

User Manual

LG-VN360

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 0.59 inches (1.5cm) from the body. To comply with FCC RF exposure requirements, a minimum separation distance of 0.59 inches (1.5cm) must be maintained between the user's body and the back of the phone. Third-party belt-clips, holsters and similar accessories containing metallic components may not be used. Body-worn accessories that cannot maintain 0.59 inch (1.5cm) 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.

FCC Part 15.19 statement

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

FCC Part 15.21 statement

Change or Modifications that are not expressly approved by the manufacturer could void the user's authority to operate the equipment.

FCC Part 15.105 statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

HAC statement

This phone has been tested and rated for use with hearing aids for some of the wireless technologies that it uses. However, there may be some newer wireless technologies used in this phone that have not been tested yet for use with hearing aids. It is important to try the different features of this phone thoroughly and in different locations, using your hearing aid or cochlear implant, to determine if you hear any interfering noise. Consult your service provider or the manufacturer of this phone for information on hearing aid compatibility. If you have questions about return or exchange policies, consult your service provider or phone retailer.

Getting Started

View of Phone

1. **PWR/END Switch:** Lets you power the phone on or off.
2. **Antenna:** Internal antenna provides optimum reception for 800 MHz & 1900 MHz frequencies.
3. **Power On Indicator:** Illuminates red when the phone powers on with power on sound indicator.
4. **Headset Jack:** Provides connection for an optional headset.
5. **Volume Control Keys:** Adjust the Ring Volume in the Main Menu or the Voice Volume during a call. The keys also scroll through months in the Calendar or pages in the Mini Browser.
6. **Navigation Key:** Allows quick and easy scrolling through the menus.
7. **OK:** Lets you place a call, receive a call, end a call or select menu options.
8. **CLR:** Lets you clear an entry or back-up in the menu.
9. **Folder:** Lets you answer or end calls.

Installing and Removing 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.

To remove the battery, press down on the latch and remove the battery from the phone.

Turning Your Phone On and Off

To turn your phone on, push the On/Off Switch  for 2 ~3 seconds. Your phone performs a short self-test before letting you know it is operational.

If your phone does not turn on, make sure the battery is installed correctly and is adequately charged or has external power (via the AC Adapter, Cigarette Lighter Adapter).

To turn your phone off, push the On/Off Switch  for 2 ~3 seconds.

Main Menu

When your phone acquires Service, the Greeting (a banner of text), the current time and date and the Main Menu are displayed. If you are in authorized cellular provider's service area, you are ready to send and receive calls.

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 your screen. The phone automatically checks for service periodically or you can check manually by pressing any key.

Menu Navigation

The Navigation Key lets you scroll circularly through menus quickly and easily.



As you navigate through a menu, the options are highlighted (**Highlighted Test Example**). Select an

option by highlighting it and pressing . The scroll bar at the right of the menu keeps track of your position in the menu at all times.

For example, if you want to view your last incoming call:

1. From the Main Menu, select **RECENT CALLS** and press “2. Received“ (It may already be highlighted.)
2. Press the OK Key down  to highlight and press .

If you have received any calls, they are displayed on the screen.

Entering Characters Using the Keypad(T9)

To enter a letter, punctuation or number when creating Phone Book or Scheduler entries, press the corresponding key until the desired character appears. By default, the first letter of a word is capitalized and following letters are lowercase. Characters in the following order:

	1 . ? , ' & - @ () / ~		P Q R S 7 p q r s
	A B C 2 a b c 2		T U V 8 t u v 8
	D E F 3 d e f 3		W X Y Z 9 w x y z 9
	G H I 4 g h i 4		Next 0
	J K L 5 j k l 5		Shift
	M N O 6 m n o 6		Space

After a character is entered, the cursor automatically advances to the next space after two seconds. You can also advance the cursor by pressing or entering a character not on the same key.

If you make a mistake, press “Left Navigation Key” to move the cursor left or to erase a character.

To clear the entire entry, press and hold for two seconds.

Display Icons

Display icons are the symbols your phone uses to communicate important information. They are as follows:

<u>ICON</u>	<u>DESCRIPTION</u>
	Alarm
	Battery
	Antenna
	In use
	No service
	Location On
	E911 Only
	Voice
	Voice Privacy
	Digital
	Vibrate
	Roaming
	TTY
	SSL
	Ringer
	Ringer off
	Text + voice
	1x Active Data
	1x Dormant Data

Using the AC Adapter

To charge the battery, plug the AC Adapter into a standard wall outlet and connect it to the phone via the I/O Connector on the bottom of the phone.

The battery Charge Status icon flashes during charging. When the battery is fully charged, the battery icon stops flashing.

Using Your Phone

Placing a Call

When the phone is turned on, check the Signal Strength icon to see if you are in a Service Area or authorized PCS CDMA provider's service area.

1. Open the Slide.

2. Enter the phone number and press [SEND]. 

Tip! When dialing long distance, it is not necessary to dial a "1" before the area code.

3. When you are finished with your call and press [END] . If the phone is in Active Slide Mode, closing the Slide will also end the call.

Roaming With Your Phone

Your Phone is you can use it to make and receive calls in many places.

Setting Your Phone's Mode

Your Phone allows you to control your ability to roam. (See "Set Mode")

Calling Experience

When you use your phone on other PCS CDMA networks, your calling experience and call quality will be quite similar to what you experience when making calls within the Net work. Although certain calling features may not be available, your phone calls are still private and secure.

Correcting Dialing Mistakes

To delete one digit at a time, press  . To delete all digits, press and hold  .

Redialing Last Outgoing Number

Press and hold [SEND]  for 2 seconds.

Dialing Options ([phone book](#) – Not Functioning)

When you enter numbers in the Main Menu, dialing options are displayed. To display a Phone Book entry, enter its entry number. To use the 4- Digit Dial option, enter the last four digits of a phone number in your Phone Book.

To select an option, highlight it and press **press [OK]**  . (phone book – Not Functioning)

- Call – Dials the phone number.
- Roam Confirm – Reminds you that you are making a call on an. (See “Disabling Roam Confirm”)
- Roam Call – Dials the phone number using the current PCS CDMA or analog cellular network.
- Save – Saves the phone number in your Phone Book. (See “Saving a Phone Number” on the following page.)
- Find – Displays phone numbers in your Phone Book that contain the entered numbers. (See “Finding a Phone Number”)
- Hard Pause – Inserts a Hard Pause. (See “Dialing and Saving Phone Numbers With Pauses”)

- 2- Second pause – Inserts a two-second pause. (See “Dialing and Saving Phone Numbers With Pauses”)
- Exit – Returns to the Main Menu.
- A Phone Book Entry – Displays the Phone Book entry. To dial the entry’s speed-dealing number, press and hold [SEND]. To dial an alternate number, highlight it and press and hold [SEND].
Tip! To speed dial a Phone Book entry from the Main Menu, press and hold the entry’s number. If the entry number is two digits, enter the first digit, then press and hold the second digit. (This feature will not work when the Roam Confirm option is enabled.)

In Call Options

During a call, your phone displays menu options in addition to the Main Menu.

To select an option, Highlight it and press [OK]. (functions ‘[Send](#)’ and ‘[End](#)’ only)

- End Call - Ends the call
- Send Tones - Sends the next set of numbers after a Hard Pause. (See “Dialing and Saving Phone Numbers With Pauses “ on the previous page.)
- Mute or Unmute – Select Mute to mute your phone’s microphone. Select Unmute to reactivate the microphone.
- Dial 3-Way Call – Lets you dial another phone number.
- Flash – Answers an incoming Call Waiting call or connects the third party for Three-Way Calling.

Incoming Call Notification

Depending on your settings, your phone notifies you of incoming calls in the following ways:

- The phone rings or vibrates
- The LED flashes green
- The backlight illuminates
- The screen displays an incoming call message
- The phone number of the caller is displayed if the phone number is available
- The caller's name is displayed if the phone number is in your Phone Book

The following options are also displayed. To select an option, highlight it and press [SEND].

- Answer – answers the call.
- Silent Ringer – Mutes the ringer.

Note: You can also mute the ringer by pressing the up or down Volume Control key or [BACK].

Answering Calls

To answer incoming calls, open the Folder (in Active Flip Open) or press [SEND].

Note: If you open the Folder (in Active Flip Open) and then press [SEND], you will hang up on the caller.

To answer incoming roam calls, highlight Answer and press [SEND].

Displaying Your Phone Number(phone book – not functioning)

To display your phone number:

1. From the Main Menu, select **SETTING & TOOLS**
2. And choose **11. Phone Info – 1. My Number**

Setting the Ring Volume to Vibrate

To set the phone to Vibrate Mode, press the down Volume Control key until **Vibrate Only** is displayed.
The phone will vibrate and “**Vibrate Only**” is displayed above the Main Menu.

To set the phone to Vibrate Mode using the Main Menu, see “Adjusting the Volume” .

Getting the Most From Service

Retrieving Page/Text Messages

To retrieve page/text messages:

1. From the **Messaging**

2. Highlight **Inbox** and press [OK].



Highlight the message you want to display and press [OK]



To select an option, highlight it and press [OK]



Text Message options:

- Delete
- Forward
- Save Contact
- Save as Templates
- Call Back
- Go to website
- Lock
- Message Info

Erasing All Page/Text Messages

1. From the **Messages** Menu
2. Highlight **Delete All** and press [OK].
3. Highlight **Delete All Messages** and press [OK].
4. Highlight **Yes** and press [OK].

Page/Text Message Storage

Your LG-VN360 can store up to 100 page/text messages. When the message memory is 100% full, a warning message prompts you to erase messages to obtain more memory space.

Roaming on to Other Service Providers

Roaming occurs when you are in an area serviced by another authorized service provider. When this situation occurs, the  icon and Digital Roam or Analog Roam are displayed. If there is no service available, the  icon is displayed.

(Call History- not functioning)

Page/Text Messages

For information on page/text messages, see “Retrieving Page/Text Messages” .

Sounds

Adjusting the Volume

1. From the Main Menu, highlight **Settings & Tools** and press [OK], highlight **Sound** and press [OK].
2. Highlight **Volume** and press [OK].
3. Highlight **Master Volume** or **Keypad** or **Earpiece** or **Speaker** and press [OK].

 **Tip!** You can use the Volume Control keys to adjust the Ring Volume in the Main Menu or the Voice Volume during a call.

4. Highlight **Volume 5** ~ **Volume 1**, **1 Beep**, **Vibrate Only** or **Alarm Only** or **Silent All** and press [OK].

Note: When the phone is in Vibrate Mode and attached to an accessory (Desktop Charger, Hands-Free Car Kit, etc.), it uses the Ringers to alert you of incoming calls, alarms or messages.

Selecting Ring Types for Voice Calls

To Select a Ring Type for Voice Calls:

1. From the Main Menu, highlight **Settings** and press [OK], highlight **Sound** and press [OK].
2. Highlight **Ringers** and press [OK].
3. Highlight **All Calls** or **Caller ID** or **No Caller ID** or **Restricted Calls** and press [OK].
4. To select Ringer directory.
5. Highlight a Ringtone and press [Play]. You will hear a preview of the Ringers when you highlight it.
6. Highlight a Ringtone and press [Set].

 **Tip!** You can also assign different Ring Types to individual Phone Book entries. (See “Selecting an ID Finger” on page 46.)

Selecting Ring Types for Messages

To select a Ring Type for Messages:

1. From the Main Menu, highlight **Settings** and press [OK], highlight **Sound** and press [OK].
2. Highlight **Message Alerts** and press [OK].
3. Highlight **Text Message**, **Picture Message** or **Voicemail** or **All Messages** and press [OK].
4. Highlight a Ringtone and press [Play]. You will hear a preview of the Ringers when you highlight it.
5. Highlight a Ringtone and press [Set].

Tone Length

Longer tone lengths may be better for tone recognition when dialing voicemail or other automated systems.

To select a tone length:

1. To make a call.
2. To select **Options**, highlight it and press [DTMF Tones].
3. Highlight **Normal** of **Long** or **Off** and press [OK].

Alert Notification

To enable or disable alert sounds:

1. From the Main Menu, highlight **Sound** and press [OK].
2. Highlight **Message Alerts** or **Service Alerts** and press [OK].
3. Select an alert by highlighting it and pressing [OK].
 - Services – An alert sounds when you exit or enter PCS CDMA or cellular coverage.
 - Messages – An alert sounds when you receive a voicemail or page/text message.
4. Highlight **ON** or **Off** and press [OK].

Display

For information on changing Backlight, Greeting or Contrast settings, see **Handy Tips**.

Display Menu

Security

Accessing the Security Menu

You must enter your lock code to view the Security menu. If you forget your lock code, try using the last four digits of your Social Security number, the last four digits of your Phone Number or 0000.

Security Menu

To access the Security menu:

1. From the Main Menu, select **Settings & Tools** and press 7 (Phone Settings)
2. From the Phone Settings, select 7.Security or press 7
3. [Enter](#) your lock code.

Locking Your Phone

When your phone is locked, you can only make calls to 911, Customer Care and Special Numbers or receive incoming calls.

To lock your phone:

1. From the Security menu, highlight **Lock Phone** and press [OK].
2. Highlight **Unlock** or **Lock** or **On Power up** and press [OK]. If you select On Power Up, the phone will be locked each time it power up.

Unlocking Your Phone

1. Highlight **Unlock** and press [OK].

2. Enter your lock code.

Changing the Lock Code

To change your lock code:

1. From the Security menu, highlight **Change Lock** and press [OK].
2. Highlight **Phone Only** or **Call & Applications** and press [OK].
3. Enter your new lock code.
4. Reenter your new lock code.

Answering Your Phone with the Hands-Free Car Kit

You can select different answering options when your phone is connected to the Hands-Free Car Kit.

To answer calls automatically or by pressing any key:

1. From the Main Menu, highlight **Setup** and press [OK].
2. Highlight **Car Use** and press [OK].

To select an option, highlight it and press [OK].

- Slide Up – You can answer calls by opening the slide.
 - OK Key - You can answer calls by pressing OK key when the slide is closed.
 - Auto with Handsfree - Your phone answers incoming calls automatically after five seconds.
3. Highlight **On** and press [OK].

To disable an option, follow steps 1 and 2 and select Off.

Safety Guideline

Provided herein is the TIA Safety Information for Wireless Handheld phones. Inclusion of this text in the terminal unit's owner's manual is required for CTIA Certification.

TIA Safety Information

Provided herein is the complete TIA Safety Information for Wireless Handheld phones. Inclusion of the text covering Pacemakers, Hearing Aids, and Other Medical Devices is required in the owner's manual for CTIA Certification. Use of the remaining TIA language is encouraged when appropriate.

EXPOSURE TO RADIO FREQUENCY SIGNALS

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.

In August, 1996, the Federal Communications Commissions (FCC) adopted RF exposure guidelines with safety levels for hand-held wireless phones. Those guidelines are consistent with the safety standards previously set by both U.S. and international standards bodies:

ANSI C95.1 (1992)*

NCRP Report 86 (1986)

ICNIRP (1996)

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 the FCC guidelines (and those standards).

ANTENNA CARE

Use only the supplied or an approved replacement antenna. Unauthorized antennas, modifications, or attachments could damage the phone and may violate FCC regulations.

* American National Standards Institute; National Council on Radiation Protection and Measurements; International Commission on Non-Ionizing Radiation Protection

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.

* American National Standards Institute; National Council on Radiation Protection and Measurements; International Commission on Non-Ionizing Radiation Protection

DRIVING

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 answering a call if driving conditions so require.

ELECTRONIC DEVICES

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 is 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 service provider [or call the customer service line to discuss alternatives.] Optional for each phone manufacturer.

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 manufacturer or its representative regarding your vehicle. You should also consult the manufacturer of any equipment that has been added to your vehicle.

Posted Facilities

Turn your phone OFF in any facility where posted notices so require.

AIRCRAFT

FCC regulations prohibit using your phone while in the air. Switch OFF your phone before boarding an aircraft.

BLASTING AREAS

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 signs and instructions.

POTENTIALLY EXPLOSIVE ATMOSPHERES

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 often, but not always marked clearly. Potential areas may 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.

For Vehicles Equipped with an Air Bag

An air bag inflates with great force. DO NOT place objects, including either 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.

Consumer Recycling Information and Logo

Wireless...The New Recyclable

Your wireless phone can be recycled. Recycling your wireless phone reduces the amount of waste disposed in landfills and allows recycled materials to be incorporated into new products.

CTIA and its members encourage consumers to recycle their phones and have taken steps to promote the collection and environmentally sound recycling of end-of-life wireless devices.

As a wireless phone user, you have an important role in ensuring that this phone is recycled properly. When it comes time to give this phone up or trade it in for a new one, please remember that the phone, the charger, and many of its accessories can be recycled. It's easy. To learn more about CTIA's Recycling Program for Used Wireless Devices, including information on where to recycle wireless devices near you, please visit www.recyclewirelessphones.com.

FDA Consumer Update



The U.S. Food and Drug Administration's Center for Devices and Radiological Health Consumer Update on Mobile Phones

1. Do wireless phones pose a health hazard?

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

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

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

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

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

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

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

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

FDA shares regulatory responsibilities for wireless phones with the Federal Communications Commission (FCC). All phones that are sold in the United States must comply with FCC safety guidelines that limit RF exposure. FCC relies on FDA and other health agencies for safety questions about wireless phones.

FCC also regulates the base stations that the wireless phone networks rely upon. While these base stations operate at higher power than do the wireless phones themselves, the RF exposures that people get from these base stations are typically thousands of times lower than those they can get from wireless phones. Base stations are thus not the subject of the safety questions discussed in this document.

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

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

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

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

Three large epidemiology studies have been published since December 2000. Between them, the studies investigated any possible association between the use of wireless phones and primary brain cancer, glioma,

meningioma, or acoustic neuroma, tumors of the brain or salivary gland, leukemia, or other cancers. None of the studies demonstrated the existence of any harmful health effects from wireless phone RF exposures. However, none of the studies can answer questions about long-term exposures, since the average period of phone use in these studies was around three years.

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

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

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

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

FDA has been a leading participant in the World Health Organization International Electromagnetic Fields (EMF) Project since its inception in 1996. An influential result of this work has been the development of a

detailed agenda of research needs that has driven the establishment of new research programs around the world. The Project has also helped develop a series of public information documents on EMF issues.

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

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

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

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

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

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

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

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

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

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

10. What about children using wireless phones?

The scientific evidence does not show a danger to users of wireless phones, including children and teenagers. If you want to take steps to lower exposure to radiofrequency energy (RF), the measures described above would apply to children and teenagers using wireless phones. Reducing the time of wireless phone use and increasing the distance between the user and the RF source will reduce RF exposure.

Some groups sponsored by other national governments have advised that children be discouraged from using wireless phones at all. For example, the government in the United Kingdom distributed leaflets containing such a recommendation in December 2000. They noted that no evidence exists that using a wireless phone causes brain tumors or other ill effects. Their recommendation to limit wireless phone use by children was strictly precautionary; it was not based on scientific evidence that any health hazard exists.

11. What about wireless phone interference with medical equipment?

Radiofrequency energy (RF) from wireless phones can interact with some electronic devices. For this reason, FDA helped develop a detailed test method to measure electromagnetic interference (EMI) of implanted cardiac pacemakers and defibrillators from wireless telephones. This test method is now part of a standard sponsored by the Association for the Advancement of Medical instrumentation (AAMI). The final draft, a joint effort by FDA, medical device manufacturers, and many other groups, was completed in late 2000. This standard will allow manufacturers to ensure that cardiac pacemakers and defibrillators are safe from wireless phone EMI.

FDA has tested hearing aids for interference from handheld wireless phones and helped develop a voluntary standard sponsored by the Institute of Electrical and Electronic Engineers (IEEE). This standard specifies test methods and performance requirements for hearing aids and wireless phones so that that no interference occurs when a person uses a “compatible” phone and a “compatible” hearing aid at the same time. This standard was approved by the IEEE in 2000.

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

12. Where can I find additional information?

For additional information, please refer to the following resources:

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

FCC Hearing-Aid Compatibility (HAC) Regulations for Wireless Devices

On July 10, 2003, the U.S. Federal Communications Commission (FCC) Report and Order in WT Docket 01-309 modified the exception of wireless phones under the Hearing Aid Compatibility Act of 1988 (HAC Act) to require digital wireless phones be compatible with hearing-aids. The intent of the HAC Act is to ensure reasonable access to telecommunications services for persons with hearing disabilities.

While some wireless phones are used near some hearing devices (hearing aids and cochlear implants), users may detect a buzzing, humming, or whining noise. Some hearing devices are more immune than others to this interference noise, and phones also vary in the amount of interference they generate.

The wireless telephone industry has developed a rating system for wireless phones, to assist hearing device users to find phones that may be compatible with their hearing devices. Not all phones have been rated. Phones that are rated have the rating on their box or a label located on the box.

The ratings are not guarantees. Results will vary depending on the user's hearing device and hearing loss. If your hearing device happens to be vulnerable to interference, you may not be able to use a rated phone successfully. Trying out the phone with your hearing device is the best way to evaluate it for your personal needs.

M-Ratings: Phones rated M3 or M4 meet FCC requirements and are likely to generate less interference to hearing devices than phones that are not labeled. M4 is the better/higher of the two ratings.

T-Ratings: Phones rated T3 or T4 meet FCC requirements and are likely to generate less interference to hearing devices than phones that are not labeled. T4 is the better/ higher of the two ratings.

Hearing devices may also be rated. Your hearing device manufacturer or hearing health professional may help you find this rating. Higher ratings mean that the hearing device is relatively immune to interference noise. The hearing aid and wireless phone rating values are then added together. A sum of 5 is considered acceptable for normal use. A sum of 6 is considered for best use. In the example to the left, if a hearing

aid meets the M2 level rating and the wireless phone meets the M3 level rating, the sum of the two values equal M5. This should provide the hearing aid user with “normal usage” while using their hearing aid with the particular wireless phone. “Normal usage” in this context is defined as a signal quality that’s acceptable for normal operation. The M mark is intended to be synonymous with the U mark. The T mark is intended to be synonymous with the UT mark. The M and T marks are recommended by the Alliance for Telecommunications Industries Solutions (ATIS). The U and UT marks are referenced in Section 20.19 of the FCC Rules. The HAC rating and measurement procedure are described in the American National Standards Institute (ANSI) C63.19 standard. When you’re talking on a cell phone, it’s recommended that you turn the BT (Bluetooth) mode off for HAC.

For information about hearing aids and digital wireless phones

Wireless Phones and Hearing Aid Accessibility

<http://www.accesswireless.org/hearingaid/>

FCC Hearing Aid Compatibility and Volume Control

http://www.fcc.gov/cgb/consumerfacts/hac_wireless.html