

* Some of the contents of this manual may differ from your phone,
depending on the software installed or your service provider.



**PORTABLE CELLULAR
TELEPHONE
SCH-N510**

User's Manual



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Important Safety Precautions

Read these guidelines before using your wireless phone. Failure to comply with them may be dangerous or illegal.

Road Safety at All Times

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

Switching Off When Refuelling

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

Switching Off in an Aircraft

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

Switching Off near all medical equipment

Switch off your phone near medical equipment. Hospitals or health care facilities may be using equipment that could be sensitive to external RF energy. Follow any regulations or rules in force.

Interference

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

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 (in a hospital for example).

Important Safety Precautions


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 Call

Key in the emergency number for your present location, then press the  key. Give all the necessary information as accurately as possible. Do not end the call until given permission to do so.

Accessories and Batteries

Use only Samsung-approved accessories and batteries. Use of any unauthorised accessories could damage your phone and may be dangerous. Use only Samsung-approved batteries and recharge your battery only with Samsung-approved chargers.

Qualified Service

Only qualified service personnel may repair your phone. For more detailed safety information, see "Health and Safety Information" on page 73.

CAUTION

RISK OF EXPLOSION IF A BATTERY IS
REPLACED BY AN INCORRECT TYPE.
DISPOSE USED BATTERIES ACCORDING TO
THE INSTRUCTIONS.

Unpacking

Your package contains the following items. The illustrations below may look different from your phone and accessories:

Handset	Travel Adapter
Quick Guide	Battery

In addition, you can obtain the following accessories for your phone from your local Samsung dealer:

- Standard Battery
- Travel Adapter
- Car Adapter
- PC Data Link Cable
- Ear Microphone

Keys







Key(s)	Description
Soft keys	Performs the functions indicated by the text above them, on the bottom line of the display.
Navigation keys	In Menu mode, scrolls through the menu options. In Standby mode, quickly enters the several menus.
C(Clear) key	Deletes characters from the display. In Menu mode, returns to the previous menu level.
Send key	Makes or answers a call. In Standby mode, retrieves the most recent numbers dialled, received, or missed. Redials the last outgoing number when pressed and held.
End key	Ends a call. Also switches on and off the phone when pressed and held. In Menu mode, cancels your input and returns to Standby mode.
Numeric keys	Enters numbers, letters, and some special characters.

Key(s)	Description (continued)
0 key	Enters 1-Beep mode when pressed and held.
* key	In Standby mode, activates Key Guard mode when pressed and held. To unlock the keypad, press C key and then * key. In the text entry mode, changes the case of letters.
# key	In Standby mode, quickly enters or exits Vibrate mode when pressed and held. In the text entry mode, inserts a space.



Display

The display has three areas: the top line of icons, the text and graphic area, and the bottom line of soft key indicators.

Icons

Icon	Description
	Signal Strength: Shows the received signal strength. The greater the number of bars, the better the signal.
	Service: Appears when a call is in progress.
	No Service: Appears when you are outside a service area. When it displays, you cannot make or receive calls. Wait a little while for a better signal or move into an open area to regain service.
	Roaming: Appears when you are out of your home area and have logged onto a different network; for example, when travelling in other countries.
	New Message: Indicates that there is a new SMS message waiting to be checked. The message icon blinks when an urgent message is received. It is also blinks if a message is received but the memory is full.
	Alarm: Appears when you set an alarm to ring at a specified time.

Icon Description (continued)

	Vibration: Appears when your phone is in Vibrate mode or it is set to vibrate when a call comes in the Ringer Volume menu.
	Battery Status: Shows the level of your battery. The more bars you see, the more power you have remaining.

Backlight

The backlight illuminates the display and keypad. When you press any key, the backlight illuminates. It turns off if no key is pressed within a given period of time, depending on your setting in the **Backlight** menu.

To specify the length of time the phone waits before the backlight turns off, set the **Backlight** menu.

Getting Started

Getting Started

Installing a Battery

Your phone is powered by a rechargeable Li-ion battery. Use only approved batteries and chargers. Ask your local Samsung dealer for further details.

Note: You must fully charge the battery before using your phone for the first time. A discharged battery is fully recharged in approximately 120 minutes for a standard battery.

Installing the Battery

1. Remove the battery cover by pressing down the groove and then sliding the cover out.
2. Place the battery into the battery slot, making sure that the metal contacts is facing down.
3. Place the battery cover, as shown, and slide it toward the top of the phone until it clicks into place.

Charging the Battery

Your phone is powered by a rechargeable Li-ion battery. A travel adapter comes with your phone. Use only approved batteries and chargers. Ask your local Samsung dealer.

You can use the phone while the battery is being charged, but this will cause the battery to charge more slowly.


1. With the battery in position on the phone, plug the connector of the travel adapter into the adapter jack at the bottom of the phone.
2. Plug the adapter into a standard AC wall outlet.

The Battery Strength icon on the display repeats filling and emptying itself to indicate that the battery is charging.

3. When charging is finished, unplug the adapter from both the power outlet and the phone by pressing the buttons on both sides of the connector and pulling the connector out.

Note: Do not remove the battery from the phone without unplugging the adapter while it is charging. Otherwise, the phone may be damaged.

Low Battery Indicator

When the battery is weak and only a few minutes of talk time remain, the battery sensor will let you know by blinking the empty Battery Strength icon (). You will hear a warning tone and a "LOW BATTERY WARNING" message will be repeated at regular intervals on the display.

When the battery becomes too weak for the phone to operate, it switches off automatically.

Switching On or Off the Phone

1. Press and hold the END key for more than one second to switch on the phone.

The power-on image displays and an alert sounds. When the your phone locates services, it displays the current time and date. You can now place and receive calls.

If the phone is out of the service area, the No Service icon (✖) appears on the display. In this case, you cannot place and receive calls. You can try again later when service is available.

Note: You can change the display language in the **Language** menu.

2. When you wish to switch off the phone, press and hold the END key for more than two seconds.

WARNING!

Do not switch on the phone when mobile phone use is prohibited or when it may cause interference or danger.

Using the Soft Keys

Your phone offers a set of functions that allows you to customise it. These functions are arranged in menus and submenus, accessed using the two soft keys marked. Each menu and submenu allows you to view and alter the settings of a particular function.

The roles of the soft keys vary according to the current function you are using; the labels on the bottom line of the display just above each key indicates its current role.

Your Phone's Modes

Standby Mode

Standby is the most basic state of your phone. The phone goes into Standby mode soon after you turn it on, or whenever you briefly press the END key. When your phone is in Standby mode, you will typically see a wallpaper or banner message and the current date and time. If you enter a phone number, you can press the SEND key to dial it, or press the **Save** soft key to save it in the internal Phone Book.

Press the END key at any time to return to Standby mode. Be careful; if you are on a call when you press the END key, your phone disconnects the call and returns to Standby mode.

Menu mode can be accessed when you are in Standby mode.

Talk Mode

You can place and answer calls only when your phone is turned on. During a call, the phone is in the Talk mode. While you are in Talk mode, pressing the **Menu** soft key gives you a list of options.

Key Guard Mode

You can lock the keypad by pressing and holding the * key in Standby mode. By doing this, you can prevent accidental key pressing.

To unlock the keypad, press the C key and then the * key. The Lock icon displays in the soft key indicator field.

When you have an incoming call or an alarm occurs in Key Guard mode, the mode is automatically deactivated and the phone goes to Standby mode.

Lock Mode

When you lock your phone using the **Lock Mode** menu, you can receive messages and calls, but you cannot place a call until you unlock the phone.

Once the phone is locked, it is in restricted mode until the lock code is entered. Press soft key, Unlock then enter 4 digit password. The lock code password by default is 0000.

In case you have changed the password and are unable to remember the new password. Please contact Samsung authorised service center.

Vibrate Mode

Vibrate Mode disables all sounds on the phone. This feature is best used in situations where the

phone might disturb others, such as in a meeting, a library, or a theatre. You can switch your phone to Vibrate Mode with one touch of a key.

In Standby mode, press and hold down the # key until "Enter! Vibrate Mode" and the Vibrator icon display.

To exit and reactivate the previous sound settings, press and hold the # key again until "Exit! Vibrate Mode" appears. The Vibrator icon no longer displays.

1-Beep Mode

In 1-Beep mode, your phone beeps only once when a call or SMS is incoming. You can switch your phone to the 1-Beep mode with one touch of a key.

In Standby mode, press and hold the 0 key until "Entering 1-Beep Mode" displays.

To exit and reactivate the previous sound settings, press and hold the 0 key again until "Exit 1-Beep Mode" displays.

Call Functions

Making a Call

To make a call:

1. In Standby mode, enter the area code and phone number.
2. Press the SEND key. The phone places the call to the entered phone number.

Note: If you have activated the **Auto Redial** menu, the phone automatically retries to make the call up to 10 times when a connection fails.

Using the Dialling Options

While entering a phone number, you can use the following options by pressing the **Options** soft key.

Speed Dial: allows you to use the Speed Dialling feature. This option displays only when you enter a number which can be a Phone Book memory location.

4-digit Dial: allows you to use the 4-digit Dialling feature. This option displays only when you enter a 4-digit number.

Call: places a call to the number you entered.

Save: allows you to save the number you entered in Phone Book.

Find: allows you to find a number from Phone Book.

Hard Pause: enters a hard pause.

Correcting the Number

To clear	Press
the last digit displayed	the C key.
the whole display	the C key for more than one second.

Ending a Call

When you want to finish your call, briefly press the END key.

The call time, or the length of the call, displays briefly and the phone returns to Standby mode.

Making a Call from Phone Book

You can store the phone numbers that you use regularly in the phone's memory, which are collectively called Phone Book. Simply select the required name to recall the associated number to dial.

Redialling the Last Number

To redial the last call you made, press the SEND key twice or press and hold it down.

Your phone stores the most recent 10 numbers each you dialled received or missed. To redial any of these numbers:

1. If you have typed any characters on the display, press the END key to return to Standby mode.
2. Press the SEND key to display the list of the dialled numbers.

You can scroll to the other types of calls, missed and received calls, if any, by pressing Left or Right navigation keys.
3. Use Up and Down navigation keys to scroll through the list until the required number highlights.
4. To dial the number, press the END key.

Emergency Dialling

You can place emergency call from your emergency number list even if your phone is locked.

Speed Dialling

Once you have stored phone numbers in Phone Book, you can dial them easily whenever you want. You can assign up to 2000 numbers for Speed Dialling.

For the Memory Locations of One Digit

Press and hold the digit of the memory location containing the number to be dialled.

The stored number and name display and then the phone dials the number.

For the Other Memory Locations

Press the first digit(s) briefly, then hold down the last digit of the memory location.

The stored number and name display and then the phone dials the number.

4-digit Dialling

You can quickly dial a phone number in Phone Book by entering its last four consecutive digits. Your phone searches Phone Book for the entire number for you.

1. Enter the last consecutive digits for the number you want to dial.
2. Press the **Options** soft key.
3. Select **4-digit Dial** and press the **Select** soft key.

The phone displays the first entry matching your input.
4. If there is more than one matching entry, scroll to the number by pressing the Navigation keys.
5. Press the SEND key.

Pause Dialling

When you call automated systems, like banking services, you are often required to enter a password or an account number. Instead of manually entering the numbers each time, you can store them in your Phone Book or enter all of them before dialling, separated by pauses.

Storing a number in your Phone Book that contains pauses

1. Enter the phone number you want to store, such as a bank's teleservice phone number.
2. Press the **Options** soft key and then select **Hard Pause**.

The letter "P" displays within the number, meaning that a hard pause will occur at that point in the calling sequence.
3. Enter a number to follow the pause, such as your account number or password.
4. Continue entering numbers by repeating steps 2 and 3.
5. Store the number in your Phone Book as you normally would by pressing the **Save** soft key and following the screen prompts.

Pause Dialling from a Stored Phone Book Entry

1. Dial the number from the Phone Book.
2. Wait for the appropriate prompt for the number, such as a credit card number or a bank account number.
3. When prompted, press the SEND key to send the DTMF (Dual-tone Multi-frequency) number that follows your pause.

Manual Pause Dialling

You can enter pauses manually during the dialling process.

1. Enter the phone number of the service you want to connect to, such as a bank's teleservice phone number.
2. Press the **Options** soft key and then select **Hard Pause**.

The letter "P" displays within the number, meaning that a hard pause will occur at that point in the calling sequence.
3. Enter a number to follow the pause, such as your account number or password.
4. Continue entering numbers by repeating steps 2 and 3.
5. When the number is completed, press the SEND key to make a call to the number.
6. Each time you are prompted, press the SEND key to send the DTMF number that follows your pause.

Answering a Call

When someone calls you, the phone rings and displays the incoming call image.

When the caller can be identified, the caller's phone number or name, if it is stored in your Phone Book, displays. If the caller cannot be identified, "Blocked ID." displays.

1. To answer a call, press the SEND key.

If the **Answer Mode** menu is set to **Any Key**, you can answer the call by pressing any key, except for the END key and the **Silence** soft key.

If the menu is set to **Call Key**, you must press the SEND key to answer the call.

2. To end an answered call press the END key.

Silencing the Call Ringer

If you press the END key or the **Silence** soft key once, when a call is received, the phone stops ringing or vibrating depending on the mode it is in.

You can still answer the call by pressing the END key, or by pressing the END key twice to disconnect without answering the call.

Options During a Call

Your phone provides a number of control functions that you can use during a call.

Press the **Menu** soft key during a call to access the following options:

Phone Book: allows you to access the **Phone Book** menu. See page 40 for details.

Mute/Quit: allows you to switch your phone's microphone off or on. When you mute the microphone, the person with whom you are talking cannot hear you.

For example: You wish to say something to another person in the room but do not want the person with whom you are talking to hear you.

Silent/Quit: allows you to switch the key tones off or on. By switching the tones off, you can press the keys without hearing annoying key tones during a call.

Call History: allows you to access the **Call History** menu. See page 54 for details.

Messages: allows you to use the **Messages** menu. See page 44 for details.

Organiser: allows you to access the **Organiser** menu. See page 62 for details.

Voice Privacy: encrypts the voice channel so that people cannot eavesdrop on your conversation. For further details, see page 70.

Using Caller ID

This feature tells you who is calling you by displaying the caller's number when the phone rings. If a caller's name and number are stored in your Phone Book, the corresponding name displays along with the number. If you call someone whose phone is available with this feature, your phone number displays on her or his phone.

Note: For further details about the Caller ID service, contact your service provider.

Viewing Missed Calls

Your phone keeps a list of calls that you do not answer when the phone is on and service is available. The phone indicates a Missed Call by displaying a text notification on the screen. Additionally, if caller information is available, the screen displays the phone number of the most recent Missed Call.

Press the SEND key to call the displayed number.

Press the **Save** soft key to save the displayed number

Call Forwarding

When the **Call Forwarding** menu is enabled, your phone forwards incoming calls to another phone or voice mail centre that you have specified, even

Activating Call Forwarding does not effect outgoing calls made from your phone.

Note: Contact your service provider for its availability.

Call Waiting

When the **Call Waiting** menu is enabled, you can answer an incoming call while you have a call in progress.

When a waiting call is detected, your phone alerts you to a call waiting by beeping and displaying "Call Waiting."

Note: Contact your service provider for its availability.

To answer a waiting call:

1. Press the SEND key and the current call is put on hold and you can answer the waiting call.
2. Press the SEND key again to switch between the two calls.

Note: If you do not answer a waiting call, the phone will forward the call to voice mail centre or another number that you have set up. Contact your service provider for more information.

Three-Way Calling

This feature allows up to three people to take part simultaneously in a call. The phone records each call into the Dialed in Call History.

Note: For further details, contact your service provider.



Entering Text

When using your phone, you will need to enter text at many times; for example, when storing a name in Phone Book, creating a text message, or scheduling events in your calendar. You can enter alphanumeric characters into your phone by using your phone's keypad.

Your phone has the following text input modes:

- **T9(English)**: This mode allows you to enter words with only one keypress per letter. Each key on a keypad has more than one letter; for example, when you press once, J,K or L displays. The T9(English) mode automatically compares your key presses to an internal linguistic database to determine the correct word thus requiring far fewer keystrokes than the traditional multi-tap method, Alphabet mode.
- **Alphabet**: This mode allows you to enter letters by pressing the key labelled with the letter you want once, twice, or three times until the letter displays.
- **Symbol**: This mode allows you to enter various symbols, punctuation marks, and special characters.
- **Number**: This mode allows you to enter numbers.

Changing the Text Input Mode

When you are in a field that allows characters to be entered, you will notice the text input mode indicator on the display.

To change the text input mode:

1. Press the **Options** soft key.
2. Scroll to the mode you want by pressing Up or Down navigation keys.
3. Press the **Select** soft key.

You will find the indicator of the selected text input mode on the display.

Using T9(English) Mode

T9 is a predictive text input mode which allows you to enter any character using single keystrokes. This text input mode is based on a built-in dictionary.

Using Alphabet Mode

When typing in Alphabet mode, you should press the keys labelled with the letter you want:

- once for the first letter
- twice for the second letter
- and so on.

This method is called Multi-tap typing.

Note: The cursor moves to the right when you press a different key. When entering the same letter twice or a different letter on the same key, just wait for a few seconds for the cursor to move to the right automatically, and then select the next letter.

Refer to the table below for the list of characters assigned to each key.

Key	Characters in the Order Displayed				
1	.	@	?	!	- , & : ' 1
2	A	B	C	2	
3	D	E	F	3	
4	G	H	I	4	
5	J	K	L	5	
6	M	N	O	6	
7	P	Q	R	S	7
8	T	U	V	8	
9	W	X	Y	Z	9
0	0				

(Caps Lock mode)

- To change the case of the next letters that you type, press the * key. There are three cases:
- You can enter a space between words by pressing the # key.
- You can move the cursor through your text by pressing the Navigation keys.
- To delete letters, press the C key. Press and hold the C key to clear the display.

- To quickly enter a number between letters, press and hold the number key.

Using Symbol Mode

Symbol mode allows you to enter symbols.

Press Left or Right navigation keys to display more symbols.

Press the number keys corresponding to the symbol you want. The phone automatically switches back to the text entry mode used just prior to selecting Symbol mode.

Using Number Mode

Number mode enables you enter numbers. Press the keys corresponding to the digits you want, and manually switch back to text input mode of choice.



Using the Menus

The phone offers a range of functions that allows you to tailor it to your needs. These functions are arranged in menus and submenus.

The menus and submenus can be accessed by scrolling or by using the shortcuts.

Accessing a Menu Function by Scrolling

1. In Standby mode, press the **Menu** soft key to access Menu mode.
2. Press the Navigation keys to reach a main menu; for example, **Display**. Press the **Select** soft key to enter the **Display** menu.
3. If the menu contains any submenus; for example, **Language**, find the one you want by pressing Up or Down navigation keys. Press the **Select** soft key to enter the submenu. If the selected menu contains submenus, repeat this step.
4. Press the Navigation keys to find the setting of your choice.
5. Press the **Select** soft key to confirm the chosen setting.

Using Shortcuts

The menu items, such as menus, submenus and setting options, are numbered and can be accessed quickly by using their shortcut numbers.

In Standby mode, press the **Menu** soft key to access Menu mode.

1. Enter the first digit of the shortcut number. Repeat this for each digit of the shortcut number.
2. Press the Navigation keys to find the setting of your choice.
3. Press the **OK** or **Select** soft key to confirm the chosen setting.

List of Menu Functions

The following list shows the menu structure available and indicates the number assigned to each option.

1. Phone Book (see page 40)

- 1.1 Find
- 1.2 Add Entry
- 1.3 Groups
- 1.4 Memory Status

2. Messages (see page 44)

- 2.1 Write
- 2.2 Inbox
- 2.3 Outbox
- 2.4 Drafts
- 2.5 Templates
- 2.6 Erase Messages
 - 2.6.1 Inbox
 - 2.6.2 Outbox
 - 2.6.3 Drafts
 - 2.6.4 All Messages
 - 2.6.5 Voice Mail
- 2.7 Settings
 - 2.7.1 Auto Scroll
 - 2.7.2 Msg Reminder
 - 2.7.3 New Messages
 - 2.7.4 Alert On Call
- 2.8 Voice Mail
- 2.9 SMS Groups
- 2.0 Quick SMS
 - 2.0.1 View Members
 - 2.0.2 Edit Msg
 - 2.0.3 Setting
 - 2.0.4 Quick SMS On/Off
- 2.# EMAIL Groups

3. Call History (see page 54)

- 3.1 Missed
- 3.2 Received
- 3.3 Dialed
- 3.4 Erase History
 - 3.4.1 Missed
 - 3.4.2 Received
 - 3.4.3 Dialed
 - 3.4.4 All
- 3.5 Call Duration
 - 3.5.1 Last Call
 - 3.5.2 Total Dialed Calls
 - 3.5.3 Total Received Calls
 - 3.5.4 Reset All
 - 3.5.5 Life Time

4. Sound (see page 56)

- 4.1 Ring Tones
 - 4.1.1 Calls
 - 4.1.2 Messages
 - 4.1.3 Schedules
- 4.2 Ringer Volume
 - 4.2.1 Calls
 - 4.2.2 Messages
 - 4.2.3 Alarm/Schedules
- 4.3 Alerts
 - 4.3.1 Call Connect
 - 4.3.2 Call Disconnect
 - 4.3.3 Voice Privacy
- 4.4 Key Tone
 - 4.4.1 Tone Volume
 - 4.4.2 Tone Length
- 4.5 Power On/Off Melody

5. Display (see page 59)

- 5.1 Language
- 5.2 Wallpaper
- 5.3 Banner
- 5.4 Menu Theme
- 5.5 Backlight
- 5.6 LCD Contrast
- 5.7 Quick Menu Indicator

6. Organiser (see page 62)

- 6.1 Scheduler
- 6.2 Task List
- 6.3 Memo Pad
- 6.4 Alarm
- 6.5 Calculator
- 6.6 Unit Change
- 6.7 World Time
- 6.8 Countdown
- 6.9 Stop Watch

7. Setting (see page 65)

- 7.1 Call
 - 7.1.1 Answer Mode
 - 7.1.2 Airplane Mode
 - 7.1.3 Auto Redial
 - 7.1.4 Call Forwarding
 - 7.1.5 Call Waiting
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During a Call + Menu

- 1: Phone Book
- 2: Mute/Quit
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- 4: Call History
- 5: Messages
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Phone Book

The Phone Book allows you to store frequently-used phone numbers and the associated names in your personal directory to make it easy for you to make a call without remembering or entering the phone number. You can store up to 2000 entries. Each entry can contain up to 32 digits including hard pauses, with an associated name of up to 20 characters.

Find *(Menu 1-1)*

In this menu, you can search Phone Book for an entry using a name, entry number, and group name.

By Name

This option allows you to find an entry by entering a person's name.

By Entry

This option allows you to find an entry by entering its entry number.

By Group

This option allows you to find an entry by selecting its caller group.

Add Entry *(Menu 1-2)*

This menu allows you to store a number with a name in your Phone Book. You can save a person's numbers, such as workplace number, mobile phone number and fax number, into one entry. A Phone Book entry can contain up to six numbers, one in each category.

Add Number *(Menu 1-2-1)*

1. Enter a phone number and press the **Save** soft key.
2. Press the **Select** soft key to confirm adding a new entry.

When you are storing a number for the first time, skip to step 3.

3. Enter a name and press the **Next** soft key.
4. Select an icon to label the category of the number to be stored using the Navigation keys and press the **Select** soft key.
5. To select an option, scroll to it by pressing Up or Down keys. Press the **Edit** soft key to enter information or use Left or Right keys to change the setting.

The following options are available for the entry:

- **Enter Name:** allows you to edit a name of up to 20 characters.
- **Entry:** The first available location displays. If necessary, enter the entry number using the number keys.

- **Home/Office/Mobile/Pager/Fax/No Label:** allows you to store more numbers for each category.
 - **Speed Dial:** allows you to select one of the stored numbers to be dialled when you press the SEND key or the **Call** soft key after selecting the entry or when you use the Speed Dialling feature.
 - **E-mail:** allows you to store an e-mail address.
 - **URL:** allows you to store a URL address.
 - **Group:** allows you to assign an entry to a caller group. To remove the entry from a group, select **No Group**.
 - **Name Ringer:** allows you to select the unique ringer to be used for alerting you to an incoming call from the person.
 - **Secret:** allows you to prevent a number from being displayed when it is accessed or dialled by unauthorised users. When this option is set to **On**, only people with your phone's lock code can view the secret number.
6. When you finish setting the options, press the **Save** soft key to store the entry.
- After storing, the phone displays the name that you just saved and then the total number of the Phone Book entries you have stored.

Add Email *(Menu 1-2-2)*

This menu allows you to add a new entry by entering an e-mail address.

1. Enter an e-mail address and press the **Next** soft key.
2. Enter a name and press the **Next** soft key.
3. To complete storing the e-mail address, follow the procedure from step 5 in "Add Number".

Add URL *(Menu 1-2-3)*

This menu allows you to add a new entry by entering a URL address of a web page.

1. Enter an URL address and press the **Next** soft key.
2. Enter a name. For further details about entering characters, see page 30.
3. Press the **Next** soft key.
4. To complete storing an URL address, follow from step 5 in "Add Number" .

Groups *(Menu 1-3)*

This menu allows you to change the ringers and the names for the caller groups.

Note: The ringer and the name of **No Group** cannot be edited.

Memory Status *(Menu 1-4)*

This menu shows the total number of entries that currently stored in your Phone Book.

Messages

Your phone can send and receive text messages, or send e-mails. It can also receive voicemail notifications.

When the phone receives a message, an alert sounds and a text notification displays along with the name and phone number of the sender, if available. The New Message icon remains on the screen until you read the new text message or you listen to the new voicemail message.

Messages are received even when your phone is in Lock mode. To access a message, you must unlock the phone.

Write *(Menu 2-1)*

You can create a text message or an e-mail and send it to other mobile phones.

SMS *(Menu 2-1-1)*

1. Enter the message text.

To add a message template, press the **Options** soft key and select **Templates**.

To retrieve a number from Phone Book, press the **Options** soft key and select **Contact**.

2. When you finish entering text, press the **Next** soft key.
3. Enter a destination number using the numeric keys.

Pressing the **Options** soft key allows you to search your Phone Book or SMS Groups for a number.

4. When you finish entering, press the **Next** soft key.
5. To select an option, press Up or Down and press the **Edit** soft key and enter information or change the setting. The following options are available:

- **Msg**: allows you to change the message contents you've already entered.
- **Send To**: allows you to change the destination phone number.
- **Settings**: allows you to change the message options in order.

After changing the first option, press the **Next** soft key. You can then set the next options. When you set the last option and press the **Save** soft key, the settings are saved and the display returns to the New Message screen.

Priority: you can select a message priority.

Validity: you can select the length of time for which your message is stored at the message centre while attempts are made to deliver them to the recipient.

Send Later: you can select the length of time for which the delivery of the message will be delayed at the message centre, if you don't want to send it immediately.

Delivery Ack: select **Yes** to be informed whether or not your message has been delivered to the recipient by your network.

Save Message: you can set whether or not the phone saves the message in the Outbox. When you select **Prompt Save**, the phone asks if you want to save the message when you attempt to send it.

Note: The **Delivery Ack, Save Message** option can be preset in the **New Messages** menu.

- **Save Msg**: stores the message in the **Drafts** menu.

6. After changing the setting options, press the SEND key or the **Send** soft key to send the message.

Email *(Menu 2-1-2)*

1. Enter an e-mail address and press the **Next** soft key.

To retrieve an e-mail address from Phone Book, press the **Options** soft key and select **Phonebook**.

2. Enter the subject of your e-mail and press the **Next** soft key.

3. Enter the e-mail text and press the **Next** soft key.

To add a message template, press the **Options** soft key and select **Templates**.

To retrieve a number from Phone Book, press the **Options** soft key and select **Contact**.

4. To access e-mail options, Select **Settings** and press the **Edit** soft key. For details, see step 5 in the **SMS** menu.
5. Press the SEND key or the **Send** soft key to send the e-mail.

Downloading an image or a melody via SMS

Using the SMS feature, you can send a request and receive a variety of images or melodies from your service provider.

Inbox *(Menu 2-2)*

Your phone can store up to **50** messages total in Inbox, Outbox and the Drafts box. When the memory is full, a warning message displays and the phone rejects additional messages until you erase the obsolete ones. If a new message is received when the memory is full, the phone will display the blinking message icon.

When you access the **Inbox** menu option, the message list appears.

To view details, press Up or Down keys to scroll to one of the messages on the list and press the **Select** soft key. You can scan through the message contents by pressing Up or Down keys.

While viewing a message, press the **Reply** soft key to send a reply message to the sender.

Press the **Options** soft key to use the following options:

Erase: erases the message from the Inbox.

Forward: allows you to forward the message to another person.

Call: places a call to the callback number of the message.

Save: allows you to save the callback number of the message.

Outbox *(Menu 2-3)*

Your phone can store up to **50** messages total in Inbox, Outbox and the Drafts box.

In the **Outbox** menu option, you can review outgoing messages separately depending on their message type, **Sent** or **Unsent**.

Sent: the message was successfully delivered.

Unsent: the message was not sent.

When you select a message type, the message list appears.

To review a message, press Up or Down keys to scroll to it and press the **Select** soft key. You can scan through the message contents by pressing Up or Down keys.

While reviewing a message, press the **Resend** soft key to resend the message. Press the **Erase** soft key to erase it from Outbox.

Drafts *(Menu 2-4)*

Your phone can store draft messages that are yet to be sent in the Drafts box. If you save the message content using the **Save Msg** menu option before sending it, you can access them using this menu.

To review a stored message, press Up or Down keys to scroll to it and press the **Select** soft key. You can scan through the message contents by pressing Up or Down keys.

While reviewing a message, press the **Send** soft key to send the message. Press the **Erase** soft key to erase it.

Templates *(Menu 2-5)*

Using this menu, you can preset up to eleven (including Empty message that you can make) messages that you use most frequently and send a new message using one of them.

When you access this menu, the preset message list displays.

Erase Messages *(Menu 2-6)*

Using this menu, you can erase the messages in each message box; Voice Mail box, Inbox, Outbox, and Drafts box. For the Inbox, you can erase only the messages you have read or all of the messages. For the Outbox, you can erase only the message the phone sent or couldn't send, or all misuses.

You can also erase all of the messages at one time by selecting **All Messages**.

When a confirmation message appears, press the **Yes** soft key.

Settings *(Menu 2-7)*

In this menu, you can preset several options for using the messaging features.

Auto Scroll *(Menu 2-7-1)*

If an incoming message is too long for the display, the phone displays it by scrolling the screen automatically. You can set how often the phone scrolls the message to the next screen.

If you select **Off**, you need to scroll to the next screen manually by pressing Up or Down keys .

Msg Reminder *(Menu 2-7-2)*

When a message is received, the phone alerts you by sounding the selected ringer. You can set how often you want to be alerted.

Off: the message alert sounds once when the message is received.

Once: the message alert sounds once when the message is received and sounds again after 2 minutes.

Every 2 min: the message alert sounds every 2 minutes until you check the message.

New Messages *(Menu 2-7-3)*

You can set up the default settings of the options for creating a new message. The following options are available:

Save Message: allows you to set whether or not you want the transmitted message to be saved in the Outbox.

Do Not Save: the phone does not save the message.

Prompt Save: the phone asks you if you want to save the message or not.

Auto Save: the phone automatically saves the message.

Entry Method: allows you to select the text input mode, either T9 Word mode or Alphabet mode.

Delivery Ack: allows you to receive a delivery report to let you know that your message is correctly delivered.

Alert On Call *(Menu 2-7-4)*

This menu allows you to choose whether or not the phone informs you when you receive a new message during a call.

On: the phone alerts you with a beep and displays the corresponding notification.

Off: the phone doesn't actively alert you to incoming messages. It only displays the corresponding notification.

Voice Mail *(Menu 2-8)*

When multiple new voice messages are received but you haven't checked them, information of the last one displays. The information display includes the time/date stamp, the number of new voice messages and the callback number.

While reviewing the message, press the soft key to access the following options:

Listen: allows you to listen to the voice message. The phone automatically dials the number of your Voice Mail centre.

Reset: clears the New Message icon and resets the counter for a new voice message, if necessary. The phone resets the counter automatically after you listen to all of the new messages.

SMS Groups *(Menu 2-9)*

Using this menu, you can preset up to 5 SMS groups that you send a message most frequently.

Scroll to the group you want by pressing the Up or Down keys.

- Press the **Options** soft key to view members, clear or rename the group. You can add members to the group at View Members option. However, the information of the member that is supposed to be added should be saved in the Phone Book.
- Press the **Send** soft key to send the message to the group.

Quick SMS *(Menu 2-0)*

In an emergency, you can send a preset message to party(ies) that you specify by pressing the **C** key four times from idle screen. In this menu, you can prepare the one-touch paging feature.

View Members *(Menu 2-0-1)*

This menu allows you to set up the group of contacts to whom you want to send an emergency message.

Edit MSG *(Menu 2-0-2)*

Using this menu, you can edit the pre-written message, possibly requesting a callback.

Settings *(Menu 2-0-3)*

This menu allows you to set the following options for emergency messages:

Priority: selects a priority level.

Delivery Ack: allows you to receive a report to let you know that your message has been correctly delivered.

EMAIL Groups *(Menu 2-#)*

You can set up a email group of your contacts to which you frequently send a message.

Call History

Call History

You can use the **Call History** menu to:

- view and dial the most recent calls you dialed, received, or missed.
- erase the numbers in the call log memory.
- view the length of calls.

Missed *(Menu 3-1)*

If Caller Line Identification service is available, your phone keeps a list of the most recent 10 incoming calls that you failed to answer. Contact your service provider for more information about the service.

When you access this menu, a list of the missed calls displays.

When you press the **Options** soft key on the call log list, the following options are available:

Save: (shows when the number is not stored in your Phone Book) allows you to save the number in Phone Book.

Show Entry: (shows when the number is stored in your Phone Book) displays the detailed information stored in the Phone Book entry, such as a name, entry number, phone numbers, speed dial number, and other settings.

Edit: allows you to change the phone number and then dial it or save it in Phone Book.

Erase: erases the selected number.

Send Msg: allows you to send a message.

Received *(Menu 3-2)*

This option lets you view up to 10 of the most recent calls you received, if you are subscribed to the Caller Line Identification service. Contact service provider for more information about this service.

When you access this menu, a list of the incoming calls displays.

Dialed *(Menu 3-3)*

The phone stores up to 10 of the most recent calls you dialed. When you access this menu, a list of the outgoing calls displays.

Erase History *(Menu 3-4)*

You can erase the entries stored in each of the three call histories or all three histories at once.

When a confirmation message displays, press the **Yes** soft key.

Call Duration *(Menu 3-5)*

Your phone records the amount of air time, or talk time, used. Using this option, you can view the number of the calls to or from your phone, and the air time for all of the calls. You can easily erase the air time records at any time. This option is convenient for estimating your usage.

Note: This feature is not intended to be used for billing purposes.

Sound

Sound

You can use the **Sound** menu to customise various sound settings, such as the:

- ringer volume, type, and tone.
- key tone and alert sounds.
- sound which plays when the phone is switched on or off.

Ring Tones *(Menu 4-1)*

This menu allows you to set the unique ringer melodies for the following items:

Calls: allows you to set a unique ring for incoming calls.

Messages: allows you to have a distinctive ring for incoming text and voice mail messages independently.

Schedules: allows you to have a distinctive ringer for schedule alarms.

Ringer Volume *(Menu 4-2)*

This menu allows you to adjust the ringer volume.

Calls: allows you to adjust the ringer volume for incoming calls.

Messages: allows you to adjust the ringer volume for incoming messages.

Alarm/Schedules: allows you to adjust the ringer volume for alarm settings and schedule alarms.

To adjust the volume level for each item, the following options are available:

Silent: the phone does not sound a ring and does not flash the backlight.

Light: the phone does not sound a ring and only flashes the backlight.

Vibrate: an incoming call vibrates the phone.

1-Beep: the phone sounds a beep.

Level 1 ~ 5: adjust the volume level. The more bars, the louder.

Low+Vib/High+Vib: the phone rings in the lowest/highest volume level and then vibrates. This option is only shown for **Calls**.

Ascending: the phone sounds from level 1, louder and louder, to level 5.

Alerts *(Menu 4-3)*

Your phone gives audible alerts (beeps) at a specified time to inform you that certain things have happened. The alerts only occur in your earpiece so that the person with whom you are talking does not hear them.

The following alerts are available:

Call Connect: when this option is set to **On**, the phone sounds the connect tone when your call is connected to the system.

Sound

Call Disconnect: when this option is set to **On**, the phone sounds the disconnect tone when a call is disconnected.

Voice Privacy: when this option is set to **On**, the phone sounds an audible beep when you loose a private encrypted CDMA line. For this option to work correctly, you need to set the **Voice Privacy** menu to **Enhanced**.

Key Tone *(Menu 4-4)*

In this menu, you can set up the sound your phone generates when you press a key.

The following options are available:

Tone Volume: you can adjust the key tone volume using the Navigation keys.

Tone Length: you can select **Long** or **Short** DTMF (Dual-tone Multi-frequency) tones. DTMF tones are sent by your phone to access teleservices, such as a bank account. The system used by the bank or other service determines if you need short or long DTMF tones. If the service is digital, as most are, short DTMF tones will almost always work.

Power On/Off Melody *(Menu 4-5)*

You can activate or deactivate the tone that the phone sounds when it is switched on or off.

Display

The Display feature enables you to customize various settings for the display and the light.

Language *(Menu 5-1)*

This menu allows you to change the display and input language.

You can choose a language either **English** or हिन्दी .

Service Area *(Menu 5-2)*

This menu displays the current service area the user is in. The service area is also displayed for about 1 seconds when your phone is registered onto a network or when you make or receive a call.

Wallpaper *(Menu 5-3)*

You can select the background image (wallpaper) to be displayed in Standby mode.

When you set this menu to **Digital Clock1**, the phone displays the text message you entered using the **Banner** menu in Standby mode.

Banner *(Menu 5-4)*

This option allows you to set a banner message to display at the bottom of the display in Standby mode. However, the banner message could be displayed, when the Wallpaper is set on Digital Clock1.

Menu Theme *(Menu 5-5)*

This options allows you to select the menu display style.

Backlight *(Menu 5-6)*

You have several options for setting how the backlight operates. Remember that backlight use drains your battery faster.

The following options are available:

Always On: the backlight is always on.

Always Off: the backlight is always off.

8/15/30 Seconds: the backlight switches on when you press a key and switches off after 8/15/30 seconds if you don't press any key.

LCD Contrast *(Menu 5-7)*

The menu allows you to adjust the brightness of the LCD screen.

Quick Menu Indicator *(Menu 5-8)*

In this menu, you can set whether or not the menu Quick Menu indicators are displayed on the dial screen.

While dialing numbers in Standby mode, you can press the appropriate Navigation key to access the preset menu you want.

Organiser

Organiser

The Organiser feature enables you to:

- keep track of important dates and events
- create a list of things to do
- make a memo
- set an alarm to ring at a specific time
- use the phone as a calculator
- check the time in another part of the world
- use the countdown timer.

Scheduler *(Menu 6-1)*

In this menu, you can keep track of your daily or monthly schedule. You can create up to 70 events.

Today *(Menu 6-1-1)*

You can schedule up to 9 events for the current day, indicating each event's start and end time. You can even have your phone's calendar alert you before an event starts. Events scheduled for future dates automatically appear on your Today display for that particular day.

All *(Menu 6-1-2)*

This menu allows you to view the current month, as well as past or future months, in calendar format. On the calendar, the current day is highlighted.

Task List *(Menu 6-2)*

This menu allows you to enter up a list of tasks to be done and assign a deadline to each task. You can create up to 9 tasks.

Memo Pad *(Menu 6-3)*

This menu allows you to write down memos about anything you need to remember. You can create up to 9 memos.

Alarm *(Menu 6-4)*

This menu allows you to set up to an alarm to ring at a specific time.

Calculator *(Menu 6-5)*

Using this feature, you can use the phone as a calculator. The calculator provides the basic arithmetic functions; addition, subtraction, multiplication and division.

Unit Change *(Menu 6-6)*

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

World Time *(Menu 6-7)*

This menu allows you to check the current times for 34 major cities around the world or set DST (Daylight Savings Time).

Countdown *(Menu 6-8)*

This menu helps you know how much time it takes for you to do something, or how many months, days, hours and minutes until a specific day arrives. You can create up to 9 counters.

Stop Watch *(Menu 6-9)*

Use this menu to measure elapsed time. The precision of the stopwatch is one one-hundredth of a second.

Setting

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

Call *(Menu 7-1)*

This menu contains the suboptions for answering or redialling a call.

Answer Mode *(Menu 7-1-1)*

This menu allows you to select how to answer an incoming call.

The following options are available:

Any Key: the phone answers when you press any key except for the END key and the **Silence** soft key.

Call Key: the phone answers only when you press the SEND key.

Airplane Mode *(Menu 7-1-2)*

In an airplane, all calls are restricted for safety and you must turn off the phone. However, if you need to use your phone, except call functions, use Airplane mode which disables all call functions of your phone.

Select **Enable** to enable Airplane mode by using the Navigation keys, and press **OK** soft key.

To disable this mode, select Disable and press **OK** soft key. press **OK** soft key to reboot your phone.

Auto Redial (Menu 7-1-3)

When this menu is activated, your phone automatically redials the call up to 10 times when a connection fails.

To activate this feature, select how often the phone automatically retries the call; **60**, **30** and **10 seconds** are available.

Select **Off** to deactivate the Auto Redial feature.

Call Forwarding (Menu 7-1-4)

This network service allows incoming calls to be forwarded to another number.

Note: This feature is only available when your service provider supports it. Contact your service provider to check its availability.

The following options are available:

Immediate: calls are forwarded immediately when they are received.

When Busy: calls are forwarded if you are already on the phone.

No Reply/Not Reachable: calls are forwarded if you don't answer or when your phone is switched off.

Disable All: all of the call forward settings are cancelled.

Call Waiting (Menu 7-1-5)

The Call Waiting feature alerts you of incoming calls while you are on a call.

To enable the feature, select **To Enable** by using the Navigation keys and press the **Select** soft key. The phone sends your setting to your network.

To disable Call Waiting, select **To Disable** and press the **Select** soft key. The phone sends your setting to your network.

To edit your forwarding feature code:

1. Select **Edit Feature Code** and press the **Select** soft key.
2. Select **To Enable** and press the **OK** soft key. Enter the number that activate the call waiting and press the **Save** soft key.

Select **To Disable** and press the **OK** soft key. Enter the number that deactivate the call waiting and press the **Save** soft key.

Phone/System (Menu 7-2)**Quick Menu** (Menu 7-2-1)

You can set up a menu of your own using your favourite menu items, which can then be accessed by specific number keys. Once you have set up your favourites, you can easily and quickly access them.

Key Guard (Menu 7-2-2)

You can prevent accidental key pressing by using Key Guard mode.

To activate the Key Guard feature, select the period of time your phone waits for before locking the keypad. If you do not want to use the feature, set this menu to **Off**.

Set Time *(Menu 7-2-3)*

To display the correct date and time on the idle screen or to use the Organiser features, such as Scheduler, Task List, Countdown, Alarm and World Time, you need to set the current time and date using this menu.

Enter the time and date using the numeric keys.

Each of the hour, minute, day, and month must be entered using 2 digits and the year requires all 4 digits. You need to enter the hour in 24-hour format.

Network time is set automatically.

Version *(Menu 7-2-4)*

This option allows you to view the software and hardware versions of your phone. This feature is helpful if you need to call customer care.

Security *(Menu 7-3)*

Your phone provides you with many security options, including a user-programmable lock code.

To access the **Security** menu, you need to enter a lock code. The lock code is preset to "0000" at the factory.

Lock Mode *(Menu 7-3-1)*

When the phone is locked, you cannot operate the phone until you enter the Lock code.

Change Code *(Menu 7-3-2)*

This feature allows you to change your current lock code to a new one. The lock code is preset to "0000" at the factory.

Enter a new four-digit lock code and then enter the code again to confirm.

Emergency Numbers *(Menu 7-3-3)*

Your phone provides you with the option for storing three emergency numbers. The default numbers are 100, 101 and 102. All of these numbers can be manually dialled at any time even when your phone is locked.

IMPORTANT NOTICE!

Emergency calling may not be available on all wireless networks at all times. A connection cannot always be guaranteed, due to various transmission methods, network parameters and user settings used to complete a call from your wireless phone.

DO NOT depend on this phone as a primary method of dialling 100 or for any other essential or emergency communications.

Remember to always turn your phone on and check for the adequate signal strength before placing a call.

Setting

Voice Privacy *(Menu 7-3-4)*

Used only in digital networks, Voice Privacy encrypts the voice channel so that people cannot eavesdrop on your conversation.

The following options are available:

Standard: The phone will use a standard line for calls.

Enhanced: The phone will make and receive calls on an encrypted high security line. When you set this option, P icon displays on the screen.

Clear Phone Book *(Menu 7-3-5)*

This menu allows you to erase all of the numbers in your Phone Book. When a confirmation message displays, press the **Yes** soft key.

Reset Phone *(Menu 7-3-6)*

Resetting the phone cancels all of your selection in the user-selectable setting options and returns them to the factory default settings.

When a confirmation message appears, press the **Yes** soft key. The phone turns itself off and back on and then returns to Standby mode.

Clear SMS Groups *(Menu 7-3-7)*

This menu allows you to erase all of the members in your SMS Groups.

Clear EMAIL Groups *(Menu 7-3-8)*

This menu allows you to erase all of the members in your EMAIL Groups.

Games

You can experience the fun of playing games on your phone.

You can enjoy five fun games on your phone:

- Jump Jump (**Menu 8-1**)
- Freedom Fighter (**Menu 8-2**)
- Dolmen (**Menu 8-3**)

To start a game:

1. Select a game by pressing the Navigation keys and press the **Select** key.
2. The following options are available:
 - **New Game:** starts a new game.
 - **High Score:** shows you the high score table.
 - **Key Info:** opens the screen showing the key operations for the game.
3. Select **New Game**.
4. Depending on the selected game, follow the directions on the game screen.
5. To end the game, press the END key.

Note: If the battery power is low, the **Game** wouldn't be accessed. Charge the battery before using it.

Settings *(Menu 8-4)*

This menu allows you to change the volume for the game sound and turn on or off the backlight during a game.

Volume *(Menu 8-4-1)*

This menu allows you to adjust the volume of the game sound.

Backlight *(Menu 8-4-2)*

Playing a game consumes the battery power more than using other functions of your phone. This menu allows you to activate or deactivate the backlight during the game to conserve your battery.

Exposure to radio frequency (RF) signals

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.*

* 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.

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 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.

FCC certification information for this model phone is attached separation paper.

For body operation

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 of 1.5 cm from the body.

The minimum distance for this model phone is 1.5 cm from the body.

Non-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/rfsafety>

Cellular Telecommunications Industry Association (CTIA): <http://www.wow-com.com>

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

- 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

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, make sure that you are following the special regulations in a given area or country.

Operating environment

Remember to follow any special regulations in force in any area and always switch your phone off 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

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 your phone off 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 your phone off 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 your phone off in any facility where posted notices require you to do so.

Potentially explosive environment

Switch your phone off 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 the phone off 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

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. Emergency numbers vary by location.
3. Press the TALK key.

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 cut off the call until given permission to do so.

Restricting Children's access to your Phone

Your phone is not a toy. Children should not be allowed to play with it because they could hurt themselves and others, damage the phone or make calls that increase your phone bill.

FCC Notice and Cautions

FCC Notice

Note: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

- 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 your phone off 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

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 the phone and all its parts and accessories out of the reach of small children's.
- 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.
- 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

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.
- (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

Appendix A: 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 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 Head:1.18W/Kg, Body-worn :1.28W/Kg. Body-worn operations are restricted to Samsung-supplied, approved or none Samsung designated accessories that have no metal and must provide at least 1.5cm separation between the device, including its antenna whether extended or retracted, and the user's body. None 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 A3LSCHN510.

Appendix B: GUIDE TO SAFE AND RESPONSIBLE

WIRELESS PHONE USE

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 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 note to do a 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 nonemergency 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.

Appendix C: Consumer Update on Wireless Phones

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.

1. 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:

- I Support needed research into possible biological effects of RF of the type emitted by wireless phones;
- I Design wireless phones in a way that minimizes any RF exposure to the user that is not necessary for device function; and
- I 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:

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

1. 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.

1. 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.

1. 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.

1. 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.

2. 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.

1. 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.

1. 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.

1. 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.

2. 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 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/emfpg.html>

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

International Commission on Non-Ionizing Radiation Protection:
<http://www.icnirp.de>

National Radiation Protection Board (UK):
<http://www.nrpb.org.uk>

Updated 4/3/2002: US Food and Drug Administration
<http://www.fda.gov/cellphones>

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.wowcom.com/consumer/issues/driving/articles.cfm?ID=85>

Glossary

Glossary

Airtime - Actual time spent talking on the wireless phone. Most carriers bill customers based on how many minutes of airtime they use each month.

Antenna - A device for transmitting or receiving signals. The size and shape of antennas is determined, in part, by the frequency of the signal they receive. Wireless phones and the base station must have antennas.

Base station - The fixed radio transmitter/receiver that maintains communications with mobile radio telephones within a given area. (Typically called a cell or cell site)

CDMA - (Code Division Multiple Access) A spread-spectrum approach to digital transmission. With CDMA, each conversation is digitized and then tagged with a code. The mobile phone deciphers only a particular code to pick the right conversation off the air. The transmitted signal is just above noise level across the available bandwidth.

Channel - Communications signals transmit along paths called channels.

Codec - Compression & Decompression.

Deactivation - The process of rendering a wireless phone inactive.

DTMF - (Dual-tone Multi-Frequency) You send DTMF signals when you enter numbers by pressing the digit keys.

EVRC - (Enhanced Variable Rate Codec) EVRC is a new global standard for compressing and decompressing voice signals. EVRC uses a lower bit rate (the number of bits sent per second) than existing CDMA vocoders, while providing significant improvements in voice quality. This technology enables your phone to provide superb voice quality while benefiting from the ability to process more cellular voice calls using less bandwidth than the voice codecs in CDMA networks today.

Frequency - A measure based on time, as one or more waves per second, in an electrical or light wave information signal. A signal's frequency is stated in cycles-per-second or Hertz (Hz).

Hands-free - A feature that permits a driver to use a wireless phone without lifting or holding the handset - an important safety feature for automobiles, tractors and most other motorized vehicles.

LCD - (Liquid Crystal Display) Commonly used to refer to the screen display on the wireless phone.

LED - (Light Emitting Diode) Commonly used to refer to a small light on the wireless phone or on the Desktop Charger. The LED lights on the phone to indicate an incoming call. The lights on the charger indicate that battery charging is taking place.

Prepend - The addition of a prefix, such as an area code, to a phone number.

RF - Radio Frequency

Roaming - The ability to use a wireless phone to make and receive calls in places outside of the home service area.

Glossary

Service charge - The amount paid each month to receive wireless service.

Soft keys

- varies according to the function that you are currently using.
- is indicated on the bottom line of the display just above the corresponding key.

Standby time - The amount of time a fully charged wireless portable or transportable phone can be on and idle without being in use. (See Talk time.)

Talk time - The length of time a person can talk on a portable or transportable wireless phone without recharging the battery.

Vocoder - Voice coder. A device used to convert speech into digital signals.

Wireless - Radio-based Systems that allow transmission of telephone or data signals through the air without a physical connection, such as a metal wire (copper) or fiber optic cable.