture and audio files in the phone memory and to transfer them between phone and PC.
- Nokia Multimedia Player to play multimedia (MMS) messages, and audio and video files. You can also create playlists of your favorite multimedia files.
- Nokia PC Sync to synchronize contacts, calendar, to-do notes and notes between your phone and your PC.
- Nokia 6820 data modem drivers enable you to use your phone as a modem.
- Nokia Modem Options contains settings for HSCSD and GPRS connections.
- Nokia Connection Manager to select the connection type between the PC and the phone.

Copyright protections may prevent some images, ringing tones and other content from being copied, modified, transferred or forwarded.

EGPRS, HSCSD and CSD

You can use the EGPRS (enhanced GPRS), GPRS (general packet radio service), HSCSD (high speed circuit switched data) and CSD (circuit switched data, GSM data) data services.

For availability and subscription to data services, contact your network operator or service provider.

The use of HSCSD service consumes the battery more quickly than normal voice or data calls. You may need to connect the phone to a charger for the duration of data transfer.

For more information, see "EGPRS modem settings" on page 67.

• DATA COMMUNICATIONS APPLICATIONS

For information on using a data communications application, refer to the documentation provided with it.



Note: Making or answering phone calls during a computer connection is not recommended as it might disrupt the operation.

For a better performance during data calls, place the phone on a stationary surface with the keypad facing downward. Do not move the phone or hold it in your hand during a data call.

18 Enhancements



This section provides information about the batteries, chargers, and accessories for your phone. Be aware that the information in this section is subject to change as the batteries, chargers, and accessories change.



Warning: Use only batteries, chargers and accessories approved by the phone manufacturer for use with this particular phone model. The use of any other types may invalidate any approval or warranty applying to the phone, and may be dangerous. For availability of approved accessories, please check with your dealer.

• SAFETY

- Keep all enhancements out of the reach of small children.
- When you disconnect the power cord of any enhancement, grasp and pull the plug, not the cord.
- Check regularly that any vehicle-installed enhancements are mounted and are operating properly.
- Installation of any complex car enhancements must be made by qualified personnel only.

Check the model number of any charger before use with this device. This device is intended for use when supplied with power from ACP-7, ACP-8, ACP-9, ACP-12, LCH-8, LCH-9, LCH-12, and ACH-1.

• ENHANCEMENTS FOR YOUR PHONE

For detailed information on accessories and enhancements, contact your authorized Nokia dealer or visit the Nokia Web site at www.nokia.com/us.

Audio

- Wireless Headset (HDW-2)
- Wireless Clip-on Headset (HS-3W)
- Wireless Boom Headset (HS-4W)
- Boom Headset (HDB-4)
- Headset (HS-5)
- Retractable Headset (HS-10)

Car

- Wireless Car Kit (CARK112)
- Wireless Car Kit (CK-1W)

- Car Installation Kit (CARK 126)

Imaging

- Nokia Observation Camera
- Image Frames (SU-4/7)
- Image Viewer (SU-2)

Messaging

- Digital Pen

Data

- Data Cable (DKU-5)
- Desktop Stand (DCV-14)

Power

- Battery, 850 mAh, Li-ion (BL-5C)
- Retractable Charger (AC-1)
- Travel Charger (ACP 12)

19 Reference Information

• BATTERY INFORMATION

Charging and Discharging

Your phone is powered by a rechargeable battery.

A new battery's full performance is achieved only after two or three complete charge and discharge cycles!

The battery can be charged and discharged hundreds of times but it will eventually wear out. When the operating time (talk time and standby time) is noticeably shorter than normal, it is time to buy a new battery.

Use only batteries approved by the phone manufacturer and recharge your battery only with the chargers approved by the manufacturer. Unplug the charger when not in use. Do not leave the battery connected to a charger for longer than a week, since overcharging may shorten its lifetime. If left unused a fully charged battery will discharge itself over time.

Temperature extremes can affect the ability of your battery to charge.

Use the battery only for its intended purpose.

Never use any charger or battery which is damaged.

Do not short-circuit the battery. Accidental short-circuiting can occur when a metallic object (coin, clip or pen) causes direct connection of the + and - terminals of the battery (metal strips on the battery) for example when you carry a spare battery in your pocket or purse. Short-circuiting the terminals may damage the battery or the connecting object.

Leaving the battery in hot or cold places, such as in a closed car in summer or winter conditions, will reduce the capacity and lifetime of the battery. Always try to keep the battery between 15°C and 25°C (59° F and 77° F). A phone with a hot or cold battery may temporarily not work, even when the battery is fully charged. Batteries' performance is particularly limited in temperatures well below freezing.

Do not dispose of batteries in a fire!

Dispose of batteries according to local regulations (such as recycling). Do not dispose as household waste.

Battery operation times

Battery talk and standby times are estimates only and depend on signal strength, network conditions, features used, battery age and condition (including the effect of charging habits), temperatures to which battery is exposed, use in digital mode, and many other

factors. Please note that the amount of time a phone is used for calls will affect its standby time. Likewise, the amount of time that the phone is turned on and in the standby mode will affect its talk time.

• CARE AND MAINTENANCE

Your phone is a product of superior design and craftsmanship and should be treated with care. The suggestions below will help you to fulfil any warranty obligations and to enjoy this product for many years.

- Keep the phone and all its parts and accessories out of the reach of small children.
- Keep the phone dry. Precipitation, humidity and all types of liquids or moisture can contain minerals that will corrode electronic circuits.
- Do not use or store the phone in dusty, dirty areas. Its moving parts can be damaged.
- Do not store the phone in hot areas. High temperatures can shorten the life of electronic devices, damage batteries, and warp or melt certain plastics.
- Do not store the phone in cold areas. When it warms up (to its normal temperature), moisture can form inside, which may damage electronic circuit boards.
- Do not attempt to open the phone. Non-expert handling may damage it.
- Do not drop, knock or shake the phone. Rough handling can break internal circuit boards.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the phone.
- Do not paint the phone. Paint can clog the moving parts and prevent proper operation.
- Use only the supplied or an approved replacement antenna. Unauthorized antennas, modifications or attachments could damage the phone and may violate regulations governing radio devices.

All of the above suggestions apply equally to your phone, battery, charger or any accessory. If any of them is not working properly, take it to your nearest qualified service facility. The personnel there will assist you and, if necessary, arrange for service.

• TRAFFIC SAFETY

Do not use a hand-held telephone while driving a vehicle. Always secure the phone in its holder; do not place the phone on the passenger seat or where it can break loose in a collision or sudden stop.

Remember road safety always comes first!

• OPERATING ENVIRONMENT

Remember to follow any special regulations in force in any area and always switch off your phone whenever it is forbidden to use it, or when it may cause interference or danger.

Use the phone only in its normal operating positions.

Parts of the phone are magnetic. Metallic materials may be attracted to the phone, and persons with a hearing aid should not hold the phone to the ear with the hearing aid. Always secure the phone in its holder, because metallic materials may be attracted by the earpiece. Do not place credit cards or other magnetic storage media near the phone, because information stored on them may be erased.

• ELECTRONIC DEVICES

Most modern electronic equipment is shielded from radio frequency (RF) signals. However, certain electronic equipment may not be shielded against the RF signals from your wireless phone.

Pacemakers

Pacemaker manufacturers recommend that a minimum separation of 6 inches (20 cm) maintained between a handheld wireless phone and a pacemaker to avoid potential interference with the pacemaker. These recommendations are consistent with the independent research by and recommendations of Wireless Technology Research. Persons with pacemakers:

- Should always keep the phone more than 6 inches (20 cm) from their pacemaker when the phone is switched on;
- Should not carry the phone in a breast pocket;
- Should use the ear opposite the pacemaker to minimize the potential for interference.
- If you have any reason to suspect that interference is taking place, switch off your phone immediately.

Hearing aids

Some digital wireless phones may interfere with some hearing aids. In the event of such interference, you may want to consult your service provider.

Other medical devices

Operation of any radio transmitting equipment, including cellular phones, may interfere with the functionality of inadequately protected medical devices. Consult a physician or the manufacturer of the medical device to determine if they are adequately shielded from external RF energy or if you have any questions. Switch off your phone in health care facilities when any regulations posted in these areas instruct you to do so. Hospitals or health care facilities may be using equipment that could be sensitive to external RF energy.

Vehicles

RF signals may affect improperly installed or inadequately shielded electronic systems in motor vehicles (e.g. electronic fuel injection systems, electronic anti-skid (anti-lock) braking systems, electronic speed control systems, air-bag systems). Check with the manufacturer or its representative regarding your vehicle. You should also consult the manufacturer of any equipment that has been added to your vehicle.

Posted facilities

Switch your phone off in any facility where posted notices so require.

• POTENTIALLY EXPLOSIVE ENVIRONMENTS

Switch off your phone when in any area with a potentially explosive atmosphere and obey all signs and instructions. Sparks in such areas could cause an explosion or fire resulting in bodily injury or even death.

Users are advised to switch off the phone when at a refuelling point (service station). Users are reminded of the need to observe restrictions on the use of radio equipment in fuel depots (fuel storage and distribution areas), chemical plants or where blasting operations are in progress.

Areas with a potentially explosive atmosphere are often but not always clearly marked. They include below deck on boats; chemical transfer or storage facilities; vehicles using liquefied petroleum gas (such as propane or butane); areas where the air contains chemicals or particles, such as grain, dust or metal powders; and any other area where you would normally be advised to turn off your vehicle engine.

• VEHICLES

Only qualified personnel should service the phone, or install the phone in a vehicle. Faulty installation or service may be dangerous and may invalidate any warranty which may apply to the unit.

Check regularly that all wireless phone equipment in your vehicle is mounted and operating properly.

Do not store or carry flammable liquids, gases or explosive materials in the same compartment as the phone, its parts or accessories.

For vehicles equipped with an air bag, remember that an air bag inflates with great force. Do not place objects, including both installed or portable wireless equipment in the area over the air bag or in the air bag deployment area. If in-vehicle wireless equipment is improperly installed and the air bag inflates, serious injury could result.

Using your phone while in the air is prohibited. Switch off your phone before boarding an aircraft. The use of wireless telephones in an aircraft may be dangerous to the operation of the aircraft, disrupt the wireless telephone network and may be illegal.

Failure to observe these instructions may lead to suspension or denial of telephone services to the offender, or legal action or both.

• EMERGENCY CALLS



Important: This phone, like any wireless phone, operates using radio signals, wireless and landline networks as well as user-programmed functions. Because of this, connections in all conditions can not be guaranteed. Therefore, you should never rely solely upon any wireless phone for essential communications (such as medical emergencies).

Emergency calls may not be possible on all wireless phone networks or when certain network services and/or phone features are in use. Check with local service providers.

To make an emergency call:

- 1 If the phone is not on, switch it on. Check for adequate signal strength. Some networks may require that a valid SIM card is properly inserted in the phone.
- 2 Press the **End** key as many times as needed (to exit a call, to exit a menu, etc.) to clear the display and ready the phone for calls.
- 3 Key in the emergency number for your present location. Emergency numbers vary by location.
- 4 Press the **Send** key

If certain features are in use, you may first need to turn those features off before you can make an emergency call. Consult this guide and your local cellular service provider.

When making an emergency call, remember to give all the necessary information as accurately as possible. Remember that your wireless phone may be the only means of communication at the scene of an accident – do not cut off the call until given permission to do so.

CERTIFICATION INFORMATION (SAR)

THIS MODEL PHONE MEETS THE GOVERNMENT'S REQUIREMENTS FOR EXPOSURE TO RADIO WAVES.

Your wireless phone is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. The guidelines are based on standards that were developed by independent

scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

The exposure standard for wireless mobile phones employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg.* Tests for SAR are conducted using standard operating positions accepted by the FCC with the phone transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power level, the actual SAR level of the phone while operating can be well below the maximum value. This is because the phone is designed to operate at multiple power levels so as to use only the power required to reach the network. In general, the closer you are to a wireless base station antenna, the lower the power output.

Before a phone model 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 (for example, at the ear and worn on the body) as required by the FCC for each model.

The highest SAR value for the Nokia 6820a model phone as reported to the FCC when tested for use at the ear is 0.66 W/kg, and when worn on the body, as described in this user guide, is 1.20 W/kg. The highest SAR value for the Nokia 6820b model phone as reported to the FCC when tested for use at the ear is X.XX W/kg, and when worn on the body, as described in this user guide, is X.XX W/kg. (Body-worn measurements differ among phone models, depending upon available enhancements and FCC requirements).

While there may be differences between the SAR levels of various phones and at various positions, they all meet the government requirement. The FCC has granted an Equipment Authorization for this model phone with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines. SAR information on this model phone is on file with the FCC and can be found under the Display Grant section of <http://www.fcc.gov/oet/fccid> after searching on FCC ID PYANHL-9 for the Nokia 6820a model and FCC ID XXXXXX-X for the Nokia 6820b model.

For body worn operation, this phone has been tested and meets the FCC RF exposure guidelines for use with a carry case, belt clip, or holder that contains no metal and that positions the handset a minimum of 5/8-inch (1.5 cm) from the body. Use of other carry cases, belt clips, or holders may not ensure compliance with FCC RF exposure guidelines. If you do not use a body-worn accessory and are not holding the phone at the ear, position the handset a minimum of 5/8-inch (1.5 cm) from your body when the phone is switched on.

*In the United States and Canada, the SAR limit for mobile phones used by the public is 1.6 watts/kilogram (W/kg) averaged over one gram of tissue. The standard incorporates a substantial margin of safety to give additional protection for the public and to account for any variations in measurements. SAR values may vary depending on national reporting requirements and the network band. For SAR information in other regions please look under product information at www.nokia.com.

20 Technical information

Weight	3.5 oz (100 g) with BL-5C 850-mAh semi-fixed Li-Ion Battery	
Size	Volume: 4.8 cubic inches (79 cc) Weight: 3.5 oz (100 g) Length: 4.2 in (106.1 mm closed) Width: 1.8 in (46.1 mm) at hinges, 1.5 in (38 mm) at bottom Thickness: .8 in (21.6 mm) at top, .7 in (17 mm) at bottom	
Frequency range	6820a EGSM900 880.2-914.8 MHz (TX) 92.5-959.8 MHz (RX) GSM1800 1710.2-1784.8 MHz (TX) 1805.2-1879.8 (RX) GSM1900 1850.2-1909.8 MHz (TX) 1930.2-1989.8 (RX)	6820b GSM850 824.2-848.8 MHz (TX) 869.2-893.8 MHz (RX) GSM1800 1710.2-1784.8 MHz (TX) 1805.2-1879.8 (RX) GSM1900 1850.2-1909.8 MHz (TX) 1930.2-1989.8 (RX)
Tx output power	Up to 2 W	
Battery voltage	3.7 V	
Operating temperature	14°F to + 131°F (-10°C to +55°C)	
^aTalk time, standby time	Talk time: up to 7 hours Stand-by time: up to 10 days	

- a. Battery talk and standby times are estimates only and depend on signal strength, network conditions, features used, battery age and condition (including the effect of charging habits), temperatures to which battery is exposed, use in digital mode, and many other factors. Please note that the amount of time a phone is used for calls will affect its standby time. Likewise, the amount of time that the phone is turned on and in the standby mode will affect its talk time.

21 Nokia One-Year Limited Warranty

Nokia Inc. ("Nokia") warrants that this cellular phone ("Product") is free from defects in material and workmanship that result in Product failure during normal usage, according to the following terms and conditions:

- 1 The limited warranty for the Product extends for ONE (1) year beginning on the date of the purchase of the Product. This one year period is extended by each whole day that the Product is out of your possession for repair under this warranty.
- 2 The limited warranty extends only to the original purchaser ("Consumer") of the Product and is not assignable or transferable to any subsequent purchaser/end-user.
- 3 The limited warranty extends only to Consumers who purchase the Product in the United States of America.
- 4 During the limited warranty period, Nokia will repair, or replace, at Nokia's sole option, any defective parts, or any parts that will not properly operate for their intended use with new or refurbished replacement items if such repair or replacement is needed because of product malfunction or failure during normal usage. No charge will be made to the Consumer for any such parts. Nokia will also pay for the labor charges incurred by Nokia in repairing or replacing the defective parts. The limited warranty does not cover defects in appearance, cosmetic, decorative or structural items, including framing, and any non-operative parts. Nokia's limit of liability under the limited warranty shall be the actual cash value of the Product at the time the Consumer returns the Product for repair, determined by the price paid by the Consumer for the Product less a reasonable amount for usage. Nokia shall not be liable for any other losses or damages. These remedies are the Consumer's exclusive remedies for breach of warranty.
- 5 Upon request from Nokia, the Consumer must prove the date of the original purchase of the Product by a dated bill of sale or dated itemized receipt.
- 6 The Consumer shall bear the cost of shipping the Product to Nokia in Melbourne, Florida. Nokia shall bear the cost of shipping the Product back to the Consumer after the completion of service under this limited warranty.
- 7 The Consumer shall have no coverage or benefits under this limited warranty if any of the following conditions are applicable:
 - The Product has been subjected to abnormal use, abnormal conditions, improper storage, exposure to moisture or dampness, unauthorized modifications, unauthorized connections, unauthorized repair, misuse, neglect, abuse, accident, alteration, improper installation, or other acts which are not the fault of Nokia, including damage caused by shipping.
 - The Product has been damaged from external causes such as collision with an object, or from fire, flooding, sand, dirt, windstorm, lightning, earthquake or damage from exposure to weather conditions, an Act of God, or battery leakage,

theft, blown fuse, or improper use of any electrical source, damage caused by computer or internet viruses, bugs, worms, Trojan Horses, cancelbots or damage caused by the connection to other products not recommended for interconnection by Nokia.

- Nokia was not advised in writing by the Consumer of the alleged defect or malfunction of the Product within fourteen (14) days after the expiration of the applicable limited warranty period.
 - The Product serial number plate or the accessory data code has been removed, defaced or altered.
 - The defect or damage was caused by the defective function of the cellular system or by inadequate signal reception by the external antenna, or viruses or other software problems introduced into the Product.
- 8 Nokia does not warrant uninterrupted or error-free operation of the Product. If a problem develops during the limited warranty period, the Consumer shall take the following step-by-step procedure:
- The Consumer shall return the Product to the place of purchase for repair or replacement processing.
 - If "a" is not convenient because of distance (more than 50 miles) or for other good cause, the Consumer shall ship the Product prepaid and insured to:
Nokia Inc., Attn: Repair Department
795 West Nasa Blvd.
Melbourne, FL 32901
 - The Consumer shall include a return address, daytime phone number and/or fax number, complete description of the problem, proof of purchase and service agreement (if applicable). Expenses related to removing the Product from an installation are not covered under this limited warranty.
 - The Consumer will be billed for any parts or labor charges not covered by this limited warranty. The Consumer will be responsible for any expenses related to reinstallation of the Product.
 - Nokia will repair the Product under the limited warranty within 30 days after receipt of the Product. If Nokia cannot perform repairs covered under this limited warranty within 30 days, or after a reasonable number of attempts to repair the same defect, Nokia at its option, will provide a replacement Product or refund the purchase price of the Product less a reasonable amount for usage. In some states the Consumer may have the right to a loaner if the repair of the Product takes more than ten (10) days. Please contact the Customer Service Center at Nokia at the telephone number listed at the end of this warranty if you need a loaner and the repair of the Product has taken or is estimated to take more than ten (10) days.
 - If the Product is returned during the limited warranty period, but the problem with the Product is not covered under the terms and conditions of this limited warranty,

the Consumer will be notified and given an estimate of the charges the Consumer must pay to have the Product repaired, with all shipping charges billed to the Consumer. If the estimate is refused, the Product will be returned freight collect. If the Product is returned after the expiration of the limited warranty period, Nokia's normal service policies shall apply and the Consumer will be responsible for all shipping charges.

- 9 You (the Consumer) understand that the product may consist of refurbished equipment that contains used components, some of which have been reprocessed. The used components comply with Product performance and reliability specifications.
- 10 ANY IMPLIED WARRANTY OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OR USE, SHALL BE LIMITED TO THE DURATION OF THE FOREGOING LIMITED WRITTEN WARRANTY. OTHERWISE, THE FOREGOING LIMITED WARRANTY IS THE CONSUMER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. NOKIA SHALL NOT BE LIABLE FOR SPECIAL, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF ANTICIPATED BENEFITS OR PROFITS, LOSS OF SAVINGS OR REVENUE, LOSS OF DATA, PUNITIVE DAMAGES, LOSS OF USE OF THE PRODUCT OR ANY ASSOCIATED EQUIPMENT, COST OF CAPITAL, COST OF ANY SUBSTITUTE EQUIPMENT OR FACILITIES, DOWNTIME, THE CLAIMS OF ANY THIRD PARTIES, INCLUDING CUSTOMERS, AND INJURY TO PROPERTY, RESULTING FROM THE PURCHASE OR USE OF THE PRODUCT OR ARISING FROM BREACH OF THE WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT TORT, OR ANY OTHER LEGAL OR EQUITABLE THEORY, EVEN IF NOKIA KNEW OF THE LIKELIHOOD OF SUCH DAMAGES. NOKIA SHALL NOT BE LIABLE FOR DELAY IN RENDERING SERVICE UNDER THE LIMITED WARRANTY, OR LOSS OF USE DURING THE PERIOD THAT THE PRODUCT IS BEING REPAIRED.
- 11 Some states do not allow limitation of how long an implied warranty lasts, so the one year warranty limitation may not apply to you (the Consumer). Some states do not allow the exclusion or limitation of incidental and consequential damages, so certain of the above limitations or exclusions may not apply to you (the Consumer). This limited warranty gives the Consumer specific legal rights and the Consumer may also have other rights which vary from state to state.
- 12 Nokia neither assumes nor authorizes any authorized service center or any other person or entity to assume for it any other obligation or liability beyond that which is expressly provided for in this limited warranty including the provider or seller of any extended warranty or service agreement.
- 13 This is the entire warranty between Nokia and the Consumer, and supersedes all prior and contemporaneous agreements or understandings, oral or written, relating to the Product, and no representation, promise or condition not contained herein shall modify these terms.
- 14 This limited warranty allocates the risk of failure of the Product between the Consumer and Nokia. The allocation is recognized by the Consumer and is reflected in the purchase price.

- 15 Any action or lawsuit for breach of warranty must be commenced within eighteen (18) months following purchase of the Product.
- 16 Questions concerning this limited warranty may be directed to:
Nokia Inc.
Attn: Customer Service
7725 Woodland Center Blvd., Ste. 150
Tampa, FL 33614
Telephone: 1-888-NOKIA-2U (1-888-665-4228)
Facsimile: (813) 287-6612
TTY/TDD Users Only: 1-800-24-NOKIA (1-800-246-6542)
- 17 The limited warranty period for Nokia supplied attachments and accessories is specifically defined within their own warranty cards and packaging.

Manufactured or sold under one or more of the following US Patents.
Asterisk (*) indicates design patents pending.

4558302	4868846	4945633	4969192	5001372	5101175
5151946	5173927	5212834	5230091	5241583	5311151
5317283	5331638	5335362	5353328	5371481	5378935
5384782	5396657	5400949	5416435	5442521	5446364
5479476	5526366	5553125	5557639	5565821	5570369
5581244	5600708	5625274	5677620	5692032	5729541
5760568	5794142	5802465	5809413	5827082	5839101
5844884	5845219	5870683	5884103	5889770	5907823
5912570	5914690	5914796	5917868	5920826	5956332
5956625	5956633	5966378	5977887	5987137	5991857
6006114	6011853	6014551	6014573	6026161	6035189
6038238	6043760	6047196	6049796	6050415	6055439
6060193	6069923	6072787	6081732	6084920	6084962
6094587	6097964	6105784	6112099	6115617	6119180
6121846	6128509	6138091	6140966	6144243	6144676
6148209	6151485	6151507	6163609	6164547	6167248
6185295	6188909	6249584	6259312	6266330	6272361
6282436	6292668	6295286	6311054	6314166	6324389
6324412	6347218	6363259	6370362	6370389	6377820
6381468	6392660	6400958	6453179	6463278	6470470
6487397	6522670	6198928	4969192	5266782	5390223
5444816	5487084	5640395	5664053	5699482	5701392
5722074	5754976	5805301	5835889	5857151	5859843
5862178	5898925	5930233	5946651	*5960354	5960389
5963901	6005857	6011971	6031827	6118775	6128322
6137789	6167248	6170073	6178535	6195338	6199035
6240076	6266321	6285888	6356759	6377803	6430163
6438370	6456237				

FCC DRAFT

Appendix A Message from the CTIA

**(Cellular Telecommunications
& Internet Association)
to all users of mobile phones.**

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Phone: (202) 785-0081

Safety is the most important call you will ever make.

A Guide to Safe and Responsible Wireless Phone Use

Tens of millions of people in the U.S. today take advantage of the unique combination of convenience, safety and value delivered by the wireless telephone. Quite simply, the wireless phone gives people the powerful ability to communicate by voice--almost anywhere, anytime--with the boss, with a client, with the kids, with emergency personnel or even with the police. Each year, Americans make billions of calls from their wireless phones, and the numbers are rapidly growing.

But an important responsibility accompanies those benefits, one that every wireless phone user must uphold. When driving a car, driving is your first responsibility. A wireless phone can be an invaluable tool, but good judgment must be exercised at all times while driving a motor vehicle--whether on the phone or not.

The basic lessons are ones we all learned as teenagers. Driving requires alertness, caution and courtesy. It requires a heavy dose of basic common sense--keep your head up, keep your eyes on the road, check your mirrors frequently and watch out for other drivers. It requires obeying all traffic signs and signals and staying within the speed limit. It means using seatbelts and requiring other passengers to do the same.

But with wireless phone use, driving safely means a little more. This brochure is a call to wireless phone users everywhere to make safety their first priority when behind the wheel of a car. Wireless telecommunications is keeping us in touch, simplifying our lives, protecting us in emergencies and providing opportunities to help others in need.

When it comes to the use of wireless phones, *safety is your most important call.*

Wireless Phone "Safety Tips"

Below are safety tips to follow while driving and using a wireless phone which should be easy to remember.

- 1 Get to know your wireless phone and its features such as speed dial and redial. Carefully read your instruction manual and learn to take advantage of valuable features most phones offer, including automatic redial and memory. Also, work to memorize the phone keypad so you can use the speed dial function without taking your attention off the road.
- 2 When available, use a hands free device. A number of hands free wireless phone accessories are readily available today. Whether you choose an installed mounted device for your wireless phone or a speaker phone accessory, take advantage of these devices if available to you.
- 3 Position your wireless phone within easy reach. Make sure you place your wireless phone within easy reach and where you can grab it without removing your eyes from the road. If you get an incoming call at an inconvenient time, if possible, let your voice mail answer it for you.
- 4 Suspend conversations during hazardous driving conditions or situations. Let the person you are speaking with know you are driving; if necessary, suspend the

call in heavy traffic or hazardous weather conditions. Rain, sleet, snow and ice can be hazardous, but so is heavy traffic. As a driver, your first responsibility is to pay attention to the road.

- 5 Do not take notes or look up phone numbers while driving. If you are reading an address book or business card, or writing a "to do" list while driving a car, you are not watching where you are going. It's common sense. Don't get caught in a dangerous situation because you are reading or writing and not paying attention to the road or nearby vehicles.
- 6 Dial sensibly and assess the traffic; if possible, place calls when you are not moving or before pulling into traffic. Try to plan your calls before you begin your trip or attempt to coincide your calls with times you may be stopped at a stop sign, red light or otherwise stationary. But if you need to dial while driving, follow this simple tip--dial only a few numbers, check the road and your mirrors, then continue.
- 7 Do not engage in stressful or emotional conversations that may be distracting. Stressful or emotional conversations and driving do not mix--they are distracting and even dangerous when you are behind the wheel of a car. Make people you are talking with aware you are driving and if necessary, suspend conversations which have the potential to divert your attention from the road.
- 8 Use your wireless phone to call for help. Your wireless phone is one of the greatest tools you can own to protect yourself and your family in dangerous situations--with your phone at your side, help is only three numbers away. Dial 9-1-1 or other local emergency number in the case of fire, traffic accident, road hazard or medical emergency. Remember, it is a free call on your wireless phone!
- 9 Use your wireless phone to help others in emergencies. Your wireless phone provides you a perfect opportunity to be a "Good Samaritan" in your community. If you see an auto accident, crime in progress or other serious emergency where lives are in danger, call 9-1-1 or other local emergency number, as you would want others to do for you.
- 10 Call roadside assistance or a special wireless non-emergency assistance number when necessary. Certain situations you encounter while driving may require attention, but are not urgent enough to merit a call for emergency services. But you still can use your wireless phone to lend a hand. If you see a broken-down vehicle posing no serious hazard, a broken traffic signal, a minor traffic accident where no one appears injured or a vehicle you know to be stolen, call roadside assistance or other special non-emergency wireless number.

Careless, distracted individuals and people driving irresponsibly represent a hazard to everyone on the road. Since 1984, the Cellular Telecommunications Industry Association and the wireless industry have conducted educational outreach to inform wireless phone users of their responsibilities as safe drivers and good citizens. As we approach a new century, more and more of us will take advantage of the benefits of wireless telephones. And, as we take to the roads, we all have a responsibility to drive safely.

The wireless industry reminds you to use your phone safely when driving.

For more information, please call 1-888-901-SAFE.

For updates: <http://www.wow-com.com/consumer/issues/driving/articles.cfm?ID=85>

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Appendix B Message from the FDA (U.S. Food and Drug Administration) to all users of mobile phones.

July 18, 2001 For updates: <http://www.fda.gov/cdrh/phones>

Consumer Update on Wireless Phones

U.S. Food and Drug Administration

1. Do wireless phones pose a health hazard?

The available scientific evidence does not show that any health problems are associated with using wireless phones. There is no proof, however, that wireless phones are absolutely safe. Wireless phones emit low levels of radiofrequency energy (RF) in the microwave range while being used. They also emit very low levels of RF when in the stand-by mode. Whereas high levels of RF can produce health effects (by heating tissue), exposure to low level RF that does not produce heating effects causes no known adverse health effects. Many studies of low level RF exposures have not found any biological effects. Some studies have suggested that some biological effects may occur, but such findings have not been confirmed by additional research. In some cases, other researchers have had difficulty in reproducing those studies, or in determining the reasons for inconsistent results.

2. What is FDA's role concerning the safety of wireless phones?

Under the law, FDA does not review the safety of radiation-emitting consumer products such as wireless phones before they can be sold, as it does with new drugs or medical devices. However, the agency has authority to take action if wireless phones are shown to emit radiofrequency energy (RF) at a level that is hazardous to the user. In such a case, FDA could require the manufacturers of wireless phones to notify users of the health hazard and to repair, replace or recall the phones so that the hazard no longer exists.

Although the existing scientific data do not justify FDA regulatory actions, FDA has urged the wireless phone industry to take a number of steps, including the following:

- Support needed research into possible biological effects of RF of the type emitted by wireless phones;
- Design wireless phones in a way that minimizes any RF exposure to the user that is not necessary for device function; and
- Cooperate in providing users of wireless phones with the best possible information on possible effects of wireless phone use on human health.

FDA belongs to an interagency working group of the federal agencies that have responsibility for different aspects of RF safety to ensure coordinated efforts at the federal level. The following agencies belong to this working group:

- National Institute for Occupational Safety and Health
- Environmental Protection Agency
- Federal Communications Commission
- Occupational Safety and Health Administration
- National Telecommunications and Information Administration

The National Institutes of Health participates in some interagency working group activities, as well.

FDA shares regulatory responsibilities for wireless phones with the Federal Communications Commission (FCC). All phones that are sold in the United States must comply with FCC safety guidelines that limit RF exposure. FCC relies on FDA and other health agencies for safety questions about wireless phones. FCC also regulates the base stations that the wireless phone networks rely upon. While these base stations operate at higher power than do the wireless phones themselves, the RF exposures that people get from these base stations are typically thousands of times lower than those they can get from wireless phones. Base stations are thus not the subject of the safety questions discussed in this document.

3. What kinds of phones are the subject of this update?

The term wireless phone refers here to hand-held wireless phones with built-in antennas, often called cell mobile or PCS phones. These types of wireless phones can expose the user to measurable radiofrequency energy (RF) because of the short distance between the phone and the user's head. These RF exposures are limited by Federal Communications Commission safety guidelines that were developed with the advice of FDA and other federal health and safety agencies. When the phone is located at greater distances from the user, the exposure to RF is drastically lower because a person's RF exposure decreases rapidly with increasing distance from the source. The so-called cordless phones; which have a base unit connected to the telephone wiring in a house, typically operate at far lower power levels, and thus produce RF exposures far below the FCC safety limits.

4. What are the results of the research done already?

The research done thus far has produced conflicting results, and many studies have suffered from flaws in their research methods. Animal experiments investigating the effects of radiofrequency energy (RF) exposures characteristic of wireless phones have yielded conflicting results that often cannot be repeated in other laboratories. A few animal studies, however, have suggested that low levels of RF could accelerate the development of cancer in laboratory animals. However, many of the studies that showed increased tumor development used animals that had been genetically engineered or treated with cancer-causing chemicals so as to be pre-disposed to develop cancer in the absence of RF exposure. Other studies exposed the animals to RF for up to 22 hours per day. These conditions are not similar to the conditions under which people use wireless phones, so we don't know with certainty what the results of such studies mean for human health.

Three large epidemiology studies have been published since December 2000. Between them, the studies investigated any possible association between the use of wireless phones and primary brain cancer, glioma, meningioma, or acoustic neuroma, tumors of the brain or salivary gland, leukemia, or other cancers. None of the studies demonstrated the existence of any harmful health effects from wireless phone RF exposures. However, none of the studies can answer questions about long-term exposures, since the average period of phone use in these studies was around three years.

5. What research is needed to decide whether RF exposure from wireless phones poses a health risk?

A combination of laboratory studies and epidemiological studies of people actually using wireless phones would provide some of the data that are needed. Lifetime animal exposure studies could be completed in a few years. However, very large numbers of animals would be needed to provide reliable proof of a cancer promoting effect if one exists. Epidemiological studies can provide data that is directly applicable to human populations, but 10 or more years follow-up may be needed to provide answers about some health effects, such as cancer. This is because the interval between the time of exposure to a cancer-causing agent and the time tumors develop - if they do - may be many, many years. The interpretation of epidemiological studies is hampered by difficulties in measuring actual RF exposure during day-to-day use of wireless phones. Many factors affect this measurement, such as the angle at which the phone is held, or which model of phone is used.

6. What is FDA doing to find out more about the possible health effects of wireless phone RF?

FDA is working with the U.S. National Toxicology Program and with groups of investigators around the world to ensure that high priority animal studies are conducted to address important questions about the effects of exposure to radiofrequency energy (RF).

FDA has been a leading participant in the World Health Organization International Electromagnetic Fields (EMF) Project since its inception in 1996. An influential result of this work has been the development of a detailed agenda of research needs that has driven the establishment of new research programs around the world. The Project has also helped develop a series of public information documents on EMF issues.

FDA and the Cellular Telecommunications & Internet Association (CTIA) have a formal Cooperative Research and Development Agreement (CRADA) to do research on wireless phone safety. FDA provides the scientific oversight, obtaining input from experts in government, industry, and academic organizations. CTIA-funded research is conducted through contracts to independent investigators. The initial research will include both laboratory studies and studies of wireless phone users. The CRADA will also include a broad assessment of additional research needs in the context of the latest research developments around the world.

7. How can I find out how much radiofrequency energy exposure I can get by using my wireless phone?

All phones sold in the United States must comply with Federal Communications Commission (FCC) guidelines that limit radiofrequency energy (RF) exposures. FCC established these guidelines in consultation with FDA and the other federal health and safety agencies. The FCC limit for RF exposure from wireless telephones is set at a Specific Absorption Rate (SAR) of 1.6 watts per kilogram (1.6 W/kg). The FCC limit is consistent with the safety standards developed by the Institute of Electrical and Electronic Engineering (IEEE) and the National Council on Radiation Protection and Measurement. The exposure limit takes into consideration the body's ability to remove heat from the tissues that absorb energy from the wireless phone and is set well below levels known to have effects.

Manufacturers of wireless phones must report the RF exposure level for each model of phone to the FCC. The FCC website (<http://www.fcc.gov/oet/rfsafety>) gives directions for locating the FCC identification number on your phone so you can find your phone's RF exposure level in the online listing.

8. What has FDA done to measure the radiofrequency energy coming from wireless phones?

The Institute of Electrical and Electronic Engineers (IEEE) is developing a technical standard for measuring the radiofrequency energy (RF) exposure from wireless phones and other wireless handsets with the participation and leadership of FDA scientists and engineers. The standard, Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques, sets forth the first consistent test methodology for measuring the rate at which RF is deposited in the heads of wireless phone users. The test method uses a tissue-simulating model of the human head. Standardized SAR test methodology is expected to greatly improve the consistency of measurements made at different laboratories on the same phone. SAR is the measurement of the amount of energy absorbed in tissue, either by the whole body or a small part of the body. It is measured in watts/kg (or milliwatts/g) of matter. This measurement is used to determine whether a wireless phone complies with safety guidelines.

9. What steps can I take to reduce my exposure to radiofrequency energy from my wireless phone?

If there is a risk from these products--and at this point we do not know that there is--it is probably very small. But if you are concerned about avoiding even potential risks, you can take a few simple steps to minimize your exposure to radiofrequency energy (RF). Since time is a key factor in how much exposure a person receives, reducing the amount of time spent using a wireless phone will reduce RF exposure.

If you must conduct extended conversations by wireless phone every day, you could place more distance between your body and the source of the RF, since the exposure level drops off dramatically with distance. For example, you could use a headset and carry the wireless phone away from your body or use a wireless phone connected to a remote antenna.

Again, the scientific data do not demonstrate that wireless phones are harmful. But if you are concerned about the RF exposure from these products, you can use measures like those described above to reduce your RF exposure from wireless phone use.

10. What about children using wireless phones?

The scientific evidence does not show a danger to users of wireless phones, including children and teenagers. If you want to take steps to lower exposure to radiofrequency energy (RF), the measures described above would apply to children and teenagers using wireless phones. Reducing the time of wireless phone use and increasing the distance between the user and the RF source will reduce RF exposure. Some groups sponsored by other national governments have advised that children be discouraged from using wireless phones at all. For example, the

government in the United Kingdom distributed leaflets containing such a recommendation in December 2000. They noted that no evidence exists that using a wireless phone causes brain tumors or other ill effects. Their recommendation to limit wireless phone use by children was strictly precautionary; it was not based on scientific evidence that any health hazard exists.

11. What about wireless phone interference with medical equipment?

Radiofrequency energy (RF) from wireless phones can interact with some electronic devices. For this reason, FDA helped develop a detailed test method to measure electromagnetic interference (EMI) of implanted cardiac pacemakers and defibrillators from wireless telephones. This test method is now part of a standard sponsored by the Association for the Advancement of Medical Instrumentation (AAMI). The final draft, a joint effort by FDA, medical device manufacturers, and many other groups, was completed in late 2000. This standard will allow manufacturers to ensure that cardiac pacemakers and defibrillators are safe from wireless phone EMI. FDA has tested hearing aids for interference from handheld wireless phones and helped develop a voluntary standard sponsored by the Institute of Electrical and Electronic Engineers (IEEE). This standard specifies test methods and performance requirements for hearing aids and wireless phones so that no interference occurs when a person uses a compatible phone and a accompanied hearing aid at the same time. This standard was approved by the IEEE in 2000.

FDA continues to monitor the use of wireless phones for possible interactions with other medical devices. Should harmful interference be found to occur, FDA will conduct testing to assess the interference and work to resolve the problem.

12. Where can I find additional information?

For additional information, please refer to the following resources:

- FDA web page on wireless phones
<http://www.fda.gov/cdrh/phones/index.html>
- Federal Communications Commission (FCC) RF Safety Program
<http://www.fcc.gov/oet/rfsafety>
- International Commission on Non-Ionizing Radiation Protection
<http://www.icnirp.de>
- World Health Organization (WHO) International EMF Project
<http://www.who.int/emf>
- National Radiological Protection Board (UK)
<http://www.nrpb.org.uk/>

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