July 2000

MOTOROLA

Professional Radio

GM340

User Guide

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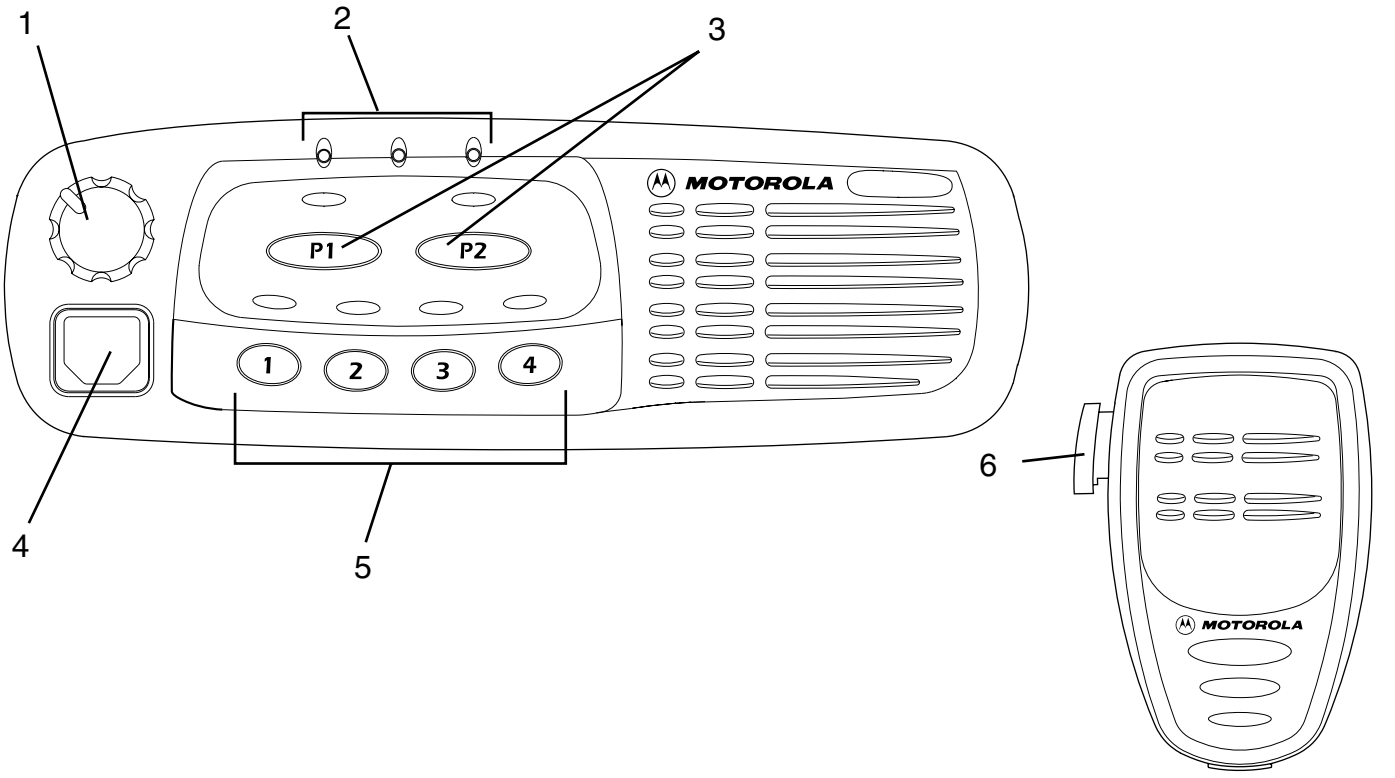
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RADIO OVERVIEW

This user guide covers the operation of the GM340 Professional Mobile Radio.

Please read pages 27 to 30 **before** using this radio.

RADIO CONTROLS

The numbers below refer to the illustrations on the inside front cover.

1. **On-Off / Volume Knob**
   Used to turn the radio on or off, and to adjust the radio's volume.
2. **LED Indicators**
   Indicates channel, scan, and monitor status, as well as receipt of a selective call.
   Green: *Successful power up.*
   Green Flashing: *Radio scanning.*
   Red: *Radio transmitting.*
   Red Flashing: *Channel busy-when receiving.*
   Yellow: *Radio called or Monitor (lower priority).*
   Yellow Flashing: *Radio call reminder alert.*
3. **Programmable Buttons** P1 P2
4. **Mic Jack**
5. **Programmable Buttons** 1 2 3 4
6. **Push-to-talk (PTT)**
   Press and hold down this button to talk; release it to listen.

PROGRAMMABLE BUTTONS

Several of your radio buttons can be programmed (by Customer Programming Software CPS) to activate the radio features.

Above each button is an associated LED. For buttons programmed as channel selectors, only the LED of the selected channel will be lit; for buttons programmed as feature on/off switches, the LED will be lit if the feature is on.

The following table shows the features that can be assigned to the P1and P2 buttons and the 1-4 buttons.

P1 and P2 are exchangeable for customised icon buttons to match programming.

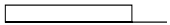
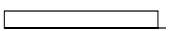
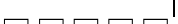
Feature	Description
Monitor/Cancel	Monitor allows user to select between signalling squelch, carrier squelch and unsquelch, and to suspend scan when landed on a channel in scan mode. Cancel allows user to cancel current incoming or outgoing call.
Radio Call	To make an individual or group selective call.
Scan On/Off	To toggle between start and stop of the scan operation.
Nuisance Delete/Cancel (Voice Storage)	To delete a nuisance (unwanted) channel when scanning, with exception of priority channel, last channel in scan list and home channel. Cancel, deletes messages being played back from the Voice Storage feature.

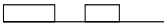
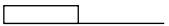
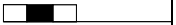
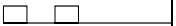
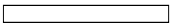
Feature	Description
Nuisance Delete	To delete a nuisance (unwanted) channel when scanning, with exception of priority channel, last channel in scan list and home channel.
Cancel (Voice Storage)	Cancel, deletes messages being played back from the Voice Storage feature.
Power Level	To toggle the radio's transmit power level between High and Low.
Talkaround On/Off	To talk directly with another radio without going through a system or despatcher.
Emergency	Activates emergency alarm sequence.
Lone Worker	To identify user as a lone worker. Radio enters emergency sequence unless user responds, when prompted, by pressing any radio button.
Call Forward	To transfer calls automatically to another radio if user is unable to take the call.
Companding On/Off	To toggle between compression/expansion of audio signal and normal audio signal.
Option Board On/Off	Allows user to toggle the option board between on and off.

Feature	Description
External Alarm	To toggle the External Alarm feature on and off.
Record/Play-back (Voice Recorder)	To record/play-back incoming calls or memos using voice recorder feature.

AUDIO SIGNAL TONES

High pitched tone ☐ Low pitched tone ■

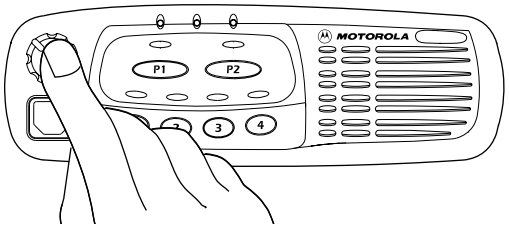
Tone	Signal	Description
Power up OK		Radio self-test OK.
Power up Fail		Radio self-test fail.
Button Error		Button press not permitted.
Engaged		Channel busy or not permitted to transmit.
Call Failed		Call failed to connect.
Force Monitor		Radio must monitor channel before transmission permitted.
Button Feature Enable		Any option button pressed to enable a feature.
Button Feature Disable		Any option button pressed to disable a feature.
Group Call		Radio receives a Group Call.
Individual Call		Radio receives an Individual Call.

Tone	Signal	Description
Call Reminder		Reminder of unanswered call.
TOT Pre-Alert		Warns of expiry of time out timer.
Monitor Alert		Alerts to change of squelch.
Voice Storage		Voice Storage-Recording.
Voice Storage		Voice Storage-Warning.
Voice Storage		Voice Storage-Full.
Scan Start		Radio starts scanning.
Scan Stop		Radio stops scanning.
Priority Call Decode		Radio detects a priority call.
Priority Channel		Radio landed on the priority channel.
Lone Worker		Reminds lone worker to respond.

Tone	Signal	Description
Hardware Error		Hardware error, tone continues until valid operation.
Cancel Message		Previous message or message currently being played from Voice Storage has been deleted.
Channel Free Beep		Indicates current channel is free.
Incoming Emergency Alert		Indicates an emergency situation.
Ringtones	English/French/ General	Incoming calls (high tones), outgoing calls (low tones).

GETTING STARTED

TURNING THE RADIO ON OR OFF



ON	OFF
Push the **On/Off/ Volume Control** knob until you hear a click.	Push the **On/Off/ Volume Control** knob until you hear a click.

ADJUSTING THE VOLUME

Turn the **On/Off/Volume Control** knob clockwise to increase the volume, or counterclockwise to decrease the volume.

RADIO ON INDICATION

At power up the radio performs a self test routine. On completion of a successful self test the radio will emit a high pitched tone (Radio self test ok) and the green led will light. If the radio fails the self test, an alternating high/low pitched tone (Radio self test fail) will sound and the red LED will flash until the radio is turned off.

Note: If your radio fails the self test routine consult your dealer.

Selecting a Radio Channel

Your radio offers up to 6 channels, however some may not be programmed. Check with your dealer for more information.

To select a channel, press the appropriate Channel Selector button, the LED above the button will light.

Sending a Call

1. Select the desired radio channel.
2. Press the **PTT** button and speak clearly into the microphone.Your mouth should be 2.5 to 5 cm away from the microphone.
3. When transmitting, the red indicator will light continuously.
4. Release the **PTT** button to listen.

Your radio may be configured for 'Transmit Inhibit' under certain conditions (e.g. when the channel is in use by others) in which case, the channel busy tone will sound when you press the PTT or call button to indicate that transmission is inhibited.

When the channel is free, the Channel Free beep ▭_____will sound, and you can make a call.

If your radio is equipped with a transmit time out timer (TOT), a warning tone ▬_____will sound a few seconds before the transmission is cut off. Your radio may be programmed to inhibit retransmission within a preset time.

Receiving a Call

1. Turn your radio on and adjust the volume level.
2. Switch to the desired radio channel.
3. If, at any time, a call is received you will hear the call at the volume level you have set.

Note: The system may have a limited call time and the call may be terminated automatically if this call time is exceeded.

Cancelling a Call

At any time while setting up a call it may be cancelled by pressing the Monitor/Call Cancel button, or replacing the microphone in its holder (referred to as going "on hook") .
The call timer can also cancel a call.

Ending a Call

A call should always be ended by pressing the Monitor/Call Cancel button, or replacing the microphone in its holder.

RADIO CALLS

SELECTIVE CALLS

Making a Selective Call

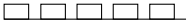
You can make a selective call to a particular radio, known as an individual call, or a group of radios, known as a group call.

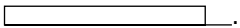
To make a Selective Call :

1. Press the PTT or Call Button (depending on the way your radio has been programmed by your dealer), to set up the call.
2. Wait until the conversation has been set up, which means you are authorised to use the system.
3. Talk with your mouth 2.5 - 5cm from the microphone. Release PTT to listen.
4. When transmitting the red indicator will light continuously.

Receiving a Selective Call

When you receive a selective call, you will hear either,

an individual call alert tone  ,

or a group call alert tone  .

and LED Indicator will light (yellow).

To answer the call:

1. Press the PTT button or Call button.
2. The call will terminate automatically when the conversation has ended or press the Monitor button.

EMERGENCY CALL

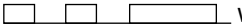
Your radio can be programmed to give you a one-button quick access to call a particular radio or centre (predefined by your dealer) in emergency situations. This is the *Emergency Call*.

When you make an Emergency call, your radio goes into an Emergency state, which can be programmed to:

- continually receive speech,
- the radio can receive and transmit.

1. Press the **Emergency** button to initiate an Emergency call.
2. Emergency can be stopped by:
   - Switching the radio **Off** and **On** again.
   - A **reset** message is received by your radio.
   - The emergency time duration is reached.

Note: The emergency time duration and reset message are programmed into your radio by your dealer.

Should you receive an Emergency call the incoming emergency alert tone  will sound.

FEATURES

PUBLIC ADDRESS MODE

The Public Address mode allows you to use your radio audio as a public address system. You can use your radio microphone as normal and the audio is routed through the radio to an external loudspeaker fitted to your vehicle.

A switch, external to your radio, switches the audio from your radio to the external loudspeaker.

This feature is programmed and fitted by your dealer.

To access the Public Address system:

1 Turn external switch to the **PA** position.

2 Press microphone PTT and talk.

3 To exit PA mode, turn external switch to the **RADIO** position.

Note 1: While in PA mode you can still hear incoming radio calls as long as you **do not** press the PTT.

Note 2: You must exit PA mode in order to answer or make radio calls.

CAR RADIO MUTE

The Car Radio Mute feature automatically mutes your in-car audio entertainment system to allow you to hear incoming calls or to stop audio interference when you are making a call.

This feature may be programmed into your radio by your dealer.

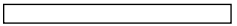
UTILITIES

The utilities described below are programmed into your radio by your dealer and are accessible via a programmable button.

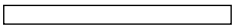
VOICE RECORDER

You can record and playback incoming calls or make a memo using the voice recorder feature, which allows up to 2 minutes of recording.

To **record** an incoming call:

1. Press and hold the Record/Playback button, the Voice Storage Recording alert  sounds momentarily.
2. Record the call or part of the call.
3. The Voice Storage Warning alert sounds when the memory is nearly full.
4. The Voice Storage Full alert sounds when the memory is full and recording ceases.
5. Release the Record/Playback button at any time to stop recording.

To **record** a memo:

1. Press and hold the Record/Playback button, the Voice Storage Recording alert  sounds momentarily.
2. Speak clearly into the radio microphone to recored your memo.
3. The Voice Storage Warning alert sounds when the memory is nearly full.
4. The Voice Storage Full alert sounds when the memory is full and recording ceases.
5. Release the Record/Playback button at any time to stop recording.

To **playback** a recorded call or memo:

1. Press the Record/Playback button with the radio in the idle state(i.e. not receiving or transmitting calls) to playback the latest recorded call or memo.
2. Press the Record/Playback button again to skip to the next message to be played back.

To **delete** a recorded call or memo:

1. Press the Cancel Message button to delete the message currently being played back.

SCAN

You can monitor several channels in order to receive any call that is transmitted on any of these channels. Sixteen channels can be programmed into each scan list. Each channel can share the same scan list or have different scan lists assigned to them.

Once the radio's scan operation is activated and the radio detects a call coming through a channel in its scan list, it switches to that channel for you to receive the call.

STARTING OR STOPPING SCAN

You can start or stop a scan operation by using a pre-programmed **Scan** button.

1. Press the **Scan** button to start scanning. The scan start alert tone □ □ □ □ ____ will sound and the associated LED will light.
2. Press the **Scan** button again to stop scanning. The scan stop alert tone ■ ■ ■ ■ ____ will sound and the associated LED will be extinguished.

The LED indicator will blink green during a scan operation. When a call on a channel is detected the LED will stop blinking.

PRIORITY CHANNEL

A scan list may contain a priority channel. This means that a particular channel (for example, a commonly used channel) may be checked more frequently than other channels in the list during a scan operation. Priority channels are programmed into your radio scan lists by your dealer.

TALKBACK

If the programmable Talkback option is set, you can respond to any calls received during the scan operation by pressing the PTT button before the programmed hang-time ends. Check with your dealer for details.

DELETING A NUISANCE CHANNEL

If a channel continually generates unwanted calls/noise (a “nuisance” channel), you can temporarily remove it from the scan list by performing a *Nuisance Channel Delete* operation:

1. While the radio is on the Nuisance Channel, press and hold the **Nuisance Delete** button until you hear the scan start alert tone.
2. Release the **Nuisance Delete** button.

Note: You cannot perform a Nuisance Channel Delete on a priority channel or if there is only one remaining channel in the scan list.

ADDING A DELETED NUISANCE CHANNEL BACK INTO THE SCAN LIST

Using the Scan Button

1. Press the **Scan** button to stop scanning. The scan stop alert tone will sound.
2. Press the **Scan** button again to re-start scanning. The scan start alert tone will sound, and the scan list will contain all programmed channels.

CALL FORWARD

You can call forward calls to your radio to another radio if you are unable to take calls or are away from your radio.

You can switch **On** or **Off** Call Forward by using a pre-programmed **Call Forward** button.

To enable Call Forward

1. Press the **Call Forward** button to switch **on** Call Forward, when the feature enable alert will sound and the associated LED will light.

To disable Call Forward

1. Press the **Call Forward** button again to switch **off** Call Forward when the feature disable alert will sound and the associated LED will be extinguished.

TALKAROUND

In your communications network, you may be using a system to cover a larger area than is possible with your radio. However, you can communicate with another radio within your radio's range without going through the system by using the Talkaround feature. This is especially useful when the system is down.

You can switch **On** or **Off** Talkaround by using a pre-programmed **Talkaround** button.

To enable Talkaround

1. Press the **Talkaround** button to switch **on** Talkaround when the feature enable alert will sound and the associated LED will light.

To disable Talkaround

1. Press the **Talkaround** button again to switch **off** Talkaround when the feature disable alert will sound and the associated LED will be extinguished.

EXTERNAL ALARM

The external alarm feature activates the vehicle horn and/or lights to inform you of an incoming call when you are away from your vehicle.

You can switch **On** or **Off** External Alarm by using a pre-programmed **External Alarm** button.

When the alarm is activated it can be cancelled by:

1. Answering the call.
2. The external alarm timer times out.

To enable External Alarm

1. Press the **External Alarm** button to switch External Alarm **on**, when the feature enable alert will sound and the associated LED will light.

To disable External Alarm

1. Press the **External Alarm** button again to switch External Alarm **off**, when the feature disable alert will sound and the associated LED will be extinguished.

LONE WORKER

The Lone Worker feature enables you to work alone with added safety.

You can switch **On** or **Off** Lone Worker by using a pre-programmed **Lone Worker** button.

To enable Lone Worker

1. Press the **Lone Worker** button to switch Lone Worker **on**, when the feature enable alert will sound and the associated LED will light.

- If you have not pressed any buttons within a programmed time, you will be reminded that **Lone Worker** is switched **on** by a high pitched alert tone (Lone Worker Reminder) being sounded.
- Press **any button** to respond and cancel the alert, if you do **not** the radio will enter the Emergency state.

To disable Lone Worker

1. Press the **Lone Worker** button again to switch Lone Worker **off**, when the feature disable alert will sound and the associated LED will be extinguished.
2. You may also switch off Lone Worker by changing the channel or switching radio **off** and **on** again.

POWER LEVEL

You can transmit your calls at different transmit power levels. A higher level means you can reach a radio that is farther away. A lower power level reduces the possibility of interference. Use the high power setting only when necessary.

You can switch between **high** and **low** power levels by using a pre-programmed **Power Level** button.

Using the Power Level Button

1. Press the **Power Level** button to switch to **high power** when the feature enable alert will sound and the associated LED will light.
2. Press the **Power Level** button again to switch to **low power** when the feature disable alert will sound and the associated LED will be extinguished.

COMPANDING

Companding is a collective term to define **comp**ressing the audio signal on transmission and exp**anding** the audio signal on reception. The overall effect is to reduce noise in the received signal, giving you crisper, clearer audio clarity. Companding should only be used when other radios in your system have the same companding feature available.

You can switch **On** or **Off** Companding by using a pre-programmed **Companding** button or via the menu.

To enable Companding

1. Press the **Companding** button to switch Companding **on**, when the feature enable alert will sound and the associated LED will light.

To disable Companding

1. Press the **Companding** button again to switch Companding **off**, when the feature disable alert will sound and the associated LED will be extinguished.

OPTION BOARD

Your radio is capable of being fitted with an option board. Each board will extend the capability of your radio by adding a new feature such as voice storage, voice scrambler or trunking. See your dealer for the availability and suitability of the various option boards.

You can switch **On** or **Off** the Option Board by using a pre-programmed **Option Board** button or via the menu.

To enable the Option Board

1. Press the **Option Board** button to switch the Option Board **on**, when the feature enable alert will sound and the associated LED will light.

To disable the Option Board

1. Press the **Option Board** button again to switch the Option Board **off**, when the feature disable alert will sound and the associated LED will be extinguished.

VOICE OPERATED TRANSMIT (VOX)

When the VOX accessory is connected, your radio may be used with hands-free operation.

The VOX feature intelligently senses background noise, so that it adapts automatically to the noise level in the environment in which you are working.

To start the VOX feature:

1. Ensure that the VOX accessory is connected to the rear accessory connector of the radio.
2. Switch the radio to a VOX channel.

You can disable the VOX feature by pressing the PTT button on the hand held microphone. This allows you to use the hand held microphone as normal.

To re-enable the VOX feature:

1. Change channel away from and back to the VOX channel.

STUN/UNSTUN

For added security and to avoid abuse of the radio system in which you operate, a feature known as **Stun/Unstun** is included in your radio.

This feature can only be activated by your system manager or administrator.

For example, if your radio is stolen and is being used illegally, your system administrator can send a signal which will **stun** the radio making it incapable of being used. This feature is also useful if the system is being abused by a user who is not complying with the correct communications protocol.

The radio can only be unstunned, i.e. returned to operational use, by an **unstun** signal sent from the system administrator or returning the radio for reprogramming.

SAFETY INFORMATION

Safe and Efficient Operation of Motorola Two-Way Radios

This section provides information and instructions for the safe and efficient operation of Motorola Mobile Two-Way Radios.

For information regarding radio use in hazardous areas, please refer to the Factory Mutual (FM) approval manual supplement or Instruction Card which is included with radio models that offer this capability.

Exposure To Radio Frequency Energy

National and International Standards and Guidelines

Your Motorola Two-Way Radio, which generates and radiates radio frequency (RF) electromagnetic energy (EME) is designed to comply with the following National and International Standards and Guidelines regarding exposure of human beings to radio frequency electromagnetic energy:

- Federal Communications Commission Report and Order No. FCC 96-326 (August 1996)
- American National Standards Institute (C95.1 - 1992)
- National Council on Radiation Protection and Measurements (NCRP - 1986)
- International Commission on Non-Ionizing Radiation Protection (ICNRP - 1986)
- European Committee for Electrotechnical Standardisation (CENELEC)

• ENV. 50166-1 1995 E	Human Exposure to Electromagnetic Fields Low Frequency (0Hz to 10kHz)
• ENV. 50166-2 1995 E	Human Exposure to Electromagnetic Fields High Frequency (10kHz to 300GHz)
• Proceedings of SC211/8 1996	Safety Considerations for Human Exposure to E.M.F.s from Mobile Telecommunications Equipment (M.T.E.) in the Frequency Range 30MHz - 6 GHz (E.M.F. - Electromagnetic Fields)

To assure optimal radio performance and that human exposure to radio frequency electromagnetic energy is within the guidelines set forth in the above standards, always adhere to the following procedures:

Electromagnetic Interference/Compatibility

Note: Nearly every electronic device is susceptible to electromagnetic interference (EMI) if inadequately shielded, designed or otherwise configured for electromagnetic compatibility.

To avoid electromagnetic interference and/or compatibility conflicts, turn off your radio in any facility where posted notices instruct you to do so. Hospitals or health care facilities may be using equipment that is sensitive to external RF energy.

When instructed to do so, turn off your radio when on board an aircraft. Any use of a radio must be in accordance with airline regulations or crew instructions.

Operational Warnings

WARNING

Vehicles With an Air Bag

Do not place communications equipment in the area over an air bag or in the air bag deployment area. Air bags inflate with great force. If communications equipment is placed in the air bag deployment area and the air bag inflates, it may be propelled with great force and cause serious injury to occupants of the vehicle.

Potentially Explosive Atmospheres

Turn off your two-way radio when you are in any area with a potentially explosive atmosphere.

Sparks in a potentially explosive atmosphere can cause an explosion or fire resulting in bodily injury or even death.

Blasting Caps and Areas

To avoid possible interference with blasting operations, turn off your radio when you are near electrical blasting caps, in a blasting area, or in areas posted: “Turn off two-way radio.” Obey all signs and instructions.

Note:
The areas with potentially explosive atmospheres referred to above include fueling areas such as: below decks on boats; fuel or chemical transfer or storage facilities; 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. Areas with potentially explosive atmospheres are often but not always posted.

Mobile Radio Operation and EME Exposure

To assure optimal radio performance and that human exposure to radio frequency electromagnetic energy is within the guidelines referenced earlier in this document, transmit only when people inside and outside the vehicle are at least the minimum distance away from a properly installed, externally mounted antenna.
Table 1 lists the minimum distance for several different ranges of radiated power.

Table 1: Radiated Power and Distance

Radiated Power of Vehicle-installed Mobile Two-way Radio	Minimum Distance From Transmitting Antenna
7 to 15 Watts	30.5 cm(1 Foot)
16 to 50 Watts	61 cm (2 Feet)
More than 50 Watts	91.5 cm (3 Feet)

Mobile Antenna Installation

Install the vehicle antenna *external* to the vehicle and in accordance with:

- The requirements of the antenna manufacturer/ supplier
- Instructions in the Radio Installation Manual

Control Station Operation

When radio equipment is used to operate as a control station, it is important that the antenna be installed outside the building and away from places where people may be in close proximity.

Refer to Table 1 for rated power and minimum distant values for transmitting antennas.

General Radio Care

Caution

- The use of chemicals such as detergents, alcohol, aerosol sprays, and/or petroleum products may be harmful to and damage the radio housing.
- Avoid physical abuse of the radio.
- Clean the radio exterior using a cloth moistened with clean water and a mild dishwashing liquid.
- The use of non-approved radio accessories may damage the radio and invalidate warranty.

NOTES