

TDC-8100 Operating Guide

(User Guide)

FCC RF EXPOSURE INFORMATION

Read this information before using your phone

In August 1996 the Federal Communications Commission (FCC) of the United States with its action in Report and Order FCC 96-326 adopted an updated safety standard for human exposure to radio frequency (RF) electromagnetic energy emitted by FCC regulated transmitters. Those guidelines are consistent with the safety standard previously set by both U.S. and international standards bodies. The design of this phone complies with the FCC guidelines and these international standards.

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

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

Body-worn Operation





















This device was tested for typical body-worn operations with the back of the phone kept 1.5 cm. from the body. To maintain compliance with FCC RF exposure requirements, use only belt-clips, holsters or similar accessories that maintain a 1.5 cm. separation distance between the user's body and the back of the phone, including the antenna. The use of belt-clips, holsters and similar accessories should not contain metallic components in its assembly. The use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be avoided.

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

CONTENTS

I. THE NAME AND FUNCTIONS	3
Icon	3
II. BASIC FUNCTIONS	4
1. Turning the Phone On and Off	4
2. Making a Call	4
3. Correcting Dialing Mistakes	4
4. Receiving a Call.....	4
5. Mute	5
6. Redialing Last Outgoing Number	5
7. Adjusting the Volume	5
III. Main Menu Feature	6
Menu 1. <Mymenu>	6
Menu 2. <Phone Book>.....	8
Menu 3. <Call>	14
Menu 4. <Sound>	16
Menu 5. <Display>	18
Menu 6. <Utility>.....	20
Menu 7. <Setting>	24
Menu 8. <Message>	29
IV. SAFETY INFORMATION.....	31
1. TIA Safety Language.....	31
Exposure to Radio Frequency Signals.....	31
Antenna Care	31
Phone Operation	31
Driving	31
Electronic Devices	32
Hearing Aids.....	32
Other Medical Devices	32
Vehicles	32
Posted Facilities	32
Aircraft	33
Blasting Area	33
Potentially Explosive Atmosphere	33
For Vehicles Equipped with an Air Bag.....	33
2. FDA Consumer Update	34
3. Consumer Information on SAR.....	39
4. Warning of FCC RF Exposure	40

I. The name and Functions

ICON	Description
	Call signal level(displayed up to 6th level)
	Now in use.
	Not in service area
	Vibration mode when calling.
	Display that auto-answering was set
	Text message(s)
	Voice message(s)
	EMS message(s)
	E-mail message(s)
	Voice privacy is in service
	Digital service
	Display 1x service
	Circuit Service (data service)
	Packet Service (data service)
	Alarm set
	Roaming Service
	Remained battery
	WAP service in use
	Security mode
	Stopwatch Enabled

II. Basic Functions

1. Making a Phone On/Off

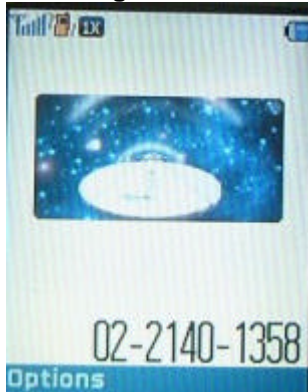
[Phone On]

Press END key for several seconds.

[Phone Off]

Press END key for several seconds.

2. Making a Call



1) Simply press a phone number.

1. Press a phone number one by one.
2. Press SEND key to make a call.
3. Press END key after a call.

2) By Phonebook Entry

1. Press Entry number and then press SEND key to make a call.
2. Find a Entry number or a name in the Phonebook, then press SEND key to make a call.

3) By Call history

1. Select a number Outgoing/Incoming/Missed Calls in the menu, Call – Call Logs and then press SEND key to make a call.

3. Correcting Dialing Mistakes

1. Press CLR soft key to remove a phone number one by one.
2. The whole phone number is removed if long pressing CLR soft key.

4. Receiving a Call



1. You may press any key except END key to answer a call when ringing.
2. Press END key or close the folder after answering a call.

5. Mute

1. If pressing Mute soft key while answering, "MUTE" will be displayed and soft key is

changed into Unmute.

2. Press Unmute soft key again, "MUTE" is disappeared.

6. Redialing Last Outgoing Call

1) Easy call – Press SEND key to view an outgoing list. Then, press SEND key again to make a call.

2) By Call history

1. If selecting Call Logs in Call menu, Outgoing/Incoming/Missed calls menus show up.

2. Select Outgoing calls to view a phone number list.

Choose a number and press SEND key to make a call.

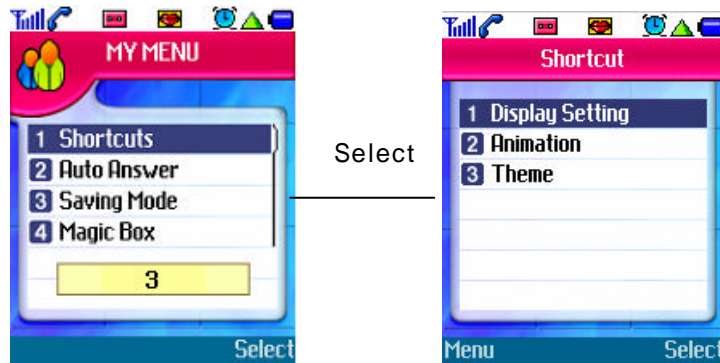
7. Adjusting the Volume

- With side keys, speaker volume and bell volume can be easily controlled.
- Speaker volume may be controlled even in answering a call.
- In waiting mode, Key tone can be adjusted.
- Bell volume can be adjusted when phone s ringing.

III. Main MENU Feature : General Guide to Menu Access and Setting

Menu 1. My Menu

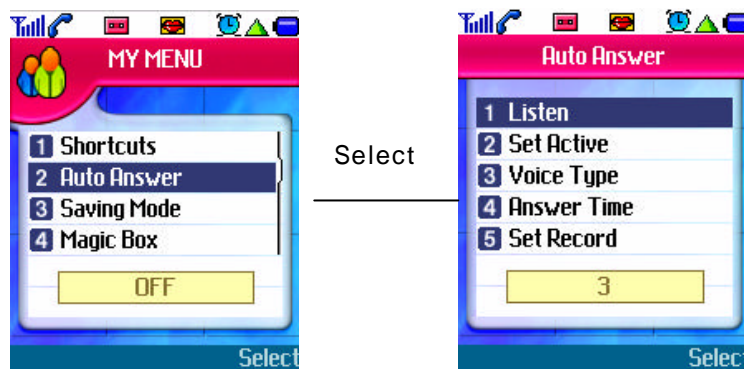
1. Shortcuts



You can set shortcut menus for your frequent and convenient use.

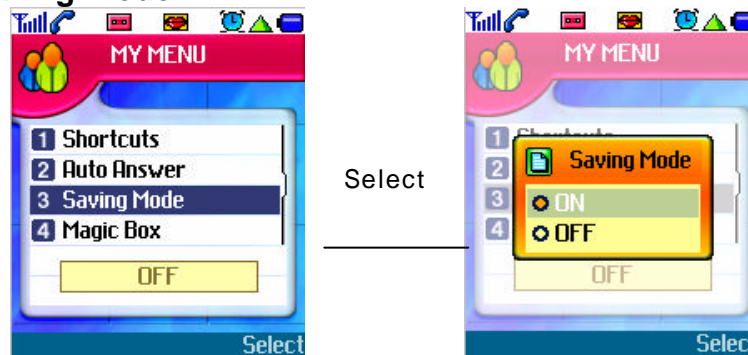
- Select [My Menu] in main menu.
- Select [1.Shortcuts] in the menu list.
- Select a menu to move to it instantly.

2. Auto Answer



- 1) Select My Menu in Main Menu.
- 2) Select [2.Auto Answer] in the menu list to move to it instantly.

3. Saving Mode

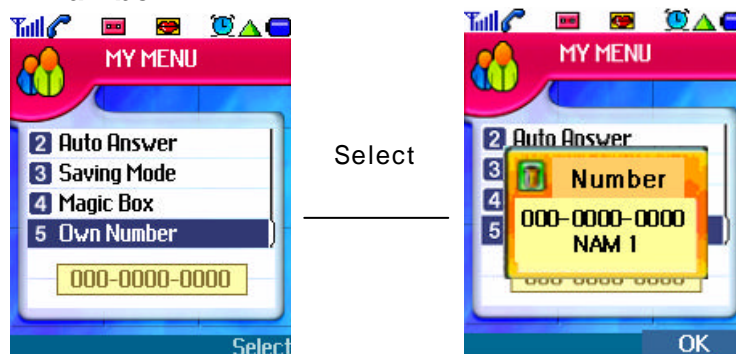


- 1) Select My Menu in Main Menu.
- 2) Select [3.Saving Mode] in the menu list to display a pop-up menu.

4. Magic Box

- 1) Select My Menu in Main Menu.
- 2) Select [4.Magic Box] in the menu list to display menus.
 - 2.1) Download
 - Control downloaded Sounds and Images.
 - If selecting a Sound or an Image, it may be displayed and menu soft key is appeared.
 - * Menu Soft KEY
 - Erase: Delete a Sound or Image that is currently selected.
 - Erase all : Delete all Sounds and Images that have been downloaded.

5. Own Number

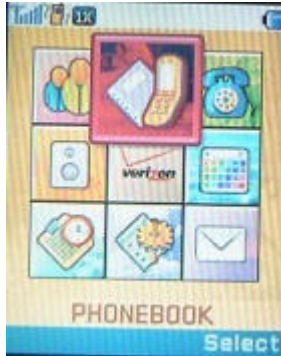


How to view my own number

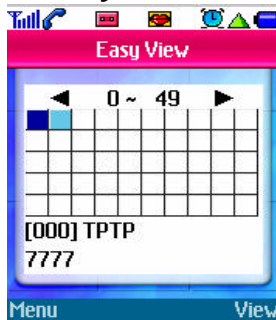
- 1) Select My Menu in Main Menu.
- 2) Select [5.Own Number] in the menu list to view your own number.

Menu 2. Phone Book

You can find Phone Book menu in the second item of Main Menu and run it by Select key or hot number(number 2) instantly.



1. Easy View



- 1) Select 'Phone Book' in Main Menu.
- 2) Select [1.Easy View] in the menu list, you can view all the items saved
 - With 'Easy view', you can page through by 50 menus for easy search.
- 3) Making a Call : Press 'Send short key'.
(Make a call to the number designated as a main number)

-View -

Detail View Display : Can see a detail info.



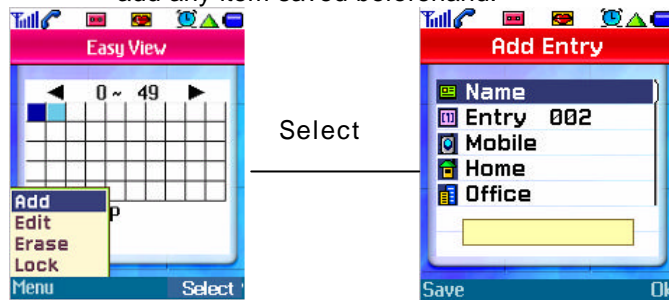
Making a Call : Send short key

- Provided a highlighted number is available, you can make a call to the number.
- Provided a highlighted number is not in service, you can make a call to the number set as a main number.

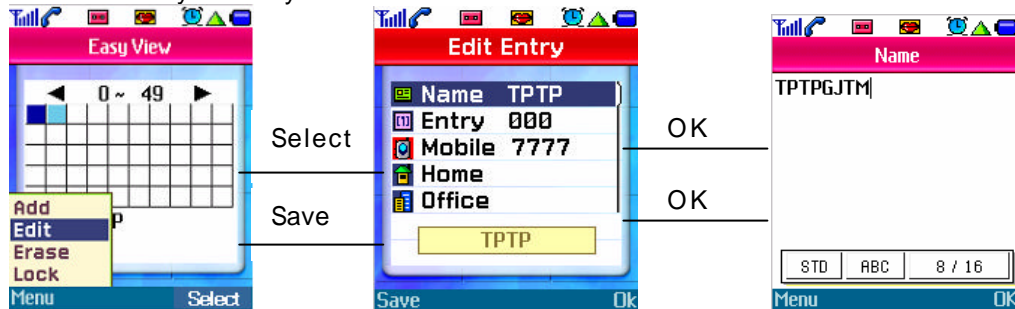
- Menu -

Add : Like 'New Entry' in the Phone Book, you may add a new item.

: In 'Easy view', you may select an empty Entry and add an item; you may not add any item saved beforehand.

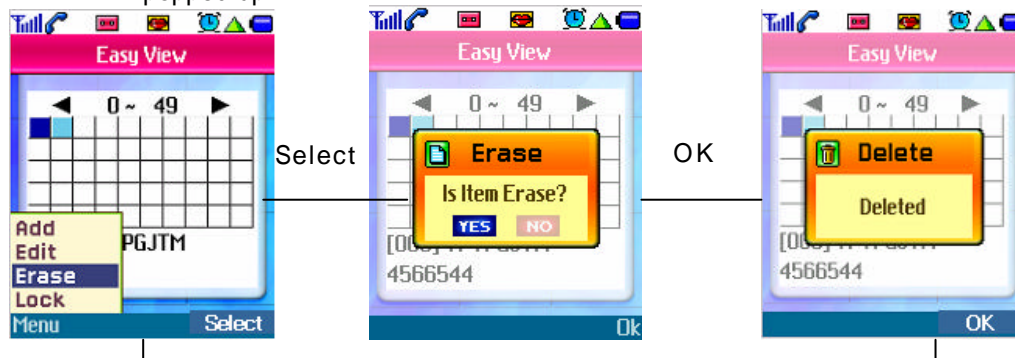


Edit : You may edit any information saved with the menu.

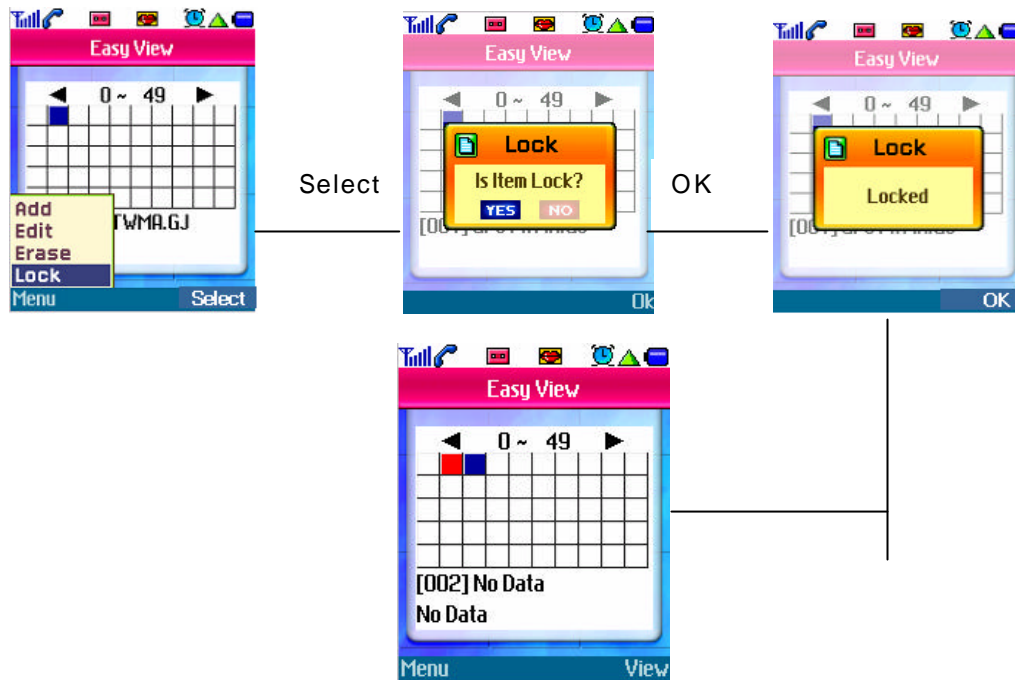


Erase : You may delete a selected entry.

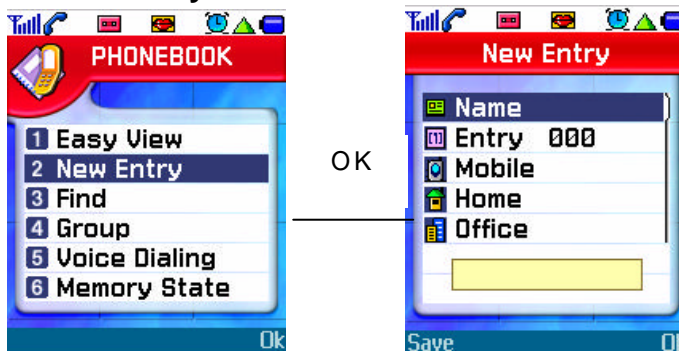
: You may be asked to delete it clearly by selecting 'YES' in Query Note that is popped up.



Lock : Information is protected if any entry is locked until it is unblocked



2. New Entry

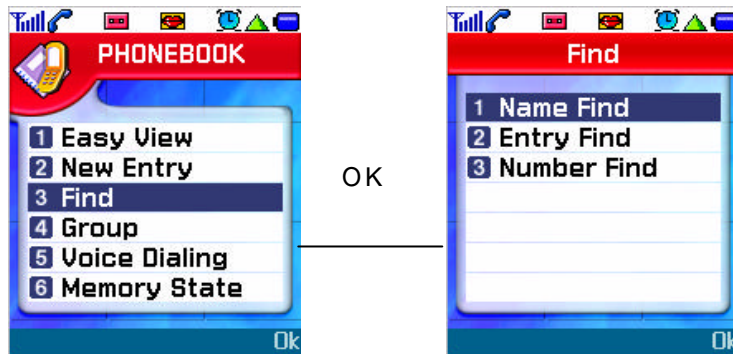


- 1) Select 'Phone Book' in Main Menu.
- 2) Select [2.New Entry] in the menu list to open New Entry menu.
 - Add new info in an empty entry and save it.
 - For 'Entry number', select the smallest number among available empty numbers
- 3) Enter information and press 'Save soft key' to open Main number.
- 4) After the selection, Saving message is displayed and it returns to menu list.

- Note -

Main Number? : In case you make a call by pressing SEND key after searching for a main number in Phone Book, Main Number has the priority to make a call.

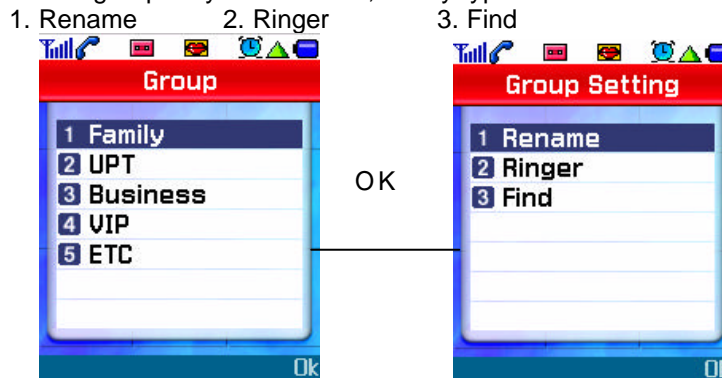
3. Find



- 1) Select Phone Book in Main Menu.
- 2) Select [3.Find] in the menu list to open menus.
 - Search for information saved already.
 - Retrieval Condition : 1. Name Find 2. Entry Find 3. Number Find
 - Enter your preferred condition and search it.
- 3) View all the lists : To view all the list, just start searching with no entry in searching menu.
 - 'View' in the menu has same function 'view' in Easy view menu.
 - Menu : 'Edit/Erase' has same functions 'Edit' in Easy view-menu in Phone Book.

4. Group

- 1) Select 'Phone Book' in Main Menu.
- 2) Select [4.Group] in the menu list to view the group items.
 - You may classify entries saved in Phone Book into groups and manage them.
 - Family, Friends, Business, VIP and ETC are available for the group name.
 - Each group may be renamed, set by typical sound or searched for entries in it.



- Menu -

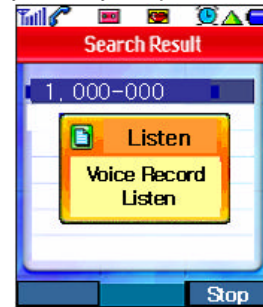
Rename : As a function to change group name, all other related information should be changed, following the renamed group.

Ringer : A bell sound may be selected and set by a group to discriminate specific numbers in a group.

Find : The entry list in a group may be searched. And searched entries can be deleted or edited.

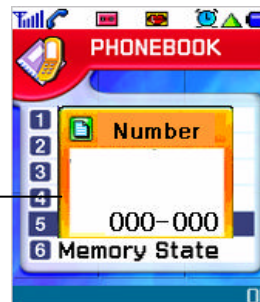
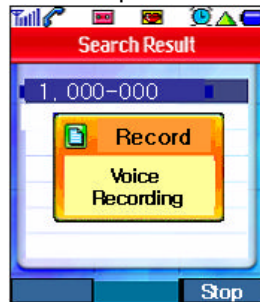
5. Voice Dialing

- 1) Select 'Phone Book' in Main Menu.
 - A function to make a call by voice order
- 2) Select [5.Voice Dialing] in the menu list to open up items.
- 3) Listen
 - You may listen to your voices saved in 'Voice Dialing' and check it.
 - After listening to the voice(s), it moves to the previous step or you may stop listening to



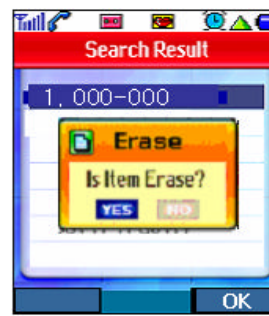
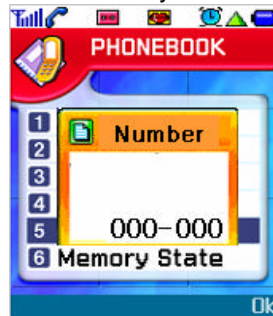
voices by pressing Stop or Clear key and moves to the previous step.

- Menu : Record – Before adding a new voice dialing, you may check whether memory is sufficient and follow the next steps



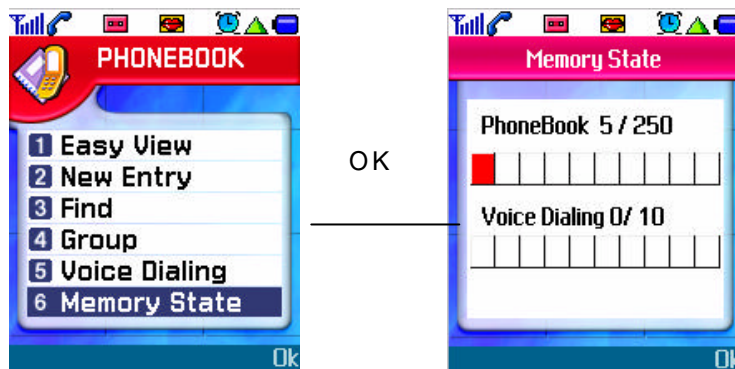
Number Edit – The existing phone numbers are displayed in editor.

Erase – Ask you to delete it.



6. Memory State

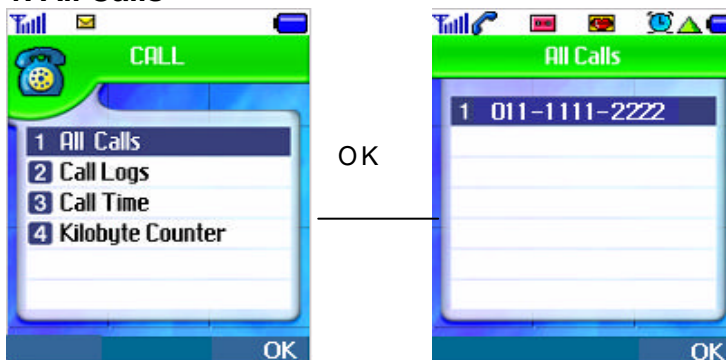
- 1) Select 'Phone Book' in Main Menu.
- 2) Select [6.Memory State] in the menu list and you may see remained memory capacity in Phone Book.



- Display the status of Phone Book and Voice Dialing graphically and you can see how much capacity you have used now by text mode.

Menu 3. Call

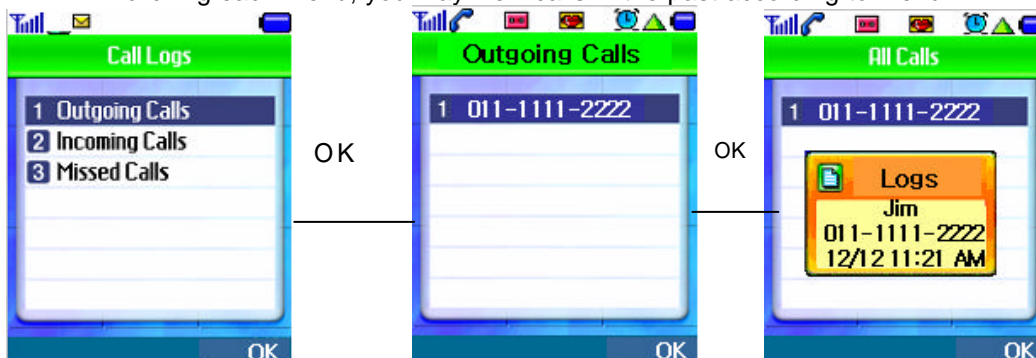
1. All Calls



- 1) Select 'Call' in Main Menu.
- 2) Select [1.All Calls] in the menu list and you can see all calls you made/answered in the past.

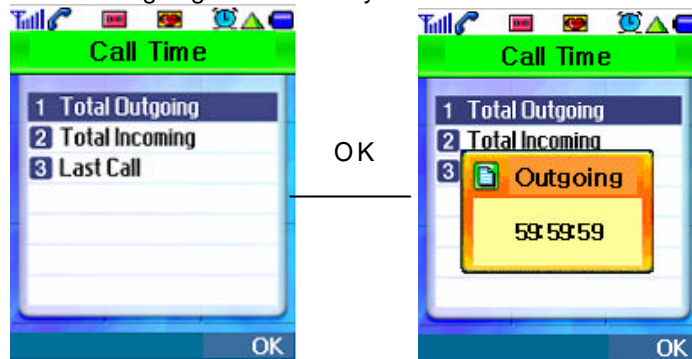
2. Call Logs

- 1) Select 'Call' in Main Menu.
- 2) Select [2.Call Logs] in the menu list, and you may see menus.
 1. Outgoing Calls – Calls you made in the past
 2. Incoming Calls – Calls you answered in the past
 3. Missed Calls – Call you unanswered till now
- If clicking each menu, you may view calls in the past according to menu.



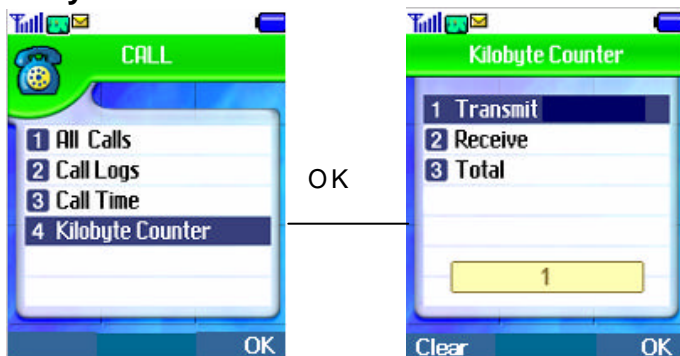
3. Call Time

- 1) Select ' Call ' in Main Menu.
- 2) Select [3.Call Time] in the menu list, and you can see the related menus.
 1. Total Outgoing – Total time you made calls and talked



2. Total Incoming – Total time you answered calls and talked
3. Roaming – Total time of local area calls
4. Home - Roaming call time
5. Last Call – Time duration you made a recent call
6. All Call – Total time of incoming/outgoing calls

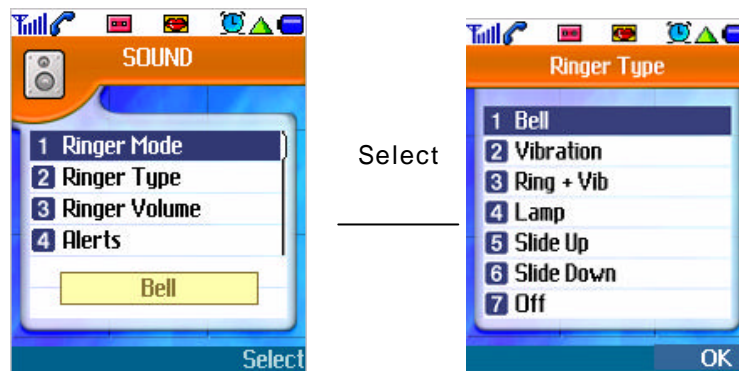
4. Kilobyte Counter



- 1) Select ' Call ' in Main Menu.
- 2) Select [4.Kilobyte Counter] in the menu list, you may see the related menus.
 1. Transmit – Data volume you sent
 2. Receive – Data volume you received
 3. Total – Total data volume you sent and received

Menu 4. Sound

1. Ringer Mode



- 1) Select 'Sound' in Main Menu.
- 2) Select [1.Ringer Mode] in the menu list, you may see the related items.
 - You can choose an item as Bell, Vibration, Vib+Ring, Lamp, Slide up, Slide down or Off.

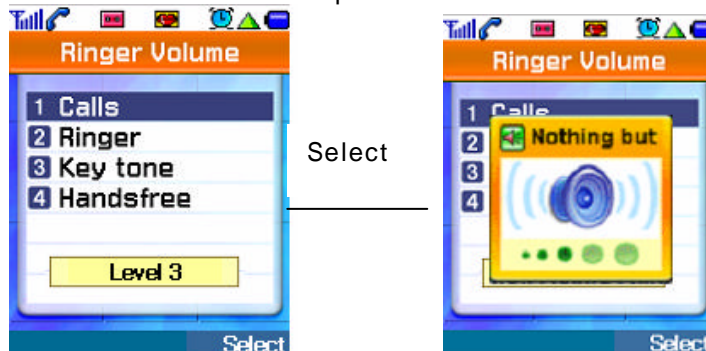
2. Ringer Type



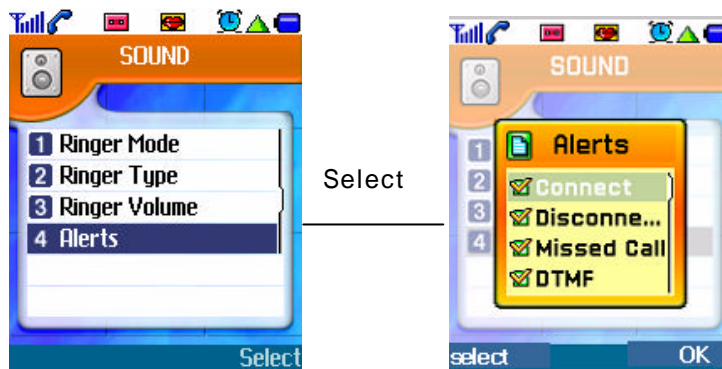
- 1) Select 'Sound' in Main Menu.
- 2) Select [2.Ringer Type] in the menu list, you may see the related items.
 1. Incoming – sound setting while phone is ringing
 2. Opening – sound setting when turning on the phone
 3. Ending – sound setting when turning off the phone
 4. Alarm – alarm sound setting

3. Ringer Volume

- 1) Select 'Sound' in Main Menu.
- 2) Select [3.Ringer Volume] in the menu list and you may see the related items.
 1. Calls – Sound volume while the phone is ringing
 2. Ringer – Sound volumes when listening to voice dialing or alarm sound
 3. Key Tone – key tone volume
 4. Handsfree – Handsfree earphone's volume control

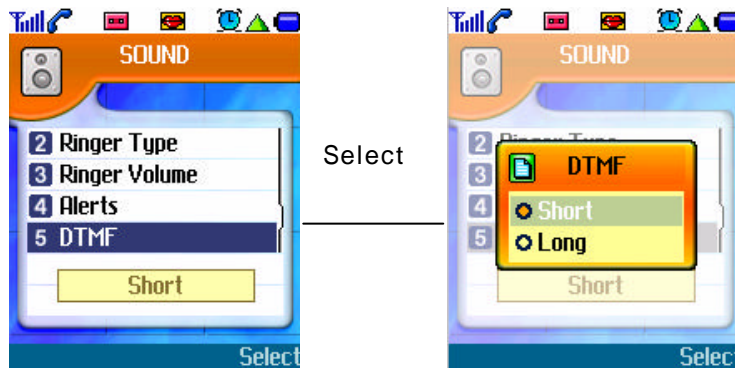


4. Alerts



- 1) Select 'Sound' in Main Menu.
- 2) Select [4.Alerts] in the menu list and you may see the related items.
 - You can select an item among Connect / Disconnect / Missed Call / Warning.
 - Default values have been already set.

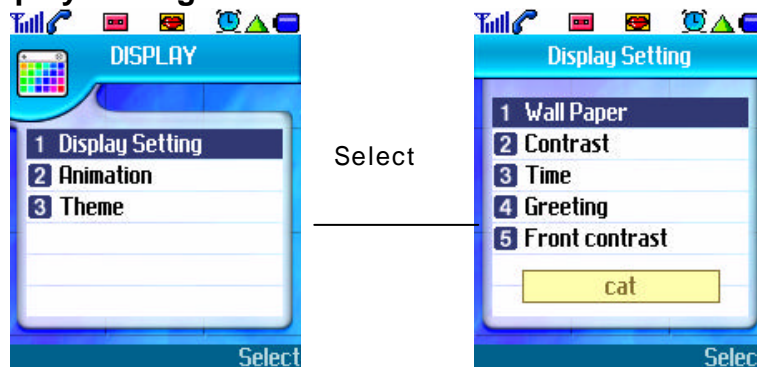
5. DTMF



- 1) Select 'Sound' in Main Menu.
- 2) Select [5.DTMF] in the menu list and you may open up a window to choose a menu.
 - 'Short' or 'Long' is selectable and the default value has been set as 'Short'.

Menu 5. Display

1. Display Setting

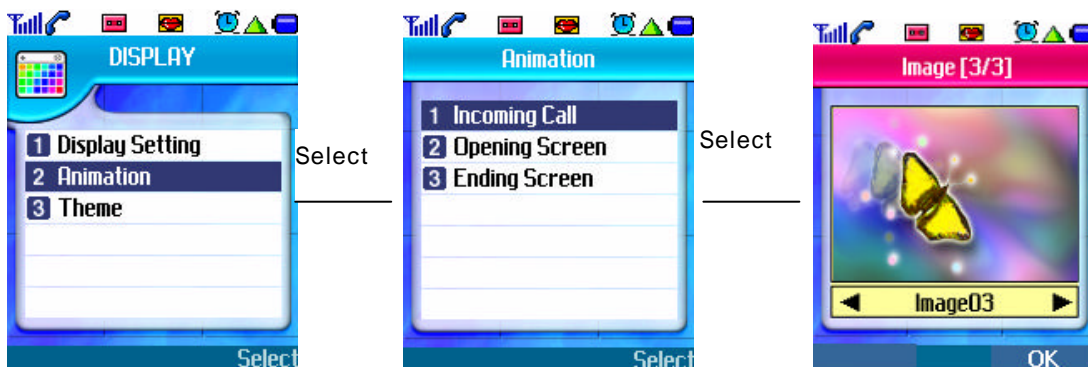


- 1) Select 'Display' in Main Menu.

- 2) Select [1.Display Setting] in the menu list and sub-menus will be displayed.
 - Display the current values.
 - 1. Wall Paper – Set a background figure.
 - Image : Select one among the saved images.
 - Animation : Select one among the saved animations.
 - Download : Select one among the downloaded items.
 - 2. Digital Clock – Choose On/Off.
 - 3. Contrast – Adjust Main LCD Contrast.
 - You may choose one among ten levels ranging from 10 to 100 and the default value is 40.
 - 4. Backlight Time – Set 'Backlight time' of main LCD.
 - You may choose one among Always on, 7 sec, 15 sec and 30 sec.
 - The defaulted value is 15 sec.
 - 5. Front Contrast – Adjust Contrast of Sub LCD.
 - You may choose one among ten levels ranging from 10 to 100 and the default value is 40.
 - 6. Greeting – You may set your greeting on idle screen.
 - It can be displayed up to 16bytes.

2. Animation

- 1) Select 'Display' in Main Menu.
- 2) Select [2.Animation] in the menu list and sub-menus will be displayed.
 - It displays the currently set values.



1. Incoming Call – Set an animation displayed while the phone is ringing.
2. Outgoing Call – Set an animation displayed when you make a call.
3. Opening Screen – Set an animation displayed when you turn on the phone.
4. Ending Screen – Set an animation displayed when you turn off the phone.

3. Theme



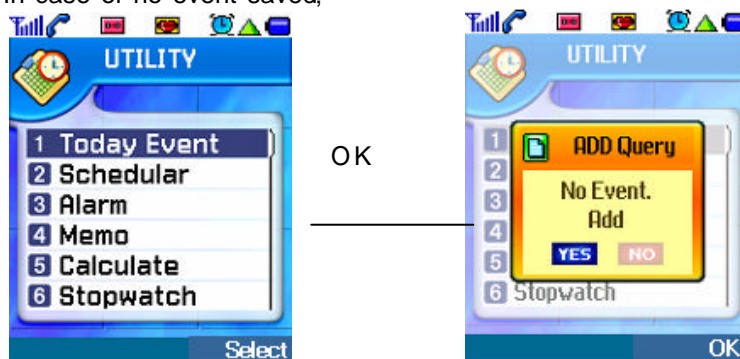
- 1) Select 'Display' in Main Menu.
- 2) Select [3. Theme] in the menu list.
 - There are five themes and any theme you choose should be displayed in preview

image

Menu 6. Utility

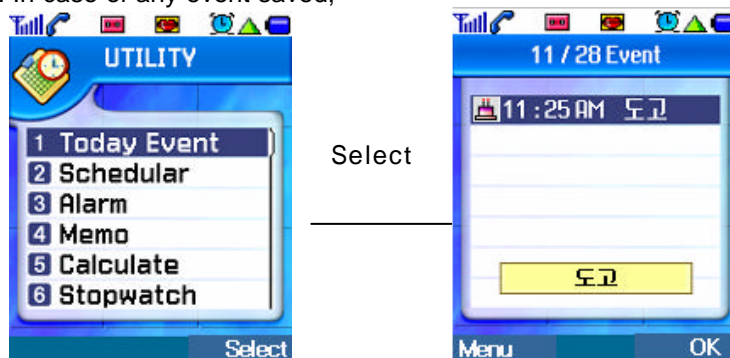
1. Today Event

- 1) Select 'Utility' in Main Menu.
- 2) Select [1.Today Event] in the menu list.
1. In case of no event saved;



- In case of no event saved, "No Event" is displayed and the phone asks you to add an event.
- If you select 'Yes', an empty note will be displayed to enter a new event.
=> Time, AM/PM, Alarm, Kind, Input

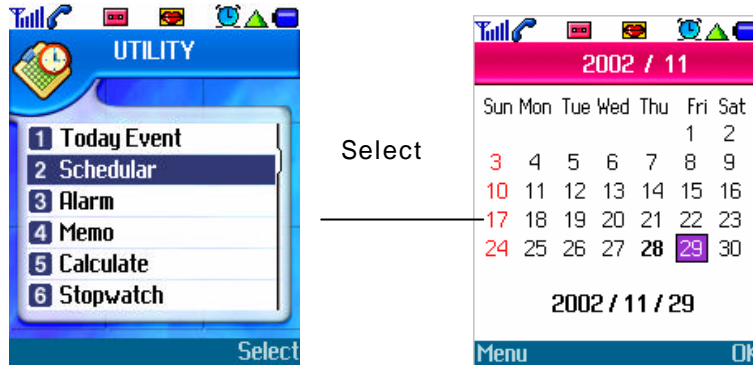
2. In case of any event saved;



- The saved events will be displayed.
- Menu : New – add a new event

Erase – remove the saved event
 Erase all – delete all the saved events

2. Scheduler



- 1) Select 'Utility' in Main Menu.
 - 2) Select [2.Scheduler] in the menu list.
 - 3) Move to the desired date by using directional keys and press 'OK soft key',
 - In case of any event : the event item(s) will be displayed.
 - In case of no event : "No event" is displayed.
 - 4) Move to the desired date by using directional keys and press 'Menu soft key',
 - New : Same as Menu – New of "Today Event".
 - Erase all : Delete all event saved currently.
- * Note 1. You may save events up to 50 in the Scheduler; the number of daily maximum events is 10.

3. Alarm

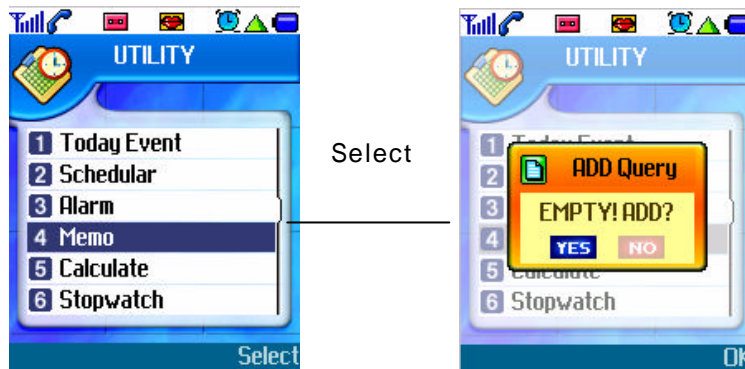
- 1) Select 'Utility' in Main Menu.
- 2) Select [3.Alarm] in the menu items.



1. In case of no alarm set before;
 - Notify you of no alarm set before and ask you to add it.
 - If selecting 'Add', you may set Time, AM/PM, Mode and On/Off.
2. In case of any alarm set before;
 - Display the saved alarms saved.
 - Menu : Add, Edit, Erase
 - View : Show you details of the saved alarm.

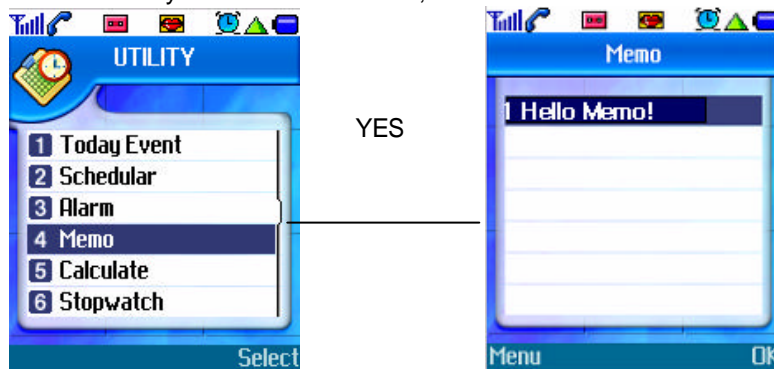
4. Memo

- 1) Select 'Utility' of Main Menu.
- 2) Select [4.Memo] in the menu items.
 1. In case of no memo saved before;



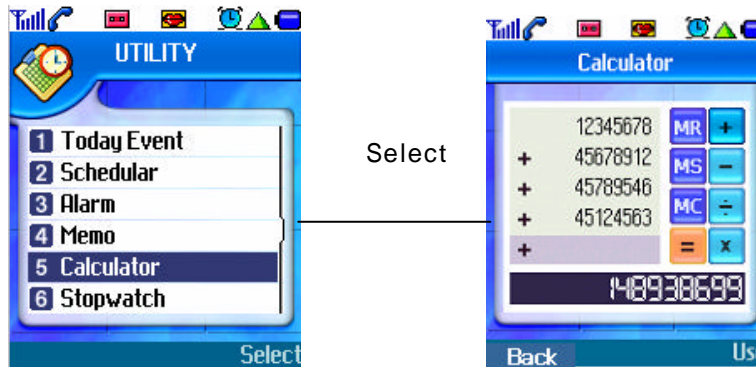
- Notify you of empty status and ask you to add memo.
- If you select 'Yes', a new note will be opened up.

2. In case of any memo saved before;



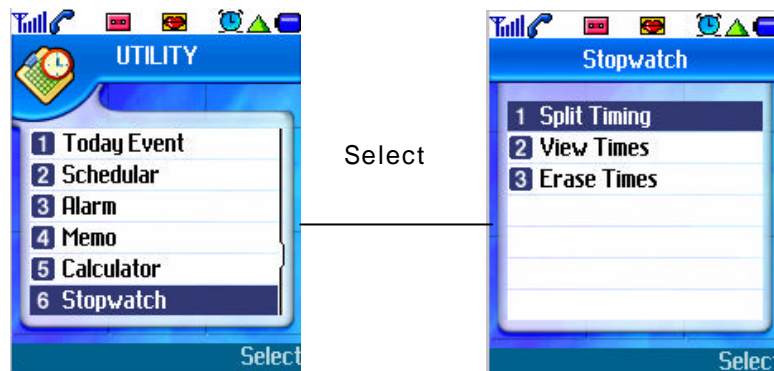
- Display the saved memo(s).
- Menu : Add, Edit, Erase, Erase all

5. Calculate



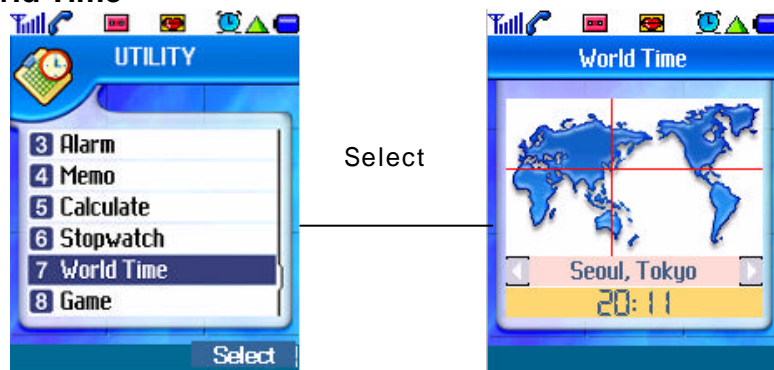
- 1) Select 'Utility' in Main Menu.
- 2) Select [5.Calculate] in the menu items.

6. Stopwatch



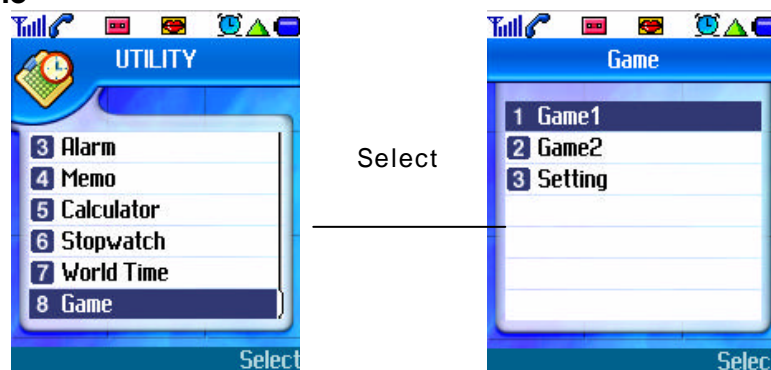
- 1) Select 'Utility' in Main Menu.
- 2) Select [6.Stopwatch] in the menu items and the related menus will be displayed.
 1. Last View – When you exit the stopwatch function after quitting it.
 2. Continue – When you exit the stopwatch function without stopping it.
 3. Split Timing – Check the desired time by a user's activity.
 4. View Times – Conform the saved timing when checking a time.
 5. Erase Times – Delete a saved timing
- Max Number to be saved : 10, Max Split Number : 10

7. World Time



- 1) Select 'Utility' in Main Menu.
- 2) Select [7.World Time] in the menu items.
- 3) Move a city for world time by using Left/Right scroll keys.

8. Game



- 1) Select 'Utility' in Main Menu.
- 2) Select [8.Game] in the menu items.
- 3) If selecting a game, it will be started.
- 4) Setting : You can control sound for a game with the menu.



Menu 7. Setting

1. Security



- 1) Select 'Setting' in Main Menu.
- 2) Select [1. Security] in the menu items and the related menus will be displayed.
 1. Language – Choose a language to be used for the phone. (English, Spanish)
 2. Lock Mode – May lock up the phone and use it only when anyone enter Lock code in it.
Also you can set when you would check it.
 3. Lock Code – Change the current Lock Code into new one.
 4. Private – Protect any private information of which item(s) has been checked beforehand.
- Message, Phonebook, Calls
 5. Restriction – Checked items would have set restrictions all of which are related with calls.
- Out Calls, In Calls, Inter Calls, Internet

2. Reset



- 1) Select 'Setting' in Main Menu.
- 2) Select [2.Reset] in the menu items and the related menus will be displayed.
 1. Phonebook – Delete the information saved in Phonebook.
 2. Download – Delete all the downloaded data.
 3. Data – Delete all the information but that in Phonebook and Download.
 4. Reset Phone – Delete all the information and make the phone initialized in the factory.

3. Time Display



- 1) Select 'Setting' in Main Menu.
- 2) Select [3.Time Display] in the menu items and 'Time Setting' is displayed.
- 3) Select either of 12hr/24hr time display.

4. Call Answer



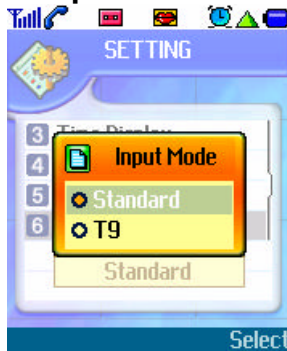
- 1) Select 'Setting' in Main Menu.
- 2) Select [4.Call Answer] in the menu items.
- 3) Select one among Flip Open, Send Key and Any Key.

5. Auto Redialing



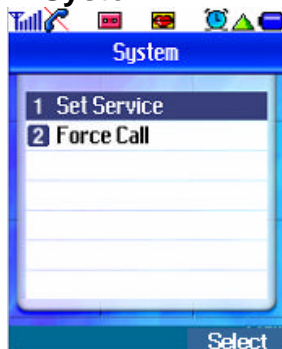
- 1) Select 'Setting' in Main Menu.
- 2) Select [5.Auto Redialing] in the menu items.
- 3) Select either of On / Off.

6. Input Mode

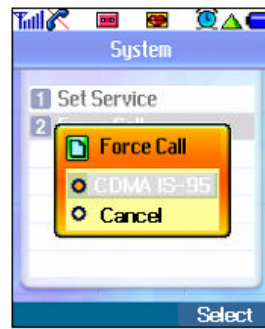
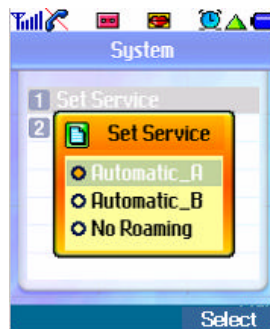


- 1) Select 'Setting' in Main Menu.
- 2) Select [6.Input Mode] in the menu items.
- 3) Select either of Standard / T9

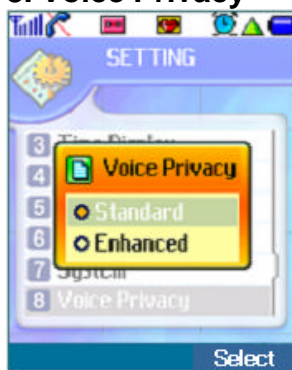
7. System



- 1) Select 'Setting' in Main Menu.
- 2) Select [7.System] in the menu items and the related menus will be displayed.
 1. Set Service – A only, B Only, No Roaming
 2. Force Call – CDMA IS-95, Cancel

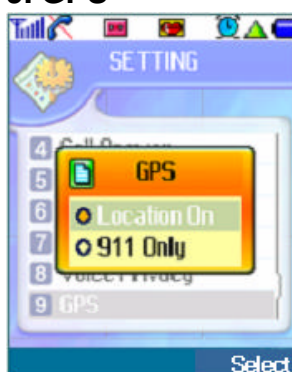


8. Voice Privacy



- 1) Select 'Setting' in Main Menu.
- 2) Select [8.Voice Privacy] in the menu items.
- 3) Select either of Standard / Enhanced.

9. GPS



- 1) Select 'Setting' in Main Menu.
- 2) Select [9.GPS] in the menu items.
- 3) Select either of Location On / 911 Only.

10. Data/Fax



- 1) Select 'Setting' in Main Menu.
- 2) Select [10.Data/Fax] in the menu items.
- 3) Select either of Off / Data / Fax.

11. In_call Timer



- 1) Select 'Setting' in Main Menu.
- 2) Select [11.In_call Timer] in the menu items.
 1. Set Active – On / Off
 2. Time – 1 minute / 5 minute / 7 minute

Menu 8. Message

1. Voice mail



- 1) Select 'SMS' in Main Menu.
- 2) Select [1.Voice mail] in the menu items.
 1. Connect VMN
 2. View Message

2. Write Message



- 1) Select 'SMS' in Main Menu.
- 2) Select [2.Write Message] in the menu items.
- 3) Enter 'Send Number' .
 - Enter a phone number directly or Search(2.Phonebook-Find) it first and enter it.
- 4) Enter a message and press OK to display menu items.
 1. Send – Enter a phone number and send a message.
 2. Priority – choose the message' s importance (Normal / Urgent).
 3. Deferred deliv
 4. Save SavedBox – save a sending message together with the send number.
 5. Save address – save the Send Number. (2.Phonebook-New Entry)
 6. Save Text – save the entered message.

3. Inbox

- 1) Select 'SMS' in Main Menu.
- 2) Select [3.Inbox] in the menu items.
 1. In case Inbox is empty – display “Empty”.
 2. In case Inbox contains any message,

4. Outbox

- 1) Select 'SMS' in Main Menu.
- 2) Select [4.OutBox] in the menu items.
 1. In case Outbox is empty – display “Empty”.
 2. In case Outbox contains any message – display a list.
 - can discriminate success/fail by an icon.

5. Saved Box

- 1) Select 'SMS' in Main Menu.
- 2) Select [5.SavedBox] in the menu items.
 - Display a send number and a message.
 - Press ' Menu soft key' to move to (1. Write Message).

6. Setting

- 1) Select 'SMS' in Main Menu.
- 2) Select [6.Setting] in the menu items and the related menus will be displayed.
 - Display the currently set values.
 1. Message Alert – set an alarm sound when receiving a message (Alert Once/Every 2min)
 2. Outbox save – Set saving option after sending a message.
 - (Auto Save/Prompt/Don' t save)
 3. CB#
 4. Auto Delete

5. Direct View – Direct View Setting (On/Off)
6. Read Ack

7. Erase

- 1) Select 'SMS' in Main Menu.
- 2) Select [7.Erase] in the menu items
 1. Inbox – select 'Inbox' to view the related menus. (All / UnRead / Read)
 2. Outbox – select 'Outbox' and it asks you whether to remove it or not.
 3. Saved Box – select 'Saved Box' and it asks you whether to remove it or not.
 4. Erase all – select 'Erase all' and it asks you whether to remove all contents.

8. SMTP

- 1) Select 'SMS' in Main Menu.
- 2) Select [8.Smtp] in the menu items and the related menus will be displayed.
 1. Setting – If selecting it, the related menus will be displayed, and if selecting sub-menu, text input window is displayed.
 1. Gateway / 2. User Name / 3. Mail Account / 4. Mail Server
 2. Write Mail – enter text for a mail and send it.
 3. Saved Mail Box – view a mail(s) saved before.

9. EMS Editor

- 1) Select 'SMS' in Main Menu.
- 2) Select [9.EMS Editor] in the menu item.

IV. Safety Information

1. TIA Safety Language

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

1) EXPOSURE TO RADIO FREQUENCY SIGNALS

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

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

ANSI C95.1 (1992)
NCRP Report 86(1986)
ICNIRP (1996)

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

The design of your phone complies with the FCC guidelines (and those standards).

2) 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.

3) PHONE OPERATION

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

TIPS ON EFFICIENT OPERATION: For your phone to operate most efficiently:

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

4) DRIVING

Check the laws and regulations on the use of wireless telephones in the areas where you live. Always obey them. Also, if using your phone while driving, please:

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

5) 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.

Pacemaker

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

Persons with pacemakers:

- Should ALWAYS keep the phone more than six inches from their pacemaker when the phone is turned ON;
- Should not carry the phone in a breast pocket;
- Should use the ear opposite the pacemaker to minimize the potential for interference.
- If you have any reason to suspect that interference is taking place, turn your phone OFF immediately

6) 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 serviced line to discuss alternatives.]

Optional for each phone manufacturer.

7) Other Medical Devices

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

Turn your phone OFF in health care facilities when any regulations posted in these areas instruct you to do so. Hospitals or health care facilities may be using equipment that could be sensitive to external RF energy.

8) 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.

9) Posted Facilities

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

10) AIRCRAFT

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

11) BLASTING AREAS

To avoid posted: "Turn off two-way radio". Obey all signs and instructions.

12) POTENTIALLY EXPLOSIVE ATMOSPHERES

Turn your phone OFF when in any area with a potentially explosive atmosphere and obey all signs and instructions. Sparks in such areas could cause an explosion or fire resulting in bodily injury or even death.

Areas with a potentially explosive atmosphere are often but not always clearly marked. They include fueling areas such as gasoline stations; below deck on boats; fuel or chemical transfer or storage facilities; vehicles using liquefied petroleum gas (such as propane or butane); areas where the air contains chemicals or particles, such as grain, dust, or metal powders; and any other area where you would normally be advised to turn off your vehicle engine.

13) For Vehicles Equipped with an Air Bag

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

2. FDA Consumer Update

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

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 radio frequency energy (RF), considered non-significant, when in the stand-by mode. It is well known that high levels of RF can produce biological damage through heating effects (this is how your microwave oven is able to cook food). However, it is not known whether, to what extent, or through what mechanism, lower levels of RF might cause adverse health effects as well.

Although some research has been done to address these questions, no clear picture of the biological effects of this type of radiation has emerged to date. Thus, the available science does not allow us to conclude that mobile phones are absolutely safe, or that they are unsafe. However, the available scientific evidence does not demonstrate any adverse health effects associated with the use of mobile phones.

What kinds of phones are in questions?

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 distance 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:

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

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

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

FDA is currently working with government, industry, and academic groups to ensure the proper follow-up to these industry-funded research findings. Collaboration with the Cellular Telecommunication 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 tests. There were no changes in the subjects' ability to recall words, numbers, or pictures, or in their spatial memory, but they were able to make choices more quickly in one visual test when they were exposed to simulated mobile phone signals. This was the only change noted among more than 20 variables compared.(3)

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

(1) Muscat et al. Epidemiological Study of Cellular Telephone Use and Malignant Brain Tumors. In: States 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, A and Mild, KH. Use of cellular telephones and the risk for brain tumors: a case-control study. *Int. J. Oncol.*, 15: 113-116, 1999

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

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

Some people who have used mobile phones have been diagnosed with brain cancer. But it is important to understand that this type of cancer also occurs among people who have not used mobile phones. In fact, brain cancer occurs in the U.S. population at a rate of about 6 new cases per 100,000 people each year. At that rate, assuming 80 million users of mobile phones (a number increasing at a rate of about 1 million per month), about 4800 cases of brain cancer would be expected each year among those 80 million people, whether or not they used their phones. Thus it is not possible to tell whether any individual's cancer arose because of the phone, or whether it would have happened anyway. A key question is whether the risk of getting a particular form of cancer is greater among people who use mobile phones than among the 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 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 phones 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 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 Telecommunication 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 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 hands-held models for shorter conversations or for situation when other types of

Phones are not available.

People who must conduct extended conversations on their cars every day could switch to a type of mobile phone

That places more distance between their bodies and the source of the RF, since the exposure level drops off dramatically with distance. For example, they could switch

To :

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

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

Where can I find additional information?

For additional information, see the following web sites:

- **Federal Communications Commission (FCC) RF Safety Program:**

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

- **World Health Organization (WHO) International EMF Project:**

<http://www.who.int/emf>

- **United Kingdom, National Radiological Protection Board:**

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

- **Cellular Telecommunications Industry Association (CTIA):**

<http://www.wow-com.com>

- **U.S. Food and Drug Administration (FDA) Center for Devices and Radiological Health:**

<http://www.fda.gov/cdrh/consumer/>

3. 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 of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

The exposure standard for wireless mobile phones employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg. * Tests for SAR are conducted using standard operating positions specified by the FCC with the phone transmitting at its highest certified power level, the actual SAR level of the phone while operating can be well below the maximum value. This is because the phone is designed to operate at multiple power levels so as to use only the power required to reach the network. In general, the closer you are to a wireless base station antenna, the lower the power output.

Before a phone model is available for sale to the public, it must be tested and certified to the FCC that it does not exceed the limit established by the government-adopted requirement for safe exposure. The tests are performed in positions and locations (e.g., at the ear and worn on the body) as required by the FCC for each model. The highest SAR value for this model phone when tested for use at the ear is 1.0 mW/g and when worn on the body, as described in this user guide, is 0.760 mW/g, (Body-worn measurements differ among phone models, depending upon available accessories and FCC requirements). [Labeling Committee note : if applicable, if body-worn SARs are required]. While there may be differences between the SAR levels of various phones and at various positions, they all meet the government requirement for safe exposure.

The FCC has granted an Equipment Authorization for this model phone with all reported SAR levels evaluated as in compliance with the FCC RF emission guidelines. SAR information on this model phone is on file with the FCC and can be found under the Display Gant section of <http://www.fcc.gov/oet/fccid> after searching on FCC ID : MC6TDC8100.

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

* In the United States and Canada, the SAR limit for mobile phones used by the public is 1.6 watts/kg (W/kg) averaged over one gram of tissue. The standard incorporates a substantial margin of safety to give additional protection for the public and to account for any variations in measurements.

4. Warning of FCC RF Exposure

FCC RF EXPOSURE INFORMATION

Read this information before using your phone

In August 1996 the Federal Communications Commission (FCC) of the United States with its action in Report and Order FCC 96-326 adopted an updated safety standard for human exposure to radio frequency (RF) electromagnetic energy emitted by FCC regulated transmitters. Those guidelines are consistent with the safety standard previously set by both U.S. and international standards bodies. The design of this phone complies with the FCC guidelines and these international standards.

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

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

Body-worn Operation

This device was tested for typical body-worn operations with the back of the phone kept 1.5 cm. from the body. To maintain compliance with FCC RF exposure requirements, use only belt-clips, holsters or similar accessories that maintain a 1.5 cm. separation distance between the user's body and the back of the phone, including the antenna. The use of belt-clips, holsters and similar accessories should not contain metallic components in its assembly. The use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be avoided.

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