Service Provider Features

7

Several features on your phone are available only if you sign up for them with your wireless service provider. If you do not have one of the services listed below, contact your wireless service provider for more information.

Caller ID

This feature displays the phone number of the person calling you. If the caller's phone number matches an entry in the Phonebook, the backlight changes color and the corresponding name is displayed. The ring tone, and color depend on the settings you selected in the Phonebook.

Call Waiting

1 An alert sounds when you receive an incoming call during a conversation.

```
Call Waiting
770-555-4141

ACCEPT     IGNORE
```

- The display indicates that a call is waiting.
- If the caller's phone number matches an entry in the Phonebook, the backlight changes color and the corresponding name is displayed.

2 Press (ACCEPT) to connect with the incoming call and place the first call on hold.

OR

Press (IGNORE) to silence the ring and continue your current call.

3 Press to switch between the two calls.

4 Press to end the current call.

Three-Way Calling

This feature lets you dial a third person while you are in a call. You can continue your conversation with one person when the other one hangs up.

1 While in a call, enter a phone number or recall it from the Phonebook.

2 Press .

- The phone call you are in is temporarily placed on hold.

3 When the third person answers, press again to connect all three parties.

4 Press to end all calls.

Note: This feature may not be available in all areas. Contact your wireless service provider for more information.

Text Messaging

Composing a Text Message

You can type a text message (up to 160 characters including the e-mail address).

Entering the Send To Information

1 From the Text Message menu, scroll to **Compose** and press ⊙ (OK).

2 Press ⊙ (SELECT) to select **Send To**.

3 From the Send To screen, select **From Phonebook**, **Phone#**, or **E-mail Address**. Follow the display prompts or enter characters. (See *Chapter 4*, *"Text Entry Operations"*.) Press ⊙ (OK).

   If you decide to change the phone number or e-mail address you entered, reselect the check-marked **Send To:** entry, and press ⊙ (CHANGE). Repeat the first part of this step.

   OR

   If you have created a group list, you can send the message to several people at once, by selecting **Group Lists** and pressing ⊙ (OK). Select an entry from your group lists and press ⊙ (OK). (See *"Creating a Group List" on page 55* for information on how to set up group lists.)
   - The Compose menu is displayed with a check mark next to **Send To**, indicating that this field has been completed.

Entering the Text of Your Message

4 Scroll to **Message** and press ⊙ (SELECT).

5 Enter the text of your message and press ⊙ (OK). (See *Chapter 4*, *"Text Entry Operations"*.)
   - The Compose menu is displayed with a check mark next to **Send To** and **Message**, indicating that both these fields have been completed.

Message Options

6 Do one of the following:
   - To send the message, press ⊙ (OK).
   - To store the message in the outbox before sending it, scroll to **Save** and press ⊙ (OK).
     - The outbox holds up to 20 unsent messages. If the outbox is full, delete or send an outbox message to make more room in the outbox.
   - To delete the message and return to the Text Message menu, scroll to **Exit** and press ⊙ (OK).

Accessing Text Messages

1 From standby, press ✉.
   OR
   From standby, press ⊡ (MENU), scroll to **Messages**, and press ⊙ (OK)

2 Scroll to **Text Message**, and press ⊙ (OK).

```
 ■   □      Tull
   Text Message
1>Inbox
2 Compose
3 Group Lists
 OK  ◄►  BACK
```

3 Do one of the following:

- **-** To look at messages in the **Inbox**, press ⊡ (OK). See *"Viewing Inbox Messages" on page 53*.
- **-** To compose a message, scroll to **Compose** and press ⊡ (OK). See *"Composing a Text Message" on page 50*.
- **-** To create a group list so that you can send a message to several people at once, scroll to **Group Lists** and press ⊡ (OK). See *"Creating a Group List" on page 55*.
- **-** To delete all messages in the Inbox or Outbox, scroll to **Delete All** and press ⊡ (OK). See *"Deleting All Inbox or Outbox Messages" on page 54*.
- **-** To look at messages in the Outbox, scroll to **Outbox** and press ⊡ (OK). See *"Viewing Outbox Messages" on page 53.*

Reading New Text Messages

When a new text message is received, an alert sounds and ✉ appears on the top of the display.

- • If you have received 40 messages, the oldest read message will be overwritten when you receive a new message.
- • If the envelope icon is dark (▨), you have 40 unread (including locked) messages waiting and the inbox is full. See *"Deleting a Text Message" on page 54* and delete a message.
- • The display indicates how many new text messages you have received.

```
 ■✉  □      Tull

    1 Message
     Received

 VIEW    EXIT
```

1 Press ⊡ (VIEW) to view the inbox message list.

- • The display icons indicate the message status:
  - ✉ :Unread message
  - ⌁ :Locked message
  - :Read message
- • The urgency level of the received message is also displayed:
  - **!!** :Very urgent message
  - **!** :Urgent message
  - ✳ :Normal message
  - ↓ :Bulk message

2 If you have one new message, press ◀ or ▶ to scroll through the message, sender, and reception time.

OR

If you have more than one message, press ▼ or ▲ to scroll through the list of messages. When the arrow points to the message you want to read, press ◀ or ▶ to scroll through the message, sender, and reception time.

3 Once you read a message, you can do any of the following:

- To reply to the message, see *"Replying to a Text Message (Inbox Only)" on page 52*.
- To lock the message, see *"Locking a Text Message" on page 52*.
- To forward the message, see *"Forwarding a Text Message" on page 52*.
- To call a number shown in the message, see *"Calling Back a Text Message" on page 53*.
- To delete the message, see *"Deleting a Text Message" on page 54*.

Replying to a Text Message (Inbox Only)

1 With a message displayed, press 🔲 (OPTION).
   • The OPTIONS menu is displayed.
2 Press 🔲 (OK) to select **Reply**.
   • The Compose screen appears with a check mark next to **Send To**, indicating that this field is already completed.
3 Scroll to **Message** and press 🔲 (SELECT).
4 Enter the text of your message in the Message screen and press 🔲 (OK).
   • The Compose screen is displayed.

Locking a Text Message

You can lock a message so that it will not be overwritten by another incoming message when your inbox is full.

1 With the message selected or displayed, press 🔲 (OPTION).
2 Scroll to **Lock** and press 🔲 (OK).
   • **Message Locked** is shown on the display and the ⬚ icon appears next to the message in the Inbox list.

Forwarding a Text Message

1 With the message selected or displayed, press 🔲 (OPTION).
2 Scroll to **Forward** and press 🔲 (OK).
   • The Compose screen appears with a check mark next to **Message**, indicating that the message field is completed.
3 Press 🔲 (SELECT).
4 From the Send To screen, do one of the following:
   - To select a number or e-mail address from the Phonebook, press 🔲 (OK).
     Scroll to a name and then to the phone number or e-mail address to forward the message to, and press 🔲 (OK).
   - To enter a phone number, scroll to **Phone#** and press 🔲 (OK).

Enter the phone number to forward the message to, and press 🔲 (OK).

- To enter an e-mail address, scroll to **E-mail Address** and press 🔲 (OK).

Enter the e-mail address to forward the message to, and press 🔲 (OK).

- To select a group list, scroll to **Group List**, and press 🔲 (OK).

Scroll to the group list to forward the message to, and press 🔲 (OK).

- The Compose screen is displayed with check marks next to **Send To** and **Message**.

Calling Back a Text Message

When the text of a message contains a telephone number, you can call that number without having to press the keys yourself.

1 With the message displayed, press 🔲 (OPTION).
2 Scroll to **Call Back**, and press 🔲 (OK).
3 Scroll to the phone number you want to call back. (Phone numbers are automatically inserted.)
4 Press 🔲 (OPTION) and then select **Prefix** to add a prefix to the phone number, or select **Save** to save the number in the Phonebook as a home, work, cell, or other phone number.

OR

Press 🔲 (SEND) to place the call.

Viewing Inbox Messages

1 From the Text Message menu, press 🔲 (OK).
2 Press ▼ or ▲ to scroll to the message of your choice, then ◀ or ▶ to scroll through the message, sender, and the reception time.
3 Do one of the following:
   - To reply to a message, see *"Replying to a Text Message (Inbox Only)" on page 52*.
   - To lock a message so that it cannot be overwritten by another incoming message, see *"Locking a Text Message" on page 52*.
   - To forward a message, see *"Forwarding a Text Message" on page 52*.
   - To call a number shown in the message, see *"Calling Back a Text Message"* above.
   - To delete the message, see *"Deleting a Text Message" on page 54*.

Note: If a phone number is displayed after **From:** in an Inbox message, pressing 📞 calls the displayed number.

Viewing Outbox Messages

1 From the Text Message menu, scroll to **Outbox** and press 🔲 (OK).
2 Press ▼ or ▲ to scroll to the message of your choice, then ◀ or ▶ to scroll through the message, destination, and the time.
3 After reading through a message, press 🔲 (OPTION).

4 From the Options menu, do one of the following:

- To edit the destination or the text of a message, press ⌾ (OK) to select **Edit**.

  • The Compose screen is displayed. See *"Composing a Text Message" on page 50* for instructions on editing a message.

  • To send the message, scroll to **Send** and press ⌾ (OK).

  • To delete the message, scroll to **Delete** and press ⌾ (OK).

Deleting a Text Message

1 With the message selected or displayed, press ⌾ (OPTION).

2 Scroll to **Delete**, and press ⌾ (OK).

3 Press ⌾ (YES) to delete the message.

Deleting All Inbox or Outbox Messages

1 From the Text Message menu, scroll to **Delete All** and press ⌾ (OK).

2 Do one of the following:

- Press ⌾ (OK) to delete all messages in the **Inbox**.

  • If you press ⌾ (OK), the display asks you to confirm that you want to delete all messages in your Inbox.

  • If you press ⌾ (NO), you are returned to the Delete All menu. Press ⌾ (YES).

OR

- Scroll to **Outbox** and press ⌾ (OK).

  • If you press ⌾ (OK), the display asks you to confirm that you want to delete all messages in your Outbox.

  • If you press ⌾ (NO), you are returned to the Delete All menu. Press ⌾ (YES).

Note: You cannot delete Locked messages in the Inbox with **Delete All**.

Group Lists

A group list is a convenient way to send a message to several people at once. Usually, group lists consist of people with some common element, such as members of a team at work, family members, or friends with similar interests. Each group list can have up to five members and you can have a total of five group lists. You have to assign a name to your group list first and then add members from your Phonebook entries.

Remember, that you must create your Phonebook entries *before* you can select them for a group list. Once you have created a group list, you can add or delete members, delete the entire group list, and send a message to a group.

Note: When you send a message to a group list, the message is sent individually to each name in the group list, even though it appears to you that only one message is being sent.

Creating a Group List

1 From the Text Message menu, scroll to **Group Lists** and press ▢ (OK).

2 Press ▢ (OK) to select **Create**.

```
▮  ◉        Tₐₗₗ
   Enter Name
▌ntitled


  OK    ▶ ABC
```

• The display prompts for a name for your group list.

3 Press and hold (CLR) to delete **Untitled** and then enter a name for your group list.
   • Enter a name (up to 16 characters) that will remind you who is in the list. For example, Book Club, Project Team, and so on. (See *Chapter 4, "Text Entry Operations"* for information on entering text on your display.)

4 Press ▢ (OK).
   • The display shows the name you entered for the Group List, and prompts for names of people to include.

5 Scroll to **1st:**, **2nd:**, **3rd:**, **4th:**, or **5th:**—you can add names in any order—and press ▢ (SELECT).
   • The names in your Phonebook are displayed.

6 Scroll to the name you want to add to the group list and press ▢ (SELECT).
   • All phone numbers for that person (and an e-mail address, if present) are displayed.

7 Scroll to the phone number or e-mail address you want to use and press ▢ (SELECT).
   • The person's name is added to the group list. An icon next to the name indicates which phone number (or e-mail address) will be used: ♟ (home number), ▯ (work number), ▮ (cell phone number), ▮ (other number), or **@** (e-mail address).

8 When you have entered all the names (up to five) to be included in this group list, press ▢ (FINISH).
   • The display asks if you want to save the entry.

9 Press ▢ (YES) to save the entry or ▢ (NO) to cancel it.

Editing a Group List

1 From the Text Message menu, scroll to **Group Lists** and press ▢ (OK).

2 Scroll to **Edit** and press ▢ (OK).

```
┌─────────────────────────┐
│ ▇  ▊       ▔▄█          │
│    Group Lists          │
│ 1>Work                  │
│ 2 Book Club             │
│ 3 Soccer                │
│ ▐EDIT▌ ⬍ ▐BACK▌         │
└─────────────────────────┘
```

• The names of your group lists are displayed.

3 Scroll to the one you want to edit and press ⊡ (EDIT).

4 To change or delete an entry, scroll to the entry and press ⊡ (SELECT).

5 To change the entry, press ⊡ (CHANGE).

Scroll through the names in your Phonebook, and press ⊡ (SELECT) when the name you want to enter is displayed.

Scroll through the phone numbers and e-mail address for the selected name, and press ⊡ (SELECT) when the arrow points to the number (or e-mail address) you want.

OR

To delete the entry, press ⊡ (DELETE).

6 To change or delete another entry, press ⊡ (SELECT).

OR

To return to the Group List menu, press ⊡ (FINISH).

7 To save your change(s), press ⊡ (YES).

OR

To cancel your changes and return to the Group List menu, press ⊡ (NO).

Viewing Your Group Lists

You can view your group lists, edit them, and delete them.

1 From the Text Message menu, scroll to **Group Lists** and press ⊡ (OK).

2 On the Group List menu, scroll to **View** and press ⊡ (OK).

3 Scroll to the group list you want to view and press ⊡ (VIEW).

4 Press ⊡ (OPTION).

5 From the View Options menu, do one of the following:

  - To edit a group list, press ⊡ (OK) and follow the instructions from step **4** in *"Editing a Group List"* above.

  - To delete an entire group list, scroll to **Delete** and press ⊡ (OK). When asked to confirm the deletion, press ⊡ (YES).

  - To send a message to the people in the selected group list, scroll to **Send To** and press ⊡ (OK). Follow the instructions in *"Composing a Text Message" on page 50*.

Voice Mail

Note: You must subscribe to voice mail through your wireless service provider before you can retrieve voice mail messages. To check if voice mail has been programmed, press and hold ✉. If the display indicates that the Voice Mailbox number is empty, voice mail has not been programmed. Contact your wireless service provider for programming instructions.

Listening to New Voice Mail

1   When a new voice mail message is received, an alert sounds and 📞 appears on the top of the display.
2   Press 🔲 (LISTEN) to automatically dial your voice mail number.
    OR
    From the standby display, press and hold ✉ until it calls your voice mailbox.
3   Follow the recorded instructions for your voice mail.
4   Press 📵 to end your call and return to standby.

Saving and Deleting Voice Mail

Saving and deleting voice mail is a function of your wireless service provider. Once you call your voice mailbox, follow the instructions given by your wireless service provider.

Resetting the Voice Mailbox Number

Caution: Do not reset your voice mailbox number if it is preprogrammed by your wireless service provider. Your voice mail will be inaccessible if an incorrect number is entered. Check with your wireless service provider for specific information.

1   From standby, press 🔲 (MENU) to enter the Main Menu.
2   Press ▼ to scroll to **Messages** and press 🔲 (OK).
3   Press 🔲 (OK) to select **Voice Mail**.

```
■   ▣   ▆▆▆▆
Voice Mailbox #

770-555-4141

LISTEN   EDIT
```

• Your voice mailbox phone number is displayed.
• If a voice mailbox number has not been programmed, **(Empty)** is displayed.

4   Press 🔲 (EDIT) and enter a new voice mailbox phone number.
    •   You can also program Pause and Wait times for your password or PIN. See *"Programming Pauses or Waits" on page 30*.
5   Press 🔲 (OK) to save the new phone number.

Chapter 7

System Settings

This chapter contains information about settings in the System Settings menu. You should not have to change these settings. The procedures in this chapter are provided for technically knowledgeable users.

8

Caution: Before making *any* changes to these settings, contact technical support. Random changes to these settings could negatively affect your phone's performance.

Voice Privacy Mode

When this feature is on, conversations and messages are encrypted with a special code that can be interpreted only by your wireless service provider. Voice privacy is available *only* if offered by your wireless service provider. Contact your wireless service provider for additional information.

1   From standby, press (MENU) to enter the Main Menu.
2   Press ▼ to scroll to **System Setting** and press (OK).
3   Press (OK) again to select **Network**.
4   Press (OK) again to select **Voice Privacy**.
5   To change the setting, scroll to the other option and press (OK).
   • If you selected **On**, the encryption icon ( ) is displayed during calls (if you have subscribed to voice privacy with your service provider).

Selecting Your Phone Number (NAM)

Your phone can have up to two phone numbers (programmed by your wireless service provider). You can select either phone number to make a call. These phone numbers are referred to as NAM1 and NAM2. NAM stands for Number Assignment Module.

Your wireless service provider must program a NAM into your handset in order for it to operate correctly on their network. This can be done by a sales representative, or optionally, it can be programmed into your phone over the airwaves.

1   From standby, press (MENU) to enter the Main Menu.
2   Press ▼ to scroll to **System Setting** and press (OK).
3   Press ▼ to scroll to **NAM Selection** and press (OK).
   • The display shows your current phone number setting.
4   If you have a second phone number (NAM2), view it by pressing ▼ or ▲ .
5   To select the other phone number (other than the one you are currently using), make sure that phone number (NAM) is displayed and press (OK).
   • If you changed the NAM setting, a network search occurs.

Note: If you would like to have a second phone number programmed for your phone, contact your wireless service provider.

Searching for Available Systems

Your phone's search default is set to **Normal**, which means it automatically searches for available network systems, and then selects the appropriate one. It will default to this setting every time you turn on your phone, even when you have changed the search setting. To search for a particular network, select **Manual**. Up to 16 network names may be displayed. When **New Search** is selected, your phone begins a new search for available systems and asks if you use the network.

1   From standby, press ⊡ (MENU) to enter the Main Menu.

2   Press ▼ to scroll to **System Setting** and press ⊡ (OK).

3   Press ▼ to scroll to **Search** and press ⊡ (OK).

4   Scroll to your preferred search setting and press ⊡ (OK).

5   Do one of the following:

-   If you selected **Normal**, press any key or wait 3 seconds to return to standby.

-   If you selected **Manual**, press ▼ to scroll to a network you use and press ⊡ (OK) to select it. Then, press any key or wait 3 seconds to return to standby.

-   If you selected **New Search**, an available network name is displayed. Press ⊡ (YES) to select it or ⊡ (NO) to have the phone search for another available network. After you select a network, press any key or wait 3 seconds to return to standby.

Service Priority

Your phone automatically searches for available networks when powered on. To change the service priority order, follow this procedure. If you are not sure which service you have, contact your wireless service provider.

1   From standby, press ⊡ (MENU) to enter the Main Menu.

2   Scroll to **System Setting** and press ⊡ (OK).

3   Scroll to **SVC Priority** and press ⊡ (OK).

4   Scroll to **Custom** and press ⊡ (OK).

-   This display shows the default search order:
    Residential: When turned on, the phone first searches for its home base station.
    Private: The phone then searches for an in-building system.
    Public: The phone searches for any available networks.

5   Press ▼ or ▲ to change the **SVC Priority** order.

6   When your preferred order is displayed, press ⊡ (OK).

Before Requesting Help

A

As you learn how to use all of your phone's features, you may occasionally experience minor problems. Fortunately, you can fix most of these problems yourself. Listed below are some of the problems you might encounter, as well as procedures that may help you arrive at a solution. If your problem persists, please contact your wireless service provider or visit Panasonic's website at *www.panasonic.com*.

Problems and Solutions

Problem	Possible Cause(s)	Solution(s)
Phone will not turn on	Battery is too low or not charged.	Recharge the battery. Or, connect the AC or DC adapter.
	Battery contacts need to be cleaned.	Wipe the battery contacts and phone contacts with a dry cloth.
	☎ was not pressed long enough.	Try pressing and holding ☎ for at least three seconds.
"Initialization Error xxxx" or **"Run Time Error xxxx"** is displayed	Your phone has detected a programming error.	Contact your wireless service provider.
Phone turns off inadvertently	Battery is too low or will not hold a charge.	Connect an AC or DC adapter and confirm that the battery icon is displayed. If the battery icon is not displayed, contact your wireless service provider.
Keys do not work when pressed	Keypad may be locked. (The display shows **Key Lock On**.)	If **Key Lock On** is displayed, press ▢ (UNLOCK) and then ▢ (YES) to unlock.
	Phone may not be on.	Verify that phone is on.
Unable to store entries into Phonebook	The Phonebook is full.	Delete an entry from the Phonebook. (See *"Editing/Deleting a Phonebook Entry" on page 31* for details.)

Problems and Solutions

Problem	Possible Cause(s)	Solution(s)
Battery will not recharge	The ambient air temperature exceeds 113°F (45°C) or is less than 32°F (0°C).	Lower or raise the air temperature; allow the phone to cool off or warm up before recharging.
	Contact between your battery and recharger is incomplete.	Disconnect your charger from the phone and then try reconnecting it.
	The battery has not been charged for a long time and has been deeply discharged.	Attempt to recharge the battery. It may take a few minutes for recharging to begin. If the battery will not recharge, replace it.
	The battery is defective.	Replace the battery. **Note:** It's normal for a battery to slowly lose its ability to hold a charge.
No Service is displayed	Signal is too weak.	Move to another location, or wait a few minutes if you are traveling in an automobile. If you are in a building, move near a window or go outside to send or receive calls. **Note:** If you know you are in a cellular service area and the phone continues to indicate **No Service**, contact your wireless service provider.
Unable to receive calls	Phone is off.	Turn on phone.
	Security features may be set so that the phone will not receive calls.	Check Security Options settings. (See *"Call Lock" on page 47* for more information.)
	Answer Options setting is set to use ⟨☎⟩ to answer a call.	Press ⟨☎⟩ to answer a call or change the Answer Key setting to **Any Key**. (See *"Answer Key Options" on page 28.*)
	Service is not activated.	Contact your wireless service provider.

Problems and Solutions

Problem	Possible Cause(s)	Solution(s)
Missing incoming calls	Ring volume may be set to silent.	Set ring volume on.
	Phone was not programmed correctly by dealer or carrier.	Contact your wireless service provider.
Calls dropped/ disconnected inadvertently	You are outside of a cellular service area.	Check your wireless service provider's coverage map (including roaming areas) and try to move to a location within the coverage area. If problems persist, contact your wireless service provider.
	Phone automatically disconnects calls when the battery level is low.	Recharge the battery.
Unable to enter text as intended when pressing keys	Phone may be in WORD T9 (**WORD/9**) mode instead of Letter (**ABC**) mode.	If **WORD/9** shows above the right softkey (⬒), press the right softkey (⬒) until **ABC** appears above it. (See *Chapter 4, "Text Entry Operations".*)
Lost or forgot lock code		Try entering **1234** as the lock code. Check inside back cover for new lock code. Contact your wireless service provider.
Unable to place calls	Phone is off.	Confirm phone is on.
	Security features may be set so that the phone cannot place calls.	Check Security Options settings. (See *"Call Lock" on page 47* for more information.)
	You are outside of a cellular service area.	Check your wireless service provider's coverage map (including roaming areas) and try to move to a location within the coverage area.
	An error was made dialing the number.	Confirm the number is correct.
	Service is not activated.	Contact your wireless service provider.

Problems and Solutions

Problem	Possible Cause(s)	Solution(s)
Unable to access Voice Mailbox	Voice Mail phone number is not programmed into phone.	Program Voice Mail phone number. Refer to additional information from your wireless service provider.
	DTMF tones may be set to short instead of long.	Set DTMF tones to long. (See *"DTMF Duration" on page 46* for details.)
	Voice Mail service is not activated.	Contact your wireless service provider.
Unable to set a subscriber feature	The feature you are trying to set is not offered by your wireless service provider.	Contact your wireless service provider for more information.
It is difficult to hear the other party	Your phone's earpiece volume is set too low.	Press ▲ during conversation.
You can hear the other party, but the other party can't hear you	Your microphone may be muted.	If the display shows **Muted**, press ▣ (UNMUTE).
Handsfree headset does not work when plugged into phone	TTY Mode is set to **On**.	Select **TTY Mode** in the Miscella-neous menu and set it to **Off**.
TTY device does not work when plugged into phone	TTY Mode is set to **Off**.	Select **TTY Mode** in the Miscella-neous menu and set it to **On**.

Phone Accessories

B
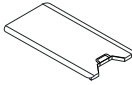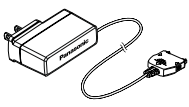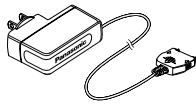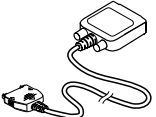
A variety of accessories are available for your Panasonic phone. Contact your local wireless service provider to purchase Genuine Panasonic accessories.
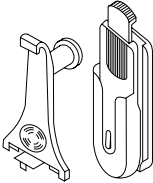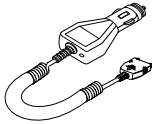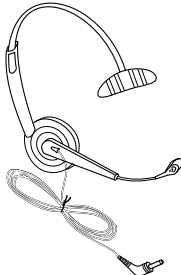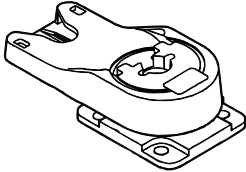
Note: Replacement antennas are available from Panasonic.
In the U.S., call 1 (800) 833-9626.
In Canada, contact your cellular dealer.

Using non-Panasonic accessories or accessories not recommended by your wireless service provider may result in poor performance of your phone, or even cause an electrical hazard.

EB-TX320 Accessories	
Battery (Li-Ion 740 mAh) **EB-BS310B (Blue)** **EB-BS310S (Silver)** **EB-BS310K (Titanium)**	**Private Handsfree Headset** **EB-EM300**
AC Adapter (400 mA) **EB-CA340**	**AC Adapter (700 mA)** **EB-CA370**
Data Cable **EB-RS300**	**DC Adapter** **EB-CD300**

EB-TX320 Accessories (cont.)

TTY Cable **EB-WA300**	**Belt Clip** **EB-YK300**

EB-HF300EZ Handsfree Car Kit

DC Adapter **EB-CD300**	**Headset**
Handset Holder	**Car Holder**

Consumer Update

C

Consumer Update on Mobile Phones

(Published by U.S. Food and Drug Administration, Center for Devices and Radiological Health, October 20, 1999.)

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

Why the concern?

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

What kind of phones are in question?

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

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

Briefly, there is not enough evidence to know for sure, either way; however, research efforts are on-going. The existing scientific evidence is conflicting and many of the studies that have been done to date have suffered from flaws in their research methods. Animal experiments investigating the effects of RF exposures characteristic of mobile phones have yielded conflicting results. A few animal studies, however, have suggested that low levels of RF could accelerate the development of cancer in laboratory animals. In one study, mice genetically altered to be predisposed to developing one type of cancer developed more than twice as many such cancers when they were exposed to RF energy compared to controls. There is much uncertainty among scientists about whether results obtained from animal studies apply to the use of mobile phones. First, it is uncertain how to apply the results obtained in rats and mice to humans. Second, many of the studies that showed increased tumor development used animals that had already been treated with cancer-causing chemicals, and other studies exposed the animals to the RF virtually continuously — up to 22 hours per day.

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

Appendix C

1   In a hospital-based, case-control study, researchers looked for an association between mobile phone use and either glioma (a type of brain cancer) or acoustic neuroma (a benign tumor of the nerve sheath). No statistically significant association was found between mobile phone use and acoustic neuroma. There was also no association between mobile phone use and gliomas when all types of gliomas were considered together. It should be noted that the average length of mobile phone exposure in this study was less than three years.

When 20 types of glioma were considered separately, however, an association was found between mobile phone use and one rare type of glioma, neuroepithelliomatous tumors. It is possible with multiple comparisons of the same sample that this association occurred by chance. Moreover, the risk did not increase with how often the mobile phone was used, or the length of the calls. In fact, the risk actually decreased with cumulative hours of mobile phone use. Most cancer causing agents increase risk with increased exposure. An ongoing study of brain cancers by the National Cancer Institute is expected to bear on the accuracy and repeatability of these results.[1]

2   Researchers conducted a large battery of laboratory tests to assess the effect of exposure to mobile phone RF on genetic material. These included tests for several kinds of abnormalities, including mutations, chromosomal aberrations, DNA strand breaks, and structural changes in the genetic material of blood cells called lymphocytes. None of the tests showed any effect from the RF except for the micronucleus assay, which detects structural effects on the genetic material. The cells in this assay showed changes after exposure to simulated cell phone radiation, but only after 24 hours of exposure. It is possible that exposing the test cells to radiation for this long resulted in heating. Since this assay is known to be sensitive to heating, heat alone could have caused the abnormalities to occur. The data already in the literature on the response of the micronucleus assay to RF are conflicting. Thus, follow-up research is necessary.[2]

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

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

1   Two groups of 18 people were exposed to simulated mobile phone signals under laboratory conditions while they performed cognitive function test. There were no changes in the subjects' ability to recall words, numbers, or pictures, or in their spatial memory, but they were able to make choices more quickly in one visual test when they were exposed to simulated mobile phone signals. This was the only change noted among more than 20 variables compared.[3]

2   In study of 209 brain tumor cases and 425 matched controls, there was no increased risk of brain tumors associated with mobile phone use. When tumors did exist in certain locations, however, they were more likely to be on the side of the head where the mobile phone was used. Because this occurred in only a small number of cases, the increased likelihood was too small to be statistically significant.[4]

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

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

Some people who have used mobile phones have been diagnosed with brain cancer. But it is important to understand that this type of cancer also occurs among people who have not used mobile phones. In fact, brain cancer occurs in the U.S. population at a rate of about 6 new cases per 100,000 people each year. At that rate, assuming 80 million users of mobile phones (a number increasing at a rate of about 1 million per month), about 4800 cases of brain cancer would be expected each year among those 80 million people, whether or not they used their phones. Thus it is not possible to tell whether any

individual's cancer arose because of the phone, or whether it would have happened anyway. A key question is whether the risk of getting a particular form of cancer is greater among people who use mobile phones than among the rest of the population. One way to answer that question is to compare the usage of mobile phones among people with brain cancer with the use of mobile phones among appropriately matched people without brain cancer. This is called a case-control study. The current case-control study of brain cancers by the National Cancer Institute, as well as the follow-up research to be sponsored by industry, will begin to generate this type of information.

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

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

Although the existing scientific data do not justify FDA regulatory actions at this time, FDA has urged the mobile phone industry to take a number of steps to assure public safety. The agency has recommended that the industry:

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

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

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

The National Institutes of Health also participates in this group.

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

If there is a risk from these products — and at this point we do not know that there is — it is probably very small. But if people are concerned about avoiding even potential risks, there are simple steps they can take to do so. For example, time is a key factor in how much exposure a person receives. Those persons who spend long periods of time on their hand-held mobile phones could consider holding lengthy conversations on conventional phones and reserving the hand-held models for shorter conversations or for situations when other types of phones are not available.

People who must conduct extended conversations in their cars every day could switch to a type of mobile phone that places more distance between their bodies and the source of the RF, since the exposure level drops off dramatically with distance. For example, they could switch to

- a mobile phone in which the antenna is located outside the vehicle,
- a hand-held phone with a built-in antenna connected to a different antenna mounted on the outside of the car or built into a separate package, or
- a headset with a remote antenna to a mobile phone carried at the waist.

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

Appendix C

Where can I find additional information?

For additional information, see the following websites:

- Federal Communications Commission (FCC) RF Safety Program (select "Information on Human Exposure to RF Fields from Cellular and PCD Radio Transmitters"):
  http://www.fcc.gov/oet/rfsafety
- World Health Organization (WHO) International Commission on Non-Ionizing Radiation Protection (select Qs & As):
  http:// www.who.int/peh-emf
- United Kingdom, National Radiological Protection Board:
  http://www.nrpb.org.uk
- Cellular Telecommunications Industry Association (CTIA):
  http://www.wow-com.com
- U.S. Food and Drug Administration (FDA) Center for Devices and Radiological Health:
  http://www.fda.gov/cdrh/consumer/

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1   Muscat et al. "Epidemiological Study of Cellular Telephone Use and Malignant Brain Tumors". In: State of the Science Symposium; 1999 June 20; Long Beach, California.

2   Tice et al. "Tests of mobile phone signals for activity in genotoxicity and other laboratory assays". In: Annual Meeting of the Environmental Mutagen Society. March 29,1999, Washington, D.C. and personal communication, unpublished results.

3   Preece, AW, Iwi, G, Davies-Smith, A, Wesnes, K, Butler, S, Lim, E, and Varey, A. "Effect of a 915-MHz simulated mobile phone signal on cognitive function in man". Int. J. Radiat. Biol., April 8, 1999.

4   Hardell, L, Nasman, A, Pahlson, A, Hallquist, Aand Mild, KH. "Use of cellular telephones and the risk for brain tumors: a case-control study". Int. J. Oncol., 15: 113-116, 1999.

Index

Index