







## Function

### Using the QuickMemo+ options

You can easily use the editing tools when using the QuickMemo+.

	Undo or Redo.
	Use complex concept function.
	Select the pen type and the colour.
	Erase the memo that you created.
	Save the memo with the current screen in the <b>Gallery</b> or <b>QuickMemo+</b> .
	<b>Option:</b> Tap to choose <b>Share</b> , <b>Paper style</b> for the memo.

### Viewing the saved QuickMemo+

From the Home screen, tap  > **QuickMemo+**.

Or tap **Gallery** and select the **Quickmemo+** album.

## QSlide



From any screen, bring up a notepad, calendar, and more as a window inside your screen.



OR



1		Tap to exit the QSlide and return to full window.
2		Tap to adjust transparency.
3		Tap to end the QSlide.
4		Tap to adjust the size.

- 1 Touch and slide the status bar downwards > tap QSLIDE APPS or while using applications that support QSlide, tap . The function will be continuously displayed as a small window on your screen.
- 2 You can make a call, browse the Web, or choose other phone options. You can also use and tap the screen under the small windows when the transparency bar is not full .

**NOTE:** The QSlide can support up to two windows at the same time.

# Multimedia

## Gallery



Open the **Gallery** application to view albums of your pictures and videos.

### To open the Gallery application

- From the Home screen, tap  > **Gallery** .

### Viewing your albums

The **Gallery** application presents the pictures and videos saved in your phone, including those you've taken with the **Camera** application and those you downloaded from the web or other locations.

- Tap  to access **New Album**, **Delete**, **Hide/Show album**, and **Settings**.
- Tap the **Camera icon**  to return to the Camera application.
- Tap an album to open it and view its contents.
- Tap a picture or video in an album to view it.

### To share an album




You can share the entire contents of one or more albums or individual images or videos from an album.

- 1 From the Home screen, tap  > **Gallery** .
- 2 Touch and hold the desired album, tap **Share**, select the application to use to share your images, then complete the sending method as necessary.

### Working with photos

Use the **Gallery** application to view pictures that you've taken with the **Camera** application, downloaded.

## To view a photo

- 1 From the Home screen, tap  > **Gallery** .
- 2 Open an album and tap a picture.
- 3 Tap  (at the top right corner of the screen) to access **Set image as, Move, Copy, Copy to Clip Tray, Slideshow, Rotate left, Rotate right, Crop, Add/Remove location, Rename, Print, or Details.**

### Camera Mode Icon

Tap here to go to camera mode.

### Gallery Icon

Tap here to return to your Gallery.

### Favorites Icon

Tap here to set the picture to your Favorites folder.

### Edit Icon

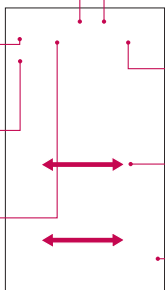
Tap here to edit your picture.

### Share Icon

Tap here to share the photo using the method you select.

### Delete Icon

Tap here to delete the photo.



Swipe horizontally to scroll through the photos in the current album.








Swipe here to quickly scroll through the images in the album, then tap the one you want to view.

## Working with videos



The Gallery is where you can access the Gallery of stored video images. You can view them, share them with your friends, and delete and edit them.

# Multimedia

## To view a video

- 1 From the Home screen, tap  > **Gallery**  to view the videos stored in storage.
- 2 Tap an album to open it and view its contents.
- 3 Tap a video to view it. You can access the following options:
  - ▶  **Favorites:** Tap to set the video to your Favorites folder.
  - ▶  **Rotation:** Changing the orientation of screen content.
  - ▶  **QSlide:** Enables an overlay on your phone's display for easy multitasking.
  - ▶  **Menu:** Tap to access Screen ratio, Subtitles, Share, Settings, Details options.
  - ▶  **Screen shot:** Captures a screen shot while playing a video.

**NOTE:** Tap  > Settings > Screenshot on.



- ▶  **Volume:** Tap to display the Volume slider bar, then adjust the playback volume on the slider bar.
- ▶  **Lock/Unlock:** Locks the touch keys to prevent unintentional touches.

## NOTE:

- While a video is playing, slide the left side of the screen up or down to adjust the screen brightness.
- While a video is playing, slide the right side of the screen up or down to adjust the sound.
- While playing a video, slide your finger from left to right (or vice versa) to fast-forward and rewind.
- Do not press too hard; the touch screen is sensitive enough to pick up a light, but firm touch.

## QSlide while playing videos

You can play videos in a QSlide window allowing you to use other applications while the video is playing.

- 1 Open the **Gallery** application and begin playing the video.
- 2 Tap the **QSlide** icon  at the top right corner of the screen to activate the QSlide feature to play the video in a QSlide window.
- 3 To close the QSlide window, tap the  in the upper-right corner of its title bar.

## Music

Your phone has a built-in music player that lets you play all your favorite tracks. To access the music player, tap  >  > **Apps** tab >  **Music**.

## Add music files to your phone

Start by transferring music files to your phone:

- Transfer music using Media device (MTP).
- Download from the wireless Web.
- Synchronize your phone to a computer.
- Receive files via Bluetooth.




## Transfer music using Media device (MTP)










- 1 Connect the phone to your PC using the USB cable.
- 2 Select the **Media device (MTP)** option. Your phone will appear as another hard drive on your computer. Click on the drive to view it. Copy the files from your PC to the drive folder.

## Multimedia

- 3 When you're finished transferring files, swipe down on the Status Bar and tap **Media device (MTP) > Charge phone**. You may now safely unplug your device.

### Playing a song

- 1 Tap  >  > **Apps** tab >  **Music**.
- 2 Tap **Songs**.
- 3 Select the song you want to play.

	Tap to pause playback.
	Tap to resume playback.
	Tap to skip to the next track in the album, playlist, or shuffle. Touch and hold to fast forward.
	Tap to restart the current track or skip to the previous track in the album, playlist, or shuffle. Touch and hold to rewind.
	Tap to display the Volume slider bar, then adjust the playback volume on the slider bar.
	Tap to go to the music library.
	Tap to play the current playlist in shuffle mode (tracks are played in random order).
	Tap to toggle through the repeat modes to repeat all songs, repeat current song, or repeat off.
	Tap to add the song to your favourites.



Tap to open the current playlist.



Tap to access **Search, Add to playlist, Delete, Share, Set as ringtone, Music video, Details** or **Settings**.

To change the volume while listening to music, press the up and down volume keys on the back side of the phone.

Touch and hold any song in the list. The **Play, Add to playlist, Delete, Share, Set as ringtone, Details** and **Search** options will be displayed.

**NOTE:**

- Some file formats are not supported, depending on the device software.
- If the file size exceeds the available memory, an error can occur when you open files.

**NOTE:** Music file copyrights may be protected by international treaties and national copyright laws.





Therefore, it may be necessary to obtain permission or a licence to reproduce or copy music.


In some countries, national laws prohibit private copying of copyrighted material. Before downloading or copying the file, check the national laws of the relevant country concerning the use of such material.













## Utilities

### Setting your alarm




- 1 Tap  >  > **Apps** tab >  **Clock** > .
- 2 Set the desired alarm time.
- 3 Set **Repeat**, **Snooze duration**, **Vibration**, **Alarm sound**, **Alarm volume**, **Auto app starter**, **Puzzle lock** and **Memo**. Tap **Save**.
- 4 Tap **Save** to save the alarm.

**NOTE:** To change alarm settings in the alarm list screen, tap  and select **Settings**.

### Using your calculator

- 1 Tap  >  > **Apps** tab >  **Calculator**.
- 2 Tap the number keys to enter numbers.
- 3 For simple calculations, tap the function you want to perform (  ,  ,  or  ) followed by .
- 4 For more complex calculations, tap  and select **Scientific calculator**, then choose the desired functions.
- 5 To check the history, tap .

### Adding an event to your calendar



- 1 Tap  >  > **Apps** tab >  **Calendar**.
- 2 Tap  and choose from **Day**, **Week**, **Month**, **Year**, or **Agenda** to change the month view.
- 3 Tap on the date for which you wish to add an event and tap .


- 4 Tap **Event name** and enter the event name.
- 5 Tap **Location** and enter the location. Check the date and enter the time you wish your event to start and finish.
- 6 If you wish to repeat the alarm, set **REPEAT** and set **REMINDERS**, if necessary.
- 7 Tap **Save** to save the event in the calendar.

## Voice Recorder


Use the voice recorder to record voice memos or other audio files.

### Recording a sound or voice

- 1 Tap  >  >  **Voice Recorder**.
- 2 Tap  to begin recording.
- 3 Tap  to end the recording.
- 4 Tap  to listen to the recording.

**NOTE:** Tap  to access your album. You can listen to the saved recording. The available recording time may differ from actual recording time.

### Sending the voice recording


- 1 Once you have finished recording, you can send the audio clip by tapping .
- 2 Choose from any of the available methods for sharing.

## Utilities

### Tasks

This task can be synchronized with MS Exchange account. You can create task, revise it and delete it in MS outlook or MS Office Outlook Web Access.

#### To Synchronize MS Exchange

- 1 From the Home Screen, Tap  >  > **Apps** tab >  **Settings**.
- 2 Tap **General** tab > **Accounts & sync** > **Add account**.
- 3 Tap **Microsoft Exchange** to create Email address and Password.
- 4 Make sure if you checkmark Sync task.

**NOTE:** MS Exchange may not be supported depending on email server.

### Google+





Use this application to stay connected with people via Google's social network service.

- Tap  >  > **Apps** tab >  **Google** folder >  **Google+**.

**NOTE:** This application may not be available depending on the region or service provider.

## Voice Search

Use this application to search webpages using voice.

- 1 Tap  >  > **Apps** tab >  **Google** folder >  **Voice Search**.
- 2 Say a keyword or phrase when **Speak now** appears on the screen. Select one of the suggested keywords that appear.

**NOTE:** This application may not be available depending on the region or service provider.

## Downloads

Use this application to see what files have been downloaded through the applications.

- Tap  >  > **Apps** tab >  **Downloads**.

**NOTE:** This application may not be available depending on the region or service provider.

## FM Radio

Your phone has a built-in FM radio so you can tune in to your favorite stations and listen on the go.

- Tap  >  > **Apps** tab >  **FM radio**.

# The Web

## Browser

Use this application to browse the Internet. Browser gives you a fast, full-color world of games, music, news, sports, entertainment and much more, right on your mobile phone wherever you are and whatever you enjoy.

**NOTE:** Additional charges apply when connecting to these services and downloading content. Check data charges with your network provider.

1 Tap  >  > **Apps** tab >  **Browser**.


## Using the Web toolbar

Tap slide it upwards with your finger to open.



Tap to go back one page.



Tap to go forward one page, to the page you connected to after the current one. This is the opposite of what happens when you tap , which takes you to the previous page.



Tap to go to the Home page.



Tap to add a new window.



Tap to access bookmarks.

## Viewing webpages


Tap the address field, enter the web address and tap **Go**.

## Opening a page

To go to new page, tap  → .

To go to another webpage, tap , scroll up or down, and tap the page to select it.

## Searching the web by voice

Tap the address field, tap , speak a keyword, and then select one of the suggested keywords that appear.


**NOTE:** This feature may not be available depending on the region or service provider.

## Bookmarks

To bookmark the current webpage, tap  > **Add to bookmarks** > **OK**.

To open a bookmarked webpage, tap  and select one.

## History

Tap  > **History** to open a webpage from the list of recently-visited webpages. To clear all history, tap  → **Yes**.

## Chrome

Use Chrome to search for information and browse webpages.

**1** Tap  >  > **Apps** tab >  **Chrome**.

**NOTE:** This application may not be available, depending on your region and service provider.


# The Web

## Viewing webpages

Tap the Address field, and then enter a web address or search criteria.

## Opening a page

To go to a new page, tap  > **New tab**.

To go to another webpage, tap , scroll up or down and tap the page to select it.

## Syncing with other devices

Sync open tabs and bookmarks to use with Chrome on another device when you are logged in with the same Google account.

To view open tabs on other devices, tap  > **Recent tabs** > **Other devices**.

Select a webpage to open.

## Adding and viewing bookmarks

To add bookmarks, tap  > .

To open a bookmarked webpage, tap  > **Bookmarks** and select the desired page.

# Settings

## Access the Settings menu

This section provides an overview of items you can change using your phone's System settings menus.

**To access the Settings menu:**

Tap , touch and hold the **Recent Apps Key**  and select the **System settings**.

- or -

Tap  >  > **Apps tab** >  **Settings**.

## WIRELESS & NETWORKS

< **Airplane mode** >





**Airplane mode** – Activating airplane mode disables all wireless connections.

< **Wi-Fi** >

**Wi-Fi** – Turns on Wi-Fi to connect to available Wi-Fi networks.

### TIP! How to obtain the MAC address

To set up a connection in some wireless networks with MAC filters, you may need to enter the MAC address of your phone in the router.

You can find the MAC address in the following user interface: tap  >  > **Apps tab** >  **Settings** > **Networks tab** > **Wi-Fi** >  > **Advanced Wi-Fi** > **MAC address**.



# Settings

## < Bluetooth >

Turn the Bluetooth wireless feature on or off.

## < Mobile data >

Displays the data usage and allows you to set a mobile data usage limit.

## < Call >

**Voicemail** – Allows you to select your carrier's voicemail service.

## OUTGOING CALL

**Fixed dialing numbers** – Turn on and compile a list of numbers that can be called from your phone. You'll need your PIN2, which is available from your operator. Only numbers within the fixed dial list can be called from your phone.

**Caller ID** – Use default operator settings to display your number in outgoing calls.

## INCOMING CALL

**Incoming voice call pop-up** – If you select this function, the Incoming voice call pop-up will be displayed when an app is in use.

**Decline with message** – When you want to reject a call, you can send a quick message using this function. This is useful if you need to reject a call during a meeting.

**Auto answer** – Allows you to enable or disable Auto answer with handsfree.

## ONGOING CALL

**Connection vibration** – Vibrates your phone when the other party answers the call.

**TTY mode** – Sets the TTY mode to communicate with other TTY devices.

**Hearing aids** – Checkmark to turn on hearing aid compatibility.

## END CALL

**Power button ends call** – Checkmark to allow you to end voice calls by pressing the Power/Lock Key.

## OTHERS

**Call duration** – Allows you to view the call duration for the last call, outgoing calls, incoming calls, and all calls.

**Sound settings** – Set the sound settings.

**Additional settings** – Set call forwarding and call waiting.

< More ... >

**Mobile networks** – Allows you to enable/disable data and set APNs.

**VPN** – Displays the list of Virtual Private Networks (VPNs) that you've previously configured. Allows you to add different types of VPNs.

**NOTE:** You must set a pattern, PIN or password before you can use credential storage.

## DEVICE

< Sound >


### BASIC

**Sound profile** – Set the sound profile to **Sound**, **Vibrate only**, or **Silent**.

**Volumes** – Manage the volume for **Ringtone**, **Notifications**, **Touch feedback & system**, and **Music, video, games & other media**.

# Settings

## RINGTONES & VIBRATIONS

**Ringtone** – Sets the ringtone for calls. You can also add a ringtone by tapping the **New** icon  (at the upper-right corner of the screen).

**Notification sound** – Sets the sound for notifications. You can also add a notification sound by tapping the **New** icon  (at the upper-right corner of the screen).

**Sound with vibration** – Checkmark to set the phone to vibrate in addition to the ringtone when you receive calls.

**Vibration type** – Sets the incoming call vibration options. Choose from **Long Lasting**, **Rapid**, **Short repeated**, **Standard**, and **Ticktock**. Tap the **New** icon  (at the upper-right corner of the screen) to create your own vibration pattern.

## NOTIFICATIONS

**Do not disturb** – Have no interruptions from notifications.

**Lock screen** – Set the lock screen for Show all notifications and Hide all notifications.

**Apps** – Set notifications for apps.

## ADVANCED SETTINGS

**Vibrate on tap** – Checkmark to vibrate when you touch the screen (e.g., touch keys and make selections).

**Sound effects** – Tap to set dial pad touch tones, touch sounds, screen lock sound, sound when roaming, or emergency tone.

**Message/call voice notifications** – Tap the Message/call voice notifications switch to toggle it On or Off. On allows your phone to automatically read your incoming calls and/or messages out loud. Checkmark Calls for caller information, Messages for sender information, and Read messages for message content. You can also set the readout language.

## < Display >

### SCREEN

**Brightness** – Adjust the screen brightness. Checkmark **Night brightness** to set brightness at 0% automatically between 12:00 AM ~ 06:00 AM.

**Screen timeout** – Set the amount of time before the screen times out.

**Screen-off effect** – Set the screen off effect used when the screen turns off.

**Auto-rotate screen** – Set to switch orientation automatically when you rotate the phone.

**Daydream** – Select the screensaver to display when the phone is sleeping while docked and/or charging.

### FONT

**Font type** – Change the type display font.

**Font size** – Change the size of the display font.

### ADVANCED SETTINGS

**Home touch buttons** – Sets the Touch Keys displayed at the bottom of all of the screens. Set which ones are displayed, their position on the bar, and what they look like. Select Button combination, Color.

# Settings

< Home screen >

## SCREEN

**Wallpaper** – Sets the wallpaper to use on your Home screen. Select it from **Gallery**, **Live Wallpapers**, **Photos**, or **Wallpaper gallery**.

**Screen swipe effect** – Sets the effect when you swipe to change screens. Choose from **Basic**, **Breeze**, **Accordion**, **Panorama**, **Carousel**, **Layer**, and **Domino**.

**Allow Home screen looping** – Checkmark to set the Home screen panels to scroll continuously, eliminating the need to scroll back in the opposite direction when you reach either end.

## DATA

**Home backup & restore** – Backup and restore the app, widget, and theme configurations.

## TIPS

**Help** – Displays some useful tips for the Home screen.

< Lock screen >

## SCREEN SECURITY

**Select screen lock** – Set a screen lock type to secure your phone. Set **None**, **Swipe**, **Knock Code**, **Face Unlock Pattern**, **PIN** or **Password**.

**Screen swipe effect** – Select the screen effect you want to use when unlocking the screen. Set **Dewdrop** or **White hole**.

## CUSTOMIZE

**Wallpaper** – Select the wallpaper for your lock screen from **Gallery** or **Wallpaper gallery**.

**Shortcuts** – Customize the shortcuts on the lock screen.

**Contact info for lost phone** – Show owner info on the lock screen in case your phone is lost.

## LOCK TIME

**Lock timer** – Set the lock time after the screen times out.

**Power button instantly locks** – Set the screen lock when the Power/Lock Key is pressed.

< Gestures >

## ANSWER ME

**Silence incoming calls** – Flip the device to silence incoming calls.

## OTHERS

**Snooze or stop alarm** – Flip the device to snooze or stop the alarm.

**Pause video** – Flip the device to pause the video.

**Help** – Touch to get information on using the Gesture functions of your device.

## SENSOR

**Motion sensor calibration** – Improve the accuracy of the tilt and speed of the sensor.

< Storage >

**INTERNAL STORAGE** – View the internal storage usage.

**Total space** – Displays the total amount of space in the phone's memory. It's listed in Gigabytes and also on a colored bar graph with a colorcoordinated list of the apps as well as the amount of space they use. Remaining memory space is gray-colored.

## Settings

**SD CARD** – Check total available SD card space. Tap **Unmount SD card** for safe removal. If no SD card is mounted, tap **Mount SD card**. Tap **Erase SD card** if you want to delete all data from the SD card.

< **Battery** >

### **BATTERY INFORMATION**

The Battery charge information is displayed on a battery graphic along with the percentage of the remaining charge and its status.

**Battery usage** – Tap the Battery charge icon to display the Battery use screen to see battery usage level and battery use details. It displays which components and applications are using the most battery power. Tap one of the entries to see more detailed information.

**Battery percentage on status bar** – Checkmark to display the battery level percentage on the Status Bar next to the battery icon.

### **Battery saver**

Tap the switch  to toggle it On or Off.

### **TURN BATTERY SAVER ON**

**Turn Battery saver on** – Choose to turn battery saver on when the battery charge gets to a certain battery level. Choose from **Immediately**, **5% battery**, **15% battery**.

**Help** - You can get more information about battery saving items.

< **Smart cleaning** >

Display the space in use and free in your phone. Tap the Menu Key , then tap Settings to set notification interval and idle time period.

## < **Apps** >

Use the **Apps** menu to view details about the applications installed on your phone, manage their data, and force them to stop.

Swipe left and right to select one of the three tabs across the top of the screen to view detailed information for **DOWNLOADED**, **RUNNING**, and **ALL** applications.

Tap an entry to view more information, tap **Stop** (or **Force stop**), then **OK** to stop it from running.

## < **Default message app** >

Set Messaging or Hangouts as default app.

# PERSONAL

## < **Accounts & sync** >

Permits applications to synchronize data in the background, whether or not you are actively working in them. Deselecting the **Auto-sync data** setting can save battery power and lower (but not eliminate) data usage.

## < **Location** >

### **MODE**

**High accuracy** – Use GPS, Wi-Fi and mobile networks to estimate location.

**Battery saving** – Use Wi-Fi and mobile networks to estimate location.

**Device sensors only** – Use GPS to pinpoint your location.

### **RECENT LOCATION REQUESTS**

Displays apps that have recently requested location information.



# Settings

## LOCATION SERVICES

Allows you to view your Google location settings.

< **Security** >

## ENCRYPTION

**Encrypt phone** – Allows you to encrypt the phone to keep it secure. After encryption, a PIN or password needs to be entered each time you power the phone on.

**Encrypt SD card storage** – Allows you to encrypt the SD card data to keep it secure. After encryption, you will not be able to use it in other devices. Any data that is created or updated after disabling encryption will not be encrypted but the data that has been previously encrypted will remain encrypted.

## PASSWORDS

**Password typing visible** – Show the last character of the hidden password as you type.

## PHONE ADMINISTRATION

**Phone administrators** – View or deactivate phone administrators.

**Unknown sources** – Default setting to install non-Play Store applications.

**Verify apps** – Disallow or warn before installation of apps that may cause harm.

## CREDENTIAL STORAGE

**Storage type** – Displays the current storage type for credentials (e.g., Hardware-backed).




**Trusted credentials** – Display trusted CA certificates.

**Install from storage** – Choose to install encrypted certificates.

**Clear credentials** – Remove all certificates.

## ADVANCED

**Trust agents** – Select apps to use without unlocking screen.


**Screen pin** – Allows you to lock your device to a single app to keep your devices secure. To use it, Tap the switch  to turn it on. To activate it, tap Recent Apps Key  > . To exit, touch and hold Back Key + Recent Apps Key at the same time.

## < Language & input >

**Language** – Sets the language to use on your device.

## KEYBOARD & INPUT METHODS

**Default** – Sets the default on-screen keyboard to use when entering text.

**LG Keyboard** – Checkmark to select the LG Keyboard to enter data. Tap the **Settings** icon  to change the following settings:

## MY KEYBOARD

**Input language and keyboard layout:** Sets the keyboard language and layout (QWERTY and Phone).

**Keyboard height and layout:** Allows you to adjust various height and layout options for you keyboard to make it easier to use.

**Phone keyboard layout:** Sets customize symbol and setting keys in side columns.

**QWERTY keyboard layout:** Sets customize setting key, symbol keys, and more in the bottom row.

**Keyboard height:** Sets the height of the keyboard in comparison to the screen you're typing on.

**Keyboard theme:** Sets the Keyboard theme. Choose White or Black.

# Settings

## SMART INPUT

**Path input:** Checkmark to enter a word by drawing a path through all of the letters.

**Show word suggestion:** Checkmark to show words through text prediction.

**Show emoticon suggestions:** Checkmark to show word-related color emoticons.

**Auto correction:** Choose from **Off**, **Mild**, **Moderate**, and **Aggressive**.

**Update word suggestions:** Uses Swype Connect to provide more word suggestions. To use this feature, accept the Agreement Rights.

**Additional settings:** Sets advanced settings including checkboxes to enable

**Vibrate on keypress**, **Sound on keypress**, **Pop-up on keypress**, **Auto-capitalization**, **Auto-punctuation**, **Spell checker** and **Suggest next word**.

In addition, you can access **Clear word suggestion history** and **Personal dictionary**.

**Help:** Displays additional keyboard help information.

**Google voice typing** – Checkmark to select Google voice typing to enter data. Tap the **Settings** icon  to change the Google voice settings.

**Choose input languages:** Sets the languages supported with Google voice typing.

## GENERAL

**Block offensive words:** Checkmark to hide recognized offensive text.

**Offline speech recognition:** Enables voice input while offline.

## SPEECH

**Voice Search** – Sets the following options: **Language**, **Speech output**, **"Ok Google" Detection**, **Offline speech recognition**, **Block offensive words** and **Bluetooth headset**.

**Text-to-speech output** – Sets the preferred speech engine and speech rate (slow vs. fast). Also plays a short demonstration of speech synthesis.

## MOUSE/TRACKPAD

**Pointer speed** – Sets the pointer speed using a slide bar to select it.

### < Backup & reset >

## BACKUP & RESTORE

**Back up my data** – Backup your app data, Wi-Fi passwords, and other settings to Google servers.

**Backup account** – Allows you to set the account to which you want to backup data to.


**Automatic restore** – When reinstalling an app, restore backed up settings and data.

## PERSONAL DATA

**Factory data reset** – Reset your settings to the factory default values and delete all your data.

## SYSTEM

### < Shortcut key >

Tap the Shortcut key switch  to toggle it On or Off. On allows quick access to apps by pressing and holding the Volume Keys (on the back of the phone) when the screen is off or locked. Press and hold the Volume Up Key to access QuickMemo+. Press and hold the Volume Down Key access the Camera app.

## Settings

### < Date & time >

**Automatic date & time** – Checkmark to use network-provided time.

**Automatic time zone** – Checkmark to use network-provided time zone.

**Set date** – If you do not activate Automatic date & time, then set the date.

**Set time** – If you do not activate Automatic date & time, then set the time.

**Select time zone** – If you do not activate Automatic time zone, then set the time zone.


**Use 24-hour format** – Checkmark to display the time using the 24-hour time format (for example, 13:00 instead of 1:00 pm).

**Select date format** – Sets the format for displaying dates.


### < Accessibility >

Use the **Accessibility** settings to configure accessibility plug-ins you have installed on your phone.

### VISION

**TalkBack** – Allows you to set up the TalkBack function which assists people with impaired vision by providing verbal feedback. Tap the switch  to toggle it On or Off. Tap **Settings** at the bottom of the screen to adjust the TalkBack settings.

**Font size** – Checkmark to increase the size of the text.

**Invert color** – Sets the color contrast for better screen viewing. Tap the switch  to toggle it On or Off. Then tap the screen and drag across the screen in any direction until you see the color contrast you want to use.

**Color adjustment** – Set the adjustment screen and content colors.

**Touch zoom** – Set the zoom in and out by triple-tapping the screen.

**Message/call Voice notifications** – Tap the Voice notifications switch  to toggle it On or Off. On allows you to hear automatic spoken alerts for incoming calls and messages.



## READ OUT LOUD

**Calls:** Checkmark to read caller information out loud.

**Messages:** Checkmark to read sender information out loud.

**Read messages:** Checkmark to read messages out loud.

## LANGUAGE

**Message/call voice notifications Language:** Tap to set Text-to-speech output. Choose **Google Text-to-speech** or **LG TTS+**. If you choose **Google Text-to-speech**, tap the **Settings** icon  to set **Language** and **Settings for Google Text-to-speech Engine**, and **Install voice data**. If you choose **LG TTS+**, tap the **Settings** icon  to set **Language** and **Settings for LG TTS+**.

**Speech rate:** Sets the speech rate. Choose from **Very slow**, **Slow**, **Normal**, **Fast**, and **Very fast**.

**Listen to an example:** Tap to play a short demonstration of Text-to-speech.

**Default language status:** English (United States) is fully supported.

**Screen shades** – Activate to dim the screen's backlight.

**Accessibility shortcut** – Set the accessibility shortcut quickly on any screen.

**Text-to-speech output** – Sets the customize text-to-speech(TTS) settings.

## HEARING

**Audio type** – Sets the audio type. Choose **Mono** or **Stereo**.

## Settings

**Sound balance** – Routes the sound through both the right and left channel when a headset is connected. To manually set the audio route, move the slider on the sound balance slide bar to set it.

**Flash alerts** – Checkmark to allow a flash to blink for incoming calls and notifications.

**Turn off all sounds** – Checkmark to turn off all sounds.

**Captions** – Tap the **Captions** switch  to toggle it On or Off. On customizes caption settings for those with hearing impairments. Set **Language**, **Font size**, and **Caption style**.


### PHYSICAL AND MOTOR

**Touch feedback time** – Sets the touch and feedback time. Choose from **Short**, **Medium**, or **Long**.

**Touch assistant** – Tap the **Touch assistant** switch to toggle it On or Off. On allows you to replace the hardware keys with a **Touch assistant** board that is displayed on the touchscreen. Tap the **Touch assistant** icon to be able to tap its Power button, Home button, Volume down button, Volume up button, and the more button (**Screen capture** button, **Accessibility** button, and **Pinch** button). Draw a "C" ("call") on the board to automatically display the Dial tab. Draw an "M" on the board to automatically display the Messaging app. Draw a "W" ("web") on the board to automatically launch the Chrome app. Draw an "S" ("Settings") on the board to automatically display the settings app. Draw an "L" ("Lock screen") on the board to go directly to the Lock screen.

**Screen timeout** – Sets the screen timeout. Choose from **15 seconds**, **30 seconds**, **1 minute**, **2 minutes**, **5 minutes**, **10 minutes**, **15 minutes**, **30 minutes**, and **Keep screen turned on**.

## RECOGNITION

**Touch control areas** – Tap the **Touch control areas** switch  to toggle it On or Off. On allows you to select an area of the screen to limit touch control. Press the **Volume Down Key** and tap the **Home Key** at the same time to activate and deactivate this feature.

## SYSTEM

**Auto-rotate screen** – Checkmark to allow the phone to rotate the screen depending on the phone orientation (portrait or landscape).

**Password voice confirmation** – Checkmark so that your phone can read passwords you enter.

**Power key ends call** – Checkmark so that you can end voice calls by pressing the **Power/Lock Key**. When enabled, pressing the **Power/Lock Key** during a call does not lock the screen.

**Accessibility settings shortcut** – Sets quick, easy access to selected features when you triple-tap the **Home Key** . Choose from **Off**, **Show all**, **TalkBack**, **Invert colors**, **Universal touch**, and **Accessibility settings**.

**One-touch input** – Checkmark to enable one-touch input. It allows each finger touch to enter letter or character on the LG keyboard.

## SERVICES

**Switch access** – Allows you to interact with your device using one or more switches that work like keyboard keys. This menu can be helpful for users with mobility limitations that prevent them from interacting directly with the your device. Tap **Settings** at the bottom of the screen to adjust the Switch access settings.



# Settings

## < Printing >

### PRINT SERVICES

**Cloud Print** – This menu allows you to access your cloud print services.

## < About phone >

This menu allows you to manage your software updates and view various information relating to your device.

**Phone name** – Allows you to change your phone name. This will be your phone name for Bluetooth, Wi-Fi Direct, etc.

**Update Center** – Check updates for apps and software provided by LG Electronics.

**Network** – Allow you to view your network, network type and strength, service state, roaming status, mobile network state, and IP address.

**Status** – Allow you to view your phone number, MIN, PRL version, ESN, MEID HEX, MEID DEC.

**Battery** – Allows you to view the battery status, battery level, and battery use information.

**Hardware info** – Allows you to view the model number, up time, warranty date code, Wi-Fi MAC address and Bluetooth address.

**Software info** – Allows you to view the Android version, baseband version, kernel version, build number, and software version.


**Legal info** – Allows you to view LG apps rights agreement, open source licenses and Google legal information.

**Patent information** – Display LG patent information.

# Phone software update

## Update your smart phone without a PC (FOTA)

This feature allows you to conveniently update your phone's software to a newer version via Firmware Over-the-Air (FOTA), without connecting with to a USB cable.

- 1 From the Home screen, tap  > **System settings** > **About phone** > **Update Center** > **Software Update**.
- 2 Select the desired option.

**Update now** – You can check the new software update and conduct the update.

**Check current version** – You can check the current software version.

**Last update** – Displays the date of the last software update.

### NOTE

- After download, you can install the software immediately or select a later time for the installation.
- Each software version is updated sequentially. Even after the update is completed, check if there is any newer version available.
- LG reserves the right to make firmware updates available only for selected models at its own discretion and does not guarantee the availability of the newer version of the firmware for all phone models.

## Accessories

These accessories are available for use with your phone. **(Items described below may be optional and sold separately.)**

### Travel adapter



### Data cable

Connect your phone and PC.



### User Guide

Learn more about your phone.



### Battery



#### **NOTE:**

- Always use genuine LG accessories. Failure to do this may void your warranty.
- Accessories may vary in different regions.

## About this user guide

### About this user guide


- Before using your device, please carefully read this manual. This will ensure that you use your phone safely and correctly.
- Some of the images and screenshots provided in this guide may appear differently on your phone.
- Your content may differ from the final product, or from software supplied by service providers or carriers. This content may be subject to change without prior notice. For the latest version of this manual, please visit the LG website at [www.lg.com](http://www.lg.com).
- Your phone's applications and their functions may vary by country, region, or hardware specifications. LG cannot be held liable for any performance issues resulting from the use of applications developed by providers other than LG.
- LG cannot be held liable for performance or incompatibility issues resulting from edited registry settings being edited or operating system software being modified. Any attempt to customize your operating system may cause the device or its applications to not work as they should.
- Software, audio, wallpaper, images, and other media supplied with your device are licensed for limited use. If you extract and use these materials for commercial or other purposes is, you may be infringing copyright laws. As a user, you are fully are entirely responsible for the illegal use of media.
- Additional charges may be applied for data services, such as messaging, uploading and downloading, auto-syncing, or using location services. To avoid additional charges, select a data plan to is suitable for your needs. Contact your service provider to obtain additional details.

## About this user guide

### Trademarks



- LG and the LG logo are registered trademarks of LG Electronics.
- All other trademarks and copyrights are the property of their respective owners.

## FAQ

Category Sub- Category	Question	Answer
<b>BT</b> Bluetooth Devices	What are the functions available via Bluetooth	You can connect a Bluetooth audio device such as a Stereo/Mono headset or Car Kit.
<b>BT</b> Bluetooth Headset	If my Bluetooth headset is connected, can I listen to my music through my 3.5 mm wired headphones?	Yes, you can listen to your music through the last connected device.
<b>Data</b> Contacts Backup	How can I backup Contacts?	The Contacts data can be synchronized between your phone and Gmail™.
<b>Data</b> Synchronization	Is it possible to set up one-way sync with Gmail?	Only two-way synchronization is available.
<b>Data</b> Synchronization	Is it possible to synchronize all email folders?	The Inbox is automatically synchronized. You can view other folders by tapping  and select <b>Folders</b> to choose a folder.


## FAQ

Category Sub- Category	Question	Answer
<b>Google™ Service</b> Gmail Log-In	Do I have to log into Gmail whenever I want to access Gmail?	Once you have logged into Gmail, no need to log into Gmail again.
<b>Google™ Service</b> Google Account	Is it possible to filter emails?	No, email filtering is not supported via the phone.
<b>Phone Function</b> Email	What happens when I execute another application while writing an email?	Your email will automatically be saved as a draft.
<b>Phone Function</b> Ringtone	Is there a file size limitation for when I want to use MP3 file as ring tone?	There is no file size limitation.
<b>Phone Function</b> Message Time	My phone does not display the time of receipt for messages older than 24 hrs. How can I change this?	You will only be able to see the times for messages received the same day.

Category Sub- Category	Question	Answer
<b>Phone Function</b> Navigation	Is it possible to install another navigation application on my phone?	Any application that is available at Play Store™ and is compatible with the hardware can be installed and used.
<b>Phone Function</b> Synchronisation	Is it possible to synchronize my contacts from all my email accounts?	Only Gmail and MS Exchange server (company email server) contacts can be synchronized.
<b>Phone Function</b> Wait and Pause	Is it possible to save a contact with Wait and Pause in the numbers?	<p>If you transferred a contact with the W &amp; P functions saved into the number, you will not be able to use those features. You will need to re-save each number.</p> <p>How to save with Wait and Pause:</p> <ol style="list-style-type: none"> <li>1. From the Home screen, tap the <b>Phone</b> icon .</li> <li>2. Dial the number, then tap .</li> <li>3. Tap <b>Add 2-sec pause</b> or <b>Add wait</b>.</li> </ol>
<b>Phone Function</b> Security	What are the phone's security functions?	You are able to set the phone to require that an Unlock Pattern be entered before the phone can be accessed or used.






## FAQ

Category Sub- Category	Question	Answer
<b>Phone Function</b> Unlock Pattern	How do I create the Unlock Pattern?	<ol style="list-style-type: none"><li>1. From the Home screen, tap .</li><li>2. Tap <b>Settings</b> &gt; <b>Display</b> tab &gt; <b>Lock screen</b>.</li><li>3. Tap <b>Select screen lock</b> &gt; <b>Pattern</b>. The first time you do this, a short tutorial about creating an Unlock Pattern will appear.</li><li>4. Set up by drawing your pattern once, and once again for confirmation.</li></ol> <p>Precautions to take when using the pattern lock.</p> <p>It is very important to remember the unlock pattern you set. You will not be able to access your phone if you use an incorrect pattern five times. You have five chances to enter your unlock pattern, PIN or password. If you have used all 5 opportunities, you can try again after 30 seconds. (Or, if you preset the backup PIN, you can use the backup PIN code to unlock the pattern.)</p>

Category Sub- Category	Question	Answer
<b>Phone Function</b> Unlock Pattern	What should I do if I forget the unlock pattern and I didn't create my Google account on the phone?	<p>If you have forgotten your pattern: If you logged into your Google account on the phone but failed to enter the correct pattern 5 times, tap the forgot pattern button. You are then required to log in with your Google account to unlock your phone. If you have not created a Google account on the phone or you have forgotten it, you will have to perform a hard reset.</p> <p>Caution: If you perform a factory reset, all user applications and user data will be deleted. Please remember to backup any important data before performing a factory reset.</p>
<b>Phone Function</b> Memory	Will I know when my memory is full?	Yes, you will receive a notification.

## FAQ

Category Sub- Category	Question	Answer
<b>Phone Function</b> Language Support	Is it possible to change my phone's language?	<p>The phone has multilingual capabilities.</p> <p>To change the language:</p> <ol style="list-style-type: none"><li>1. From the Home screen, tap  and tap <b>Settings</b>.</li><li>2. Tap <b>General</b> tab &gt; <b>Language &amp; input</b> &gt; <b>Language</b>.</li><li>3. Tap the desired language.</li></ol>
<b>Phone Function</b> VPN	How do I set up a VPN?	<p>VPN access configuration is different for each company. To configure VPN access from your phone, you must obtain the details from your company's network administrator.</p>
<b>Phone Function</b> Screen time out	My screen turns off after only 15 seconds. How can I change the amount of time for the backlight to turn off?	<ol style="list-style-type: none"><li>1. From the Home screen, tap .</li><li>2. Tap <b>Settings</b> &gt; <b>Display</b> tab.</li><li>3. Tap <b>Screen timeout</b>.</li><li>4. Tap the preferred screen backlight timeout time.</li></ol>

Category Sub- Category	Question	Answer
<b>Phone Function</b> Wi-Fi & mobile network	When Wi-Fi and mobile network are both available, which service will my phone use?	When using data, your phone may default to the Wi-Fi connection (if Wi-Fi connectivity on your phone is set to On). However, there will be no notification when your phone switches from one to the other. To know which data connection is being used, view the mobile network or Wi-Fi icon at the top of your screen.
<b>Phone Function</b> Home screen	Is it possible to remove an application from the Home screen?	Yes. Just touch and hold the icon until the dustbin icon appears at the top and center of the screen. Then, without lifting your finger, drag the icon to the trash can.
<b>Phone Function</b> Application	I downloaded an application and it causes a lot of errors. How do I remove it?	<ol style="list-style-type: none"> <li>1. From the Home screen, tap .</li> <li>2. Tap <b>Settings</b> &gt; <b>General</b> tab &gt; <b>Apps</b> &gt; <b>DOWNLOADED</b>.</li> <li>3. Tap the application, then tap <b>Uninstall</b>.</li> </ol>

## FAQ

Category Sub- Category	Question	Answer
<b>Phone Function</b> Charger	Is it possible to charge my phone using a USB data cable without installing the necessary USB driver?	Yes, the phone will be charged by the USB cable regardless of whether the necessary drivers are installed or not.
<b>Phone Function</b> Alarm	Can I use music files for my alarm?	Yes, when you set up an Alarm you can use a Music file as Alarm sound. <ol style="list-style-type: none"><li>1. Add new Alarm.</li><li>2. From the <b>Set alarm</b> setting screen, tap <b>Alarm sound</b> then choose <b>Music</b> and tap on desired Music file.</li></ol>
<b>Phone Function</b> Alarm	Will my alarm be audible or will it go off if the phone is turned off?	No, this is not supported.
<b>Phone Function</b> Alarm	If my ringer volume is set to Off or Vibrate, will I hear my alarm?	Your alarm is programmed to be audible even in these scenarios.

Category Sub- Category	Question	Answer
<b>Recovery Solution</b> Hard Reset (Factory Reset)	How can I perform a factory reset if I can't access the phone's setting menu?	If your phone does not restore to its original condition, use a hard reset (factory reset) to initialize it.

# For your safety

## Safety Information

Please read and observe the following information for safe and proper use of your phone and to prevent damage.

**WARNING!** This product contains chemicals known to the State of California to cause cancer and birth defects or reproductive harm.

***Wash hands after handling.***

**Caution:** Violation of the instructions may cause minor or serious damage to the product.

- For your safety, do not remove the battery incorporated in the product.
- Do not disassemble or open crush, bend or deform, puncture or shred.
- Repairs under warranty, at LG's option, may include replacement parts or boards that are either new or reconditioned, provided that they have functionality equal to that of the parts being replaced.
- Do not modify or remanufacture, attempt to insert foreign objects into the battery, immerse or expose to water or other liquids, expose to fire, explosion or other hazard.
- Avoid dropping the phone. If the phone is dropped, especially on a hard surface, and the user suspects damage, take it to a service center for inspection.
- For those host devices that utilize a USB port as a charging source, the host device's user manual shall include a statement that the phone shall only be connected to products that bear the USB-IF logo or have completed the USB-IF compliance program.

## **Charger and Adapter Safety**

- The charger and adapter are intended for indoor use only.
- Insert the battery pack charger vertically into the wall power socket.
- Unplug the power cord and charger during lightning storms to avoid electric shock or fire.
- Use the correct adapter for your phone when using the battery pack charger abroad.

## **Battery Information and Care**

- Please read the manual of specified charger about charging method.
- Do not damage the power cord by bending, twisting, or heating. Do not use the plug if it is loose as it may cause electric shock or fire. Do not place any heavy items on the power cord. Do not allow the power cord to be crimped as it may cause electric shock or fire.
- Unplug the power cord prior to cleaning your phone, and clean the power plug pin when it's dirty. When using the power plug, ensure that it's firmly connected. If not, it may cause excessive heat or fire. If you put your phone in a pocket or bag without covering the receptacle of the phone (power plug pin), metallic articles (such as a coin, paperclip or pen) may short-circuit the phone. Short-circuit of the terminal may damage the battery and cause an explosion. Always cover the receptacle when not in use.
- Charging temperature range is between 0°C/32°F and 45°C /113 °F. Do not charge the battery out of recommended temperature range. Charging out of recommended range might cause the generating heat or serious damage of



## For your safety

battery. And also, it might cause the deterioration of battery's characteristics and cycle life.

- The battery pack has protection circuit to avoid the danger. Do not use near places that can generate static electricity more than 100V which could damage the protection circuit. Damaged protection circuits may generate smoke, rupture or ignite.
- When using the battery for the first time, if it emits a bad smell, you see rust on it, or anything else abnormal, do not use the equipment and bring the battery to the shop which it was bought.
- Do not handle the phone with wet hands while it is being charged. It may cause an electric shock or seriously damage your phone.
- Do not place or answer calls while charging the phone as it may short-circuit the phone and/or cause electric shock or fire.
- Do not use harsh chemicals (such as alcohol, benzene, thinners, etc.) or detergents to clean your phone. This could cause a fire.
- Always unplug the charger from the wall socket after the phone is fully charged to save unnecessary power consumption of the charger.

## Care and Maintenance

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

## **Keep your Mobile Device away from:**

### **Liquids of any kind**

Keep the mobile device dry. Precipitation, humidity, and liquids contain minerals that will corrode electronic circuits. If the mobile device does get wet, do not accelerate drying with the use of an oven, microwave, or dryer, because this may damage the mobile device and could cause a fire or explosion.

Do not use the mobile device with a wet hand.

Doing so may cause an electric shock to you or damage to the mobile device.

### **Extreme heat or cold**

- Avoid temperatures below 0°C /32°F or above 45°C /113°F.
- Use your phone in temperatures between 0°C /32°F and 40°C /104°F, if possible. Exposing your phone to extremely low or high temperatures may result in damage, malfunction, or even explosion.

### **Microwaves**

Do not try to dry your mobile device in a microwave oven. Doing so may cause a fire or explosion.

### **Dust and dirt**

Do not expose your mobile device to dust, dirt, or sand.

### **Sunscreen lotion**

Do not expose or wear your device to any liquid like sunscreen lotion.

Doing so may cause your device to or damage to the mobile device.

## For your safety

### **Cleaning solutions**

Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the mobile device.

Wipe it with a soft cloth lightly dampened in a mild soap-and-water solution.

### **Shock or vibration**

Do not drop, knock, or shake the mobile device.

Rough handling can break internal circuit boards.

### **Paint**

Do not paint the mobile device. Paint can clog the device's moving parts or ventilation openings and prevent proper operation.

### **General Notice**

- An emergency call can be made only within a service area. For an emergency call, make sure that you are within a service area and that the phone is turned on.
- Do not place items containing magnetic components such as a credit card, phone card, bank book, or subway ticket near your phone. The magnetism of the phone may damage the data stored in the magnetic strip.
- Talking on your phone for a long period of time may reduce call quality due to heat generated during use.
- When the phone is not used for a long period time, store it in a safe place with the power cord unplugged.
- Using the phone in proximity to receiving equipment (i.e., TV or radio) may cause interference to the phone.

- Do not use the phone if the antenna is damaged. If a damaged antenna contacts skin, it may cause a slight burn. Please contact an LG Authorized Service Center to replace the damaged antenna.
- The data saved in your phone might be deleted due to careless use, repair of the phone, or upgrade of the software. Please backup your important phone numbers. (Ringtones, text messages, voice messages, pictures, and videos could also be deleted.) The manufacturer is not liable for damage due to the loss of data.
- When you use the phone in public places, set the ringtone to vibration so you don't disturb others.
- Do not turn your phone on or off when putting it to your ear.
- Your phone is an electronic device that generates heat during normal operation. Extremely prolonged, direct skin contact in the absence of adequate ventilation may result in discomfort or minor burns. Therefore, use care when handling your phone during or immediately after operation.

Use accessories, such as earphones and headsets, with caution. Ensure that cables are tucked away safely and do not touch the antenna unnecessarily.

## **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 causes undesired operation.

## For your safety

### **Bodily Contact During Operation**

This device was tested for typical use with the back of the phone kept 0.59 inches (1.5 cm) from the body. To comply with FCC RF exposure requirements, a minimum separation distance of 0.59 inches (1.5 cm) 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. Avoid the use of accessories that cannot maintain 0.59 inches (1.5 cm) distance between the user's body and the back of the phone and have not been tested for compliance with FCC RF exposure limits.

### **Consumer Information About Radio Frequency Emissions**

Your wireless phone, which contains a radio transmitter and receiver, emits radio frequency energy during use. The following consumer information addresses commonly asked questions about the health effects of wireless phones.

### **Are wireless phones safe?**

Scientific research on the subject of wireless phones and radio frequency ("RF") energy has been conducted worldwide for many years, and continues. In the United States, the Food and Drug Administration ("FDA") and the Federal Communications Commission ("FCC") set policies and procedures for wireless phones. The FDA issued a website publication on health issues related to cell phone usage where it states, "The scientific community at large . . . believes that the weight of scientific evidence does not show an association between exposure to radiofrequency (RF) from cell phones and adverse health outcomes. Still the scientific community does recommend conducting additional research to address gaps in knowledge. That research is being

conducted around the world and FDA continues to monitor developments in this field. You can access the joint FDA/FCC website at <http://www.fda.gov> (under “c” in the subject index, select Cell Phones > Research). You can also contact the FDA toll-free at (888) 463-6332 or (888) INFO-FDA. In June 2000, the FDA entered into a cooperative research and development agreement through which additional scientific research is being conducted. The FCC issued its own website publication stating that “there is no scientific evidence that proves that wireless phone usage can lead to cancer or a variety of other problems, including headaches, dizziness or memory loss.” This publication is available at <http://www.fcc.gov/cgb/cellular.html> or through the FCC at (888) 225-5322 or (888) CALL-FCC.

## What does “SAR” mean?

In 1996, the FCC, working with the FDA, the U.S. Environmental Protection Agency, and other agencies, established RF exposure safety guidelines for wireless phones in the United States. Before a wireless phone model is available for sale to the public, it must be tested by the manufacturer and certified to the FCC that it does not exceed limits established by the FCC. One of these limits is expressed as a Specific Absorption Rate, or “SAR.” SAR is a measure of the rate of absorption of RF energy in the body. Tests for SAR are conducted with the phone transmitting at its highest power level in all tested frequency bands. Since 1996, the FCC has required that the SAR of handheld wireless phones not exceed 1.6 watts per kilogram, averaged over one gram of tissue. Although the SAR is determined at the highest power level, the actual SAR value of a wireless phone while operating can be less than the reported SAR value. This is because the SAR value may vary from call to call, depending on factors such as proximity to a cell site, the proximity of the phone to the body while

## For your safety

in use, and the use of hands-free devices. For more information about SARs, see the FCC's OET Bulletins 56 and 65 at [http://www.fcc.gov/Bureaus/Engineering\\_Technology/Documents/bulletins](http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins) or visit the Cellular Telecommunications Industry Association website at [http://www.ctia.org/consumer\\_info/index.cfm/AID/10371](http://www.ctia.org/consumer_info/index.cfm/AID/10371). You may also wish to contact the manufacturer of your phone.

### Can I minimize my RF exposure?

If you are concerned about RF, there are several simple steps you can take to minimize your RF exposure. You can, of course, reduce your talk time. You can place more distance between your body and the source of the RF, as the exposure level drops off dramatically with distance. The FDA/FCC website states that “hands-free kits can be used with wireless phones for convenience and comfort. These systems reduce the absorption of RF energy in the head because the phone, which is the source of the RF emissions, will not be placed against the head. On the other hand, if the phone is mounted against the waist or other part of the body during use, then that part of the body will absorb more RF energy. Wireless phones marketed in the U.S. are required to meet safety requirements regardless of whether they are used against the head or against the body. Either configuration should result in compliance with the safety limit.” Also, if you use your wireless phone while in a car, you can use a phone with an antenna on the outside of the vehicle. You should also read and follow your wireless phone manufacturer's instructions for the safe operation of your phone.

## Do wireless phones pose any special risks to children?

The FDA/FCC website states that “the scientific evidence does not show a danger to users of wireless communication devices, including children.” The FDA/FCC website further states that “some groups sponsored by other national governments have advised that children be discouraged from using wireless phones at all”. For example, the Stewart Report from the United Kingdom [“UK”] made such a recommendation in December 2000. In this report a group of independent experts noted that no evidence exists that using a cell phone causes brain tumors or other ill effects. [The UK’s] recommendation to limit cell phone use by children was strictly precautionary; it was not based on scientific evidence that any health hazard exists. A copy of the UK’s leaflet is available at <http://www.dh.gov.uk> (search “mobile”), or you can write to: NRPB, Chilton, Didcot, Oxon OX11 0RQ, United Kingdom. Copies of the UK’s annual reports on mobile phones and RF are available online at [www.iegmp.org.uk](http://www.iegmp.org.uk) and <http://www.hpa.org.uk/radiation/> (search “mobile”). Parents who wish to reduce their children’s RF exposure may choose to restrict their children’s wireless phone use.

## Where can I get further information about RF emissions?

For further information, see the following additional resources (websites current as of April 2005):

### U.S. Food and Drug Administration

FDA Consumer magazine November-December 2000 Telephone: (888) INFO-FDA  
<http://www.fda.gov> (Under “c” in the subject index, select Cell Phones > Research.)



## For your safety

### **U.S. Federal Communications Commission**

445 12th Street, S.W. Washington, D.C. 20554 Telephone: (888) 225-5322 <http://www.fcc.gov/oet/rfsafety>

### **Independent Expert Group on Mobile Phones**

<http://www.iegmp.org.uk>

### **Royal Society of Canada Expert Panels on Potential Health Risks of Radio Frequency Fields from Wireless Telecommunication Devices**

283 Sparks Street Ottawa, Ontario K1R 7X9 Canada Telephone: (613) 991-6990  
[http://www.rsc.ca/index.php?page=Expert\\_Panels\\_RF&Lang\\_id=120](http://www.rsc.ca/index.php?page=Expert_Panels_RF&Lang_id=120)

### **World Health Organization**

Avenue Appia 20  
1211 Geneva 27  
Switzerland  
Telephone: 011 41 22 791 21 11  
<http://www.who.int/mediacentre/factsheets/fs193/en/>

### **International Commission on Non-Ionizing**

Radiation Protection c/o Bundesamt für Strahlenschutz  
Ingolstaedter Landstr. 1  
85764 Oberschleissheim

Germany

Telephone: 011 49 1888 333 2156

<http://www.icnirp.de>

## **American National Standards Institute**

1819 L Street, N.W., 6th Floor

Washington, D.C. 20036

Telephone: (202) 293-8020

<http://www.ansi.org>

## **National Council on Radiation Protection and Measurements**

7910 Woodmont Avenue, Suite 800

Bethesda, MD 20814-3095

Telephone: (301) 657-2652

<http://www.ncrponline.org>

## **Engineering in Medicine and Biology Society, Committee on Man and Radiation (COMAR) of the Institute of Electrical and Electronics Engineers**

<http://ewh.ieee.org/soc/embs/comar/>

## **TIA Safety Information**

The following is the complete TIA Safety Information for wireless handheld phones.

## For your safety

### Exposure to Radio Frequency Signal

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

In August, 1996, the Federal Communications Commissions (FCC) adopted RF exposure guidelines with safety levels for handheld 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)

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

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.

### 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:

Don't 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.

## **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 (6) 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;
- Should turn the phone OFF immediately if there is any reason to suspect that interference is taking place.

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### **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).

### **Other Medical Devices**

If you use any other personal medical device, consult the manufacturer of your device to determine if it is adequately shielded from external RF energy. Your physician may be able to assist you in obtaining this information.

### **Health Care Facilities**

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 use 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 Atmosphere**

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.

## **FDA Consumer Update**



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

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### **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 Radio Frequency (RF) energy in the microwave range while being used. They also emit very low levels of RF when in idle 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 the FDA's role concerning the safety of wireless phones?**

Under the law, the FDA does not review the safety of radiation-emitting consumer products such as wireless phones before they can be sold, as it does with new drugs or medical devices. However, the agency has authority to take action if wireless phones are shown to emit Radio Frequency (RF) energy at a level that is hazardous to the user. In such a case, the 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 does not justify FDA regulatory actions, the 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.

The 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
- Occupational Safety and Health Administration
- National Telecommunications and Information Administration

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

The 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. The FCC relies on the FDA and other health agencies for safety questions about wireless phones.

The 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 handheld wireless phones with built-in antennas, often called “cell”, “mobile”, or “PCS” phones. These types of wireless phones can expose the user to measurable Radio Frequency (RF) energy because of the short distance between the phone and the user’s head. These RF exposures are limited by FCC safety guidelines that were developed with the advice of the 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 Radio Frequency (RF) energy 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 do not 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, 166 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 ten or more years followup 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 cancercausing 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 the FDA doing to find out more about the possible health effects of wireless phone RF?**

The 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

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conducted to address important questions about the effects of exposure to Radio Frequency (RF) energy.

The FDA has been a leading participant in the World Health Organization International Electro Magnetic 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.

The FDA and the Cellular Telecommunications & Internet Association (CTIA) have a formal Cooperative Research And Development Agreement (CRADA) to do research on wireless phone safety. The FDA provides the scientific oversight, obtaining input from experts in government, industry, and academic organizations. CTIA-funded research is conducted through contracts with 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 Radio Frequency 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 Radio Frequency (RF) energy exposures. The FCC established these guidelines in consultation with the FDA and the other federal health and safety agencies. The FCC limit for RF exposure from wireless phones 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 the FDA done to measure the Radio Frequency energy coming from wireless phones?**

The Institute of Electrical and Electronic Engineers (IEEE) is developing a technical standard for measuring the Radio Frequency (RF) energy 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.

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### **9. What steps can I take to reduce my exposure to Radio Frequency energy from my wireless phone?**

If there is a risk from these products — and at this point we do not know that there is — it is probably very small. But if you are concerned about avoiding even potential risks, you can take a few simple steps to minimize your exposure to Radio Frequency (RF) energy. 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 does 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 Radio Frequency (RF) energy, 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?**

Radio Frequency (RF) energy from wireless phones can interact with some electronic devices. For this reason, the FDA helped develop a detailed test method to measure Electro Magnetic 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 the 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. The FDA has tested hearing aids for interference from handheld wireless phones and helped develop a voluntary standard sponsored by the Institute of Electrical and Electronic Engineers (IEEE). This standard specifies test methods and performance requirements for hearing aids and wireless phones so that no interference occurs when a person uses a “compatible” phone and a “compatible” hearing aid at the same time. This standard was approved by the IEEE in 2000.

The FDA continues to monitor the use of wireless phones for possible interactions with other medical devices. Should harmful interference be found to occur, the 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:

Federal Communications Commission (FCC) RF Safety Program

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

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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.hpa.org.uk/radiation/>)

### Driving

Check the laws and regulations on the use of wireless phones in the areas where you drive and always obey them. Also, if using your phone while driving, please observe the following:

- 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 or the law require it.

### Consumer Information on SAR (Specific Absorption Rate)

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 radiofrequency (RF) energy set by the Federal Communications Commission (FCC) of the U.S. Government. These FCC exposure limits are derived from the recommendations of two expert organizations, the National Council on Radiation Protection and

Measurement (NCRP) and the Institute of Electrical and Electronics Engineers (IEEE). In both cases, the recommendations were developed by scientific and engineering experts drawn from industry, government, and academia after extensive reviews of the scientific literature related to the biological effects of RF energy.

The exposure limit for wireless mobile phones employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR is a measure of the rate of absorption of RF energy by the human body expressed in units of watts per kilogram (W/kg). The FCC requires wireless phones to comply with a safety limit of 1.6 watts per kilogram (1.6 W/kg). The FCC exposure limit incorporates a substantial margin of safety to give additional protection to the public and to account for any variations in measurements.

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 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. Because the phone is designed to operate at multiple power levels 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 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.



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The highest SAR value for this model phone when tested for use at the ear is 1.13 W/Kg (1g) and when worn on the body, as described in this user's manual, is 1.05 W/Kg (1g). While there may be differences between SAR levels of various phones and at various positions, they all meet the government requirement for safe exposure.

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/ea/fccid/> after searching on FCC ID ZNFL16C.

To find information that pertains to a particular model phone, this site uses the phone FCC ID number which is usually printed somewhere on the case of the phone. Sometimes it may be necessary to remove the battery pack to find the number. Once you have the FCC ID number for a particular phone, follow the instructions on the website and it should provide values for typical or maximum SAR for a particular phone.

Additional information on Specific Absorption Rates (SAR) can be found on the Cellular Telecommunications Industry Association (CTIA) website at <http://www.ctia.org/>

\*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.

## HAC

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.

## **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

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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.

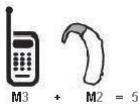
**M-Ratings:** Phones rated M3 or M4 meet FCC requirements and are likely to generate less interference to hearing devices than phones that are not labeled. M4 is the better/ higher of the two ratings.

**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. To ensure that the Hearing Aid Compatibility rating for your phone is maintained, secondary transmitters such as Bluetooth and WLAN components must be disabled during a call.

When you're talking on a cell phone, it's recommended that you turn the BT (Bluetooth) or WLAN mode off for HAC.

### **For information about hearing aids and digital wireless phones**

Wireless Phones and Hearing Aid Accessibility

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

### **Gallaudet University, RERC**

<http://tap.gallaudet.edu/Voice/>

### **FCC Hearing Aid Compatibility and Volume Control**

<http://www.fcc.gov/cgb/dro/hearing.html>

### **The Hearing Aid Compatibility FCC Order**

[http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-03-168A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-03-168A1.pdf)

### **Hearing Loss Association of America [HLAA]**

<http://hearingloss.org/content/telephones-and-mobile-devices>

## **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

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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.

\* Service not available everywhere.

\* Information subject to change.

### Part 15.21 statement

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

### Battery information and care

Always unplug the charger from the wall socket after the phone is fully charged to save unnecessary power consumption of the charger.

## 7.11 Warranty Laws

The following laws govern warranties that arise in retail sales of consumer goods:

- The California Song-Beverly Consumer Warranty Act [CC §§1790 et seq],
  - The California Uniform Commercial Code, Division Two [Com C §§2101 et seq], and
  - The federal Magnuson-Moss Warranty Federal Trade Commission Improvement Act [15 USC §§2301 et seq; 16 CFR Parts 701– 703].
- A typical Magnuson-Moss Act warranty is a written promise that the product is free of defects or a written promise to refund, repair, or replace defective goods. [See 15 USC §2301(6).] Remedies include damages for failing to honor a written warranty or service contract or for violating disclosure provisions. [See 15 USC §2310(d).] Except for some labeling and disclosure requirements, the federal Act does not preempt state law. [See 15 USC §2311.]

The Consumer Warranty Act does not affect the rights and obligations of parties under the state Uniform Commercial Code, except the provisions of the Act prevail over provisions of the Commercial Code when they conflict. [CC §1790.3.]

For purposes of small claims actions, this course will focus on rights and duties under the state laws.