

**GTX Mobile Radio
User Guide**

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GENERAL INFORMATION

With the GTX mobile radio you have made an excellent choice. Your GTX mobile radio has left our factory only after extensive tests.



When installing or removing the mobile radio from the vehicle, the radio must be switched off.

This user guide describes the way a **standard** radio works. Since standard operation may be changed by programming - both concerning the **Functions** which the radio includes and the **Buttons** used to activate them - the way your radio operates may differ from what is described here.

If in doubt, contact the person in charge of your radio system or your local service representative.

FUNCTIONS OF THE BUTTONS

(A) Radio ON/OFF and Volume control

(B) Three-LED indicators

1. **Tx:** red LED lights continuously when the radio transmits.
2. **Rx:** yellow LED lights continuously when the radio receives.
3. **Not used**

(C) Display with three “seven segments” characters.


D) **System selector:** enables selection of systems by pushing the system or the system buttons.


(E) **Talkgroup Selector:** enables selection of the talkgroups by pushing the talkgroup or talkgroup buttons.


(F) **Transmit key (PTT)**


Push to talk, release to listen.

(G) **Microphone connector**


Press this  button to answer a phone call or to make a phone call.

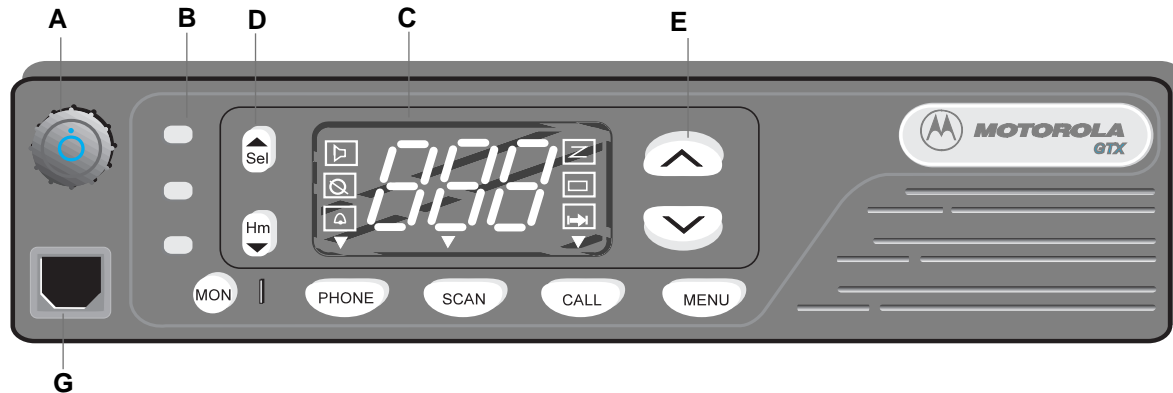
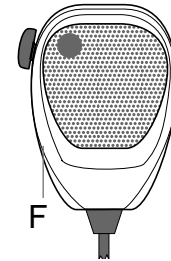
Press this  button to turn the scanning On/ Off.

Press this  button once to make a Private Call, and twice to make Call Alert.

Press this  button to select the list of Menu features

Press this  button to exit a feature.

Press this  button to select a displayed feature.



GENERAL OPERATION

Radio ON/OFF and Volume Control Knob

Turn the radio on by turning the knob clockwise. The radio then carries out a self-test.

Adjust the volume to a comfortable listening level by turning the knob (A) clockwise or counter clockwise as required.

Note: Ignition must be connected to the mobile radio. If not the radio will turn off.

Turn the radio off by turning the knob (A) counter clockwise.

Note: If the radio sounds the error tone and displays an error message, please contact the person in charge of your radio system or your local service representative.

FEATURES AND ADVANTAGES OF TRUNKING

A trunked radio system allows a large number of users to share a relatively small number of frequencies without interfering with one another. When a mobile operator keys the microphone to establish communication with someone else in the system, the system automatically assigns a communication path - a repeater and its frequency. As soon as the conversation ends, the repeater becomes free for other users. Motorola Trunked Radio System has a central controller that does the automatic frequency assignment.

Some of the key benefits of the overall Motorola Trunked Radio System are:

- * No channel monitoring required prior to transmission.
- * Fast channel access.
- * Automatic channel selection.
- * Privacy among members of the same group.
- * Uninterrupted conversations

- * Only one attempt is required to access the system. If all channels are busy, the call request enters a queue and the central controller automatically assigns the next available channel.

A high pitched “dih-dih-dit” tone sounds when the call can be made.

Types of Tones

Type of Tone	Meaning	What to Do
<i>FAILSOFT</i> Continuous faint “beep” every 10 seconds.	Operating under “failsoft” conditions. A system failure has occurred: the mobile is operating on one channel in a conventional mode.	You can still transmit and receive, but you share a channel with other groups until the system is repaired.
Disconnect Mode Warning Continuous illegal function “baaah” tone.	Reminder to exit Phone or Call Alert Modes. You may be missing other types of calls.	Press the Phone or Call Button to exit the mode.
Telephone Time-Out Warning High pitched 15-20 second tone.	Warning that the call will be terminated If not completed in 15 to 20 seconds.	Complete call or hang up. It is time to finish your call, or redial.
Talk Prohibit Constant tone when PTT is pressed.	All unsuccessful attempts to access the trunked system.	Try again, when you are in a better location.
<i>Busy Continuous</i> “bah- bah-bah” when PTT is pressed.	All available channels are busy and the radio is in queue.	Release the PTT switch. You will hear call back tone when it is your turn to transmit.
TALK PERMIT or CALL BACK High-pitched “dih-dih-dit” tone signifying channel available.	Now you have a channel to access.	The radio holds the channel open for about three seconds. Press the PTT and begin your transmission.
VALID KEY High Pitched Chirp tone. INVALID KEY “Bonk” tone when button press is rejected.	Signifies button press was accepted. Inoperative feature or illegal button press in current operating mode.	Proceed with desired function. Radio is not programmed for this function or exit a current operating
TIME-OUT-TIMER Low pitched, continuous “baaah”.	Present transmission will end in four seconds.	Finish your transmission before your transmitter is disabled.

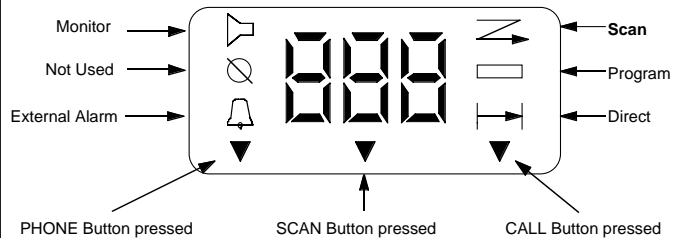
Modes of Operation

Mode of Operation	Other Calls which can be Rcvd
TALKGROUP	Announcement Calls Private Conversation Calls Call Alert Pages Systemwide Calls Telephone Calls
ANNOUNCEMENT TALKGROUP	All Talkgroup Calls Private Conversation Calls Call Alert Pages Systemwide Calls Telephone Calls
PRIVATE Conversation	Announcement Calls Systemwide Calls
Call Alert Encode	Announcement Calls Systemwide Calls
TELEPHONE INTERCONNECT	Systemwide Calls

DISPLAY ICONS

The display icons which appear on the display are:

- ∧ External Alarm Selected
- ≡ Scanning
- ∅ Not in Use
- Programming
- 🔔 Monitor
- ▶ Direct



DISPLAY CHARACTER SUMMARY

The GTX radio has a 3-character display. The character displayed on the left side of the display indicates type of incoming calls, while the other two characters displayed on the right side indicate current dispatch or conventional mode.

- In trunking dispatch mode, the digit displayed in the middle indicates the system. This can be any digit between 0 and 9 (0=system 10). The character displayed on the right side indicates the talkgroup which can be any letter between A and P.
- In conventional mode, both digits indicate the current conventional channel which can be any number between 01 and 10.



Self test

When the radio is turned on, this display appears while the self test is in process.



Telephone Interconnect

This display indicates that you have received an incoming phone call.



Private Conversation Call

This display indicates you have received an incoming private conversation phone call.



Call Alert

This display indicates that you have received a Call Alert.



Failsoft

This display indicates that the radio is in failsoft per talk-group mode.






This display indicates that the radio is in failsoft per system mode.

BASIC OPERATION

To Turn the radio On

Turn the radio ON/OFF VOLUME knob clockwise. The last system that was accessed prior to power-down will be displayed.

To Receive

Select the system by pressing the system  button until the proper system is displayed. Select the talkgroup by pressing talkgroup  or talkgroup  button until the proper talkgroup is shown. A conventional system will be indicated by digits only. A trunked system will be indicated by a digit and a letter.



To Transmit On a Trunked System


When the transmit Indicator LED lights steady or after the talk permit tones sound, press the PTT switch and speak into the microphone in a normal voice. If you hear tone(s) when you push the PTT switch, the system alerts you that certain conditions exist. Refer to the Alert Tone table for explanations.

To Transmit On a Conventional System

The yellow indicator LED will light if any other unit is active on the channel. Do not transmit if someone else is using the channel. When you press the PTT switch located on your microphone, the Transmit indicator will light steady to indicate that “you are on the air”. It will remain lit until the PTT switch is released.

To Monitor

When the radio is in conventional mode with coded squelch, the channel may be monitored by taking the microphone off hook. Another way to activate the monitor, is to press  (Monitor) button. The  (monitor) icon is displayed

To deselect monitoring, press  (Monitor) button again or place the microphone on-hook.

MULTIPLE SYSTEM AND TALKGROUP SELECTION

Multiple System Selection

This radio has ten Systems, eight Talkgroups in each system, and ten Conventional Systems or Channels. GTX mobile radios allow the operator to select up to ten systems to be programmed into the radio. Each system may have its own unique set of talkgroups, Call Alert paging, and Private Conversation calls. After the system has been selected, there is a delay of about one second before the radio can receive or transmit calls.

Trunked Systems are identified as numbers 1 through 0 (10). This trunked system number is always displayed on the left of the display

Conventional Systems or Channels sequentially follow the last trunked system. However, conventional systems appear as a number in the two rightmost digits. The indication that the radio is on a conventional system is seen when the display shows no letter or special character.

TalkGroup Selection

A trunked radio system can be divided into different talkgroups. This enables the system owner to organize the talkgroups into communication groups according to function. Members of a specific talkgroup hear only messages intended for their talkgroup.

Talkgroups are identified as letters in the right most position on the display. The system is identified in the middle position. An extended press of the talkgroup button will scroll up the list. Press the PTT switch to transmit. The radio receives only those messages intended for the talkgroup indicated on the display. For example, if talkgroup B is selected, you will not receive messages for talkgroup E.

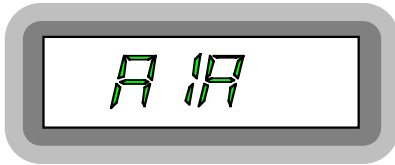
Announcement Call

If the operator has a radio equipped with announcement call, it is possible to call all members in the talkgroup's list (RSS programmable). If the operator is in announcement call mode and multiple talkgroups are active, only the first call received will be heard.

CALL ALERT

Call Alert Decode

This feature allows an individual mobile unit in a system to receive a Call Alert or page. When the mobile unit receives the Call Alert, the display shows:




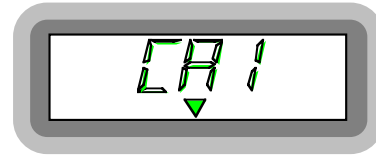
The radio will beep every four seconds until any key/PTT is pressed. Call Alert pages will not be received when the radio is engaged in voice conversation, has been turned off, or is out of the system range.



If your unit is equipped with optional horn/lights alert, see the description of *Horn/Lights* given on page 21.

Call Alert Encode

The Call Alert Encode Feature allows the dispatcher or supervisory unit to Call Alert or page up to eight mobile units.

To send a Call Alert page, press the  (Call) button until the display shows:





To select a mobile ID from the ID list, press the talkgroup  or talkgroup  button. Each mobile ID is identified as CA1 through CA8. Select the desired ID and press the PTT switch momentarily to send the CALL Alert. The radio will beep once to indicate that Call Alert has been sent. When the Call Alert has been acknowledged, the display will show:




The radio will then sound four beeps and the display will automatically return to dispatch mode.

Note: If the radio is not in service or out of range, a low pitch alert tone sounds and the display changes to show “nos”. You may try this sequence again when in range.



An illegal function tone will sound after six seconds of inactivity. This is to alert you that important channel activity may be missed if you remain in this mode. Exiting the mode by pressing  (home) button or  (Call) button will stop the tone.


PRIVATE CONVERSATION

Private Conversation Encode

This feature enables a mobile unit to exchange private calls with another unit, normally a supervisory unit. A single press of the  (Call) button activates Private Conversation. The display will show:



To select a mobile ID from the ID list, press the talkgroup  or talkgroup  button. Each mobile ID is identified as PC1, PC2, and so on till PC8. Select the desired ID and press the PTT switch to send the call.

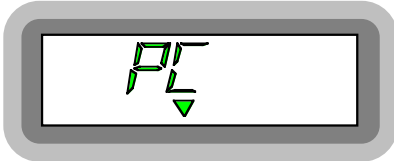
To return to the last used talkgroup, press  (home) button.

Private Conversation Decode


When a Private Conversation call is received, two beeps are heard and the display shows:



Press the  (Call) Button. The display will show:



Note: If you press the PTT switch before you press the CALL button, the response will be transmitted to everyone in the talkgroup.

To return to the last used talkgroup, press the  (home) button.

ENHANCED PRIVATE CONVERSATION CALL OPERATION (900 Mhz Only)

As with regular telephone call, conversation in an enhanced private call is heard only by the called party. With this feature, you are able to determine whether the radio you are calling is in service. If the called party does not answer your call, then you can choose to leave your radio's ID (via call alert) so that you can be called back.

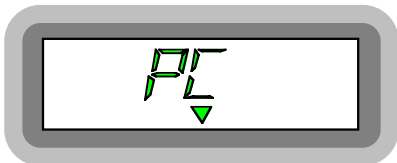
Answering an Enhanced Private Conversation Call

When you receive a Private Conversation Call, you will hear two alert tones which are repeated every five seconds for a duration of 20 seconds. The display will show:



Note: You have 20 seconds to answer the call before the radio automatically returns to the home display

Press the  (Call) button, the display will show:

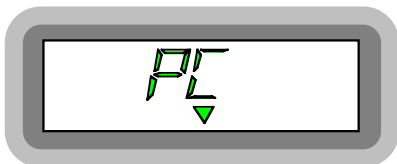


Note: If you press the PTT switch before pressing the call button, the response will be transmitted to everyone in the talkgroup.

Use the PTT switch to talk and release to hear.

Calling Last ID number transmitted or Received

Press the  (Call) button, the display will show:

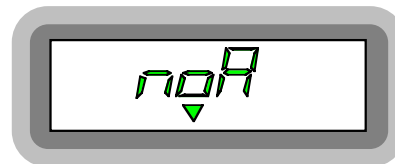


When enhanced calling the last ID number received, the display shows:



When calling the last ID number transmitted, press the PTT switch. The last ID number is transmitted. If the radio you are calling is on the air, you will hear a telephone-type ring for 20 seconds.

If the party you are calling does not answer in 20 seconds, the display will show:



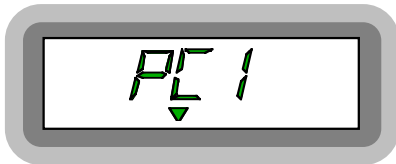
The telephone ring will stop and an alert tone will sound. You can send a call alert page or hang up.



If the radio you are calling is not in service or out of range, the display will show:



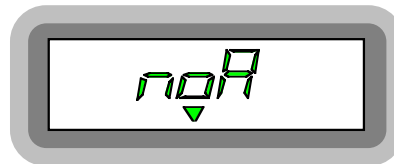
Scrolling to an ID Number in the List

Press the  (Call) button, the display will show:



Use the talkgroup  or talkgroup  button to scroll to a particular ID number in the list, and press the PTT switch. If the radio you are calling is on the air, you will hear a telephone-type ring.

If the party does not answer the call within 20 seconds, the display will show:



TELEPHONE INTERCONNECT

Your radio is equipped with a telephone interconnect option that allows you to call land line telephones through the system. Calls made through the central controller are half-duplex operation (talk or listen).

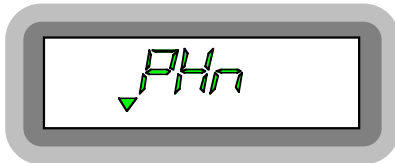
To place a Call (Full Interconnect Capability)




If your radio is not equipped with a DTMF microphone, here is how to place mobile-to-land calls:


Press  button. Momentarily the display shows:




If a free channel is available, the display will show:



You will hear dial tone. Select a phone number from the list by using talkgroup  or talkgroup  button. After selecting, the desired phone location, press the PTT switch. You will hear tones as they are being sent out. When the desired number has been completely sent out, you will hear either a busy tone or ring tone. If you get a busy tone, hang-up by pressing the  (phone) button, and try again.

- If illegal “bonk” tone sounds, when  (phone) button is pressed, it indicates that the telephone interconnect option has not been enabled and the telephone call cannot be made.
- After the called party answers, inform him/her that you are using a radio and that he/she must wait for the radio to finish transmitting (indicated by a soft beep) before replying. Proceed in a normal push-to-talk manner by pushing the PTT switch to talk and release to listen.
- The maximum time period is determined by the traffic load of the System Central Controller. If a high pitch tone sounds, it alerts you that you have just 15 seconds to complete your conversation before the call will be disconnected.

- To disconnect the call, press the  (phone) button. If the call is not disconnected, an illegal function “baaah” tone will sound after a short period. Other type of calls, except system-wide calls, will not be allowed while the telephone interconnect is engaged.

To receive a Call

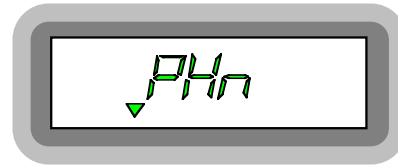
Standard telephone interconnect receive features are as follows:

- When a landline telephone user wants to call a particular radio, he/she should dial the interconnect terminal phone number. If a line is free, the landline user will hear a phone ring tone. The radio user’s display will show:




to indicate a received call.

To answer, take the microphone off the hook and press the phone button. The radio will be removed from dispatch operation and the display will show:




Press the PTT switch to talk and release to listen.


- To terminate call, press again the  (phone) button.
- If a mobile unit is equipped with the Horn/Lights feature, engage it before you leave the vehicle. When a call is received, the vehicle’s horn will sound or the lights will flash for six seconds.

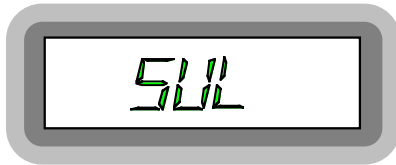
SMARTZONE/AMSS ROAMING FEATURES


Site Lock/Unlock

In the unlocked mode (automatic roaming), the radio switches between the repeater sites as one goes out of range and another comes within range. In the locked mode, the radio will remain on the current site even if you go out of range of that site. Both *Site Lock/Unlock* and *Forced-Site Search* are available through the  (Menu) button.


When you are in *Site Unlocked Mode* and want to change to *Site Locked Mode*.

- Press the  (Menu) button until the display shows:




- Press the  (Select) button to enable *Site Lock*.

When in *Site Locked Mode* and you want to change to *Site Unlocked Mode*.

- Press the  (Menu) button until the display shows:




- Press the  (Select) button to enable *Site Unlocked*.

Cauti**o**n: When enabling the *Site Lock* function, you are disabling the automatic roaming functions of the radio. If you are unsatisfied with the coverage chosen by the automatic site selection of the radio, we recommend that you use the *Forced Site Search* feature instead of *Site Lock* to gain improved coverage at a new site.


Forced Site Search

When you are in a poor coverage area and are not satisfied with the automatic site selection of the radio, you can activate the *Forced Site Search* function to scan for a new site.

The “*Forced Site Search*” feature can be activated in *Site Lock* or *Site Unlock Mode* and is enabled as follows:

- Press the  (Menu) button until the display shows:



- Press the  (Select) button to *force a Site Search*.



A forced search can be activated during normal operation as well as during Call Alert, Private Conversation, Phone.

SCAN

Introduction

The scan feature allows you to monitor activity on different conventional and trunked modes by scanning a “scan list” of members (up to 8 members).

Turning Scan On/Off

Press the  (scan) button when in any system/talkgroup or conventional position. The scanning feature will be enabled. If you desire to turn off the scanning feature, again press  (scan) button.


For as long as "SCAN ON" is selected, the (≧) scan icon will be displayed and the radio will scan for activity in the channels/talkgroups that are defined in the scan lists of the present mode.

Note: To initiate a call properly during scan mode, press the PTT switch for a few seconds.

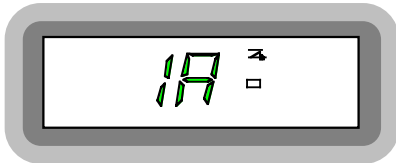
Programming/Viewing a Scan List



Press  (menu) button until the display shows:




Press the  (select) button to select “Scan Programming/Viewing mode”.

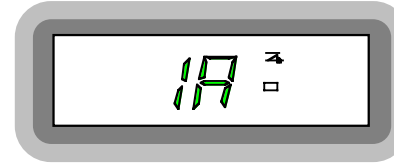
The radio will sound four quick tones and the display will show:




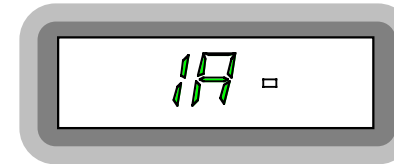
When in scan programming, use the talkgroup  button or talkgroup  buttons to scroll through the talkgroups.


If you desire to include any talkgroup in the scan

list, press the  (select) button when the desired talkgroup is shown on the display. The display will show:




To deselect, again press the  (select) button, the display will show:




To exit from the scan programming feature, press the  (home) button. The display will show the home display.

A scan list is limited to eight members. A alert tone sounds if you attempt to add more than eight members.

Nuisance Delete

If you wish to temporarily delete an annoying scan mode, press the  button and the display shows:



Then, press the  (select) button to delete. To resume scanning of the deleted mode, you must exit and re-enter scan mode.

Talkback Delay


You may talkback during a detected activity for a pre-programmed (RSS) time period after the activity ends. After this time period, the radio will resume scan.

Off-Hook Suspend Scan


If this feature is enabled (RSS programmable), the radio will stop scanning when the radio is off-hook. Scan will be resumed when the microphone is replaced on-hook.

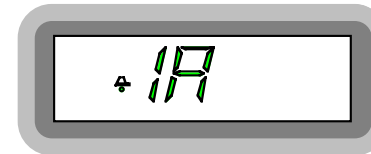
HORN/LIGHTS

When you are outside the vehicle, the radio's horn/lights feature will activate the vehicle's horn/lights (if enabled) upon receiving an incoming call alert or land to mobile phone calls.

To activate "horn and lights" press the  (menu) button until the display shows:



Then, press the  (select) button. The radio shows the home display with the horn/lights (bell) icon:



To disable - press any key.

ACCESSORIES

Please contact your local Motorola representative for further information about the accessories listed below:

Microphone Options:

- Palm Microphones
- Keypad Microphones (DTMF)

Mounting Accessories:

- Key Lock
- Direct Trunion Mount

External Loudspeaker

A Variety of Cable kits (power, ignition, etc)

- Power
- Ignition

Antennas

IMPORTANT GENERAL SAFETY INFORMATION

READ THIS INFORMATION BEFORE USING YOUR MOBILE RADIO

For the safe and efficient operation of your mobile, observe these guidelines.

Your mobile is a radio transmitter and receiver. When the mobile is ON, the externally mounted antenna is the part of the mobile that sends out and receives radio frequency (RF) energy.

• Exposure to Radio Frequency Energy

In 1991 the Institute of Electrical and Electronics Engineers (IEEE), and in 1992 the American National Standards Institute (ANSI) updated the 1982 ANSI Standard for safety levels with respect to human exposure to RF energy. Over 120 scientists, engineers, and physicians from universities, government health agencies, and industry, after reviewing the available body of research, developed this updated Standard. In March, 1993, the Federal Communications Commission (FCC) proposed the adoption of this updated Standard. To operate within this updated ANSI Standard, use your mobile as described under "Efficient Mobile Operation".

Efficient Mobile Operation

- DO NOT operate your mobile when a person is within two feet (0.6 meters) of the antenna unless that person is shielded from the antenna by a metal surface such as the roof of the car. Otherwise you may impair call quality, may cause your mobile to operate at a higher power level than is necessary, and may expose that person to RF energy in excess of the levels established by the updated ANSI Standard.
- DO NOT operate your unit unless all radio frequency (RF) connectors are properly terminated.
- All equipment must be properly grounded according to Motorola installation instructions for safe operation.
- All equipment should be serviced only by an authorized technician.

Antenna Care and Replacement

Do not use the mobile with a damaged antenna. Replace a damaged antenna immediately. Use only the supplied or approved antenna.

Unauthorized antennas, modifications, or attachments could damage the mobile and may violate FCC regulations.

Driving

Check the laws and regulations on the use of mobile radios in the areas where you drive. Always obey them. Also, when using your mobile while driving, please:

- give full attention to driving,
- pull off the road and park before making or answering a call if driving conditions so require.

Vehicle Electronic Equipment

RF energy may effect some electronic systems in motor vehicles. Check with your vehicle manufacturer's representative to be sure your mobile will not affect the electronic systems of your vehicle.

Consult your physician or the manufacturer of any personal medical devices (such as pace-makers, hearing aids, etc.) to determine if they are adequately shielded from external RF energy. The operation of inadequately shielded medical devices may be adversely affected when a mobile is ON.

- **Children**

Do not allow children to play with your mobile. It is not a toy. Children could damage the mobile, or make calls that increase your service bills.

- **Blasting Areas**

To avoid interfering with blasting operations, turn your unit OFF when in a “blasting area” or in areas posted: “turn off two-way radio.” Construction crews often use remote-control RF devices to set off explosives.

RADIO CARE

- Avoid any physical abuse of the radio.
- The radio exterior should be cleaned with a cloth dampened with clean water, a mild liquid soap solution or isopropyl alcohol.

Caut**ion:** The use of chemicals such as detergents, alcohol (except isopropyl), aerosol sprays, and petroleum products may be harmful and damage the radio housing.

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