



Guía del usuario LG-TM510

TELÉFONO DE MODO TRIPLE DE
CDMA/AMPS/PCS



LG
TM510
USER
GUIDE

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CDMA/AMPS/PCS TRI MODE PHONE

User Guide LG-TM510



Phone components

The following shows key components of your mobile phone.



Please refer to the overview descriptions of each special features on Page 9

LIMITED WARRANTY STATEMENT

1. WHAT THIS WARRANTY COVERS :

LG offers you a limited warranty that the enclosed subscriber unit and its enclosed accessories will be free from defects in material and workmanship, according to the following terms and conditions:

- (1) The limited warranty for the product extends for ONE (1) year beginning on the date of purchase of the product.
- (2) The limited warranty extends only to the original purchaser of the product and is not assignable or transferable to any subsequent purchaser/end user.
- (3) This warranty is good only to the original purchaser of the product during the warranty period as long as it is in the U.S., including Alaska, Hawaii, U.S. Territories and Canada.
- (4) The external housing and cosmetic parts shall be free of defects at the time of shipment and, therefore, shall not be covered under these limited warranty terms.
- (5) Upon request from LG, the consumer must provide information to reasonably prove the date of purchase.
- (6) The customer shall bear the cost of shipping the product to the Customer Service Department of LG. LG shall bear the cost of shipping the product back to the consumer after the completion of service under this limited warranty.

2. WHAT THIS WARRANTY DOES NOT COVER :

- (1) Defects or damages resulting from use of the product in other than its normal and customary manner.
- (2) Defects or damages from abnormal use, abnormal conditions, improper storage, exposure to moisture or dampness, unauthorized modifications, unauthorized connections, unauthorized repair, misuse, neglect, abuse, accident, alteration, improper installation, or other acts which are not the fault of LG, including damage caused by shipping, blown fuses, spills of food or liquid.
- (3) Breakage or damage to antennas unless caused directly by defects in material or workmanship.
- (4) That the Customer Service Department at LG was not notified by consumer of the alleged defect or malfunction of the product during the applicable limited warranty period.
- (5) Products which have had the serial number removed or made illegible.
- (6) This limited warranty is in lieu of all other warranties, express or implied either in fact or by operations of law, statutory or

otherwise, including, but not limited to any implied warranty of marketability or fitness for a particular use.

- (7) Damage resulting from use of non-LG approved accessories.
- (8) All plastic surfaces and all other externally exposed parts that are scratched or damaged due to normal customer use.
- (9) Products operated outside published maximum ratings.
- (10) Products used or obtained in a rental program.
- (11) Consumables (such as fuses).

3. STATE LAW RIGHTS:

No other express warranty is applicable to this product. THE DURATION OF ANY IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MARKETABILITY, IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY HEREIN. LG INFOCOMM INC. SHALL NOT BE LIABLE FOR THE LOSS OF THE USE OF THE PRODUCT, INCONVENIENCE, LOSS OR ANY OTHER DAMAGES, DIRECT OR CONSEQUENTIAL, ARISING OUT OF THE USE OF, OR INABILITY TO USE, THIS PRODUCT OR FOR ANY BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, INCLUDING THE IMPLIED WARRANTY OF MARKETABILITY APPLICABLE TO THIS PRODUCT.

Some states do not allow the exclusive of limitation of incidental or consequential damages or limitations on how long an implied warranty lasts; so these limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

4. HOW TO GET WARRANTY SERVICE :

To obtain warranty service, please call the following telephone number from anywhere in the continental United States:

LG Infocomm Inc.

201 James Record Road Huntsville, AL 35824

Tel. 1-800-793-8896 Fax. 1-800-448-4026

www.lgeservice.com

DO NOT RETURN YOUR PRODUCT TO THE ABOVE ADDRESS. Please call or write for the location of the LGIC authorized service center nearest you and for the procedures for obtaining warranty claims.



LG Infocomm Inc.

10225 Willow Creek Road San Diego, CA 92131

10 Driver Safety Tips

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

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

1. Get to know your wireless phone and its features such as speed dial and redial. If available, these features help you to place your call without taking attention off the road.
2. When available, use a hands free device. If possible, add an additional layer of convenience and safety to your wireless phone with one of the many hands free accessories available today.
3. Position your wireless phone within easy reach. Be able to access your wireless phone without removing your eyes from the road. If you get the incoming call at an inconvenient time, if possible, let your voice mail answer it for you.
4. Let the person you are speaking with know you are driving; if necessary, suspend the call in heavy traffic or hazardous weather conditions. Rain, sleet, snow, ice and even heavy traffic can be hazardous.
5. Do not take notes or look up phone numbers while driving. Jotting down a "to do" list or flipping through your address book takes attention away from your primary responsibility, driving safety.
6. Dial sensibly and assess the traffic; If possible, place calls when you are not moving or before pulling into traffic. Try to plan calls when your car will be stationary. If you need to make a call while moving, dial only a few numbers, check the road and your mirrors, they continue.

7. Do not engage in stressful or emotional conversations that may be distracting. Make people you are talking with aware you are driving and suspend conversations that have the potential to divert your attention from the road.
8. Use your wireless phone to call for you. Dial 9-1-1 or other local emergency number in the case of fire, traffic accident or medical emergencies. Remember, it is a free call on your wireless phone!
9. Use your wireless phone to help others in emergencies, if you see an auto accident crime in progress or other serious emergency where lives are in danger, call 9-1-1 or other to call emergency number, as you would want others to do for you.
10. Call roadside assistance or a special non-emergency wireless assistance number when necessary. If you see a broken down vehicle posing no serious hazard, a broken traffic signal, a minor traffic accident where no one appears injured, or a vehicle you know to be stolen, call roadside assistance or other special non-emergency wireless number.

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

For more information, please call to 888-901-SAFE, or visit our website www.wow-com.com

Provided by the Cellular Telecommunications
Industry Association

Provided by the Cellular Telecommunications Industry
Association



***HOW TO GET WARRANTY SERVICE
AND BUY OF THE HANDS FREE KIT:***

To obtain warranty service and buy,
please call the following telephone number
from anywhere in the continental United States.

LG InfoComm U.S.A., Inc. Inc.
10225 Willow Creek Rd.
San Diego, CA 92131-1639
Tel : 1-800-978-9931

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

Your wireless phone is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

The exposure standard for wireless mobile phones employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg. * Tests for SAR are conducted using standard operating positions 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.

Before a phone model is available for sale to the public, it must be tested and certified to the FCC that it does not exceed the limit established by the government-adopted requirement for safe exposure. The tests are performed in positions and locations (e.g., at the ear and worn on the body) as required by the FCC for each model. The highest SAR value for this model phone when tested for use at the ear is 1.42mW/g and when worn on the body, as described in this user guide, is 1.33mW/g. (Body-worn measurements differ among phone models, depending upon available accessories and FCC requirements). [Labeling Committee note: if applicable, if body-worn SARs are required]. While there may be differences between the SAR levels of various phones and at various positions, they all meet the government requirement for safe exposure.

The FCC has granted an Equipment Authorization for this model phone with all reported SAR levels evaluated as in compliance with the FCC RF emission 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 BEJTM510.

Additional information on Specific Absorption Rates (SAR) can be found on the Cellular Telecommunications Industry Association (CTIA) web-site at <http://www.wow-com.com>.

* In the United States 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.

SUBJECT

The LG-TM510 phone has been designed to operate on the latest digital mobile communication technology, Code Division Multiple Access (CDMA). This CDMA digital technology has greatly enhanced voice clarity and can provide a variety of advanced features. Currently, CDMA mobile communication technology has been commercially used in Cellular and Personal Communication Service (PCS).

The difference between them is the operating frequency spectrum. Cellular uses 800Mhz and PCS uses 1.9Ghz. The LG-TM510 can operate on both frequency, we usually call it dual-band phone. Also, LG-TM510 works on Advanced Mobile Phone Service (AMPS). We call it triple-mode phone. If one of the Cellular, PCS and AMPS base stations is located nearby, Call fail rate of triple-mode phone is less than dual-mode phone or single-mode phone.

The CDMA technology adopts DSSS (Direct Sequence Spread Spectrum). This feature of DSSS enables the phone to keep communication from being crossed and to use one frequency channel by multiple users in the same specific area, resulting that it increases the capacity 10 times more compared with that in the analog mode currently used. Soft/Softer Handoff, Hard Handoff, and Dynamic RF power Control technologies are combined into this phone to reduce the call being interrupted in a middle of talking over the phone.

Cellular and PCS CDMA network consists of MSO (Mobile Switching Office), BSC (Base Station Controller), BTS (Base station Transmission System), and MS (Mobile Station). The following table lists some major CDMA Standards.

CDMA Standard	Designator	Description
Basic air interface	TIA/EIA/IS-95-A	Protocol between MS and BTS for Cellular & AMPS
	ANSI J-STD-008	Protocol between MS and BTS for PCS
Network	TIA/EIA/IS-634	MAS-BS
	TIA/EIA/IS/651	PCSC-RS
	TIA/EIA/IS-41-C	Intersystem operations
	TIA/EIA/IS-124	Nom-signaling data comm.
Service	TIA/EIA/IS-96-B	Speech CODEC
	TIA/EIA/IS-99	Assign data and fax
	TIA/EIA/IS-637	Short message service
	TIA/EIA/IS-657	Packet data
Performance	TIA/EIA/IS-97	Cellular base station
	TIA/EIA/IS-98	Cellular mobile station
	ANSI J-STD-018	PCS personal station
	ANSI J-STD-019	PCS base station
	TIA/EIA/IS-125	Speech CODEC

※TSB -74: Protocol between an IS-95A system and ANSI J-STD-008

Introduction

Highlights

Congratulations! Your new mobile phone will change your way of communicating and is a compact, lightweight personal communication system with added features for the person on the go. Our advanced digital mobile communication technology allows you to do the followings

- Large, easy-to-read, 5-Line, backlight LCD with status icons.
- Paging, messaging, voice mail and caller ID.
- 18 key keypads.
- Long battery standby and talk times.
- Menu-driven interface with prompt for easy operation and configuration.
- Any key answer, auto reading, one touch and speed dialing with 199 memory locations.
- Multi language(Two language : English and Spanish are available as per your need).
- Optional accessories.

Important Information

This user's guide provides important informations on the use and operation of the phone. Please read all the information carefully prior to using the phone for the best performance and to prevent any anticipated damage to or misuse of the phone. Any unapproved change or modification will void your warranty.

Check Accessories

Your mobile phone comes with standard accessories of a one-slot desktop charger and a rechargeable battery. Please make sure that those accessories are all included.

Before You Start

Safety Instructions

WARNING! To reduce the electric shock, do not expose your phone in high humidity areas, such as the bathroom, swimming pool.

IMPORTANT! Please read the SAFETY AND GENERAL INFORMATION on page 68 prior to using your phone.



FCC RF Exposure Information

WARNING! Read this information before operating the phone

In August 1996 the Federal Communications (FCC) of the United States with its action in Report and Order FCC 96-326 adopted an updated safety standard for human exposure to

radio frequency (RF) electromagnetic energy emitted by FCC regulated transmitters. Those guidelines are consistent with the safety standard previously set by both U.S. and international standards bodies. The design of this phone complies with the FCC guidelines and these international standards.

CAUTION

Use only the supplied or and approved antenna. Use of unauthorized antennas, modifications could impair call quality, damage the phone or result in violation of FCC regulations.

Do not use the phone with the damaged antenna. If the damaged antenna comes into contact with the skin, a minor burn may result. Please contact your local dealer for replacement of the antenna.

Body-worn Operation

This device was tested for typical body-worn operations with the back of the phone kept 0.79 inches (2_{cm}) from the body. To comply with FCC RF exposure requirements, a minimum separation distance of 0.79 inches (2_{cm}) must be maintained between the user's body and the back of the phone, including the antenna, whether extended or retracted. Third-party belt-clips, holsters and similar accessories containing metallic components should not be used. Body-worn accessories that cannot maintain 0.79 inch (2_{cm}) separation distance between the user's body and the back of the phone, and have not been tested for typical body-worn operations may not comply with FCC RF exposure limits and should be avoided.

Vehicle Mounted External Antenna (optional, if available.)

A minimum separation distance of 7.9 inches (20_{cm}) must be maintained between the user/bystander and the vehicle mounted external antenna to satisfy FCC RF exposure requirements.

For more information about RF exposure, please visit the FCC website at www.fcc.gov

FCC Part 15 Class B Compliance

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

Caution For Battery Use

- Do not disassemble.
- Do not short-circuit.
- Do not exposure to high temperature : 60°C (140°F)
- Do not incinerate.

Caring For Battery Use

- Must be recycled or disposed of properly

Caution For Adapter (CHARGER) Use

- Using the wrong battery charger could cause damage to your phone and void your warranty may burst causing injury to person and damage.
- The charger or adapter is intended for indoor use only.

Do not expose the battery charger or adapter to direct sunlight nor use it in any place of high humidity, such as the bathroom.

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














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Chapter 1. Getting Started

Cautions









- ▶ Using the phone in proximity to receiving equipment (i.e., TV or radio) may cause interference.
- ▶ Keep your phone in a safe place when not in use.
- ▶ Only use the batteries, antennas, and chargers provided by LG. Using the wrong accessories could void your warranty.
- ▶ Only authorized personnel should service the phone and its accessories. Faulty installation or service may result in accidents and consequently invalidate the warranty.
- ▶ Do not hold the antenna while the phone is in use.
- ▶ Do not use the phone in designated “no cellular phone use” areas.
- ▶ Do not expose the phone to high temperature or humidity.
- ▶ Avoid getting your phone wet. If the phone gets wet, turn the power off immediately and remove the battery pack. If the phone is mal-functional, return it to the dealer for service.
- ▶ Avoid shock or impact on the phone.

Phone Overview

Function	Key Descriptions
Lamp	The red light is on when you turn the power on and when you have incoming calls and message.
LCD Screen	Displays messages & indicator icons.
	Allows user to place or answer calls.
	Used to turn power on/off and to disconnect a call. Using this key. You can return to the display screen.
Mouse Key ()	This mouse key allows quick access to  text and voice mail notification messages. [] calendar, [] outgoing call log, [] phonebook Find Name.
Cellcase	Close the cellcase to the terminate a call in progress. Open the cellcase to answer an incoming call.
Soft Keys ( , )	Soft Key 1 [] : Used to display the function setting menu. Soft Key 2 [] : If you press this key once in a menu, you can go back one level.
Side Keys ( , )	Enables you to adjust key beep volume (in standby mode) and earpiece volume (during a call).
Scroll Keys ( , )	Used to scroll through the memory locations and menu items. - In the standby mode, set the manner mode by pressing the  . (for 3 seconds) - In the standby mode, set the lock mode by pressing the  . (for 3 seconds)
Alphanu- meric Keypad	These keys enable you to enter number, characters and choose menu items.
Clear Key ()	Press to backspace and delete a single space or character. Press and hold to delete entire words. When manual mode is selected from Voice Setup menu, if you press  , your phone will prompt you to say a voice command by saying “Name Please” and you will access to the programmed phone number. (This feature is available only when voice command is programmed)

Onscreen Icons


The phone screen displays several onscreen icons and onscreen icons appears when the phone is power on.

Icons	Descriptions
	Displays the strength of the signal received by the phone and current signal strength is indicated as the number of bars displayed on the screen.
	No service The phone is not receiving a system signal.
	In use A call is in progress. * No icon indicates the phone is in standby mode.
	Digital indicator Digital service is available.
	Analog indicator Analog service is available.
	Indicates that a text message or voice mail has been received.
	Roaming The phone is outside of its home service area.
	Charge level Indicates battery charge level.

Entering Information Using T9 Text Input

You can edit the Banner, Scheduler, Short Message and Phone Book using T9 Text Input.


Key Functions



 (Up and Down) : Press to scroll and select a mode through menus.



(1) You can scroll through the modes using (Down) key in the following order : T9En → Eng → 123 → Spc → T9HLP → T9En


(2) You can scroll through the modes using (Up) key in the following order : T9En → T9HLP → Spc → 123 → Eng → T9En


- On Phone book, you can change mode by pressing Soft Key 2.


- SHIFT key (): Used to change the letter case.


 ~  (Type Text) : In T9 mode, press one key per letter to enter text.


 ~  (Type Numbers) : In 123 (Numbers) mode, press once to enter numbers.

 (Next) : In T9 mode, press to display other matching words.

 (Punctuation) : In T9 mode, press to insert punctuation in a word and to complete a sentence.

 (Shift) : Press to change the letter case.

 (Space) : Press to complete a word or punctuation and insert a space.

 (Clear) : Press to backspace and delete a single space or character. Press and hold to delete entire words.

Input mode

T9 Text Input provides five modes for entering text, numbers, special characters and punctuation.


T9En (T9) Mode

Type text using one keystroke per letter. The default is T9 modes.

Eng (Multi-tap) Mode


Use ENG mode to add words to the T9 database.

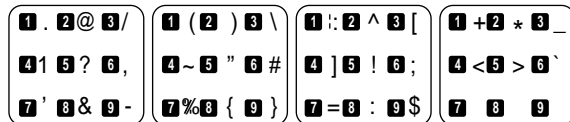
123 (Numbers) Mode

Type numbers using one keystroke per number. To change to 123 mode in a text entry field, press  until 123 mode is displayed.

Spc (Special Characters) Mode

Insert special characters and punctuation.

You may use any of the 33 special characters. Enter the number next to the character you want to insert. In Spc mode press Mouse Key () to cycle through the following characters:



T9HLP (T9Help) Mode

Display T9 Help Text.


Changing Letter Cases

These are three options for selecting letter cases:

Initial Cap (T9En/Eng)

Only the next letter is capitalized.

Caps Lock (T9EN/ENG)

Press  to change letter case to Caps Lock. All subsequent letters are capitalized.


















Lowercase (T9en/eng)

Press  again to change letter case to lowercase.


Examples Using T9 Text input

Typing In T9 Mode

To type a new message, follow these steps :

1. Press :  ,  to change letter case, if necessary.
2. Press :     .
3. Press :  to complete the word and add a space.
4. Press :           .
5. Display : Call the office

Using the NEXT Key














After you have finished typing a word, if the word displayed is not the word you want , press the  to display additional choices.

For example, follow these steps :

1. Press :     .
2. Display : Good
3. Press :  .
4. Display : Home, Gone, Hood.....

Adding Words to the T9 Database







If a word is not in the T9 database, add it using “Eng(Multi-tap) mode” text entry. The word is automatically added to the T9 database when you return to T9 mode. For example, follow these steps :

1. Press :  to change letter case to Eng(multi-tap) mode
2. Press :      .
3. Display : lmt
4. Press :  to change letter case to T9 mode and then, the word of lmt will be added to the T9 database
5. Press :  erase the existing the word of lmt
6. Press :    .
7. Display : got
8. Press :   .
9. Display : imt

Examples Using Eng (Multi-tap) Text input

Typing In Eng(Multi-tap) Mode

To type a new message, follow these steps :

1. Press :  to change letter case to Eng mode
2. Press :  to change to “ENG” Caps Lock mode
3. Press :     .
4. Display : LG

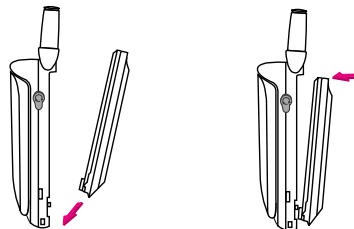
Using the Battery Pack

Charge the battery fully before the initial use of the phone.

The phone comes with a rechargeable battery pack. Fully charge the battery prior to using. Keep the battery charged while not in use in order to maximize talk time and standby time when using the phone remotely.

Installing the Battery

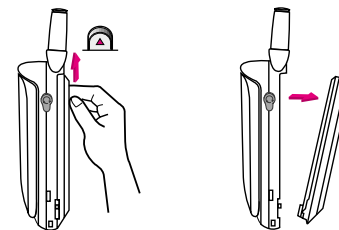
To install the battery, insert the bottom of the battery into the opening on the back of the phone. Then, push the battery down until the latch clicks.



Removing the Battery

Turn the power off. (If power is on, a loss of stored numbers and messages may occur.)

By lifting removal button the battery will become detached.



Battery Charge Level

The battery charge level is shown on the top right of the LCD screen.



When the battery charge level becomes low, the low battery sensor will alert you in three ways: Sounding an audible tone, blinking the battery icon outline, and displaying "LOW BATTERY WARNING!". If the battery charge level becomes exceedingly low, the phone will automatically switch off and any function in progress will not be saved.

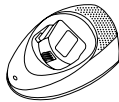
Using the Desktop Charger

Desktop charger has a slot for recharging batteries. The slot accommodates phone and battery pack for charging.

Warning! Use only the desktop charger provided with the phone. Using the wrong charger may cause damage to your phone or battery.

1. Plug the charger into a wall outlet.

▶ The phone must be charged from a 110V power source only.



2. Insert the phone with an installed battery pack or a battery pack into the slot of charger.



- ▶ Red light indicates the battery is being charged.
- ▶ Green light indicates the battery is fully charged.

Charge time will vary dependent upon battery level. Maximum charge time for a fully discharged battery will not exceed 3 hours.


Caring for the Battery

1. To recharge the battery, you do not need to wait until the battery will be completely discharged.
2. Use only LG batteries and chargers. LG's chargers are designed to maximize the battery life.
3. Do not disassemble or short-circuit the battery pack.
4. Keep the metal contacts of the battery pack clean.
5. Replace the battery when it no longer provides acceptable performance. The battery pack may be recharged five hundreds of times until it needs replacing.
6. Recharge the battery if it has not been used for a long time to maximize the battery life.
7. Do not expose the battery charger to direct sunlight or use it in high humidity area, such as the bathroom.
8. Do not leave the battery in hot or cold places, this may deteriorate the battery performance.

Chapter 2. Basic Functions


Turning the Phone On and Off

Turning the Phone On

1. Install a charged battery pack or connect the phone to an external power source such as the cigarette lighter adapter or car kit.
2. Press  for a few seconds until the red light on the middle of the phone flashes.
 - ▶ Fully extend the antenna for the best performance.



Note Like any other radio device, avoid any unnecessary contact with the antenna while your phone is on.


Turning the Phone Off

1. Press and hold  until display screen will be turned off, and then release the key.
2. Protect the antenna by pushing it back into the phone, if extended.




Making a Call

When you make a call, follow these simple steps:










1. Make sure the phone is turned on.
 - ▶ If not, press .
2. Enter the phone number with area code, if needed.
3. Press .


- ▶ If the phone is locked, enter the lock code.
 - ▶ “Call Failed” indicates that the call did not go through.
4. Press  to disconnect the call.
 5. “This phone has been restricted” on display screen means that outgoing call restricted mode is turned on.
 - ▶ If you want to turn off this function, take the following step.
[Menu] → [6] Security → Lock code insert → [2] Restrict → “No” → [Ok]

Correcting Dialing Mistakes

If you make mistakes in dialing a number, press  once to erase the last entered digit or hold down  for at least two second to delete all digits, or simply press Soft Key 2  to exit dialing state.

Receiving Calls

1. When the phone rings, open cellcase or If cellcase is open, press any key (except , , ) to answer.
 - ▶ If you press the , Side Keys (, ) once when you receive a call, you can hold the present call and ring sound or vibration stops. If you press the , Side Keys (, ) twice, the present call is terminated.

2. Press  to disconnect the call.

In call waiting mode, the present call is on hold as you answer another incoming call.


This service is provided by your service provider.

When the call waiting function is activated, your phone will beep to let you know if you have an incoming call. Your phone may also display the incoming caller's identification.

Using Quick Mode


Manner Mode

Use Manner Mode in a public place.

1. In the standby mode, activate manner mode by pressing the  . (for 3 seconds)


- ▶ When Manner Mode is set, "Manner Mode" is displayed on the LCD screen.
- ▶ When Manner Mode is set, Key tone does not sound.

Note To release the Manner Mode

To release the mode, press  again until "Normal Mode Entered!" is displayed.

Lock Mode

Used to prevent others from using your phone.

1. In the standby mode, to activate the lock mode, press the  . (for 3 seconds)

"Lock mode Setting!" will be displayed.



Note To release the Lock Mode

Press Soft Key 1 **Unlock**, then enter password(4 digits).

Lock code(password) is commonly last 4 digit of your phone number.



Call Waiting

Your cellular service may offer the call waiting function. While you are answering a call, you may hear two beeps indicating another incoming call. When call waiting is enabled, you may put the active call on hold while you answer the other incoming call. Check with your cellular service provider on this function.


1. Press  to receive a waiting call.
2. Press  again to switch between calls.

Mute

This function prevents your voice from being transmitted, but you can still hear what the other party talks.

1. Press Soft Key 1 **Menu** and  during a call.
2. To release Mute, press Soft Key 1 **Menu** and  again.

Redialing Calls

1. Press  to redial the last number in call history.
 - ▶ You can also redial any of the last 10 numbers you have dialed. The last 10 numbers can be stored in the call history list. (See the “Recent Call History List” on page 43)

Adjusting the Volume

The volume key on the top of left side(Side Keys) of the phone can be used to adjust earpiece, ringer, key beep volumes. The upper key is used to increase and the lower key is used to decrease the volume.

- You may adjust the earpiece volume during a call.
- The ringer volume can be adjusted through Menu feature.
- If you adjust the ringer volume to minimum, the LCD displays “-Ringer Off-” and you will not hear the ringer sound.
- The key beep volume is adjusted through Menu feature.
- The message volume is adjusted through Menu feature.

Power Save Mode

When the phone is in an area without service for 15 minutes, it stops searching for service and enters into the Power Save Mode. When your phone activates this feature, “Power Save” is displayed on display screen. The phone automatically checks for service periodically or you can check manually by pressing any key.

Signal Strength


The call quality depends on the signal strength in your area. The current signal strength is displayed on display screen as the number of bars next to the signal strength icon: the more the bars, the better the signal strength. If the signal quality is poor, move to the open area. If you are in a building, the reception may be better near a window. For maximum reception, make sure that the antenna is fully extended.

Emergency Dialing

You can place calls to emergency number 911 - even if your phone is locked or restricted.

1. Press  then .

OR

1. Press and hold  (for more than 3 seconds).

Mini Display


Small LCD on outer of folder is called as Caller LCD. It displays the latest one of the following information until the cellcase is open. And the event status will be displayed on main LCD on cellcase open.

Caller LCD will display the following information:

- Time and date.
- Caller's information. (Name or Number)
- Number of missed call.
- Number of new messages.
- No service status and sleep mode.

Speed Dialing (see “Dialing a call from Phone Book” on page 27.)

Speed dialing is a convenient feature, allowing you to make phone calls quickly and easily. Your phone recalls the phone number from your personal directory, displays it briefly, and then dials it.

1. Enter memory location number 1 to 199 except for 9.
2. Press . The phone will recall the telephone number from memory, display it, and then dial it.

Caller ID

Caller ID lets you know who is calling by displaying the

number of the person calling when your phone rings. If the caller's name and number are already stored in your phone book, the corresponding name appears with the number. In the same way, if you call someone who has this feature on their phone, your phone number will be displayed on their phone and the phone number designated as secret is not displayed.

You should check if the cellular service carrier provides this feature.

Phone Book Features

You can store up to 198 entries in the phone book with easy access to your most frequently dialed phone numbers. (Entry 9 is designated to emergency call)



Personal Phone Book Memory

The phone has 198 personal phone book memory locations where you can store up to 5 phone numbers with 32 digit capacity on each phone number. (Entry 9 is designated to emergency call)

Saving Numbers on Your Personal Phone Book

Memory locations 1 through 8 should be used for one-touch dialing for your most frequently used phone numbers.


1. Enter the phone number that you want to save (Up to 32 digits).

2. Press Soft Key 1 **Opt** , the sub-menu will appear.
3. Select "Save" on the sub-menu.
4. The phone will ask you for the memory location where the number will be saved. Press Soft Key 1 **Next** to automatically store the number in the first available memory location. You also have the option to enter a specific three-digit memory location number.
(Entry 9 is designated to emergency call)
5. Select your desired label types (Home, Office, Mobile, Pager, Data/Fax) using .
6. Enter a name (up to 16 characters) and then press Soft Key 1 **Save** . If you do not want to enter a name, press Soft Key 1 **Save** to proceed directly to the next number.
7. You may select the desired ID ring type, secret, and voice recognition option using .
8. Press Soft Key 1 **Save** when you are done.

Retrieving Numbers

Retrieving by Name Search

1. Press Soft Key 2 **Book** .
2. Press [Phone Book].
3. Press [Find Name].
4. Enter the character(s) that you want to search for (such as the few letters of the name).

5. Press Soft Key 1 **Find** .
 - The phone then searches for names with that character string. (Searches will ignore difference between upper case and lower case letters.)
6. You will see a list of matches.
7. Press Soft Key 1 **View** to see specifics in that memory location, or press  to place the call.


Retrieving Telephone Numbers

Retrieving Phone Numbers Using Memory Location Number.

Press Soft Key 2 **Book** on the initial display and select [Phone Book] [Find Entry] will be followed by inquiry of Entry #. The Entry # for telephone number to be retrieved may now be entered.

To search telephone numbers, enter specific number(s) in the initial display and press Soft Key 1 **OK** . By selecting "Find" on the sub-menu, the Entry List will appear. Information linked to the Entry will appear upon selecting telephone number for which details are desired.


Dialing a call from Phone Book

You can place a call from any memory location either by speed dialing or by pressing  while looking up the memory location.

One-Touch Dialing : One-touch dialing is a convenient feature which enables you to dial frequently used numbers in your personal phone book by pressing a key (for memory location 1 through 8).

- ▶ Entry 9 is designated to Emergency Call.
- ▶ For locations 1 to 8, you can use one-touch dialing (if enabled, see “One-Touch” on page 37.) by pressing and holding down the key corresponding to the memory location.

OR

- ▶ Press digit, then press .

Two-Touch Dialing (Speed Dialing) : This dialing feature enables you to dial numbers in your phone book through two keys (for locations 10 to 99).

- 1) Press the first digit.
- 2) Press and hold the key of the second digit.


OR

- 1) Press the first and second digit, then press .


Three-Touch Dialing (Speed Dialing) : This dialing feature enables you to dial numbers in your phone book through three keys (for location 100 to 199).

- 1) Press the first and second digit.
- 2) Press and hold the key of the third digit.

Dialing from a Memory List

- 1) From a memory list, press the scroll keys to go to the memory location you want.
- 2) Press .

Dialing from a Memory Location.

- ▶ On viewing and checking the memory location to call, press .

Advanced Phone Book Feature



1. You can edit existing phone numbers and add the appropriate prefix. If you dial the numbers that you want to added to the front. The numbers you press is added to the beginning of the phone number.

In addition, there are two different pauses that you can use when storing a number:


- ▶ **Hard Pause (H)**
: Pause the phone to stop dialing until you press Soft Key 1 **Resume** to advance to the next number.
- ▶ **Time Pause (T)**
: Cause the phone to wait two seconds before sending the next string of digits.

2. Storing a Number with Pauses

- 1) Enter the phone number.
- 2) Press Soft Key 1 **Opt**.







- 3) Select one out of the following:
 - ▶ Press [Hard Pause].
 - ▶ Press [Time Pause].
- 4) Enter additional number(s) (e.g. pin number or credit card number).
- 5) Press Soft Key 1 **Opt** and press Soft Key 1 **Sel**, the sub-menu will appear and select "Save" on the sub-menu, to save this number with pauses.
- 6) The phone will ask you for the memory location where the number will be saved. Press Soft Key 1 **Next** to automatically store the number in the first available memory location. You also have the option to enter a specific three-digit memory location number.
(Entry 9 is designated to emergency call)
- 7) Select your desired label types (Home, Office, Mobile, Pager, Data/Fax) using .
- 8) Enter a name (up to 16 characters) and then press Soft Key 1 **Save**. If you do not want to enter a name, press Soft Key 1 **Save** to proceed directly to the next number.
- 9) You may select the desired ID ring type, secret, and voice recognition option using .
- 10) Press Soft Key 1 **Save** when you are done.
3. "Prepending" a Stored Number : "Prepend" can be used if you are out of your home system and

need to add the area code to an existing phone book number. When a phone book entry or message callback number shows up on the display, you can make addition to the beginning of the original number. However, you cannot edit the original number during "Prepending".

- 1) Recall a number in memory.
- 2) Enter the appropriate digits to prepend numbers and the phone number.
- 3) Press .





Chapter 3. Menu Features

General Guidelines to MENU Access and Settings

1. Press Soft Key 1 **Menu**. The three menu items will appear on the display screen.
2. Press ,  or  to go through the list of menu features.
3. Press the corresponding number to the menu item that you want to select. Then the sub-menu list will appear on the screen.
4. Press the appropriate key to select the sub-menu you want to access.
5. Select preferred settings, using the ,  or . Press Soft Key 2 **Back** to go one step backward while accessing menu or selecting settings.
6. Press Soft Key 1 **Ok** to save the settings or Soft Key 2 **Back** to cancel without saving.

Sound (Menu 1@)





Ring Sound (Menu 1@ 1@)

Select the ringer sound with , ,  or . The ring sound will notify that you have an incoming call.

Ring Type (Menu 1@ 2@)

Select one out of four ring types (Ring, Vibrate, Vib+ Ring and Lamp) with , ,  or .

Ring & Vibrate Volume (Menu 1@ 3@)

Adjust the volume of the ringer using the , ,  or .

When lamp is selected, the message “Ring Type is Not Adjustable” is displayed on the display screen and adjusting the volume of Ring and Vibrate is not available.

Key Tone (Menu 1@ 4@)

Set Key Tone length and touch tone playback speed.

- ▶ Normal : Sends out a tone for a fixed period of time only if you keep the key pressed.
- ▶ Long : Sends out a continuous tone for as long as you keep the key pressed.

Key Volume (Menu 1@ 5@)

Adjust the key beep volume (the volume of sound on key pressing).

Earpiece Volume (Menu 1@ 6@)

Adjust the earpiece volume during a call, by pressing the Side Keys.

Alerts (Menu 1@ 7@)

1. Fade (Menu 1@ 7@ 1@)

Set an alert to inform you when you have lost a call or lose services.

2. Minute (Menu 1@ 7@ 2@)

Alerts you 10 seconds before the end of every minute during a call.

3. Service (Menu 1@ 7@ 3@)

If on, alerts you when service changes.

When you enter a service area, the phone displays “Entering Service Area” message.

When you leave a service area, the phone displays “Leaving Service Area” message.

4. Call Connect (Menu 1@ 7F09 404)

Alert tone notify the user of the time when the call is connected.

Display (Menu 2ABC)

Backlight (Menu 2ABC 1@)

Choose the settings of the LCD and keypad backlight. “10 seconds” turns the backlight off 10 seconds after the last key was pressed. “30 seconds” turns the backlight off 30 seconds after the last key was pressed. “On when Cellcase open” means that the backlight is always on while cellcase is open. “Always off” means that the backlight is never on.

Banner (Menu 2ABC 2ABC)

Allows you to enter or change the character field (up to 16 characters) displayed on the main screen. Press Soft Key 1 [Opt] and select [Edit] using the [] key press Soft Key 1 [Sel] , to make changes to the existing banner. Enter the characters as you would when storing a name tag to a memory location. Then press Soft Key 1 [Save] .

Theme (Menu 2ABC 3DEF)

You can set up the screen displayed on the LCD screen in the standby mode. (Default, Star theme)

Language (Menu 2ABC 404)

Set the Multi-language feature as per your need.

Available language : English / Spanish

Version (Menu 2ABC 504)

View the software and PRL version.

System (Menu 3DEF)

System Select (Menu 3DEF 1@)

Choose setting to control which cellular company your phone uses. Leave this setting as default unless you want to alter the system selection. (As instructed by your service provider.)

► Home is B (Automatic_B, Automatic_A, Home only) is displayed.

Set NAM (Menu 3DEF 2ABC)

Select the phone’s NAM (Number Assignment Module) if the phone is registered with multiple service providers.

Auto NAM (Menu 3DEF 3DEF)

Allows the phone to automatically switch to one of the programmed Telephone No. if it is operating in the corresponding service provider area.

Force Call (Menu 3DEF 404)

Make next call in analog mode. You have 30 seconds to place an analog call. This feature is typically used for data applications.

Serving System (Menu)

You can identify the Channel number of System which is served and SID Number.

This information is only for technical support.

Features (Menu)

Data/Fax (Menu)

In "Data/Fax" setting, data and fax can be transmitted. Wireless data communication services refer to utilization of subscriber terminals for access to internet with personal computer or laptops at 8Kbps or at maximum of 13Kbps.

- Data In : This setting enables the subscriber terminal to receive data calls.
- Fax In : This setting enables the subscriber terminal to receive fax transmittals.

Auto Answer (Menu)

Select the ring type before the phone automatically answers a call. This feature is most commonly used with the car kit.

- Off
- after 1 ring(or melody 5 seconds)
- after 3 rings(or melody 10 seconds)
- MACHINE Enable

When you have incoming call, the phone automatically response with pre-recorded voice message and record caller's speech after 3 rings.

Auto Retry (Menu)

Set the length of time the phone waits before

automatically redialing a number when the attempted call fails.

- off / every 10 seconds / every 30 seconds / every 60 seconds

One-Touch (Menu)

Enable/Disable one-touch dialing.

Voice Privacy (Menu)

Set the voice privacy feature for CDMA calls as "Enhanced" or "Standard" : CDMA offers inherent voice privacy. Check with your service provider for availability of the enhanced voice privacy mode.

Audio AGC (Menu)

Enable/Disable the function of Audio AGC system.

This feature provides a better audio experience by enabling the Audio AGC system to control the dynamic range and volume of the sending and receiving voice across different levels of speaker and environments.

Utility (Menu)



Country Code (Menu)

You can search for the national code of all countries in the world. (total 123 countries)

Calculator (Menu)

You can calculate simple mathematics. (Can be entered up to the second decimal place)

For example) $25 \times 100 = 2500$

1) Press  and  in order.

2) Select × (multiplication) using Keys.

3) Press , , and in order.

4) Select [=] using Soft Key 1.

Then you will see the result of calculation “2500”.

Security (Menu)

Lock code is commonly last 4 digit of your phone. (You must enter the lock code after pressing [Menu]). If you need to modify the password, you may modify it using the “New Lock Code” of Security.

Lock Mode (Menu ,)

Helps you to protect your phone from unauthorized use and once the phone is locked, the phone is restricted from making calls until the lock code is entered.

However you can still receive phone calls and make emergency calls while your phone is locked. “Never” means that the phone is never locked (Lock mode can be used). When locked, you can only make emergency calls or receive incoming calls. “On power up” means that locked the phone when the phone is turned on. “Always” means that the phone is always locked.

Restrict (Menu ,)

Set call restrictions to “Yes” or “No”. If set to “Yes”, you can only make calls to emergency numbers and phone numbers in Phonebook Entry. You can still receive calls in restrict mode. Check with your service provider.

Clear Call (Menu ,)

Allows you to delete all the telephone number saved in the “Call History”.

Clear Data (Menu ,)

Deletes all informations saved in memory location (001-199), schedule and message. (Entry 9 is designated to Emergency Call). Be careful since any deleted information is not recoverable.

Emergency # (Menu ,)

To enter 3 emergency numbers ([Edit] → enter number → [Save] → [] →). You can call these numbers and 911 even when the phone is locked or restricted.

New Lock Code (Menu ,)

New Lock Code allows you to enter a new four-digit lock code number. For confirmation, it will ask you to enter the new lock code twice. This is the same number as the pin code.

Voice Service (Menu)

Allows you to make a call by simply saying the programmed word and when you are not available to answer the phone, the caller can leave the message into voice mail and you can playback the message later.

- Voice Dialing :

You can make a call by simply saying the programmed word.

- Voice Recording :

You can record conversation over the phone.

- Voice Memo :

When you are not available to answer the phone, the caller can leave the message into voice mail.

- Auto Answering Machine :

When you are not available to answer the incoming call, you may set your phone as auto answering machine and playback the recorded message later .

- ◆ To record the voice command, Press **CLR** in Hands-Free Kit and record the voice command as per your preference.
- ◆ When you hear “Incoming call answer?” in Hands-Free Kit, if the user say “yes” the call is connected, say “no” the bell rings.

Voice Memo (Menu **7P99** **1@**)

When you are not available to answer the phone, the caller can leave the message into your voice mail and you can playback the recorded message later.

There are 2 options, Playback or Record. In playback mode, you will have the list of the recorded message and you can hear all recorded messages by pressing



Training (Menu **7P99** **2AB**)

Allows you to practice the voice command.(Yes/No)

Undo Train (Menu **7P99** **3DEF**)

Allows you to delete the recorded voice command for the practice.

Voice Setup (Menu **7P99** **4GH**)

There are three options (Manual, Auto and Disable) for Voice Dialing. On manual mode, press **CLR** to start this feature. On auto mode, this feature will be available upon opening the cellcase. On Disable mode, Voice dialing is disabled when you press **CLR**, Disabled message will be displayed on the screen.

Browser Start (Menu **8UV**)

See “Chapter 7. MiniBrowser” on page 58~64

Chapter 4. Book Features

Call History (Book 1@)

Allows you to view the 30 most recently dialed phone numbers. Once you exceed the 30-number storage limit, the oldest call history record is overwritten. These calls are divided into 3 types of calls.

Outgoing (Book 1@ 1@)

Allows you to view list of all outgoing calls you made and you may place a call by pressing the **SEND**.

Incoming (Book 1@ 2@)

Allows you to view list of all incoming calls and you may place a call by pressing the **SEND**.

Missed (Book 1@ 3@)

Allows you to view list of all missed calls and you may place a call by pressing the **SEND**.

Call Information (Book 1@ 4@)

1. Last Call (Book 1@ 4@ 1@)

Displays the time of last call made.

2. Home Calls (Book 1@ 4@ 2@)

Allows you to keep a running count of the time you spend making calls in your service area since last reset. To reset the call timer, press Soft Key 1 **Opt**, and then select Soft Key 1 **Sel** after selecting [Zero] using the **↵**.

3. Roam Calls (Book 1@ 4@ 3@)

Allows you to keep a running count of the time you spend making calls in non-service area. To reset the call timer, press Soft Key 1 **Opt**, and then select Soft Key 1 **Sel** after selecting [Zero] using the **↵**.

4. All Calls (Book 1@ 4@ 4@)

Allows you to keep a running count of the time you spend making all calls either in your service area or in non-service area. To set the call timer is not available.

Recent Call History List


Allows you to view the 30 most recently dialed phone number and speed dialing for the phone number in Call History is available.

1. Press Soft Key 2 **Book**.
2. Press [Call History]
3. Example : Press [Outgoing]
4. Press **END***, **#** or **↵** to scroll through the last ten calls and scroll to the number you want to call.
5. Press **SEND** to place a call or choose [View] of Soft Key 1 **Opt** to see the details of the call. Press Soft Key 1 **Opt** and select **Save** to save the number in memory location.(If you need further information, please refer to 25–26)

Phone Book (Book)


Find Entry (Book)

1. Press Soft Key 2 **Book**.
2. Press [Phone Book] [Find Entry]
3. Your phone will prompt you to enter entry by displaying "Enter Entry #" on display screen.
4. Enter entry. If you press Soft Key 1 **Ok** without entering any entry, you may view all the list saved in your phone book.

Note While you are on any entry, you may move to another entry by pressing Up/Down () key and if you press Soft Key 1 **Opt**, you can save or erase.

Find Name (Book)




1. Press Soft Key 2 **Book**.
2. Press [Phone Book] [Find Name]
3. Enter the name you want to search for and press Soft Key 1 **Find**. If the name is found, the name will be displayed and if the name is not found, "Not Found" message will appear.

Note On Find Name menu, you can change mode by pressing  (T9En -> Eng -> 123 -> Spc -> T9HLP)

Add Entry (Book)

You can save telephone numbers, pager number, and so on, up to 198 entries (Entry 9 is designated to Emergency Call.)


1. Press Soft Key 2 **Book**.
2. Press [Phone Book] [Add Entry]




3. Enter phone number, then press Soft Key 1 **Next**.
4. Select the memory location number.
5. Select the desired phone label using .
6. Enter Name.
 - ▶ To enter Email address, select [Email] from label, press  to move to the available enter Email address.
7. You may select the desired ID ring type, secret, and voice recognition option using .
8. Press Soft Key 1 **Save** when you are done.

Note Phone Type

Home	: Entry of Home Phone Number
Office	: Entry of Office Phone Number
Mobile	: Entry of Mobile Phone Number
Pager	: Entry of Pager Number
Data/Fax	: Entry of Data/Fax Number
E-Mail	: Entry of E-mail Address

Find Email (Book)

1. Press Soft Key 2 **Book**.
2. Press [Phone Book] [Find Email]
3. Enter the Email address you want to search for and press Soft Key 1 **Find**. If the Email address is found, the Email address will be displayed and if the Email address is not found, "Not Found" message will appear.
 - ▶ Select the item you want to view using the .
4. After selecting the Email address to edit from Email list, if you press Soft Key 1 **View**, phone book entry will be displayed.

5. After selecting Email label from level, press  to move to the available entry where to edit or delete.
6. To save, press Soft Key 1 **Save**.
 - ▶ To delete Email address : Move to the Phone book from either Find Email or Find Entry and after selecting the Email label, press  to move to the memory location, press and hold  for a while to delete Email address and press Soft Key 1 **Save** for confirmation.

Function of Scheduler

Scheduler helps you maintain a convenient agenda by storing Schedule by date and letting you know when the time comes. You may also take advantage of its "Wake up" functions.

Scheduler Item Descriptions

Scheduler (Book)

Current date/year will appear.

After selecting the required date, press Soft Key 1 and then, the selected schedule of date/year will appear on the display screen (This function is available on 'Add Event' and 'View Daily' menu only).

Date/Time Edit - Time display is a 24-hour clock setting (i.e., 6:30am = 06:30, 1:30pm = 13:30)

Add Event (Book (Soft Key 1))

- Date/Time Edit.
- After editing the date and time, press Soft Key 1 **Ok**.
- Enter items for "Scheduler" on "Description" display.
- Select [Save] in Soft Key 1 **Opt**.

View Daily (Book (Soft Key 1))

- All events of the selected date will appear.
- You may select either 'Edit' or 'Erase'.

View All (Book (Soft Key 1))

- All stored entry will appear.
- You may select either 'Edit' or 'Erase'.

Erase All (Book (Soft Key 1))

- When you are asked to 'Erase All'.
- To delete information, scroll to "Yes" and press Soft Key 1 **Ok**.
- All items in Schedule will be deleted.

Erase Old (Book (Soft Key 1))

- When you are asked to 'Erase Old'.
- To delete information, scroll to "Yes" and press Soft Key 1 **Ok**.
- Past "Scheduler" items will be deleted.

Wake Up (Book 4^{OH})

Set Alarm (Book 4^{OH} 1[@])

- Current time will show upon entering menu.
- Set time for alarm and press Soft Key 1 **Save**.
- At alarm time "Wake Up" will appear on the display screen and alarm will wake up you.
- Ringing (or vibration) will stop when any key is pressed or Cellcase is opened.
- Ring volume is controlled according to setting in reception mode. However, ringing (or vibration) will not be heard when reception mode is in "Lamp".
- Set Alarm - Time display is a 24-hour clock setting (i.e., 6:30am = 06:30, 1:30pm = 13:30)

Erase Alarm (Book 4^{OH} 2^{ABC})



- Alarm will be deleted.

Viewing Your Telephone Number (Book 5^{ML})

To view your phone number :


1. Press Soft Key 2 **Book**.
2. Highlight "My Phone #" and press Soft Key 1 **Sel**.

Chapter 5. Message Features

Text message, page and voice mailbox become available as soon as the power is on. You can access the above types of messages using the Message Key (). In addition, you can make a call to the call back number by pressing the  during a message check.

The phone can store up to 30 messages (Voice message : 1, Text messages 29) with 245 characters per message. However, you should check whether your carrier provides the above features.

Character limits : The LG-TM510 supports up to 245 characters per message including header information. Limits to available characters per message may exist, please check with your service provider for system capabilities.

The information that is stored on the message is determined by phone mode and service capability. You can check types of messages by pressing the Message Key () .

Types of Menu

- ▶ Voice : Shows the number of messages in voice mail.
- ▶ Send Msg
- ▶ New Text : Newly received text messages.
- ▶ Old Text : Opened but not erased text messages.
- ▶ Outbox : Informs the status of the saved message.
- ▶ Erase Msgs : Deletes all stored messages.
- ▶ Setting : Selects alert type for new message(s).
- ▶ Browser Msg
- ▶ Browser Set

New Message Alert


There are four ways your phone alerts you of new message.

1. The phone displays the message on the display screen.
2. One of four types is heard (if selected).
3. The red light blinks.
4. The message icon is displayed on the display screen [✉]. In the case of an urgent message, the icon will flash and an “asterisk” mark will be displayed on both sides of the message.



Note If you receive the same message twice, your phone deletes the older one and the new one is stored as “DUPLICATE”

Voice (📞)

Allows the others to view the voice messages recorded in my voice mail box.

If the call back number is available, you press  , a call will be placed to the call back number.”

Checking of Voice Mailbox

1. Press  (✉) .
2. Select “1. Voice”
3. Press  .

(If the call back number is available)

Out of Memory Warning

No more messages can be received until enough memory space becomes available.

At this time, the message “NOT ENOUGH MEMORY” will be displayed on the display screen and New Message is rejected.

Send Message (📧)

Menu

Send To : On this feature, multi sending address is available. When you have a sending message to the many different sending address, you can send message to numbers of sending address up to 10 addresses.

There are four optional menu of Continue, Next address, previous address, Phone book.

- ▶ Continue : Used to save the current address.
- ▶ Next address : Allows you to enter the next sending address.
- ▶ Previous address : Allows you to enter the previous sending address.
- ▶ Phone book : Allows you to refer to the address in phone book.

MSG : Allows you to enter the actually transmitted message.

There are four available optional menu of Send, Save, Option, Canned.

- ▶ **Send** : Used to send the message.
- ▶ **Save** : Used to save sending address, call back number, user data, current time.
- ▶ **Option** : Send, CB#, Priority, Deferred, Validity, Delivery ack are available option.
- ▶ **Canned** : Allows you to record the most frequently used word up to 10.
 - 10 texts : Yes, No, Call me, Need directions, Where are you?, Will call later, Busy, On my way, Will arrive 15 minutes, Thank you.

Send: Used to send the message.

CB# : Used to enter the call back number.


Priority: Allows you to give the priority to message. "Normal or Urgent".


Deferred: Allows you to delay sending the message until the programmed time frame.

Delaying time frame is as follow : Immediate, After 30 min., After 1 hour, After 2 hour, After 12 hour, After 1 day and After 2 days.

Validity: Indicates the validity of message delivered to the Short Message Center(SMC) without being transmitted to the sending address for certain period of time. Those message will be deleted within the programmed time frame. Validity time frame is as follow : 30 minutes, 1 hour, 2 hour, 12 hour, 1 day, 2 days and Continue.



Delivery ack : Allows you to recognize the message transmisson has gone through.


When all fields are entered, press  to send the message.

If you press  without sending address, a warning message is displayed on the display screen. When the message has gone through, confirming message is displayed on the display screen. If the message has not gone through, "MSG not Delivered" message will be displayed with one of the five failing reasons (Network Problem, Not available, Invalid address, MSG too long, Not support, MSG failed).

New Text ()

Reading Newly Received Text Messages

The latest message will be automatically displayed on the screen. To scroll through the received messages, use the  or .



After reviewing a message, you can go to next new message by .

If you press Soft Key 1 , then you can see 5 sub-menus:

Reply : This function reply the SMS to originating address or email address. If the SMS has both of originating address and email address, the reply will be sent to email address only.

Forward : Allows you to forward a call to a different address or number.

Erase : Deletes a message.




Save addr. : Shows the phone number, E-mail list on LCD. You can save the phone number on the list into phonebook by press Soft Key 1 . If you want to place a call to the number, press .

You can see the E-mail addresses up to five and the address with '@', '.' on it is considered as E-mail address. On E-mail, if you press Soft Key 1 **Opt**, you can save E-mail address into new or old entry.

Protect? : Protects a message even when all the other messages are deleted. There are two options of disable and enable. When you select (protect?), a “*” will be displayed in front of each message.

※ Auto Delete function: If you exceed storage capacity, old messages will be overwritten but, the message under protection will not be erased.






Old Text ()


1. Press  () .
2. Select “4. Old Text”.
- 1) Lists messages opened but not deleted by user.
- 2) The saved messages displayed on the screen can be selected by pressing [] Key.

Outbox ()

Displays the status of the messages recorded in the voice mail box.

▶ status

-  : Save
-  : Send - Messages saved in Short Message Center (SMC) have been transmitted.
-  : Fail
-  : Delivery - Message has been delivered.
-  : Cancel-Allows you to cancel sending a message.

 : Multi-sending address.

▶ Option menu is available. Option menu includes View, Erase and Cancel.

Resend : Allows you to retransmit the selected message.

View : Shows the message saved in current.

The view menu has Three sub menu of Resend, Open, Erase.

- Resend : Allows you to retransmit the selected message.

- Open : ‘Open’ is used to copy the saved message.

- Erase : Used to delete the recorded message.

Erase : Used to delete the recorded message.

Cancel : ‘Cancel’ is used when the message is not gone through for some reason. If you press Soft Key 1 **Save**, the message you tried to transmit is erased.

Erase Message ()

All the voice mailbox messages, text messages and pages are deleted when you select “6. Erase Message” from the Message Menu screen. The message under protection is not erased.

Erase Inbox ()

Allows you to delete all the records in inbox except the information under protection.

Erase Outbox ()

Allows you to delete all the information saved in outbox.

Erase All ()

Allows you to delete all the information saved in outbox, inbox.

Setting (7F00 1@)

There are many ways your phone alert you of a new voice mail message :

- By displaying a message on the screen.
- By sounding a beep or vibration.
- By flashing a lamp.

Alert (7F00 1@)

Allows you to select the alert type for a new message. Alert types are 2 alerts, 4 alerts, Lamp and Vibrate.

2Min Alert (7F00 2@)

User may select 2-min alert for reminder in case a new message(s) is not opened.

Default CB# (7F00 3@)

Enables its own phone number to be verified on call back menu.

Auto Save (7F00 4@)

Setting menu to save sent messages in the outbox automatically.

Auto Delete (7F00 5@)

Setting menu to delete the message automatically when you exceed storage limit.

Browser Msg (8100), Browser Set (9000)

See "Chapter 7. MiniBrowser" on page 58~64

Chapter 6. Functions Used During a Call

Mute (During a call : Menu 1@)

- Sometimes it is necessary to mute a call so that caller does not hear you or certain background noise. To use this function during a call, Press Soft Key 1 **Menu** and 1@ .
- If you need to release mute press the Soft Key 1 **Menu** and 1@ again.

Memo (During a call : Menu 2@)

Provides a place to take a note. you can use it like a piece of paper to make a note during a meeting.

Recording (During a call : Menu 3@)

Allows you to record the conversation over the phone by pressing **CLR** . This operation toggles between Enable and Disable.

Key Tone (During a call : Menu 4@)

Set Key beep length and touch tone playback speed.

- Normal : Sends out a tone for the duration of time no matter how long you keep key pressed.
- Long : Sends out a continuous tone as long as you keep the key pressed.

Voice Privacy (During a call : Menu 5@)

Set the voice privacy feature for CDMA calls as "Enhanced" or "Standard" :

CDMA offers inherent voice privacy. Check with your service provider for availability of the enhanced voice privacy mode.

Chapter 7. Mini Browser



The MiniBrowser feature allows you to view internet content specially designed for mobile phone interface. Access and selections within this feature are service provider dependent.

For specific information on MiniBrowser access through your phone, refer to your service provider.

Overview

The MiniBrowser allows the user to use a variety of Internet service. Using the MiniBrowser on the phone allows you to:

- ▶ Send and receive Internet e-mail.
- ▶ Browse and search the World Wide Web via web pages specially designed for cellular customers.
- ▶ Set bookmarks to directly access your favorite sites.
- ▶ Retrieve information such as stock quotes and flight schedules from the Internet.

Quality of Browser

Browsing the web via the phone is not like using your home computer. Site providers have selected only the critical aspects of their site to present to wireless phone users, and have removed most graphics.

Billing

Each time you start MiniBrowser, the phone will connect to the Nationwide Network as necessary, and the phone icon (In Use Icon) will appear on the display screen, and you will be billed accordingly. Rates will vary according to your billing plan.

Each time you start the MiniBrowser, you will view a reminder that you will be billed for the connection time. If you wish to disable this reminder, follow the steps below:

1. Message Menu() ➤ Browser Set () ➤ Prompt ()
2. Disable the reminder by selecting “None” using .

Accessing the MiniBrowser

You can access MiniBrowser by pressing and hold in initial screen or by selecting item from Main Menu screen.


Start MiniBrowser (Menu)

- 1) From the Main Menu, highlight [8. Browser Start] and press Soft Key 1 .
- 2) A reminder of the charge will appear; press Soft Key 1 to launch the MiniBrowser if required.
- 3) After a few seconds, you will see the Home Page.

Ending MiniBrowser Session

You can end a MiniBrowser session by pressing .

If the prompt “To end” or “Both” option is set in the MiniBrowser Setup, you will be prompted whether you want to end the browser call. (Message Menu() ➤ Browser Set () ➤ Prompt ()

Ending browser calls - Users should be able to end a browser session by pressing  .

Navigating through the Browser




While using the MiniBrowser, you will find that on the screen items may be presented in one of the following ways:

- ▶ numbered options (some options may not be numbered).
- ▶ links (embedded in content).
- ▶ text or numeric input.
- ▶ simple text.


You can act on the options or the links by making use of Soft Keys. The Soft Keys are just below the display screen.

Navigator Keys

Scrolling Up/Down by Item

You can use your  to scroll through the content if the current page does not fit into one screen. The currently selected item is indicated by a “” cursor on the screen, and the [] key will also move the cursor.

Fast Scrolling Up/Down

Press and hold  to move the cursor up and down fast on the current screen.


Scrolling Up/Down by page

Press Side Keys to move screen page up and down.



Go to Home Page

To go back to the Home Page, press and hold  .


View Browser Menu

Press and hold  to use browser menu when the MiniBrowser is being used.

Clearing out text/number entered

When entering text or numbers, press  to clear the last number, letter, or symbol. And press and hold  to completely clear the input field.

Selecting and activating items using Soft Keys and/or digits

If the items on a page are numbered, you can use your keypad (number) Keys or  to select an item, or you can select the items by moving the cursor and selecting the appropriate Soft Keys.

Soft Keys

To navigate to different screens or select special functions, use the Soft Keys. Soft Keys are just below the display screen. Note that the function associated with the Soft Keys can be changed on each page and depends on each highlighted item.

Soft Key 1

:The Soft Key 1 is used primarily for first options or selecting item but its function may change, depending on what the content is displayed.


Soft Key 2


:The Soft Key2 is used primarily for secondary options, or a menu of secondary options.

Entering Text, Numbers, or Symbols

When you are prompted to enter text, the current text entry method will appear on the Soft Key 2 as alpha, smart, Number, or Symbol. (exact label depends on implementation)

To change the input mode, use the Soft Key 2.

If you create a upper case character, use . And the current text method will appear on the Soft Key 2 as ALPHA or SMART.

 allows user to “shift” to input case sensitivity.

Initiating a phone call from the MiniBrowser


You may initiate a phone call from the MiniBrowser if the site you are using supports the feature, (the phone number may be highlighted and the Soft Key 1 will appear as “Call”)

The browser connection will be terminated when you initiate the call. After you end the call, your phone will return to the screen from which you initiated the call.


Using Bookmarks

You can bookmark many individual pages for easy access at a later time. Bookmarks save you time by reducing the number of steps it take to access a desired page.

To create a bookmark:


Go to the page that you want to mark. On the browser menu, select [Mark Site] or pressing and hold .

If the page has a title, it will be automatically used for the name of the bookmark. When bookmark is saved you could change the bookmark name if you want. Selecting Save will save the name and add the page to your list of bookmarks.

A message will appear confirming that the bookmark was added to the list. Select Soft Key 1  to return to the screen that you marked to resume navigation within the Mini Browser.

The new bookmark is added to the bottom of your bookmark list.

Finding a bookmark

From the Home Page or Pressing and hold , select the bookmark you want .

Or

From the Home Page, press and hold the number associated with the bookmark in the bookmark list.


Browser Message (Message Menu () -> Browser Msg ())

If there is any browser alerting messages, then display the list.

Browser Setting (Message Menu () -> Browser Set ())

Type of Browser setting Menu.

Prompt : Whether to inform users before making MiniBrowser calls will be charged and prompt them whether to launch the browser or not. This step is used to prevent accidental activation of the browser since all subscribers will be provisioned with browser automatically.

A message is also available to inform the users whether or not they want to exit the browser after they press . Users can disable the extra step (or enable if it is disabled) through a menu option. “To end”, “None”, “To start”, and “Both”.

Alert Sound : There are 3 types of beeps. 2 alerts, 4 alerts, Mute option are provided in this menu. User can assign a browser alerting message sound.

Chapter 8. Accessories

There are a variety of accessories available for the phone. You can select these options according to your personal communication requirements. Consult your local dealer for availability.

Travel Charger

This charger, model TC-10W, allows you to charge the battery pack. It supports standard U.S. 120Volt 60Hz outlets. While an orange light indicates that it is charging, a green light indicates charging is complete. It takes 5 hours to charge a completely discharged battery.



Battery (LGLi-AAEM)

Standard battery and Extended battery are available.



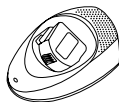
Standard battery



Extended battery

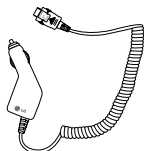
Desktop Charger

The desktop charger, model DC-41W, allows you to place the phone for charging the stand. It can charge a completely discharged battery in 3 hours.



Cigar Lighter Charger

You can operate the phone and trickle charge the phone's battery from your vehicle by using the cigarette lighter charger, model CLC-11W. It takes 5 hours to charge a completely discharged battery.



Chapter 9. Appendix

Menu Tree

- Sound**
 - 1. Ring Sound
 - 2. Ring Type
 - ▶ Ring
 - ▶ Vibrate
 - ▶ Vlb+Ring
 - ▶ Lamp
 - 3. Ring & Vlb Vol.
 - 4. Key Tone
 - ▶ Normal
 - ▶ Long
 - 5. Key Volume
 - 6. Ear Volume
 - 7. Alerts
 - ▶ Fade
 - ▶ Minute
 - ▶ Service
 - ▶ Call Connect
- Display**
 - 1. Backlight
 - ▶ 10 seconds
 - ▶ 30 seconds
 - ▶ On when
 - ▶ Cellcase open
 - 2. Banner
 - 3. Theme
 - ▶ Always off
 - ▶ Default
- System**
 - ▶ Star theme
 - 4. Language
 - 5. Version
 - 1. System Set
 - ▶ Automatic A
 - ▶ Automatic B
 - ▶ Home only
 - 2. Set NAM
 - 3. Auto NAM
 - 4. Force Call
 - 5. Serving Sys
- Features**
 - 1. Data/Fax
 - ▶ Off
 - ▶ Fax In
 - ▶ Data In
 - 2. Auto Answer
 - ▶ Off
 - ▶ after 1 ring
 - ▶ after 3 rings
 - ▶ MACHiNE Enable
 - 3. Auto Reply
 - ▶ Off
 - ▶ every 10 seconds
 - ▶ every 30 seconds
- Utility**
 - ▶ every 60 seconds
 - 4. One-Touch
 - 5. Voice Priv.
 - 6. Audio AGC
 - 1. Country Code
 - 2. Calculator
- Security**
 - 1. Lock mode
 - ▶ Never
 - ▶ On power up
 - ▶ Always
 - 2. Restrict
 - 3. Clear Call
 - 4. Clear Data
 - 5. Emergency #
 - 6. New Lock Code
- Call History**
 - 1. Outgoing
 - 2. Incoming
 - 3. Missed
 - 4. Call Info
- Phone Book**
 - 1. Find Entry
 - 2. Find Name
 - 3. Add Entry
 - 4. Find Email
- Scheduler**
 - 1. Add Event
 - 2. View Daily
 - 3. View All
 - 4. Erase All
 - 5. Erase Old
- Wakeup**
 - 1. Set Alarm
 - 2. Erase Alarm
- My Phone #**
- Voice**
- Send Msg**
- NewText**
- OldText**
- Outbox**
- Erase Msgs**
 - 1. Erase Inbox
 - 2. Erase Outbox
 - 3. Erase All
- Setting**
 - 1. Alert
 - 2. 2 Min Alert
 - 3. Default CB#
 - 4. Auto Save
 - 5. Auto Delete
- Browser Msg**
- Browser Set**
 - 1. Prompt
 - 2. Alert Sound

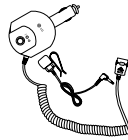
Press Soft Key 1 Menu. Press or to scroll.

Press Soft Key 2 Book. Press or to scroll.

Press Mouse Key. Press or to scroll.

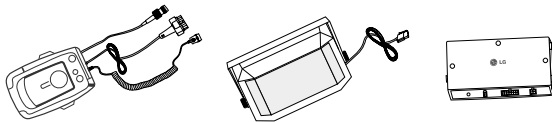
Hands-Free Car Kit (Portable)

The hands-free car kit, model PHF-30W, enables you to attach the phone to the car providing you with hands-free operation. It will also charge a completely discharged battery in 5 hours.



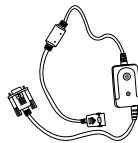
Hands-Free Car kit (Install)

The installed hands-free car kit model IHF-51W is permanently installed in your car, and provides you with hands-free operation. It will also charge a completely discharged battery is shows.



Data Cable Kit

Connects your phone to your PC. (Model KW-α)



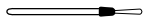
Headset

Connects to your phone, allowing hands free operation. Includes earpiece, microphone and mute key.

(Model Headset 1000)



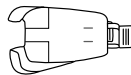
Hand strap



AC Adaptor



Holster



Chapter 10. Safety Guidelines

Safety Information

Exposure to Radio Frequency Signal

Your wireless handheld portable telephone is a low power radio transmitter and receiver. When it is ON, it receives and also sends out radio frequency(RF) signals.

European and international agencies have set standards and recommendations for the protection of public exposure to RF electromagnetic energy.

- ▶ International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1996
- ▶ Verband Deutscher Elektrotechnik(VDE) DIN-0848

Directives of the European Community, Directorate General V in Matters of Radio Frequency Electromagnetic Energy

- ▶ National Radiological Protection Board of the United Kingdom, GS 11, 1988
- ▶ American National Standards Institute(ANSI) IEEE C95.1-1992
- ▶ National Council on Radiation Protection and Measurements (NCRP), Report 86
- ▶ Department of Health and Welfare Canada, Safety Code 6

Those standards were based on comprehensive and periodic evaluations of the relevant scientific literature. For example, over 120 scientists, engineers, and physicians from universities, government health agencies, and industry reviewed the available body of research to develop the ANSI Standard (C95.1).

The design of your phone complies with these standards when used normally. Use only the supplied or an approved replacement antenna. Unauthorized antennas, modifications, or attachments could damage the phone and may violate FCC regulations.

Efficient Phone Operation

Normal Position

Hold the phone as you would any other telephone with the antenna pointed up and over your shoulder.

Tips on Efficient Operation:

For your phone to operate most efficiently;

- Extend your antenna fully
- Do not touch the antenna unnecessarily when the phone is in use. Contact with the antenna affects call quality and may cause the phone to operate at a higher power level than otherwise needed.

For Vehicles Equipped with an Air Bag

An air bag inflates with great force. DO NOT place objects, including both installed or portable wireless equipment, in the area over the air bag or in the air bag deployment area. If in-vehicle wireless equipment is improperly installed and the air bag inflates, serious injury could result.

Batteries

Caution : All batteries can cause property damage, injury or burns if a conductive material, such as jewelry, keys or beaded chains, touches exposed terminals. The material may complete an electrical circuit and become quite hot. To protect against such unwanted current drain, exercise care in handling any charged battery, particularly when placing it inside your pocket, purse or other container with metal objects. When the battery is detached from the phone, your batteries are packed with a protective battery cover, please use this cover for storing your batteries when not in use.

Check the laws and regulations on the use of wireless telephones in the areas where you drive. Always obey them.

Also, if using your phone while driving, please:

- ▶ Give full attention to driving-driving safely is your first responsibility;
- ▶ Use hands-free operation, if available;
- ▶ Pull off the road and park before making or answer a call if driving conditions so require.

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

Pacemakers

The Health Industry Manufacturers Association recommends that a minimum separation of six(6") inches be maintained between a handheld wireless phone and a pacemaker to avoid potential interference with the pacemaker. These recommendations are

consistent with the independent research by and recommendations of Wireless Technology Research.

Persons with pacemakers;

- ▶ Should ALWAYS keep the phone more than six inches from their pacemaker when the phone is turned ON;
- ▶ Should not carry the phone in a breast pocket;
- ▶ Should use the ear opposite the pacemaker to minimize the potential for interference;

If you have any reason to suspect that interference in taking place, turn your phone OFF immediately.

Hearing Aids

Some digital wireless phones may interfere with some hearing aids. In the event of such interference, you may want to consult your hearing aid manufacturer to discuss alternatives.

Other Medical Devices

If you use any other personal medical device, consult the manufacturer of your device to determine if they are adequately shielded from external RF energy. Your physician may be able to assist you in obtaining this information. Turn 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 manufacture or its representative regarding your vehicle. You should also consult the manufacturer of any equipment that has been added to your vehicle.

Posted Facilities

Turn your phone OFF in any facility where posted notice so require, FCC regulations prohibit using your phone while in the air. Switch OFF your phone before boarding an aircraft.

To avoid interfering with blasting operations, turn your phone OFF when in a "blasting area" or in areas posted; "Turn off two-way radio". Obey all signal and instructions.

Turn 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.

Areas with a potentially explosive atmosphere are not always clearly marked. They include fueling areas such as gasoline stations; below deck on boats; fuel or 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.

FDA Consumer Update

FDA has been receiving inquiries about the safety of mobile phones, including cellular phones and PCS phones. The following summarizes what is known—and what remains unknown—about whether these products can pose a hazard to health, and what can be done to minimize any potential risk. This information may be used to respond to questions.

Why the concern?

Mobile phones emit low levels of radiofrequency energy (i.e., radiofrequency radiation) in the microwave range while being used. They also emit very low levels of radiofrequency energy (RF), considered non-significant, when in the stand-by mode. It is well known that high levels of RF can produce biological damage through heating effects (this is how your microwave oven is able to cook food). However, it is not known whether, to what extent, or through what mechanism, lower levels of RF might cause adverse health effects as well. Although some research has been done to address these questions, no clear picture of the biological effects of this type of radiation has emerged to date. Thus, the available science does not allow us to conclude that mobile phones are absolutely safe, or that they are unsafe. However, the available scientific evidence does not demonstrate any adverse health effects associated with the use of mobile phones.

What kinds of phones are in question?

Questions have been raised about hand-held mobile phones, the kind that have a built-in antenna that is positioned close to the user's head during normal telephone conversation. These types of

mobile phones are of concern because of the short distance between the phone's antenna—the primary source of the RF—and the person's head. The exposure to RF from mobile phones in which the antenna is located at greater distances from the user (on the outside of a car, for example) is drastically lower than that from hand-held phones, because a person's RF exposure decreases rapidly with distance from the source. The safety of so-called "cordless phones," which have a base unit connected to the telephone wiring in a house and which operate at far lower power levels and frequencies, has not been questioned.

How much evidence is there that hand-held mobile phones might be harmful?

Briefly, there is not enough evidence to know for sure, either way; however, research efforts are on-going.

The existing scientific evidence is conflicting and many of the studies that have been done to date have suffered from flaws in their research methods. Animal experiments investigating the effects of RF exposures characteristic of mobile phones have yielded conflicting results. A few animal studies, however, have suggested that low levels of RF could accelerate the development of cancer in laboratory animals. In one study, mice genetically altered to be predisposed to developing one type of cancer developed more than twice as many such cancers when they were exposed to RF energy compared to controls. There is much uncertainty among scientists about whether results obtained from animal studies apply to the use of mobile phones. First, it is uncertain how to apply the results obtained in rats and mice to humans. Second, many of the studies that showed increased tumor development used animals that had already been treated with cancer-causing chemicals, and other studies exposed the animals to the RF virtually continuously—up to 22 hours per day.

For the past five years in the United States, the mobile phone industry has supported research into the safety of mobile phones. This research has resulted in two findings in particular that merit additional study:

In a hospital-based, case-control study, researchers looked for an association between mobile phone use and either glioma (a type of brain cancer) or acoustic neuroma (a benign tumor of the nerve sheath). No statistically significant association was found between mobile phone use and acoustic neuroma. There was also no association between mobile phone use and gliomas when all types

of types of gliomas were considered together. It should be noted that the average length of mobile phone exposure in this study was less than three years.

When 20 types of glioma were considered separately, however, an association was found between mobile phone use and one rare type of glioma, neuroepitheliomatous tumors. It is possible with multiple comparisons of the same sample that this association occurred by chance. Moreover, the risk did not increase with how often the mobile phone was used, or the length of the calls. In fact, the risk actually decreased with cumulative hours of mobile phone use. Most cancer causing agents increase risk with increased exposure. An ongoing study of brain cancers by the National Cancer Institute is expected to bear on the accuracy and repeatability of these results.

1. Researchers conducted a large battery of laboratory tests to assess the effects of exposure to mobile phone RF on genetic material. These included tests for several kinds of abnormalities, including mutations, chromosomal aberrations, DNA strand breaks, and structural changes in the genetic material of blood cells called lymphocytes. None of the tests showed any effect of the RF except for the micronucleus assay, which detects structural effects on the genetic material. The cells in this assay showed changes after exposure to simulated cell phone radiation, but only after 24 hours of exposure. It is possible that exposing the test cells to radiation for this long resulted in heating. Since this assay is known to be sensitive to heating, heat alone could have caused the abnormalities to occur. The data already in the literature on the response of the micronucleus assay to RF are conflicting. Thus, follow-up research is necessary.

2. FDA is currently working with government, industry, and academic groups to ensure the proper follow-up to these industry-funded research findings. Collaboration with the Cellular Telecommunications Industry Association (CTIA) in particular is expected to lead to FDA providing research recommendations and scientific oversight of new CTIA-funded research based on such recommendations.

Two other studies of interest have been reported recently in the literature:

Two groups of 18 people were exposed to simulated mobile phone signals under laboratory conditions while they performed cognitive function tests. There were no changes in the subjects' ability to

recall words, numbers, or pictures, or in their spatial memory, but they were able to make choices more quickly in one visual test when they were exposed to simulated mobile phone signals. This was the only change noted among more than 20 variables compared.

3. In a study of 209 brain tumor cases and 425 matched controls, there was no increased risk of brain tumors associated with mobile phone use. When tumors did exist in certain locations, however, they were more likely to be on the side of the head where the mobile phone was used. Because this occurred in only a small number of cases, the increased likelihood was too small to be statistically significant.

4. In summary, we do not have enough information at this point to assure the public that there are, or are not, any low incident health problems associated with use of mobile phones. FDA continues to work with all parties, including other federal agencies and industry, to assure that research is undertaken to provide the necessary answers to the outstanding questions about the safety of mobile phones.

What is known about cases of human cancer that have been reported in users of hand-held mobile phones?

Some people who have used mobile phones have been diagnosed with brain cancer. But it is important to understand that this type of cancer also occurs among people who have not used mobile phones. In fact, brain cancer occurs in the U.S. population at a rate of about 6 new cases per 100,000 people each year. At that rate, assuming 80 million users of mobile phones (a number increasing at a rate of about 1 million per month), about 4800 cases of brain cancer would be expected each year among those 80 million people, whether or not they used their phones. Thus it is not possible to tell whether any individual's cancer arose because of the phone, or whether it would have happened anyway. A key question is whether the risk of getting a particular form of cancer is greater among people who use mobile phones than among the rest of the population. One way to answer that question is to compare the usage of mobile phones among people with brain cancer with the use of mobile phones among appropriately matched people without brain cancer. This is called a case-control study. The current case-control study of brain cancers by the National Cancer Institute, as well as the follow-up research to be sponsored by industry, will begin to generate this type of information.

What is FDA's role concerning the safety of mobile phones?

Under the law, FDA does not review the safety of radiation-emitting

consumer products such as mobile phones before marketing, as it does with new drugs or medical devices. However, the agency has authority to take action if mobile phones are shown to emit radiation at a level that is hazardous to the user. In such a case, FDA could require the manufacturers of mobile 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 at this time, FDA has urged the mobile phone industry to take a number of steps to assure public safety. The agency has recommended that the industry:

support needed research into possible biological effects of RF of the type emitted by mobile phones;

design mobile phones in a way that minimizes any RF exposure to the user that is not necessary for device function ; and cooperate in providing mobile phone users with the best possible information on what is known about possible effects of mobile phone use on human health.

At the same time, FDA belongs to an interagency working group of the federal agencies that have responsibility for different aspects of mobile phone safety to ensure a coordinated effort at the federal level. These agencies are:

National Institute for Occupational Safety and Health

Environmental Protection Agency

Federal Communications Commission

Occupational Health and Safety Administration

National Telecommunications and Information Administration

The National Institutes of Health also participates in this group.

In the absence of conclusive information about any possible risk, what can concerned individuals do?

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 people are concerned about avoiding even potential risks, there are simple steps they can take to do so. For example, time is a key factor in how much exposure a person receives. Those persons who spend long periods of time on their hand-held mobile phones could consider holding lengthy conversations on conventional phones and reserving the hand-held models for shorter conversations or for situations when other types of phones are not available.

People who must conduct extended conversations in their cars

every day could switch to a type of mobile phone that places more distance between their bodies and the source of the RF, since the exposure level drops off dramatically with distance. For example, they could switch to a mobile phone in which the antenna is located outside the vehicle, a hand-held phone with a built-in antenna connected to a different antenna mounted on the outside of the car or built into a separate package, or a headset with a remote antenna to a mobile phone carried at the waist.

Again, the scientific data do not demonstrate that mobile phones are harmful. But if people are concerned about the radiofrequency energy from these products, taking the simple precautions outlined above can reduce any possible risk.

Where can I find additional information?

For additional information, see the following websites:

Federal Communications Commission (FCC) RF Safety Program (select "Information on Human Exposure to RF Fields from Cellular and PCS Radio Transmitters"): <http://www.fcc.gov/oet/rfsafety>

World Health Organization (WHO) International Commission on Non-ionizing Radiation Protection (select Qs & As): <http://www.who.int/emf>

United Kingdom, National Radiological Protection Board: <http://www.nrpb.org.uk>

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

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

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