



***DRAFT***

**SGH-A411**  
**User's Guide**



# Important safety precautions



Failure to comply with the following precautions may be dangerous or illegal.

## **Use road safety at all times**

Do not use a hand-held phone while driving. Park the vehicle first.

## **Switch off the phone when refuelling**

Do not use the phone at a refuelling point (service station) or near fuels or chemicals.

## **Switch off in an aircraft**

Wireless phones can cause interference. Using them in an aircraft is both illegal and dangerous.

## **Switch off the phone near all medical equipment**

Hospitals or health care facilities may be using equipment that could be sensitive to external radio frequency energy. Follow any regulations or rules in force.

## **Interference**

All wireless phones may be subject to interference, which could affect their performance.



## Be aware of special regulations

Meet 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.

## Water resistance

Your phone is not water-resistant. Keep it dry.

## Sensible use

Use only in the normal position (held to the ear). Avoid unnecessary contact with the antenna when the phone is switched on.

## Emergency calls

Key in the emergency number for your present location, then press .

## Keep your phone away from small children

Keep the phone and all its parts, including accessories, out of the reach of small children.

## Accessories and batteries

Use only Samsung-approved batteries and accessories, such as headsets and PC data cables. Use of any unauthorised accessories could damage you or your phone and may be dangerous.

- The phone could explode if the battery is replaced with an incorrect type.
- Dispose of used batteries according to the manufacturer's instructions.



At very high volumes, prolonged listening to a headset can damage your hearing.

## Qualified service

Only qualified service personnel may repair your phone.

For more detailed safety information, see "Health and safety information" on page 31.

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## Overview of menu functions

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1. Available only if supported by your USIM/SIM card.

## Unpack

Your package contains the following items.

- Handset
- Battery
- Travel Adapter
- User's Guide

You can obtain various accessories from your local Samsung dealer.

- Standard Battery
- Extended Battery
- Headset
- PC Data Link Kit
- Car Charger/Adaptor



The items supplied with your phone and the accessories at your Samsung dealer may vary, depending on your country or service provider.

## Get started

*First steps to operating your phone*

### USIM/SIM card information

When you subscribe to a cellular network, you receive a plug-in SIM (Subscriber Identity Module) card loaded with your subscription details, such as your PIN, and available optional services. For 3G services, you can purchase a USIM (Universal Subscriber Identity Module) card.

### Install and charge the phone

1 Remove the battery cover.

If the phone is already on, first turn it off by pressing and holding [⏻].

2 Insert the USIM/SIM card.

Make sure that the gold-coloured contacts on the card are face down.

3 Install the battery.

4 Plug the adapter into a standard AC wall outlet.

5 Plug the adapter into a standard AC wall outlet.

6 When the phone is completely charged (the battery icon becomes still), unplug the adapter from the power outlet.

7 Remove the adapter from the phone.

## Low battery indicator

When the battery is low:

- a warning tone sounds,
- the battery low message displays, and
- the empty battery icon  blinks.

If the battery level becomes too low, the phone automatically turns off. Recharge your battery.

## Power on or off

### Switch on

Do not turn on the phone when mobile phone use is prohibited.

1. Open the phone.
2. Press and hold [].
3. If necessary, enter the PIN and press **<Confirm>**.

### Switch off

1. Open the phone.
2. Press and hold [].

## Keys and display

### Keys

Soft keys	Perform the function indicated on the bottom line of the display.
Phonebook key	Access the contact list.
Application Switch key	Open the application switch window to access other applications without exiting the current application.
Navigation keys	In Idle mode, access your favourite menus directly. ► p. 25 In Menu mode, scroll through menu options.

Telstar key	In Idle mode, launch the web browser. In Menu mode, select a highlighted menu option or confirm input.
Send key	Make or answer a call. In Idle mode, retrieve numbers recently dialled, missed, or received.
Cancel key	Delete characters from the display. In Menu mode, return to the previous menu level.
End key	Press and hold to switch the phone on or off. End a call. In Menu mode, cancel input and return the phone to Idle mode.

**Numeric keys** Enter numbers, letters, and some special characters.  
In Idle mode, press and hold [**1**] to access your voicemail server. Press and hold [**0**] to enter an international call prefix.

**# key** Enter special characters.  
Press and hold [#] to activate or deactivate the Silent profile. .

**\* key** Enter special characters.  
Press and hold [\*] to enter a pause between numbers

**Volume keys** Adjust the phone volume.  
In Idle mode, with the phone open, adjust the key tone volume. With the phone closed, press and hold to turn on the backlight.

**Camera key** Press and hold to turn on the camera.  
In Camera mode, take a photo or record a video.

## Display

### Layout



**Icons**  
display various icons.

**Text and graphics**  
display messages,  
instructions, and  
information you enter.

**Soft key function  
indicators**  
show the current  
functions assigned to  
the soft keys.

### Icons

-  Received signal strength
-  Accessing services in a 2.5G (GPRS) network; when transferring data, this icon animates
-  Accessing services in an EDGE network; when transferring data, this icon animates
-  Accessing services in a 3G (UMTS) network; when transferring data, this icon animates
-  Roaming network
-  Call diverting feature active
-  Call in progress
-  Out of your service area; you cannot make or receive calls

**Icons**

(continued)

-  Bluetooth active; When transferring data, this icon blinks red and blue
-  Bluetooth hands-free car kit or headset connected
-  Connected with PC via a USB port
-  Browsing Internet on PC using the phone as modem
-  Connected to secured web page
-  Alarm set
-  New message:
-  Inbox full:
-  Battery power level

## *Menu functions*

*All menu options listed*

### **Call log** (Menu 1)

Use this menu to view the calls you have dialled, received, or missed, the length of the calls. You can also check the cost of your calls, if your USIM/SIM card supports this function.

To access this menu, press <**Menu**> in Idle mode and select **Call log**.

### **Recent contacts** (Menu 1.1)

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This menu displays the most recent calls you have dialled, received, or missed.

### **Missed calls** (Menu 1.2)

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This menu displays the most recent calls you did not answer.

### **Dialled calls** (Menu 1.3)

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This menu displays the most recent calls you have dialled.

### **Received calls** (Menu 1.4)

---

This menu displays the most recent calls you have received.

### **Delete all** (Menu 1.5)

---

Use this menu to delete all logs in each call type.

### **Call time** (Menu 1.6)

---

This menu displays the time log for calls made and received. The actual time invoiced by your service provider will vary.

### **Data volume** (Menu 1.7)

---

Use this menu to view the total amount of sent or received data.

### **Data call time** (Menu 1.8)

---

Use this menu to view the time log for data calls.

### **Call cost** (Menu 1.9)

---

This network feature displays the cost of calls. This menu is available only if supported by your USIM/SIM card. Note that this is not intended to be used for billing purposes.

### **Phonebook** (Menu 2)

You can store phone numbers on your USIM/SIM card and in your phone's memory. The USIM/SIM card and phone's memory are physically separate, but they are used as a single entity called Phonebook.

To access this menu, press <**Menu**> in Idle mode and select **Phonebook**.

### **Contact list** (Menu 2.1)

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Use this menu to search for contact information in Phonebook.

### **Add new contact** (Menu 2.2)

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Use this menu to add a new contact to Phonebook.

**Groups** *(Menu 2.3)*

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Use this menu to create and manage caller groups.

**Speed dial** *(Menu 2.4)*

---

Use this menu to assign speed dial numbers (2 to 9) to 8 of your most frequently dialled numbers.

**My business card** *(Menu 2.5)*

---

Use this menu to create your name card and send it to other people.

**Copy all** *(Menu 2.6)*

---

Use this menu to copy all of the contacts stored on the USIM/SIM card to the phone's memory, or vice versa.

**Own number** *(Menu 2.7)*

---

Use this feature to check your phone numbers, or to assign a name to each of the numbers. Changes made here do not affect the actual subscriber numbers on your USIM/SIM card.

**FDN list** *(Menu 2.8)*

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Use this menu to create a list of contacts to be used in FDN (Fixed Dialling Number) mode, in which the phone allows outgoing calls only to the specified phone numbers. This menu is available if your SIM/USIM card supports the FDN feature.

### **Service number** (Menu 2.9)

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Use this menu to view the list of Service Dialling Numbers (SDN) assigned by your service provider, including emergency numbers and numbers for directory enquiries. This menu is available if your USIM/SIM card supports SDN. Scroll to the number you want and press [↩].

### **Settings** (Menu 2.10)

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Use this menu to change the default settings for Phonebook entries.

### **Memory status** (Menu 2.11)

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Use this menu to check the number of contacts you have stored in the phone's memory and on the USIM/SIM card.

### **Applications** (Menu 3)

Use this menu to play media files and use convenient features, such as an alarm clock, a world clock, a voice recorder, calculator, and converter.

To access this menu, press <**Menu**> in Idle mode and select **Applications**.

**Media player** *(Menu 3.1)*

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You can play music and video files.

**Alarm** *(Menu 3.2)*

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Use this menu to set alarms to sound at specific times. The alert type for a normal alarm corresponds to the call alert type settings in the currently selected profile. A wake-up alarm is not be affected by your profile setting.

**Voice recorder** *(Menu 3.3)*

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Use this menu to record voice memos.

**Organizer** *(Menu 3.4)*

---

Use this menu to use the calendar feature.

**Calculator** *(Menu 3.5)*

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Use this menu to perform basic arithmetic functions such as addition, subtraction, multiplication, and division.

**Converter** *(Menu 3.6)*

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Use this menu for common conversions, such as currency and temperature.

**World time** *(Menu 3.7)*

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Use this menu to find out the current time in another part of the world.

### **PocketNews** (Menu 3.8)

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This menu is available if you use a USIM/SIM card that supports SIM Application Toolkit menus and provides additional services, such as news, weather, sports, entertainment, and location services. Available services may vary, depending on your service provider's plans.

For details, see your USIM/SIM card instructions or contact your service provider.

### **Browser** (Menu 4)

The web browser on your phone allows you to access the wireless web. Using the web browser, you can access up-to-date information and a wide variety of media contents, such as wallpapers, ringtones, and music files.

To access this menu, press <**Menu**> in Idle mode and select **Browser**.

### **BigPond home** (Menu 4.1)

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Use this menu to connect your phone to the network and load the homepage of the wireless web service provider. You can also press <**BigPond**> in Idle mode.

### **Bookmarks** (Menu 4.2)

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Use this menu to save URL addresses in order to quickly access web pages, or access the preset bookmarks.

### **Enter URL** *(Menu 4.3)*

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Use this menu to manually enter a URL address and access the associated web page.

### **Browser profiles** *(Menu 4.4)*

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Use this menu to select a connection profile to be used for connecting to the Internet. You can also create or edit a profile.

### **Clear cache** *(Menu 4.5)*

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Use this menu to clear the cache. A cache is a temporary memory site that stores recently accessed web pages.

### **My Place** *(Menu 5)*

The **My Place** menu enables you to use various Internet services supported by your service provider.

To access this menu, press <**Menu**> in Idle mode and select **My Place**.

### **BigPond** *(Menu 5.1)*

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Use this menu to access a range of mobile entertainment from the BigPond homepage, only available on Telstra's Next G network. For further details, please refer to your Next G User Guide.

### **FOXTEL** *(Menu 5.2)*

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Use this menu to access the online TV service supported by your service provider. You can watch TV and use various Mobile TV services. Using this link, you can access to watch 12 exclusive FOXTEL channels on your phone wherever you are. For further details, please refer to your Next G User Guide.

### **Search** *(Menu 5.3)*

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Use this menu to access the Internet on your phone and launch the Telstra search engine. For further details, please refer to your Next G User Guide.

### **Email** *(Menu 5.4)*

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Use this menu to access the E-mail service supported by your service provider. With your Telstra's Next G mobile, you can check your BigPond, Hotmail, Yahoo! Mail and other Internet provider e-mail accounts, wherever you are, whenever it suits you. For further details, please refer to your Next G User Guide.

### **Music** *(Menu 5.5)*

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Use this menu to access the BigPond Music Player and download music files. For further details, please refer to your Next G User Guide.

## **Downloads** *(Menu 5.6)*

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Use this menu to access the website preset by your service provider and have entertainment at your fingertips to download.

Download and watch music videos, movie trailers, ringtones and much more with Download Manager. For further details, please refer to your Next G User Guide.

## **Photos** *(Menu 5.7)*

---

Use this menu to access the website preset by your service provider and download pictures. You can shoot, store, view, and share photos with your family and friends, wherever you are, from your mobile or PC. For further details, please refer to your Next G User Guide.

## **Maps** *(Menu 5.8)*

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Use this menu to access a location service based on GPS positioning technology. With access to Whereis Mobile on your phone, you can quickly find your way to any location around Australia. For further details, please refer to your Next G User Guide.

## **My account** *(Menu 5.9)*

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Use this menu to manage your Telstra Accounts. View and pay your Telstra bills, manage your content subscriptions and more. For further details, please refer to your Next G User Guide.

## **My files** *(Menu 6)*

The **My files** menu allows you to access images, videos, music files, and sounds stored in the phone's memory.

To access this menu, press <**Menu**> in Idle mode and select **My files**.

- As a result of the Digital Rights Management (DRM) system, some of the media items you download from the Internet or receive by MMS may require a licence key to access them.

## **Images** *(Menu 6.1)*

---

Use this menu to access photos you have taken and images you have downloaded, received in messages, or imported from your computer.

## **Videos** *(Menu 6.2)*

---

Use this menu to access video clips you have recorded, downloaded, received in messages, or imported from your computer.

- Video clips recorded on other devices, such as camcorders, may not play correctly.

## **Sounds** *(Menu 6.3)*

---

Use this menu to access voice memos you have recorded, and sound clips you have downloaded, received in messages, or imported from your computer.

## **Music** *(Menu 6.4)*

---

This menu displays music files you have downloaded, received in messages, or imported from your computer.

### **Games and more** *(Menu 6.5)*

---

Use this menu to access the embedded Java games and download Java applications.

### **Other files** *(Menu 6.6)*

---

Files that you have received but which are not supported by your phone are stored in this folder. You cannot open these files on the phone.

### **Memory status** *(Menu 6.7)*

---

Use this menu to view memory information for media items in each folder.

## **Camera** *(Menu 7)*

You can use the camera module embedded in your phone to take photos and record videos. To access this menu, press **<Menu>** in Idle mode and select **Camera**, or press and hold [].



- Do not take photos of people without their permission.
- Do not take photos in a place where cameras are not allowed.
- Do not take photos in a place where you may interfere with another person's privacy.

## **Taking a photo**

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You can take photos in various modes. The camera produces jpeg photos.

- When you take a photo in direct sunlight or in bright conditions, shadows may appear on the photo.

## **Recording a video**

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You can record a video of what is displayed on the camera screen and save it.

## **Messages** *(Menu 8)*

Use the **Messages** menu to send and receive text messages, multimedia messages, and e-mails. You can also access push messages, voicemails, broadcast messages, and configuration messages.

To access this menu, press <**Menu**> in Idle mode and select **Messages**.

### **Create new message** *(Menu 8.1)*

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Use this menu to create and send text messages, multimedia messages, or e-mails.

### **Inbox** *(Menu 8.2)*

---

This folder stores all types of messages you have received, except for e-mails.

## **Sent** (Menu 8.3)

---

This folder stores messages that you have sent. From the message list, press <**Options**> to access the following options:

## **Outbox** (Menu 8.4)

---

This folder stores messages that the phone is attempting to send or has failed to send.

## **Drafts** (Menu 8.5)

---

This folder stores messages you have saved to send them at a later time.

## **Email inbox** (Menu 8.6)

---

This folder stores e-mails that you have received.

## **Templates** (Menu 8.7)

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Use this menu to create, edit, and send SMS templates and MMS templates.

## **Broadcast** (Menu 8.8)

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Your phone receives broadcast messages, which are text messages related to various topics, such as weather forecast, traffic, and news report, from networks. Use this menu to access received broadcast messages.

## **Delete all** (Menu 8.9)

---

Use this menu to delete messages in each message type at once.

## **Settings** (Menu 8.10)

---

Use this menu to set up various options for using messaging services.

## **Memory status** (Menu 8.11)

---

Use this menu to view the number of messages or the amount of memory currently in use for each message type in each folder.

## **Settings** (Menu 9)

The **Settings** menu provides you with various setting options to customise the phone to your preferences and needs. You can also reset the settings to their default status.

To access this menu, press <**Menu**> in Idle mode and select **Settings**.

## **Profiles** (Menu 9.1)

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Your phone provides you with sound profiles that allow you to quickly and easily change the sound settings of the phone for different events or situations. Use this menu to adjust the properties of each profile and activate the profile you need.

## **Display settings** (Menu 9.2)

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Use this menu to change settings for the display and light.

## **Time & date** (Menu 9.3)

---

Use this menu to change the time and date displayed on your phone. Before setting the time and date, specify your time zone in the **World time** menu.

## **Phone settings** (Menu 9.4)

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Many different features of your phone's system can be customised to suit your preferences.

## **Call settings** (Menu 9.5)

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Use this menu to set options for call functions.

## **Connectivity** (Menu 9.6)

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Use this menu to set options for connection available on your phone.

### **Bluetooth** (Menu 9.6.1)

Using Bluetooth wireless, you can connect the phone wirelessly to other Bluetooth devices and exchange data with them, talk hands-free, or control the phone remotely.

Bluetooth technology allows free wireless connections between all Bluetooth-compliant devices within a range of 10 metres. Since the devices communicate using radio waves, they do not need to be in line of sight to each other.

- If there are obstacles between the devices, the operating distance may be reduced.
- It is recommended that you do not use the Bluetooth feature while using multimedia features, such as voice recorder, camera, and media player, or vice versa, for the better performance.
- Some devices, especially those that are not tested or approved by Bluetooth SIG, may be incompatible with your phone.

### **Network** (Menu 9.6.2)

Use this menu to change the settings for connecting to your cellular network.

### **Connections** (Menu 9.6.3)

Use this menu to create and customise the profiles containing the settings for connecting your phone to the network. You need these settings to use the web browser or send MMS messages or e-mails.

- Your phone is set up by default for connecting to the network. If you change the settings without first checking with your service provider, the web browser, MMS, and e-mail features may not work properly.

## **Application settings** (Menu 9.7)

---

You can customise the settings for using applications available on the phone.

## **Security** (Menu 9.8)

---

Use this menu to protect the phone against unauthorised use by managing the several access codes of your phone and USIM/SIM card.



If you enter an incorrect PIN/PIN2 three times, the USIM/SIM card is blocked. To unblock it, you need to enter your PUK/PUK2 (Personal Unblocking Key). The codes are supplied by your network operator.

## **Reset settings** (Menu 9.9)

---

Use this menu to reset the phone's settings you have changed and clear all data you have added.

## **Memory status** (Menu 9.10)

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Use this menu to check the amount of memory being used for storing data, such as messages, media, calendar data, or Phonebook entries.

## Solve problems

### Help and personal needs

To save the time and expense of an unnecessary service call, perform the simple checks in this section before contacting a service professional.

### When you switch on your phone, the following messages may appear:

#### “Insert SIM”

- Be sure that the SIM card is correctly installed.

#### “Phone lock”

- The automatic locking function has been enabled. You must enter the phone’s password before you can use the phone.

#### “Enter PIN”

- You are using your phone for the first time. You must enter the PIN supplied with the SIM card.
- The PIN check feature is enabled. Every time the phone is switched on, the PIN has to be entered. To disable this feature, use the **PIN check** menu.

#### “Enter PUK”

- The PIN code has been entered incorrectly three times in succession, and the phone is now blocked. Enter the PUK supplied by your service provider.

### “No service,” “Network failure,” or “Not done” displays

- The network connection has been lost. You may be in a weak signal area. Move and try again.
- You are trying to access an option for which you have no subscription with your service provider. Contact the service provider for further details.

### You have entered a number but it was not dialed

- Be sure that you have pressed [↵].
- Be sure that you have accessed the right cellular network.
- Be sure that you have not set an outgoing call barring option.

### Your correspondent cannot reach you

- Be sure that your phone is switched on. ([📶] pressed for more than one second.)

- Be sure that you are accessing the correct cellular network.
- Be sure that you have not set an incoming call barring option.

### **Your correspondent cannot hear you speaking**

- Be sure that you have switched on the microphone.
- Be sure that you are holding the phone close enough to your mouth. The microphone is located at the bottom of the phone.

### **The phone starts beeping and "Battery low" flashes on the display**

- Your battery is insufficiently charged. Recharge the battery.

### **The audio quality of the call is poor**

- Check the signal strength indicator on the display (📶). The number of bars indicates the signal strength from strong (📶) to weak (📶).
- Try moving the phone slightly or moving closer to a window if you are in a building.

### **No number is dialled when you re-call a Phonebook entry**

- Use the Contact list feature to ensure the number has been stored correctly.
- Re-store the number, if necessary.

### **The battery doesn't charge properly or the phone sometimes turns itself off**

- Wipe the charging contacts both on the phone and on the battery with a clean soft cloth.

### **If the above guidelines do not help you to solve the problem, take note of:**

- The model and serial numbers of your phone
- Your warranty details
- A clear description of the problem

Then contact your local dealer or Samsung after-sales service.

## *Health and safety information*

### **Exposure to radio frequency (RF) signals**

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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 (FCC) 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 the safety standards that were developed by independent scientific organizations through periodic and through 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 phones employs a unit of measurement known as Specific Absorption Rate (SAR). The SAR limit set by the FCC is 1.6W/kg\*.

SAR tests are conducted using standard operating positions specified 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 of the phone. Before a new model phone 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 (e.g., at the ear and worn on the body) as required by the FCC for each model. While there may be differences between the SAR

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\* In the U.S. and Canada, the SAR limit for mobile phones used by the public is 1.6 watts/kg (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.

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 printed in the label on the phone.

## **For body operation**

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For body worn operation, this model phone has been tested and meets the FCC RF exposure guidelines when used with a Samsung-supplied or approved accessory designated for this product or when used with an accessory that contains no metal and that positions the handset a minimum from the body.

The minimum distance for this model phone is written in the FCC certification information from the body. None compliance with the above conditions may violate FCC RF exposure guidelines.

For more Information concerning exposure to radio frequency signals, see the following websites:

Federal Communications Commission (FCC)  
<http://www.fcc.gov>

Cellular Telecommunications Industry Association (CTIA):  
<http://www.ctia.org>

U.S. Food and Drug Administration (FDA)  
<http://www.fda.gov/cdrh/consumer>

World Health Organization (WHO)  
<http://www.who.int/peh-emf/en>

## **Precautions when using batteries**

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- Never use any charger or battery that is damaged in any way.
- Use the battery only for its intended purpose.
- If you use the phone near the network's base station, it uses less power; talk and standby time are greatly affected by the signal strength on the cellular network and the parameters set by the network operator.
- Battery charging time depends on the remaining battery charge and the type of battery and charger used. The battery can be charged and discharged

hundreds of times, but it will gradually wear out. When the operation time (talk time and standby time) is noticeably shorter than normal, it is time to buy a new battery.

- If left unused, a fully charged battery will discharge itself over time.
- Use only Samsung-approved batteries and recharge your battery only with Samsung-approved chargers. When a charger is not in use, disconnect it from the power source. Do not leave the battery connected to a charger for more than a week, since overcharging may shorten its life.
- Extreme temperatures will affect the charging capacity of your battery: it may require cooling or warming first.
- Do not leave the battery in hot or cold places, such as in a car in summer or winter conditions, as you will reduce the capacity and lifetime of the battery. Always try to keep the battery at room temperature. A phone with a hot or cold battery may temporarily not work, even when the battery is fully charged. Li-ion batteries are particularly affected by temperatures below 0° C (32° F).

- Do not short-circuit the battery. Accidental short-circuiting can occur when a metallic object (coin, clip or pen) causes a direct connection between the + and - terminals of the battery (metal strips on the battery), for example when you carry a spare battery in a pocket or bag. Short-circuiting the terminals may damage the battery or the object causing the short-circuiting.
- Dispose of used batteries in accordance with local regulations. Always recycle. Do not dispose of batteries in a fire.

## **Road safety**

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Your wireless phone gives you the powerful ability to communicate by voice, almost anywhere, anytime. But an important responsibility accompanies the benefits of wireless phones, one that every user must uphold.

When driving a car, driving is your first responsibility. When using your wireless phone behind the wheel of a car, practice good common sense and remember the following tips.

1. Get to know your wireless phone and its features, such as speed dial and redial. If available, these features

help you to place your call without taking your attention off the road.

2. When available, use a hands-free device. If possible, add an extra layer of convenience and safety to your wireless phone with one of the many hands-free accessories available today.
3. Position your wireless phone within easy reach. Be able to access your wireless phone without removing your eyes from the road. If you get an incoming call at an inconvenient time, let your voicemail answer it for you.
4. 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, ice and even heavy traffic can be hazardous.
5. Do not take notes or look up phone numbers while driving. Jotting down a To Do list or flipping through your phonebook takes your attention away from your primary responsibility, driving safely.
6. Dial sensibly and assess the traffic; if possible, place calls when you are not moving or before pulling into traffic. Try to plan calls when your car will be stationary. If you need to make a call while moving, 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. Make the people with whom you are talking aware that you are driving and suspend conversations that have the potential to divert your attention from the road.
8. Use your wireless phone to call for help. Dial the emergency number in the case of fire, traffic accident or medical emergencies. Remember, it is a free call on your wireless phone!
9. Use your wireless phone to help others in emergencies. If you see a car accident, crime in progress or other serious emergency where lives are in danger, call the emergency number, as you would want others to do for you.
10. Call roadside assistance or a special nonemergency wireless assistance number when necessary. 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 any other special nonemergency wireless number.

## **Operating environment**

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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.

When connecting the phone or any accessory to another device, read its user's guide for detailed safety instructions. Do not connect incompatible products.

As with other mobile radio transmitting equipment, users are advised that for the satisfactory operation of the equipment and for the safety of personnel, it is recommended that the equipment should only be used in the normal operating position (held to your ear with the antenna pointing over your shoulder).

## **Electronic devices**

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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. Consult the manufacturer to discuss alternatives.

## **Pacemakers**

Pacemaker manufacturers recommend that a minimum distance of 15 cm (6 inches) be maintained between a wireless phone and a pacemaker to avoid potential interference with the pacemaker. These recommendations are consistent with the independent research and recommendations of Wireless Technology Research.

Persons with pacemakers:

- Should always keep the phone more than 15 cm (6 inches) 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 potential 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 wish to consult your hearing aid manufacturer to discuss alternatives. Other Medical Devices If you use any other

personal medical devices, consult the manufacturer of your device to determine if it is adequately shielded from external RF energy. Your physician may be able to assist you in obtaining this information. 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. 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 off your phone in any facility where posted notices require you to do so.

## **Potentially explosive environments**

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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 while at a refueling 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.

## **Emergency calls**

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This phone, like any wireless phone, operates using radio signals, wireless and landline networks, as well as user-programmed functions, which cannot guarantee connection in all conditions. Therefore, you should never rely solely on any wireless phone for essential communications (medical emergencies, for example).

Remember, to make or receive any calls the phone must be switched on and in a service area with adequate signal strength. 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.
2. Key in the emergency number for your present location (for example, 112 or any other official emergency number). Emergency numbers vary by location.
3. Press [].

If certain features are in use (call barring, for example), you may first need to deactivate those features before you

can make an emergency call. Consult this document 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 phone may be the only means of communication at the scene of an accident; do not end the call until given permission to do so.

## **FCC Notice and Cautions**

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### **FCC Notice**

- The device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.



This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The phone may cause TV or radio interference if used in close proximity to receiving equipment. The FCC can require you to stop using the phone if such interference cannot be eliminated.

Vehicles using liquefied petroleum gas (such as propane or butane) must comply with the National Fire Protection Standard (NFPA-58). For a copy of this standard, contact the National Fire Protection Association, One Batterymarch Park, Quincy, MA 02269, Attn: Publication Sales Division.

### **Cautions**

Changes or modifications made in the radio phone, not expressly approved by Samsung, will void the user's authority to operate the equipment.

Only use approved batteries, antennas and chargers. The use of any unauthorized accessories may be dangerous and void the phone warranty if said accessories cause damage or a defect to the phone.

Although your phone is quite sturdy, it is a complex piece of equipment and can be broken. Avoid dropping, hitting, bending or sitting on it.

## **Other important safety information**

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- 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 applicable to the device.
- 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 wireless equipment is improperly installed and the air bag inflates, serious injury could result.
- Switch off your phone before boarding an aircraft. The use of wireless phones in aircraft may be dangerous to the operation of the aircraft, and is illegal.
- Failure to observe these instructions may lead to the suspension or denial of telephone services to the offender, or legal action, or both.

## **Care and maintenance**

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

- Keep your phone and all its parts and accessories out of the reach of small children and pets. They may accidentally damage these things or choke on small parts.
- Keep the phone dry. Precipitation, humidity, and liquids contain minerals that will corrode electronic circuits.
- Do not use the phone with a wet hand. Doing so may cause an electric shock to you or damage to the phone.
- Do not use or store the phone in dusty, dirty areas, as its moving parts may 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 the phone warms up to its normal operating temperature, moisture can form inside the phone, which may damage the phone's electronic circuit boards.
  - 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. Wipe it with a soft cloth slightly dampened in a mild soap-and-water solution.
  - Do not paint the phone. Paint can clog the device's moving parts and prevent proper operation.
  - Do not put the phone in or on heating devices, such as a microwave oven, a stove, or a radiator. The phone may explode when overheated.
  - When the phone or battery gets wet, the label indicating water damage inside the phone changes colour. In this case, phone repairs are no longer guaranteed by the manufacturer's warranty, even if the warranty for your phone has not expired.
  - If your phone has a flash or light, do not use it too close to the eyes of people or animals. This may cause damage to their eyes.
- Use only the supplied or an approved replacement antenna. Unauthorized antennas or modified accessories may damage the phone and violate regulations governing radio devices.
  - If the phone, battery, charger, or any accessory is not working properly, take it to your nearest qualified service facility. The personnel there will assist you, and if necessary, arrange for service.

## **Acknowledging special precautions and the FCC and Industry Canada Notice**

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### **Cautions**

Modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### **FCC compliance information**

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

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

## **Information to user**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

## **Appendix A: CERTIFICATION INFORMATION (SAR)**

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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 safety 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 (SAR). The SAR limit set by the FCC is 1.6 W/kg. SAR Tests 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 new model phone 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 (e.g., at the ear and worn on the body) as required by the FCC for each model.

The highest SAR values for this model phone as reported to the FCC are:

GSM1900 Head: 0.834 W/kg, Body-worn: 0.458 W/kg;  
WCDMA850 Head: 0.722W/kg, Body-worn: 0.318 W/kg.

Body-worn operations are restricted to Samsung supplied, approved or none Samsung designated accessories that have no metal and must provide at least 1.5 cm separation between the device, including its

antenna whether extended or retracted, and the user's body. Non-compliance to the above restrictions may violate FCC RF exposure guidelines.

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 A3LSGHA411.

## **Appendix B: Guide to safe and responsible wireless phone use**

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Cellular Telecommunications & Internet Association

"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 seat belts 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 voicemail 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."

Cellular Telecommunications & Internet Association For more information, please call 1-888-901-SAFE. For updates: <http://www.wow-com.com/consumer/issues/driving/articles.cfm?ID=85>

## **Appendix C: Consumer update on wireless phones**

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### **U.S. Food and Drug Administration**

1. 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 radio frequency 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 well within the FCC's compliance limits.

2. 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 radio frequency 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.

### 3. 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 radio frequency 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

## *Health and safety information*

- 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 primary subject of the safety questions discussed in this document.

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 radio frequency 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.

#### 4. What steps can I take to reduce my exposure to radio frequency 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 radio frequency 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.

#### 5. 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 radio frequency 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.

6. Do hands-free kits for wireless phones reduce risks from exposure to RF emissions?

Since there are no known risks from exposure to RF emissions from wireless phones, there is no reason to believe that hands-free kits reduce risks. Hands-free kits can be used with wireless phones for convenience and comfort. These systems reduce the absorption of RF energy in the head because the phone, which is the source of the RF emissions, will not be placed against the head. On the other hand, if the phone is mounted against the waist or other part of the body during use, then that part of the body will absorb more RF energy. Wireless phones marketed in the U.S. are required to meet safety requirements regardless of whether they are used against the head or against the body. Either configuration should result in compliance with the safety limit.

7. Do wireless phone accessories that claim to shield the head from RF radiation work?

Since there are no known risks from exposure to RF emissions from wireless phones, there is no reason to believe that accessories that claim to shield the head from those emissions reduce risks. Some products that claim to shield the user from RF absorption use special phone

cases, while others involve nothing more than a metallic accessory attached to the phone. Studies have shown that these products generally do not work as advertised. Unlike "hand-free" kits, these so-called "shields" may interfere with proper operation of the phone. The phone may be forced to boost its power to compensate, leading to an increase in RF absorption. In February 2002, the Federal Trade Commission (FTC) charged two companies that sold devices that claimed to protect wireless phone users from radiation with making false and unsubstantiated claims. According to FTC, these defendants lacked a reasonable basis to substantiate their claim.

8. What about wireless phone interference with medical equipment?

Radio frequency 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 compatible 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.

#### 9. 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 radio frequency 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.

## *Health and safety information*

10. 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.

11. Which other federal agencies have responsibilities related to potential RF health effects?

Additional information on the safety of RF exposures from various sources can be obtained from the following 40 organizations.

FCC RF Safety Program:

<http://www.fcc.gov/oet/rfsafety/>

Environmental Protection Agency (EPA):

<http://www.epa.gov/radiation/>

Occupational Safety and Health Administration's (OSHA):

<http://www.osha-slc.gov/SLTC/radiofrequencyradiation/index.html>

National Institute for Occupational Safety and Health (NIOSH):

<http://www.cdc.gov/niosh/topics/emf/>

World Health Organization (WHO):

<http://www.who.int/peh-emf/>

International Commission on Non-Ionizing Radiation Protection:

<http://www.icnirp.de>

Health Protection Agency (UK)

<http://www.hpa.org.uk/radiation/>\*

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\* US Food and Drug Administration <http://www.fda.gov/cellphones>