MOTOROLA SOLUTIONS

RMU2080 & RMV2080 Non-Display Models User Guide

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European Union (EU) and United Kingdom (UK) Waste of Electrical and Electronic Equipment (WEEE) Directive

The European Union's WEEE directive and the UK's WEEE regulation require that products sold into EU countries and the UK must have the crossed-out wheelie bin label on the product (or the package in some cases). As defined by the WEEE directive, this crossed-out wheelie bin label means that customers and end users in EU and UK countries should not dispose of electronic and electrical equipment or accessories in household waste.

Customers or end users in EU and UK countries should contact their local equipment supplier representative or service center for information about the waste collection system in their country.

Disclaimer

Please note that certain features, facilities, and capabilities described in this document may not be applicable to or licensed for use on a specific system, or may be dependent upon the characteristics of a specific mobile subscriber unit or configuration of certain parameters. Please refer to your Motorola Solutions contact for further information.

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Legal and Compliance Statements

Supplier's Declaration of Conformity

Supplier's Declaration of Conformity
Per FCC CFR 47 Part 2 Section 2.1077(a)

Responsible Party

Name: Motorola Solutions, Inc.

Address: 2000 Progress Pkwy, Schaumburg, IL. 60196

Phone Number: 1-800-927-2744

Hereby declares that the product:

Model Name: **RMU2080, RMV2080**

conforms to the following regulations:

FCC Part 15, subpart B, section 15.107(a), 15.107(d), and section 15.109(a)

Class B Digital Device
As a personal computer peripheral, this device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

NOTE:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or TV technician for help.

Safety and Compliance Information

RF Energy Exposure and Product Safety Guide for Two-way Radios

CAUTION:
Before using this product, read the operating instructions for safe usage contained in the Product Safety and RF Exposure booklet enclosed with your radio which contains important operating instructions for safe usage and RF energy awareness and control for Compliance with applicable Standards and Regulations.

ATTENTION:
This radio is restricted to occupational use only to satisfy FCC RF energy exposure requirements.

Notice to Users (FCC)

This device complies with Part 15 of the FCC rules per the following conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.
- Changes or modifications made to this device, not expressly approved by Motorola Solutions, could void the authority of the user to operate this equipment.

FCC Licensing Information

This device complies with Parts 90 and 15 of the Federal Communications Commission (FCC) Rules. Operation is subject to the condition that this device does not cause harmful interference.

The radio operates on radio frequencies that are regulated by the Federal Communications Commission (FCC). To transmit on these frequencies, you are required to have a license issued by the FCC. Application is made available on FCC Form 601 and Schedules D, H, and Remittance Form 159.

To obtain these FCC forms, request document 000601 which includes all forms and instructions. If you wish to have the document faxed, mailed or have questions, use the following contact information.

- Fax: Contact the Fax-On-Demand system at 1-202-418-0177
- Mail: Call the FCC forms hotline at 1-800-418-FORM or 1-800-418-3676
- Contact: For questions regarding FCC license, contact 1-888-CALL-FCC, 1-888-225-5322, or https://www.fcc.gov/

Before filling out your application, you must decide which frequency you can operate on. Refer to Frequencies and Bandwidths for frequency information. For questions on determining the radio frequency, call Motorola Solutions Product Services at: 1-800-448-6686.

Changes or modifications not expressly approved by Motorola Solutions may void the user authority granted by the FCC to operate this radio and should not be made.

To comply with FCC requirements, transmitter adjustments should be made only by or under the supervision of a person certified as technically qualified to perform transmitter maintenance and repairs in the private land mobile and fixed services as certified by an organization representative of the user of those services.

Replacement of any transmitter component such as crystal, semiconductor, and others not authorized by the FCC equipment authorization for this radio could violate FCC rules.

NOTE: Use of this radio outside the country where it was intended to be distributed is subject to government regulations and may be prohibited.

Canada Licensing Information

Notice to Users (ISED)

The operation of your Motorola Solutions radio is subject to the Radiocommunications Act and must comply with rules and regulations of the Federal Government's department of Innovation, Science, and Economic Development Canada (ISED). ISED requires that all operators using Private Land Mobile frequencies obtain a radio license before operating their equipment.

The License Application

1. Fill in the items as per the instructions. If you need additional space for any item use the reverse side of the application.
2. Be sure to print legibly
3. Make a copy for your files.
4. Prepare a cheque or money made out to the "Receiver General for Canada", for an amount, which is on the following schedule, for each radio purchased. (License is renewed on April 1st each year, and issued for a period of 12 months).
5. Mail your completed application, along with your cheque or money order to the closest ISED District office, according to the list on pages.

To obtain the latest Canadian License Application form, please go to http://www.ic.gc.ca/ic_wp-pa.htm.

Batteries and Chargers Safety Information

This document contains important safety and operating instructions. Read these instructions carefully and save them for future reference. Before using the battery charger, read all the instructions and cautionary markings on:

- The charger
- The battery
- The radio attached with battery

1. To reduce risk of injury, charge only the rechargeable Motorola Solutions-authorized batteries. Charging the other batteries may cause explosion, personal injury, and damage.
2. Use of accessories not recommended by Motorola Solutions may result in fire, electric shock, or injury.
3. To reduce damage to the electric plug and cord, pull by plug rather than the cord when disconnecting the charger.
4. An extension cord should not be used unless necessary. Use of an improper extension cord may result in fire and electric shock. If an extension cord must be used, make sure that the cord size is 18 AWG for lengths up to 100 ft (30.48 m), and 16 AWG for lengths up to 150 ft (45.72 m).

5. Do not operate the charger if it has been broken or damaged in any way. Take it to any qualified Motorola Solutions service representatives.
6. Do not disassemble the charger; it is not repairable and replacement parts are not available. Disassembly of the charger may result in risk of electrical shock or fire.
7. To reduce risk of electric shock, unplug the charger from the AC outlet before attempting any maintenance or cleaning.

Operational Safety Guidelines

- Turn off the radio while charging.
- The charger is not suitable for outdoor. Use only in dry locations or conditions.
- Disconnect charger from line voltage by removing main plug.
- Connect the equipment to an outlet which is easy to access and near.
- For equipment using fuses, replacements must comply with the type and rating specified in the equipment instructions.
- Maximum ambient temperature around the power supply equipment must not exceed 40 °C (104 °F).
- Make sure the cord is not stepped on, tripped over, subjected to water, damage, or stress.

Chapter 1

Introduction

This user guide covers the operation of your radio.

This User Guide covers multiple RM Series models, and may detail some features your radio does not have. The radio model information is provided at the bottom of the radio.

Table 1: RM Series Radio Specifications

Model	Frequency Band	Transmit Power (W)	Number of Channels	Antenna
RMU2080	UHF	2	8	Non-removable
RMV2080	VHF	2	8	Non-removable

1.1 Package Content

This section provides information regarding package content for your radio.

Your product package contains the following products and manuals:

- Radio
- Holster
- Lithium-Ion Battery
- Power Supply
- Quick Reference Guide
- Warranty Card
- Drop-in Tray Charger
- Product Safety & RF Exposure Booklet

For product information, refer to https://www.motorolasolutions.com/en_us/products/two-way-radios/commercial-business-two-way-radio-systems/on-site-business-radios/rm-series.html.

For product-related questions, contact the following numbers 1-800-448-6686:

- 1-800-448-6686 in the USA
- 1-800-461-4575 in Canada
- 1-888-390-6456 on Text Telephone (TTY)

1.2

Use and Care

Table 2: Radio Cleaning Guideline

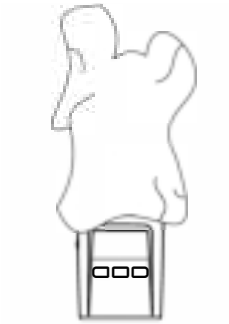
		
Use a soft damp cloth to clean the exterior.	Do not immerse in water.	Do not use alcohol or cleaning solutions.

Table 3: Guideline for Submerged Radio in Water

Turn off your radio and remove the batteries.	Dry with soft cloth.	Do not use your radio until completely dry.

Chapter 2

Radio Overview

This chapter explains the buttons, functions, and LED indications of your radio.

Figure 1: Parts of RM Series Radio

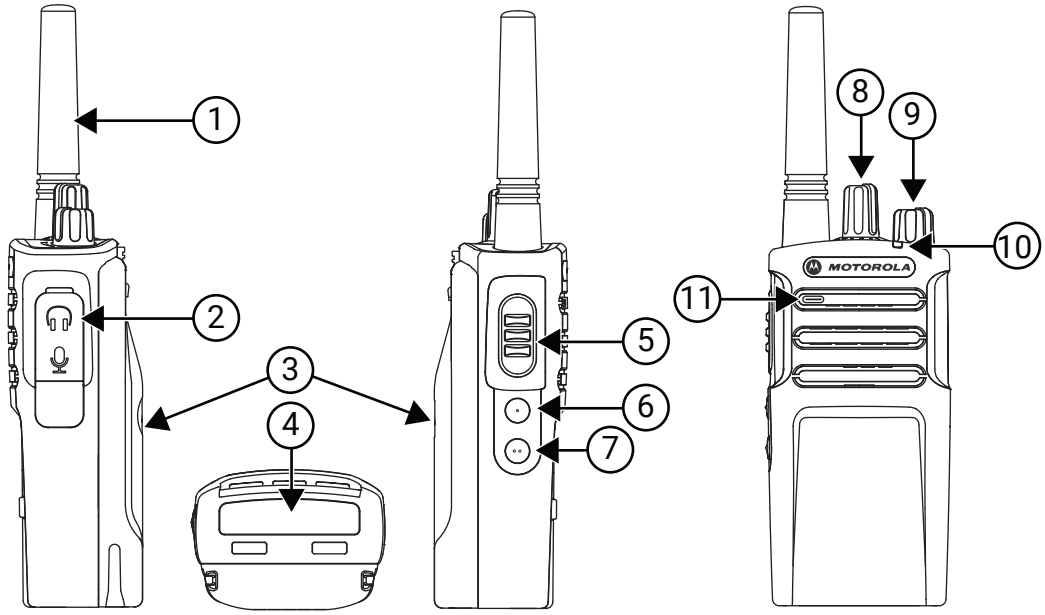


Table 4: RM Series Radio Callouts

Label	Item	Description
1	Antenna	The antenna is non-removable for RMU2080 and RMV2080 models.
2	Accessory Connector	Allows you to connect compatible audio accessories to your radio.
3	Battery	All RM Series radios come with a Lithium-Ion (Li-Ion) battery.
4	Model Label	Indicates the model of your radio.
5	Push-to-Talk (PTT) button	Allows you to press and hold down this button to talk, and release it to listen.
6	Side button 1 (SB1)	A general button that is configurable using the Customer Programming Software (CPS). **NOTE:** The default setting of SB1 is Monitor.

Label	Item	Description
7	Side button 2 (SB2)	A general button that is configurable using the CPS. **NOTE:** The default setting of SB2 is Scan or Nuisance Channel Delete.
8	Channel Selector knob	Allows you to switch the radio to different channels.
9	On/Off/Volume Control Knob	Allows you to turn on or off the radio, and adjust the volume.
10	LED Indicator	Provides battery status, power-up status, radio call information, and scan status.
11	Microphone	Allows you to speak clearly into the microphone when sending a message.

2.1 LED Indicators

Table 5: Radio LED Indicators

Radio Status	LED Indication
Channel Busy	Solid orange
Cloning Mode	Double blinking orange
Cloning in Progress	Solid orange
Fatal Error at Power Up	Alternating green, orange, and green for four seconds
Low Battery	Blinking orange
Low Battery Shutdown	Rapid blinking orange
Monitor	LED is off
Power Up	Solid red for two seconds
Idle Programming Mode /Channel Mode	Blinking green
Scan Mode	Rapid blinking red
Transmit (Tx)/Receive (Rx)	Solid red
Transmit in Low Power Select	Solid orange
VOX/iVOX Mode	Double blinking red

Chapter 3

Getting Started

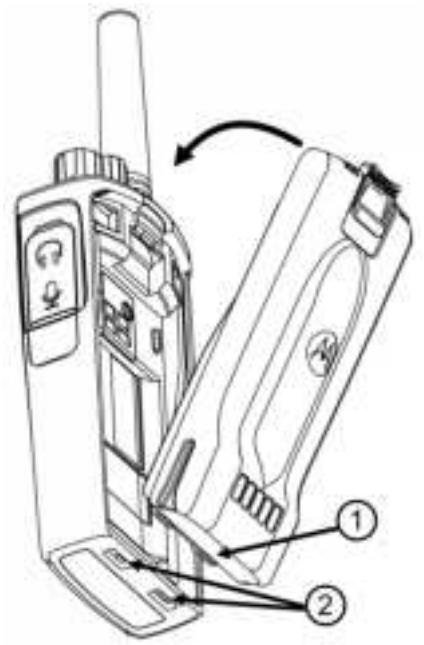
This section helps you to get familiar with the basic operations of the radio.

3.1 Installing the Battery

Your radio uses a rechargeable Lithium Ion (Li-Ion) battery.

Procedure:

1. Turn off your radio.
2. Fit the battery tab into the slot at the bottom of the radio.
3. Push the top of the battery down until a click is heard.



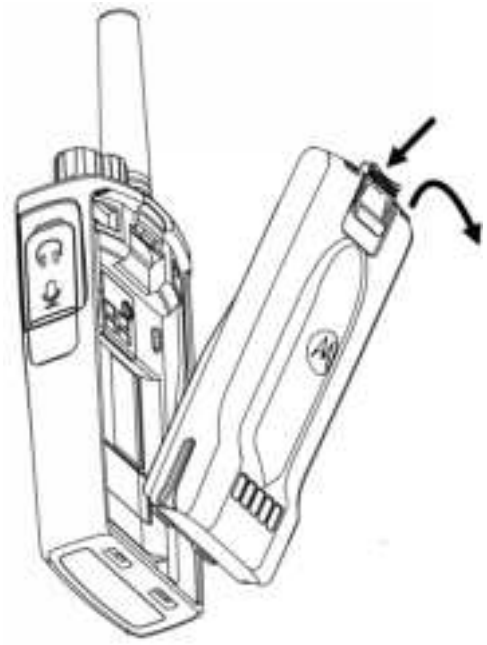
Label	Name
1	Tab
2	Slots

3.2 Removing the Battery

Procedure:

1. Turn off your radio.
2. Push down the battery latch and hold it while removing the battery.

3. Pull the battery away from the radio.



3.3
Battery Specifications

Battery life is determined by several factors. The critical ones are overcharging of batteries and the average depth of discharge each cycle. The greater the overcharge and the deeper the average discharge, the fewer cycles a battery lasts. A battery which is overcharged and discharged 100 % for several times a day, lasts fewer cycles than a battery that overcharges less and is discharged to 50 % per day. Battery with minimal overcharge and has an average of 25 % discharge, lasts even longer.

Motorola Solutions batteries are designed specifically to be used with a Motorola Solutions charger and vice versa. Charging batteries with non-Motorola Solutions equipment may lead to battery damage and void the battery warranty. Whenever possible, maintain the battery temperature to 77 °F (25 °C) (room temperature). Charging a cold battery (below 50 °F [10 °C]) may result in leakage of electrolyte and ultimate failure of the battery. Charging a hot battery (above 95 °F [35 °C]) results in reducing discharge capacity and affecting the performance of the radio. Motorola Solutions rapid-rate battery chargers contain a temperature-sensing circuit to ensure that batteries are charged within the temperature limits.

3.3.1
Battery Recycling and Disposal

Lithium-ion rechargeable batteries can be recycled. However, recycling facilities may not be available in all areas. Under various U.S. state laws and the laws of several other countries, batteries must be recycled and cannot be disposed of in landfills or incinerators. Contact your local waste management agency for specific requirements and information in your area. Motorola Solutions fully endorses and encourages the recycling of Lithium-Ion batteries.

In the U.S. and Canada, Motorola Solutions participates in the nationwide Call2Recycle program for battery collection and recycling. Many retailers and dealers participate in this program. For the location of the drop-off facility closest to you, access Call2Recycle's Internet web site at https://www.call2recycle.org/ or call 1-800-8-BATTERY. The internet site and telephone number also provide other useful information concerning recycling options for consumers, businesses, and governmental agencies.

3.3.2
Battery Life

The battery life lasts longer when the Battery Save feature is turned on. The Battery Save feature is enabled by default.

NOTE: Battery life is estimated based on 5% transmit, 5% receive, and 90% standby standard duty cycle.

3.4
Charging the Battery

The RM Series radio offers two types of power supplies:

- Standard Power Supply[1]
- Rapid Power Supply

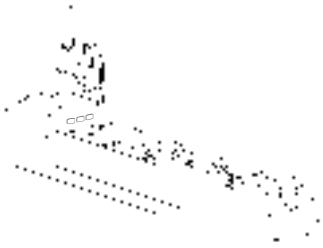
To charge the battery with the radio attached, place it in a Motorola Solutions-approved Drop-in Tray Single Unit Charger (SUC) or Drop-in Tray Multi Unit Charger (MUC).

Procedure:

1. Place the required charger (SUC or MUC) on a flat surface.
2. Insert the plug of the power cord into the jack on the charger.
3. Plug the cord into an AC outlet.
4. To charge batteries, perform one of the following actions:

Option	Actions
Charging radio (battery installed) using the SUC	Insert the radio (with battery installed) into the charger.

[1] Your radio comes with the standard power supply.

Option	Actions
Charging a stand-alone battery using the SUC	**a.** Insert the battery into the charger. (Inside surface of the battery facing the front of the charger). **b.** Align the slots in the battery with the alignment ribs in the charger.
Charging batteries using Multi-Unit Charger (MUC)	Insert the radio or battery into the charging pocket with the radio or battery facing away from the contacts. **NOTE:** The MUC allows drop-in charging of up to six radios or batteries. Batteries can be charged inside the radios or removed and placed in the MUC separately. Each of the six charging pockets can hold a radio or battery, but not both. 

3.4.1

Charger LED Indication

The following table describes the meaning of the charger LED indicator.

NOTE:
Ensure that the radio or the stand-alone battery is inserted correctly in the charger, and there is power to the outlet.

If there is no LED indication:

- Check if the radio with battery, or the battery alone, is inserted correctly.
- Ensure the power supply cable is securely plugged into the charger socket using an appropriate AC outlet and there is power to the outlet.
- Confirm that the battery being used with the radio is listed in Authorized Accessories List on page 48.

Table 6: Charger LED Indication

Indication		Status
Green for approximately one second		Power On
Steady red		Charging
Steady green		Charged
Fast blinking red		Error[2]
Slowly blinking amber		Standby[3]
Blink red one time		Battery level is low
Blink amber two times		Battery level is medium
Blink green three times		Battery level is high
No LED Indication	-	The battery is depleted

[2] Re-position the battery pack to fix the error.
[3] Battery temperature is too warm or too cold or wrong power voltage is used.

3.4.2
Estimated Charging Time

The following tables provide the estimated charging time of the battery.

Table 7: Estimated Charging Time

Charging Solution	Battery Type	
	Standard Lithium-Ion Battery	High Capacity Lithium-Ion Battery
Standard	≤ 4.5 Hours	-
Rapid	≤ 2.5 Hours	-

3.5
Using the Holster

Procedure:

1. Slide the bottom of the radio into the holster until it snaps into place.
2. To remove, detach the hooks on the holster and pull the radio away from the holster.

3.6
Turning the Radio On or Off

Turning the Radio On

Procedure:

To turn on the radio, rotate the **On/Off/Volume** knob clockwise.

The radio plays one of the followings:

- The radio sounds a tone and announces the channel number.
- The radio announces the battery level and channel numbers.
- The radio is silent. Audible tines are disabled.

The LED blinks red briefly.

Turning the Radio Off

Procedure:

To turn off the radio, rotate the **On/Off/Volume** knob counterclockwise until you hear a tone and the LED indicators turns off.

3.7

Adjusting Volume

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

NOTE: Do not hold the radio too close to your ear when the volume is high or while adjusting the volume.

Chapter 4

Basic Radio Operations

This section explains the basic operations that you can perform on your radio.

4.1 Selecting Channels

Procedure:

To select a channel, rotate the **Channel Selector** knob until you reach the required channel.

You hear the selected channel voice prompt from your radio.

Each channel has its own frequency, interference eliminator code, and scan settings.

4.2 Talking and Monitoring

Monitor the traffic before transmitting to avoid talking over someone who is already transmitting.

Procedure:

1. To access the channel traffic, press and hold the **SB1** button.

   If no activity is present, you can hear a static tone.

2. To release, press the **SB1** button again.
3. To talk, press the **PTT** button after the channel traffic is cleared.

   When transmitting, the LED illuminates in solid red.

4. To listen to all activity on the current channel, short press the **SB1** button and set the Continuous Tone-Controlled Squelch Systems (CTCSS) /Digital Private-Line (DPL) code to **0**.

   NOTE: This feature is called the CTCSS/DPL Defeat feature. The squelch is set to Silent and **SB1** button is not programmed for a different mode.

4.3 Receiving Calls

Procedure:

1. Select a channel by rotating the **Channel Selector** knob until you reach the required channel.

   You hear the selected channel voice prompt from your radio.

2. Release the **PTT** button and listen for voice activity.

   The LED illuminates in solid red when the radio is receiving calls.

3. To respond, hold the radio vertically with the microphone 1–2 inches away from your mouth and press the **PTT** button.

4. To listen, release the **PTT** button.

4.4 Talk Range

For two-way communication, the radios must be on the same channel, frequency, and interference eliminator codes.

Table 8: Talk Range

Model	Industrial (Inside steel/concrete Industrial buildings	Multi-Level (Inside multi-level buildings)
UHF 2 W	Up to 250,000 square feet	Up to 20 floors
MURS 2 W	Up to 220,000 square feet	Up to 13 floors

The talk range depends on the following stored profile that has been preprogrammed on the radio.

Channel
Current channel that the radio is using, depending on the radio model.

Frequency
The frequency the radio uses to transmit or receive.

Interference Eliminator Code:
Minimize the interference by providing a choice of code combination.

Scramble Code
Codes that makes the transmissions sound garbled to anyone listening who is not set to that specific code.

Bandwidth
Some frequencies have selectable channel spacing and must match to other radios for optimum audio quality. Only available for RMU2043.

For details on how to set up frequencies and Continuous Tone-Controlled Squelch Systems (CTCSS) /Digital Private-Line (DPL) codes in the channels, refer to Advanced Configuration Mode on page 24.

4.5 Voice Operating Transmission

Voice Operating Transmission (VOX) allows you to make hands-free voice-activated calls on a VOX-capable accessories.

4.5.1 Setting VOX with Compatible VOX Accessories

Prerequisites:
The default factory setting for Voice Operated Transmission (VOX) sensitivity level is OFF, level 0. Before using VOX, set the level to other level than the default setting through Customer Programing Software (CPS).

Turn the radio off.

Procedure:

1. Open the accessory cover.
2. Insert the audio accessory plug into the accessory port.

3. Turn the radio on.

   The LED indicator blinks red twice.

4. Lower the radio volume before placing accessory near your ear.
5. To transmit, speak into accessory microphone.

   VOX can be temporarily disabled by pressing the **PTT** button or by removing the audio accessory.

   NOTE: To order accessories, refer to the followings:

   a. http://www.motorolasolutions.com/RMseries
   b. 1800-448-6686
   c. Contact your Motorola Solutions point of purchase.

4.5.2
Setting Sensitivity Level for VOX

The radio accessory or microphone sensitivity can be adjusted to suit different operating environments. You can adjust the Voice Operated Transmission (VOX) sensitivity settings through Customer Programming Software (CPS).

Table 9: Sensitivity Levels for VOX

Sensitivity Level	Description
L3	Low audio input levels trigger the transmit.
L2	Medium sensitivity.
L1	High audio input levels trigger the transmit.
L0	Off (Default value)

4.5.3
Setting iVOX without Accessories

Procedure:

To enable Internal Voice Operated Transmission (iVOX), press the **PTT** button while turning on the radio.

Result:

NOTE:
Pressing the **PTT** button temporarily disables iVOX.

There is a short delay between the time that you start talking and when your radio transmits.

4.5.4
Microphone Gain

The sensitivity of the microphone can be adjusted to fit different users or operating environments.

You can change your microphone gain setting through the Customer Programming Software (CPS). The default setting for microphone gain is 2 (medium gain).

4.5.5
Enabling Power Up Tone Mode

Procedure:

To enable or disable the power up tone mode, press **SB1** and **SB2** buttons simultaneously for two to three seconds while powering up the radio.

You hear tones and audible voice announcement.

4.5.6
Resetting to Factory Default

This feature sets all radio features back to the default settings.

Procedure:

Press **PTT**, **SB1**, and **SB2** simultaneously while turning on the radio until you hear a tone.

4.5.7
Enabling Voice Prompt in User Mode

Procedure:

To enable or disable the voice prompt in User mode, short press the **SB1** button while turning on the radio.

NOTE: The default setting is set to On.

Chapter 5

Radio Programming through CPS

You can program or change features on your radios by using the Customer Programming Software (CPS) and the CPS Programming Cable.

CPS is available for free as web based downloadable software at http://motorolasolutions.com/RMseries.

5.1 Advanced Configuration Mode

Advanced Configuration mode allows you to configure additional features through the radio front panel.

NOTE: For non-display model radios, the navigation is guided by Voice Announcement.

Advanced Configuration mode allows you to customize the following features:

- Frequency Selection
- Codes (CTCSS/DPL)
- Auto-Scan
- Active Channels
- Weather Channel

Table 10: Advanced Configuration Mode Feature Customization

Feature	Description
Frequency Selection	Allows you to choose frequencies from a pre-defined list.
Codes (CTCSS/DPL)	Minimize interference by providing combinations of codes that filter out static, noise, and unwanted messages.
Auto-Scan	To set a particular channel to automatically enable Scan each time you switch to that channel.
Active Channels	Increase or decrease the amount of active channels in the range of maximum channels allowed.
Weather Channel	Allows you to alternate the channel function two way radio channel and weather channel. There are seven received frequencies for weather channel.

5.1.1 Entering Advanced Configuration Mode

Advanced Configuration mode allows you to configure special settings in your radio without the need of a computer.

Prerequisites: Ensure your radio is set to the channel you want to program. You can set the channel before entering the Advanced Configuration mode or at any time during the Advanced Configuration mode by rotating the **Channel Selector** knob until you reach the desired channel.

Procedure:

To set the radio to Advanced Configuration mode, press and hold the **PTT** and **SB1** buttons while turning on the radio.

Result:
You can read or modify the frequencies, codes, auto-scan and active channels, and weather channel.

Your radio shows the following indications:

- The green LED blinks.
- The Voice Announcement sounds.

NOTE:

- The Idle Programming mode is where the radio waits for you to start the radio programming cycle.
- When your radio is in the Idle Programming mode, press the **PTT** button to navigate through the programmable features and hear the frequencies, codes, auto-scan and active channels, and weather channel.

5.1.2
Selecting the Interference Eliminator Code

RM Series radios have up to 219 codes available.

For more information, refer to Frequency and Code Chart on page 39.

Prerequisites: Enter the Advanced Configuration Mode.

Procedure:

1. To cycle through the features, press the **PTT** button.

   The Voice Announcement indicates ***<Code Number>***.

2. To select the required code, press the **SB1** or **SB2** buttons.

   The Voice Announcement sounds the code.

Postrequisites:

- To continue programming, press the **PTT** button.
- To save settings and enter the Idle Programming mode, press and hold the **PTT** button.
- To exit Idle Programming mode, press and hold the **PTT** button twice.
- To exit the programming mode without saving, turn off the radio.

5.1.3
Programming Auto-Scan

Prerequisites: Enter the Advanced Configuration Mode.

Procedure:

To enter Auto-Scan mode, short press the **PTT** button.

Auto-Scan has the two following values:

- Enabled
- Disabled

Postrequisites:

- To continue programming, press the **PTT** button.
- To save settings and enter the Idle Programming mode, press and hold the **PTT** button.
- To exit Idle Programming mode, press and hold the **PTT** button twice.
- To exit the programming mode without saving, turn off the radio.

5.1.4
Programming Active Channels

Prerequisites: Enter the Advanced Configuration Mode and select your desired channel.

Procedure:

1. To enter the Active Channel mode, short press the **PTT** button while in the Auto-Scan mode.
2. To change the number of channels, press the **SB1** or **SB2** buttons.

Postrequisites:

- To continue programming, press the **PTT** button.
- To save settings and enter the Idle Programming mode, press and hold the **PTT** button.
- To exit Idle Programming mode, press and hold the **PTT** button twice.
- To exit the programming mode without saving, turn off the radio.

5.1.5
Guide to Programming FAQs

The following table lists a series of frequently asked questions (FAQs) by users related to programming the RM Series radios.

Table 11: Programming FAQs

Question	Answer
I got distracted while programming and forgot which feature I was programming. What should I do?	Return to Idle Programming mode and start over. You are not able to return to programming mode. The radio does not provide the specific stage you are at in the programming mode. Perform the following actions: • To enter the Idle Programming mode, press and hold the **PTT** button. • Turn Off the radio and enter the Advanced Configuration mode again. Refer to Entering Advanced Configuration Mode on page 24 for more information.
I am trying to program a frequency or a code value but the radio would not do it. The radio resets to value ‘0’.	The radio disallows you to program any value that is not available in the frequencies and codes pool. For example, if you try to program code 220, the

Question	Answer
	radio does not accept as the maximum allowable value is 219. Refer to Frequency and Code Chart on page 39 to ensure you are programming a valid value.
I am trying to enter the programming mode but the radio would not do it.	The radio may be locked to disallow front panel programming. Enable the programming mode through the Customer Programming Software (CPS).
I programmed the wrong value when I was programming. How can I erase or reprogram the value?	Perform the following actions: ● If you programmed the wrong value, press the **SB1** or **SB2** buttons until you get the desired value. ● Turn off the radio and start over.
I just programmed the value I wanted. How do I exit the programming mode?	Perform the following actions: ● To exit the programming mode, press and hold the **PTT** button twice. ● To exit Idle mode, press and hold the **PTT** button.
I have completed programming the features in this channel. How do I program another channel?	1. To cycle through the features, press the **PTT** button until the Voice Announcement sounds ***<Channel Number>***. 2. To select the required channel, press the **SB1** or **SB2** buttons. **NOTE:** Before changing channels, ensure that your radio is in the Idle Programming mode to save your changes.

5.2
Other Programming Features

The other programming features available for this radio is Scan and Nuisance Channel Delete.

5.2.1
Scan

Scan allows you to monitor other channels to detect conversations.

When the radio detects a transmission, it stops scanning and goes to the active channel. This allows you to listen and talk to people in that channel without having to change the channel manually. If there are transmissions on another channel, you are not able to hear the activity once the radio has stopped scanning. Once the activity on the transmitting channel stops, the radio waits for five seconds before resuming the scan again.

5.2.1.1
Scanning Channels

Procedure:

1. To start scanning, press the **SB1** or **SB2** button.

   NOTE:
   Scan has to be programmed either to the SB1 or SB2 button through Customer Programming Software (CPS). SB2 is by default Scan or Nuisance Channel delete button.

   By pressing the **PTT** button while the radio is scanning, the radio transmits on the channel that was previously selected before scan is activated. If no transmission occurs within five seconds, scanning resumes.
2. To stop scanning, short press the **SB1** or **SB2** button that are programmed for scan again.
3. To scan a channel without the Interference Eliminator Codes (CTCSS/DPL), set the code settings for the channels to **0** in the CTCSS/DPL Programming Selection mode.

5.2.2
Nuisance Channel Delete

Nuisance Channel Delete allows you to temporarily remove channels from the Scan List.

5.2.2.1
Deleting Nuisance Channel

Procedure:

1. To start the scan mode, short press the programmed **SB2** button.

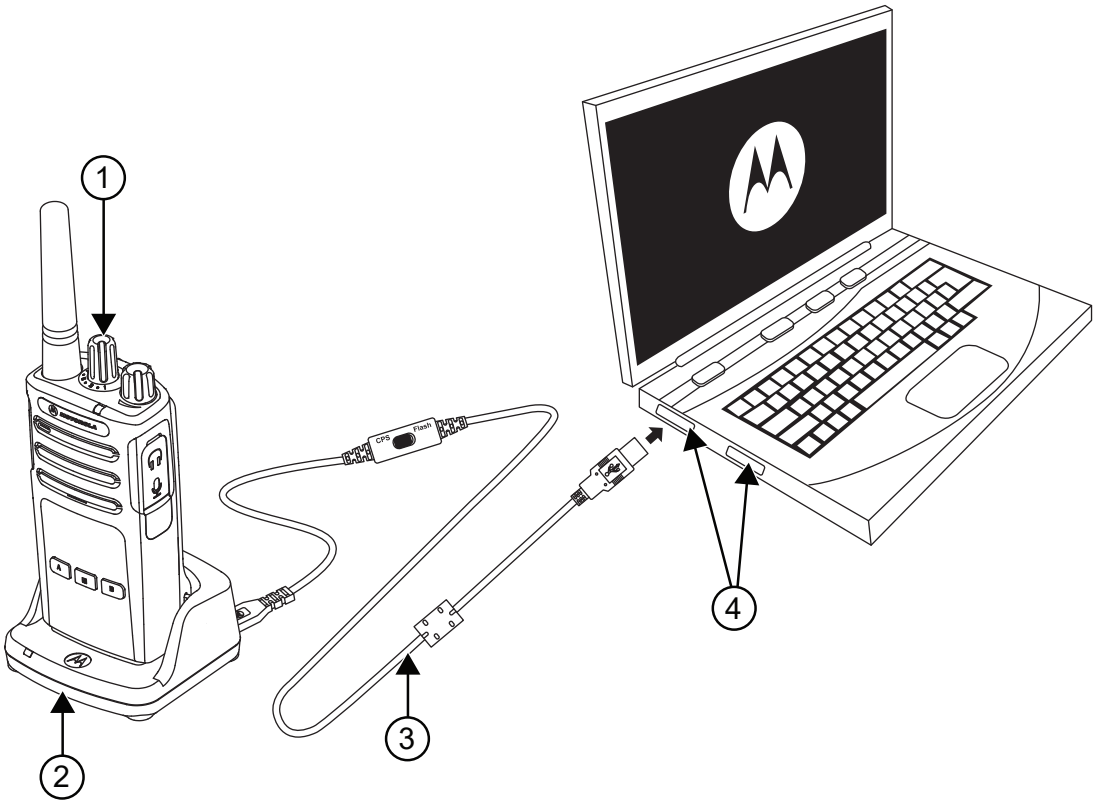
   NOTE: Wait until the radio stops at the channel you wish to eliminate.
2. To delete the channel, press and hold the **SB2** button once the radio stops at the channel you want to delete.

   You cannot delete the channel with scan enabled.
3. To scan the channel again, exit the scan mode by short pressing the **SB2** button or by turning off the radio and turning on again.

5.3

Customer Programming Software

You can connect your radio to the Drop-in Charger Tray and Customer Programming Software (CPS) Programming cable to program your radio through CPS.



Label	Description
1	Radio to be programmed
2	Drop-In Tray Charger Tray
3	CPS Programming Cable
4	USB Ports

CPS Software is available for free as web based down loadable software at http://www.motorolasolutions.com/RMseries.

CPS allows you to program the following features:

- Frequencies
- PL/ DPL Codes
- Time-out Timer
- Power Select
- Scan List
- Call Tones

- Scramble
- Reverse Burst

CPS can lock the Front-Panel Radio Programming or restrict any specific radio feature to be changed to avoid accidentally erasing the preset radio values.

CPS also provides security by giving the option to set up a password for profile radio management.

NOTE: CPS Programming cable, HKKN4027_ is an accessory sold separately. Contact your Motorola Solutions point of purchase for more information.

5.3.1
Time-Out Timer

Time-Out Timer allows you to set a fixed duration for a transmission before the transmission is automatically terminated by pressing the **PTT** button.

5.3.2
Power Select

Power Select feature allows you to select between high and low transmission power per frequency in each channel.

You can toggle the power levels between 1 W and 2 W.

NOTE: Some frequencies may have FCC transmit power limit that restrict you from setting the frequencies to a higher power level.

5.3.3
Call Tones

Call Tones feature allows you to transmit an audible tone to other radios on the same channel to alert them that you are about to talk or to alert them without speaking.

Program Call Tones feature to Side button 1 (SB1) or Side button 2 (SB2). One of the three pre-recorded tones is selected.

5.3.4
Scramble Code

Scramble Code feature makes transmissions sound garbled to anyone listening without the same code.

The default code value is **OFF**.

To change the scramble code during radio's normal operation, program Call Tones feature to Side button 1 (SB1) or Side button 2 (SB2).

5.3.5
Reverse Burst

Reverse Burst feature eliminates unwanted noise (squelch tail) during loss of carrier detection.

You can select 180 or 240 to match other radios.

The default value is 180.

5.4
Weather Channel

NOAA Weather Radio All Hazards (NWR) is a nationwide network of radio stations broadcasting continuous weather information directly from the nearest National Weather Service office.

NWR broadcasts official Weather Service warnings, watches, forecasts and other hazard information 24 hours a day, 7 days a week. Working with the Federal Communication Commission’s (FCC) Emergency Alert System, NWR is an “All Hazards” radio network, making it your single source for comprehensive weather and emergency information.

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In conjunction with Federal, State, and Local Emergency Managers and other public officials, NWR also broadcasts warning and post-event information for all types of hazards. This covers a range of situations, including natural disasters like earthquakes and avalanches, environmental incidents such as chemical spills and oil leaks, as well as public safety emergencies, which include AMBER alerts and 911 telephone outages."

NWR, known as the "Voice of NOAA's National Weather Service," is a public service provided by the National Oceanic and Atmospheric Administration (NOAA), which is part of the Department of Commerce. With a network of 1000 transmitters, NWR reaches all 50 states, adjacent coastal waters, Puerto Rico, the U.S. Virgin Islands, and U.S. Pacific Territories. To access NWR broadcasts, you need a special radio receiver or scanner designed to pick up its signal.

Broadcasts are found in the VHF public service band at these seven frequencies:

- 162.400
- 162.425
- 162.450
- 162.475
- 162.500
- 162.525
- 162.550

The channel position 8 on all RM Series radios with a channel selector knob is configured at the factory to access NOAA Weather Radio. This feature can be disabled or reconfigured to any other available channel position using the Customer Programming Software (CPS) or in Advanced Configuration Mode.

When a channel with the NOAA Weather Radio feature is selected, the RM radio provides an audible voice announcement indicating the channel and weather frequency number. For example, Channel 8: Weather 1. The announced weather frequency number corresponds to one of the seven NOAA national frequencies to which the weather radio is currently tuned.

You can change the weather frequency in Weather Channel Programming mode by pressing the **SB2** button to access the Weather menu and then using the **SB1** button to toggle up or the **SB2** button to toggle down. The PTT button acts as the menu button to progress to the channel menu or weather alert menu.

5.4.1
NOAA Weather Alert

The RM series radio is capable of monitoring the NOAA frequency for any alerts issued by the National Weather Service.

When the Weather Alert feature is enabled, the radio mutes the daily weather broadcast. You can then switch the channel to a standard two-way radio frequency and continue with normal communications.

The Weather Alert enables the radio to detect a Warning Alarm Tone (WAT) from the National Weather Service. If a WAT is detected, the weather radio unmutes, allowing the message to be heard on the RM radio. When the RM radio is set to a two-way channel and the weather alert feature is activated, the radio unmutes and broadcasts the message upon detecting a WAT.

While you are monitoring an alert, pressing the PTT button, or changing channels exits the weather alert mode and return the radio to normal operation.

NOTE: Using the Weather Alert Feature impacts normal battery life.

5.5 Clone Radio Settings

You can clone your radio settings from the source to another radio.

You can use one of the following unit chargers and cables for cloning:

- Multi Unit Charger (optional accessory)
- Two Single Unit Chargers (SUC) and a radio-to-radio cloning cable (optional accessory)
- Customer Programming Software (CPS)

5.5.1 Clone Mode in Multi-Unit Charger

You can clone radio profiles in a Multi-Unit Charger (MUC).

When in cloning mode, you must have at least two radios. Identify the radios as follows:

- A source radio where the profiles are copied or cloned to another radio.
- A target radio where the profiles are cloned from the source radio.

Match the placement for source and target radios in MUC as follows:

- 1 and 2
- 4 and 5

NOTE: Read MUC pocket numbers from left to right with the Motorola Solutions logo facing front.

When pairing the Source and Target radio, use the same band type for successful cloning mode.

When cloning, the MUC does not need to be connected to a power source.

Figure 2: Cloning Mode in Multi-Unit Charger

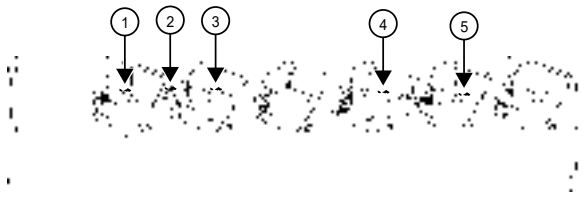


Table 12: Cloning Mode in Multi-Unit Charger

Number	Item
1	Pocket 1
2	"CLONE" symbol
3	Pocket 2
4	Pocket 4
5	Pocket 5

5.5.1.1

Configuring Cloning Mode in Multi-Unit Charger

Prerequisites: Ensure that all radios are fully charged.

Procedure:

1. Turn on the target radio.
2. Place the target radio into the Multi-Unit Charger (MUC) target pocket. See Clone Mode in Multi-Unit Charger on page 32 for the correct placement.
3. To turn on the source radio, press **PTT** and **SB2** buttons simultaneously for three seconds.

   The voice announcement sounds.
4. Place the source radio into the paired MUC target pocket. See Clone Mode in Multi-Unit Charger on page 32 for the correct placement.
5. Press and release the **SB1** button.

   The voice announcement sounds indicating that the cloning is successful or fail.
6. To exit Cloning Mode, turn off and on your radio.

NOTE:

- For more information on cloning radios using the MUC, refer to the instruction sheet provided with the MUC.
- When ordering MUC, ensure to order MUC with part number PMLN6384_.

5.5.2

Clone Mode in CPS and Cloning Cables (Optional Accessory)

Both Customer Programming Software (CPS) and Cloning cables are made to work either with RM Series radios or RDX Series radios. Cloning cable supports a mix of RM and RDX series radios.

CPS Cable

If the cable switch is in the flash position, CPS cable programs RM series radios. If the cable switch is in the CPS position and the USB converter is attached to the cable, the CPS cable programs the RDX radio.

Figure 3: CPS Cable

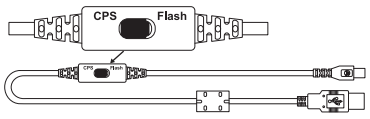


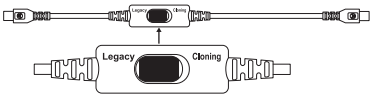
Figure 4: USB Converter

Cloning Cable

Cloning cable allows you to clone the following radios:

- RM Series radios (Ensure that the switch is in cloning or legacy position.)
- RDX Series radios (Ensure that the switch is in legacy position with a USB converter on each end of the cloning cable.)
- RM Series and RDX Series radios (Ensure that the switch is in legacy position and uses a USB converter to the RDX single unit charger.)

Figure 5: Cloning Cable



5.5.2.1

Configuring Cloning Mode Using Radio to Radio Cloning Cable

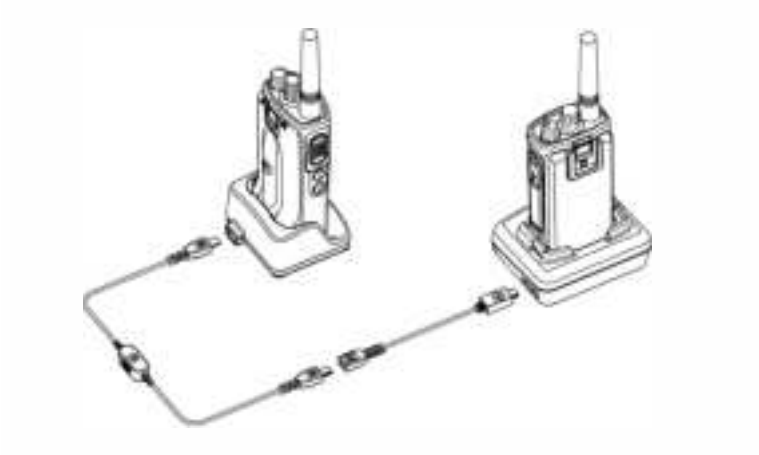
Prerequisites:
Ensure that all radios are fully charged.

Required devices/tools:

- Cloning Cable
- Two Single-Unit Chargers (SUC)

When and where to use:

Figure 6: Radio to Radio Cloning



Procedure:

1. Turn the radio off.
2. Unplug any cables from the SUC.
3. Plug one side of the cloning cable mini USB connector to the first SUC, and the other end to the second SUC.

   NOTE: During the cloning process, no power is being applied to the SUC. The batteries are not charged. Only data communication is being established between the two radios.
4. Turn on the target radio and place it into one of the SUCs.
5. To turn on the source radio, press **PTT** and **SB2** buttons simultaneously.
6. Place the source radio in the SUC and press and hold the **SB1** button for 3 seconds.

   The voice announcement sounds indicating that the cloning process has started. Once cloning is completed, the voice announcement sounds indicating that the cloning is successful or fail.
7. To exit the clone mode when the process is completed perform one of the following actions:
   - Turn off and on your radio.
   - Press and hold the **PTT** button.

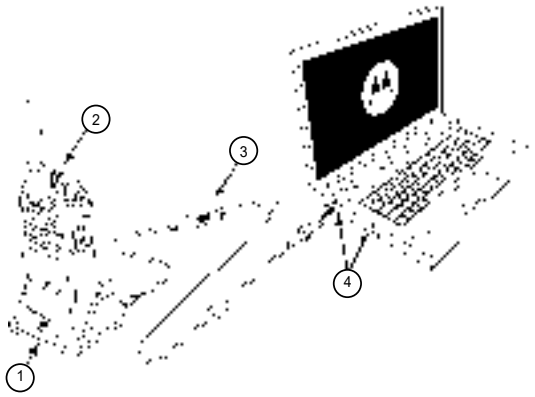
5.5.2.2
Configuring Cloning Mode Through CPS

Prerequisites: Download and install the Customer Programming Software (CPS) software on your computer.

Procedure:

1. Set up the drop-in tray charger, CPS programming cable, and computer as per the following diagram:

Figure 7: Configuring Cloning Mode Through CPS Setup



Label	Item
1	Drop-in Tray charger
2	Radio to be programmed
3	CPS programing cable
4	USB ports

2. To access the information on how to perform cloning using CPS refer to one of the following documentations:
   - From the Content and Index of the CPS Help File, select **Cloning Radios**.
   - CPS Programing Cable Accessory Leaflet.

5.5.3
Troubleshooting Cloning Mode

When and where to use:
If the voice announcement from your radio indicates that the cloning process has failed, perform the following actions before attempting to restart the cloning process.

Procedure:

1. Ensure that the batteries on both radios are fully charged and engaged properly on the radio.
2. Check the cloning cable connection on both Single-Unit Chargers (SUC).
3. Ensure that the battery is engaged properly on the radio.
4. Ensure that there is no debris in the charging tray or on the radio contacts.
5. Ensure that the target radio is turned on.
6. Ensure that the source radio is in cloning mode.
7. Ensure that the two radios are both from the same frequency band, region, and transmission power.

NOTE:
The cloning cable is designed to operate only with compatible Motorola Solutions SUC (RLN6175 and PMLN6394).

When ordering a cloning cable kit, refer to part number HKKN4028_.

For more information about the accessories, see Authorized Accessories List on page 48.

Chapter 6

Troubleshooting

Troubleshoot your radio from the list of common problems, causes, and solutions.

Table 13:

Problems	Causes	Solutions
Your radio does not turn on.	• Battery is depleted. • Extreme battery temperature.	Recharge or replace the Li-Ion battery
You can hear other noises or conversation on a channel.	Frequency or Interference Eliminator Code may be in use.	Perform one of the following actions: • Confirm Interference Eliminator Code is set. • Change frequencies or codes on all radios. • Make sure radio is at the right frequency and code when transmitting.
Message Scrambled.	The scramble Code might be set to **ON**.	Match the scramble code setting with the other radios settings.
Audio quality is weak.	Radio settings might not be matching up correctly.	Check frequencies, codes, and bandwidths to make sure the settings are identical in all radios.
Limited talk range.	• Steel and/or concrete structures, heavy foliage, buildings or vehicles can affect the range. • Wearing radio close to body such as in a pocket or on a belt decreases range.	Perform one of the following actions: • Check for clear line of sight to improve transmission. • Change the location of the radio on your body. • To increase range and coverage, you can reduce obstructions or increase power. UHF radios provides greater coverage in industrial and commercial buildings. Increasing power provides greater signal range and increased penetration through obstructions.
Message not transmitted or received.	• Radio settings. • Faulty battery. • Obstructions and operating indoors, or in vehicles, may interfere. • Scan mode.	• Make sure the **PTT** button is completely pressed when transmitting. • Confirm that the radios have the same Channel, Frequency, Interference Eliminator Code and Scramble Code settings. • Recharge, replace, and/or reposition batteries. • Change the location of the radio. • Verify that the radio is not in Scan mode.

Problems	Causes	Solutions
Heavy static or interference.	• Radios are too close; they must be at least five feet apart. • Radios are too far apart or obstacles are interfering with transmission.	Change the location of the radio.
Low battery.	• Battery is depleted. • Extreme battery temperature.	Recharge or replace the battery.
Drop-in Charger LED light does not blink	Improper radio, battery, or changer installation.	Perform one of the following actions: • Check that the radio or the battery is properly inserted. • Check the battery or charger contacts to ensure that they are clean and charging pin is inserted correctly.
Low battery indicator is blinking although new batteries are inserted.	-	Refer to Installing the Battery on page 13 topic.
Cannot activate Voice Operating Transmission (VOX).	• VOX feature might be set to **OFF**. • Accessory is not working or not compatible.	Ensure that the VOX Sensitivity level is not set to 0 through CPS.
Battery does not charge although it is placed in the drop-in charger for a while.	• Drop-in charger connection issue. • Faulty battery.	• Check drop-in tray charger is properly connected and correspond to a compatible power supply. • Check the charger LED indicator to see if the battery has a problem.

Chapter 7

Frequency and Code Chart

The following tables shows the Digital and Analogue frequency and code chart:

7.1 VHF Default Frequencies Chart (RMV2080)

Table 14: RM VHF 8CH Radios Default Frequencies Chart (RMU2043)

Channel	Frequency Number	Frequency (MHz)	Code	Bandwidth
1	20	154.4900	67.0 Hz	12.5 KHz
2	21	154.5150	67.0 Hz	12.5 KHz
3	1	151.6250	67.0 Hz	12.5 KHz
4	2	151.9550	67.0 Hz	12.5 KHz
5	10	151.5125	67.0 Hz	12.5 KHz
6	12	151.6850	67.0 Hz	12.5 KHz
7	15	151.7750	67.0 Hz	12.5 KHz
8	Weather Channel Frequency	162.4000	67.0 Hz	12.5 KHz

7.2 RM VHF Frequencies Chart

NOTE: The frequency numbers marked with an asterisk (*) are the default frequencies.

Table 15: VHF Frequencies (BRUS)

Frequency Number	Frequency (MHz)	Bandwidth
1(*)	151.6250	12.5 kHz
2(*)	151.9550	12.5 kHz
3	152.8850	12.5 kHz
4	152.9150	12.5 kHz
5	151.7000	12.5 kHz
6	151.7600	12.5 kHz
7	152.9450	12.5 kHz
8	151.8350	12.5 kHz
9	151.8050	12.5 kHz

Frequency Number	Frequency (MHz)	Bandwidth
10(*)	151.5125	12.5 kHz
11	151.6550	12.5 kHz
12(*)	151.6850	12.5 kHz
13	151.7150	12.5 kHz
14	151.7450	12.5 kHz
15(*)	151.7750	12.5 kHz
16	151.8650	12.5 kHz
17	151.8950	12.5 kHz
18	151.9250	12.5 kHz
19	152.9000	12.5 kHz
20(*)	154.4900	12.5 kHz
21(*)	154.5150	12.5 kHz
22	154.5275	12.5 kHz
23	154.5400	12.5 kHz
24	153.0050	12.5 kHz
25	154.5475	12.5 kHz
26	158.4000	12.5 kHz
27	158.4075	12.5 kHz

7.3
UHF Default Frequencies Chart (RMV2080)

Table 16: RM UHF 8CH Radios Default Frequencies Chart (RMU2043)

Channel	Frequency Number	Frequency (MHz)	Code Number	Code	Bandwidth
1	2	464.5500	1	67.0 Hz	12.5 KHz
2	8	467.9250	1	67.0 Hz	12.5 KHz
3	5	467.8500	1	67.0 Hz	12.5 KHz
4	6	467.8750	1	67.0 Hz	12.5 KHz
5	10	461.0625	1	67.0 Hz	12.5 KHz
6	12	461.1125	1	67.0 Hz	12.5 KHz
7	14	461.1625	1	67.0 Hz	12.5 KHz
8	Weather Channel Frequency	162.4000	1	67.0 Hz	12.5 KHz

7.4

RM UHF Frequencies Chart

Table 17: UHF Frequencies

Frequency Number	Frequency (MHz)	Bandwidth
1	464.5000	12.5 kHz
2	464.5500	12.5 kHz
3	467.7625	12.5 kHz
4	467.8125	12.5 kHz
5	467.8500	12.5 kHz
6	467.8750	12.5 kHz
7	467.9000	12.5 kHz
8	467.9250	12.5 kHz
9	461.0375	12.5 kHz
10	461.0625	12.5 kHz
11	461.0875	12.5 kHz
12	461.1125	12.5 kHz
13	461.1375	12.5 kHz
14	461.1625	12.5 kHz
15	461.1875	12.5 kHz
16	461.2125	12.5 kHz
17	461.2375	12.5 kHz
18	461.2625	12.5 kHz
19	461.2875	12.5 kHz
20	461.3125	12.5 kHz
21	461.3375	12.5 kHz
22	461.3625	12.5 kHz
23	462.7625	12.5 kHz
24	462.7875	12.5 kHz
25	462.8125	12.5 kHz
26	462.8375	12.5 kHz
27	462.8625	12.5 kHz
28	462.8875	12.5 kHz
29	462.9125	12.5 kHz
30	464.4875	12.5 kHz
31	464.5125	12.5 kHz
32	464.5375	12.5 kHz

Frequency Number	Frequency (MHz)	Bandwidth
33	464.5625	12.5 kHz
34	466.0375	12.5 kHz
35	466.0625	12.5 kHz
36	466.0875	12.5 kHz
37	466.1125	12.5 kHz
38	466.1375	12.5 kHz
39	466.1625	12.5 kHz
40	466.1875	12.5 kHz
41	466.2125	12.5 kHz
42	466.2375	12.5 kHz
43	466.2625	12.5 kHz
44	466.2875	12.5 kHz
45	466.3125	12.5 kHz
46	466.3375	12.5 kHz
47	466.3625	12.5 kHz
48	467.7875	12.5 kHz
49	467.8375	12.5 kHz
50	467.8625	12.5 kHz
51	467.8875	12.5 kHz
52	467.9125	12.5 kHz
53	469.4875	12.5 kHz
54	469.5125	12.5 kHz
55	469.5375	12.5 kHz
56	469.5625	12.5 kHz
57	462.1875	12.5 kHz
58	462.4625	12.5 kHz
59	462.4875	12.5 kHz
60	462.5125	12.5 kHz
61	467.1875	12.5 kHz
62	467.4625	12.5 kHz
63	467.4875	12.5 kHz
64	467.5125	12.5 kHz
65	451.1875	12.5 kHz
66	451.2375	12.5 kHz
67	451.2875	12.5 kHz
68	451.3375	12.5 kHz

Frequency Number	Frequency (MHz)	Bandwidth
69	451.4375	12.5 kHz
70	451.5375	12.5 kHz
71	451.6375	12.5 kHz
72	452.3125	12.5 kHz
73	452.5375	12.5 kHz
74	452.4125	12.5 kHz
75	452.5125	12.5 kHz
76	452.7625	12.5 kHz
77	452.8625	12.5 kHz
78	456.1875	12.5 kHz
79	456.2375	12.5 kHz
80	456.2875	12.5 kHz
81	456.3375	12.5 kHz
82	456.4375	12.5 kHz
83	456.5375	12.5 kHz
84	456.6375	12.5 kHz
85	457.3125	12.5 kHz
86	457.4125	12.5 kHz
87	457.5125	12.5 kHz
88	457.7625	12.5 kHz
89	457.8625	12.5 kHz

7.5
Interference Eliminator Codes

Table 18: Interference Eliminator Codes

Code Number	Code (Hz)	Code Number	Code (Hz)	Code Number	Code (Hz)
1	67.0	14	107.2	27	167.9
2	71.9	15	110.9	28	173.8
3	74.4	16	114.8	29	179.9
4	77.0	17	118.8	30	186.2
5	79.7	18	123.0	31	192.8
6	82.5	19	127.3	32	203.5
7	85.4	20	131.8	33	210.7
8	88.5	21	136.5	34	218.1
9	91.5	22	141.3	35	225.7

Code Number	Code (Hz)	Code Number	Code (Hz)	Code Number	Code (Hz)
10	94.8	23	146.2	36	233.6
11	97.4	24	151.4	37	241.8
12	100.0	25	156.7	38	250.3
13	103.5	26	162.2	122[4]	69.3

7.6
Digital Interference Eliminator Codes

Table 19: Digital Interference Eliminator Codes

Code Number	Code (Hz)	Code Number	Code (Hz)	Code Number	Code (Hz)
39	023	99	503	160	Inverted DPL 69
40	025	100	506	161	Inverted DPL 70
41	026	101	516	162	Inverted DPL 71
42	031	102	532	163	Inverted DPL 72
43	032	103	546	164	Inverted DPL 73
44	043	104	565	165	Inverted DPL 74
45	047	105	606	166	Inverted DPL 75
46	051	106	612	167	Inverted DPL 76
47	054	107	624	168	Inverted DPL 77
48	065	108	627	169	Inverted DPL 78
49	071	109	631	170	Inverted DPL 79
50	072	110	632	171	Inverted DPL 80
51	073	111	654	172	Inverted DPL 81
52	074	112	662	173	Inverted DPL 82

[4] New CTCSS code.

Code Number	Code (Hz)	Code Number	Code (Hz)	Code Number	Code (Hz)
53	114	113	664	174	Inverted DPL 83
54	115	114	703	175	Inverted DPL 84
55	116	115	712	176	Inverted DPL 85
56	125	116	723	177	Inverted DPL 86
57	131	117	731	178	Inverted DPL 87
58	132	118	732	179	Inverted DPL 88
59	134	119	734	180	Inverted DPL 89
60	143	120	743	181	Inverted DPL 90
61	152	121	754	182	Inverted DPL 91
62	155	123	654	183	Inverted DPL 92
63	156	124	Customized PL	184	Inverted DPL 93
64	162	125	Customized PL	185	Inverted DPL 94
65	165	126	Customized PL	186	Inverted DPL 95
66	172	127	Customized PL	187	Inverted DPL 96
67	174	128	Customized PL	188	Inverted DPL 97
68	205	129	Customized PL	189	Inverted DPL 98
69	223	130	Inverted DPL 39	190	Inverted DPL 99
70	226	131	Inverted DPL 40	191	Inverted DPL 100
71	243	132	Inverted DPL 41	192	Inverted DPL 101
72	244	133	Inverted DPL 42	193	Inverted DPL 102
73	245	134	Inverted DPL 43	194	Inverted DPL 103

Code Number	Code (Hz)	Code Number	Code (Hz)	Code Number	Code (Hz)
74	251	135	Inverted DPL 44	195	Inverted DPL 104
75	261	136	Inverted DPL 45	196	Inverted DPL 105
76	263	137	Inverted DPL 46	197	Inverted DPL 106
77	265	138	Inverted DPL 47	198	Inverted DPL 107
78	271	139	Inverted DPL 48	199	Inverted DPL 108
79	306	140	Inverted DPL 49	200	Inverted DPL 109
80	311	141	Inverted DPL 50	201	Inverted DPL 110
81	315	142	Inverted DPL 51	202	Inverted DPL 111
82	331	143	Inverted DPL 52	203	Inverted DPL 112
83	343	144	Inverted DPL 53	204	Inverted DPL 113
84	346	145	Inverted DPL 54	205	Inverted DPL 114
85	351	146	Inverted DPL 55	206	Inverted DPL 115
86	364	147	Inverted DPL 56	207	Inverted DPL 116
87	365	148	Inverted DPL 57	208	Inverted DPL 117
88	371	149	Inverted DPL 58	209	Inverted DPL 118
89	411	150	Inverted DPL 59	210	Inverted DPL 119
90	412	151	Inverted DPL 60	211	Inverted DPL 120
91	413	152	Inverted DPL 61	212	Inverted DPL 121
92	423	153	Inverted DPL 62	213	Inverted DPL 123
93	431	154	Inverted DPL 63	214	Customized DPL
94	432	155	Inverted DPL 64	215	Customized DPL

Code Number	Code (Hz)	Code Number	Code (Hz)	Code Number	Code (Hz)
95	445	156	Inverted DPL 65	216	Customized DPL
96	464	157	Inverted DPL 66	217	Customized DPL
97	465	158	Inverted DPL 67	218	Customized DPL
98	466	159	Inverted DPL 68	219	Customized DPL

Chapter 8

Authorized Accessories List

Motorola Solutions provides a list of accessories to improve the productivity of your radio.

Table 20: Audio Accessories

Part Number	Description
HKLN4599_	Earpiece with PTT, Mic, Slim Plug, PVC Free
HKLN4601_	Dual Pin Surveillance with PTT, Slim Plug, PVC Free
HKLN4604_	Swivel Earpiece with PTT, Slim plug, PVC Free
HKLN4606_	Remote Speaker Mic with PTT, Slim Plug, PVC Free
53866_	Earbud with PTT, Mic, PVC Free

Table 21: Batteries

Part Number	Description
PMNN4434_R	Standard Li-Ion Battery
PMNN4453_R	High Capacity Li-Ion Battery

Table 22: Carry Accessories

Part Number	Description
HKLN4510_	Swivel Holster

Table 23: Cables

Part Number	Description
HKKN4028_	Radio to Radio Cloning Cable
HKKN4027_	CPS Programming Cable

Table 24: Chargers

Part Number	Description
PMLN6384_	Multi-Unit Charger (MUC) Kit (North America)
PMLN6394_	Standard Drop-In Tray Charger

Table 25: Software Applications

Part Number	Description
82012694001	Customer Programming Software (CPS)

Chapter 9

Motorola Solutions Limited Warranty for the United States and Canada

9.1 Warranty

Subject to the exclusions contained below, Motorola Solutions, Inc. warrants its two way radios to be free from defects in materials and workmanship under normal consumer usage for the period(s) outlined.

This limited warranty is a consumer's exclusive remedy, and applies as follows to new Motorola Solutions Products, Accessories and Software purchased by consumers in Latin American countries, which are accompanied by this written warranty.

9.2 Products and Accessories

The table shows the length of coverage of products and accessories.

Table 26: Products and Accessories

Products Covered	Length of Coverage
Products and accessories as defined above, unless otherwise provided for below	One (1) year from the date of purchase by the first purchaser of the product unless otherwise provided for below.
Decorative accessories and cases. Decorative covers, bezels, PhoneWrap™ covers and cases	Limited lifetime warranty for the lifetime of ownership by the first purchaser of the product.
Business two-way radio accessories	One (1) year from the date of purchase by the first purchaser of the product.
Products and accessories that are repaired or replaced	The balance of the original warranty or for 90 days from the date returned to the consumer, whichever is longer.
Two-way radio	Two (2) years from the date of purchase by the first purchaser of the product.

9.3 Exclusions

Normal Wear and Tear

Periodic maintenance, repair, and replacement of parts due to normal wear and tear are excluded from coverage.

Batteries

Only batteries whose fully charged capacity falls below 80% of their rated capacity and batteries that leak are covered by this limited warranty.

Abuse and Misuse

Defects or damage that result from:

- Improper operation, storage, misuse or abuse, accident or neglect, such as physical damage (cracks, scratches, and more.) to the surface of the product resulting from misuse.
- Contact with liquid, water, rain, extreme humidity or heavy perspiration, sand, dirt, or the like, extreme heat, or food.
- Use of the Products or Accessories for commercial purposes or subjecting the Product or Accessory to abnormal usage or conditions.
- Other acts that are not the fault of Motorola Solutions, are excluded from coverage.

Use of Non-Motorola Solutions Products and Accessories

Defects or damage that result from the use of Non-Motorola Solutions branded or certified Products, Accessories, Software, or other peripheral equipment are excluded from coverage.

Unauthorized Service or Modification

Defects or damages resulting from service, testing, adjustment, installation, maintenance, alteration, or modification in any way by someone other than Motorola Solutions, or its authorized service centers, are excluded from coverage.

Altered Products

Products or Accessories with:

- Serial numbers or date tags that have been removed, altered, or obliterated.
- Broken seals or that show evidence of tampering.
- Mismatched board serial numbers.
- Nonconforming or non-Motorola Solutions housings, or parts, are excluded form coverage.

Communication Services

Defects, damages, or the failure of Products, Accessories, or Software due to any communication service or signal you may subscribe to or use with the Products Accessories or Software is excluded from coverage.

9.4 Software

Table 27: Software Warranty Table

Products Covered	Length of Coverage
Software Applies only to physical defects of the media that embodies the copy of the software.	90 days from the date of purchase.

Exclusions

Software Embodied in Physical Media

The warranty does not cover that the software will meet your requirements or will work in combination with any hardware or software applications provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected.

Software not Embodied in Physical Media

Software that is not embodied in physical media (for example, software downloaded from the internet), is provided “as is” and without warranty.

9.5
Warranty Coverage

This warranty extends only to the first consumer purchaser, and is not transferable.

9.6
Warranty Service or Other Information

Contact your Motorola Solutions point of purchase.

- 1-800-448- 6686 in the USA
- 1-800-461-4575 in Canada
- 1-866-522-5210 on your TTY (Text Telephone)

Ship the Products to us with freight, duties, and insurance prepaid. Along with the products you must include:

- A copy of your receipt, bill of sale or other comparable proof of purchase.
- A written description of the problem.
- The name of your service provider (if this product requires a subscription service).
- The name and location of the installation facility (if applicable).
- Your address and telephone number. If requested, you must also return all detachable parts such as antennas, batteries, and chargers.

9.7
Software Copyrights Notice

The Motorola Solutions products described in this manual may include copyrighted Motorola Solutions computer programs stored in semiconductor memories or other media. Laws in the United States and other countries preserve for Motorola Solutions certain exclusive rights for copyrighted computer programs including, but not limited to, the exclusive right to copy or reproduce in any form the copyrighted computer program. Accordingly, any copyrighted Motorola Solutions computer programs contained in the Motorola Solutions products described in this manual may not be copied, reproduced, modified, reverse-engineered, or distributed in any manner without the express written permission of Motorola Solutions.

Furthermore, the purchase of Motorola Solutions products shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license under the copyrights, patents or patent applications of Motorola Solutions, except for the normal non-exclusive license to use that arises by operation of law in the sale of a product.

9.8
Patent Notice

This product is covered by one or more of the following United States patents.

5896277 5894292 5864752 5699006 5742484 D408396 D399821 D387758 D389158 5894592 5893027 5789098 5734975 5861850 D395882 D383745 D389827 D389139 5929825 5926514 5953640 6071640 D413022 D416252 D416893 D433001

9.9

Export Law Assurances

This product is controlled under the export regulations of the United States of America. The Government of the United States of America may restrict the exportation or re-exportation of this product to certain destinations.

For further information, contact the U.S. Department of Commerce.

Propriété intellectuelle et avis réglementaires

Droits d’auteur

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Contenu à code source libre

Ce produit peut contenir des logiciels libres utilisés sous licence. Reportez-vous au support d’installation du produit pour obtenir tous les avis juridiques relatifs aux logiciels libres et aux contenus d’attribution.

Directive sur la mise au rebut des équipements électriques et électroniques (DEEE) de l’Union européenne (UE) et du Royaume-Uni (RU)

La directive DEEE de l’Union européenne et les réglementations DEEE du Royaume-Uni exigent que les produits (ou leur emballage, dans certains cas) vendus dans les pays de l’UE ou au Royaume-Uni portent l’étiquette de la poubelle barrée. Comme le définit la directive DEEE, cette étiquette de poubelle barrée signifie que les clients et les utilisateurs finaux dans les pays de l’UE et du Royaume-Uni ne doivent pas jeter les équipements électriques et électroniques ou leurs accessoires dans les ordures domestiques.

Les clients ou les utilisateurs finaux au sein de l’UE et du Royaume-Uni doivent prendre contact avec le représentant local du fournisseur de leur équipement ou le centre de service pour obtenir des informations sur le système de collecte des déchets dans leur pays.

Avis de non-responsabilité

Veuillez noter que certaines fonctionnalités, installations et capacités décrites dans ce document pourraient ne pas s’appliquer ou être accordées sous licence pour l’utilisation sur un système particulier, ou pourraient dépendre des caractéristiques d’une unité mobile d’abonné ou d’une configuration de certains paramètres. Contactez votre représentant Motorola Solutions pour en savoir plus.

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Information sur la sécurité et la conformité

Guide sur la sécurité du produit et l'exposition aux radiofréquences pour les radios bidirectionnelles

MISE EN GARDE :
Avant d'utiliser ce produit, lisez les instructions de fonctionnement pour un usage sécuritaire que contient la brochure sur la sécurité du produit et l'exposition aux RF livré avec votre radio, qui contient d'importantes instructions de fonctionnement pour une utilisation sécuritaire et des informations sur l'exposition aux fréquences radioélectriques, dans le but d'assurer votre conformité aux normes et règlements en vigueur.

MISE EN GARDE :
Cette radio est limitée à un usage professionnel uniquement pour répondre aux exigences d'exposition à l'énergie RF de la FCC.

Avis aux utilisateurs (FCC)

Cet appareil est conforme ¯ la partie 15 des r· glements de la FCC d'apr· s les conditions suivantes :

↙Cet appareil ne doit pas causer d'interf¶rence nuisible.

↙Cet appareil doit accepter toute interf¶rence re´ue, y compris les interf¶rences pouvant entra½ner un fonctionnement ind¶sirable.

↙Toute modification apport¶e ¯ cet appareil sans l'autorisation explicite de Motorola Solutions peut annuler l'autorisation d'utiliser cet appareil.

Renseignements de licence FCC

Cet appareil est conforme aux stipulations des Parties 90 et 15 des règles de la Federal Communications Commission (FCC). Son utilisation est assujettie à la condition qu'il ne cause pas d'interférence nuisible.

La radio fonctionne sur des fréquences radio régies par la Federal Communications Commission (FCC). Afin de transmettre sur ces fréquences, vous devez vous procurer une licence émise par la FCC. La demande doit être faite en remplissant le formulaire 601 et les annexez D et H, ainsi que le formulaire 159 (Remittance Form) de la FCC.

Pour obtenir ces formulaires de la FCC, demandez le document 000601 qui comprend tous les formulaires et les instructions. Si vous souhaitez que le document vous soit envoyé par télécopieur, par la poste ou si vous avez des questions, utilisez les coordonnées suivantes.

- Télécopieur : Communiquez avec le système de télécopie sur demande au numéro 1 202 418-0177
- Poste : Téléphonez à la ligne d'assistance de la FCC concernant les formulaires au 1 800 418-FORM ou 1 800 418-3676

- Contact : Pour des questions concernant la licence FCC, adressez-vous au 1 888 CALL-FCC, 1 888 225-5322 ou https://www.fcc.gov/.

Avant de remplir votre demande, vous devez décider sur quelle fréquence vous souhaitez exploiter les radios. Reportez-vous à la rubrique Fréquences et bandes passantes pour plus d'information sur les fréquences. Pour toute question sur le choix de la radiofréquence, appelez les services sur les produits de Motorola Solutions au numéro suivant : 1 800 448-6686.

Toute modification apportée à cet appareil sans l'autorisation explicite de Motorola peut annuler l'autorisation d'utiliser cet appareil, telle qu'elle est émise par la FCC, et ne devrait pas être faite.

Pour se conformer aux exigences de la FCC, les réglages de l'émetteur doivent être effectués par ou sous la surveillance d'un technicien certifiée pour faire l'entretien et les réparations d'émetteur-récepteur pour les services fixes ou mobiles terrestres privés, dont la certification provient d'un représentant de l'organisation de l'utilisateur de ces services.

Le remplacement de n'importe quel composant de l'émetteur (comme le quartz, les semi-conducteurs, ou autre) non permis par l'autorisation d'équipement de la FCC pour cette radio risque d'enfreindre la réglementation de la FCC.

REMARQUE :
L'utilisation de cette radio en dehors du pays pour lequel elle est distribuée est soumise aux réglementations gouvernementales et peut être interdite.

Renseignements relatifs aux licences canadiennes

Avis aux utilisateurs (ISED)

Le fonctionnement de votre radio Motorola Solutions est assujetti à la Loi sur la radiocommunication et doit se conformer aux règles et règlements du ministère Innovation, Sciences et Développement économique Canada (ISED) du gouvernement fédéral. L'ISED exige que les utilisateurs de fréquences mobiles terrestres privées obtiennent une licence avant d'utiliser leur équipement.

Demande de licence

1. Remplissez les éléments en suivant les instructions. Si vous avez besoin d'espace supplémentaire pour tout élément, utilisez le verso de la demande.
2. Assurez-vous d'écrire lisiblement.
3. Faites une copie pour vos dossiers.
4. Préparez un chèque ou un mandat-poste au nom du « Receveur général du Canada » au montant qui figure dans l'annexe suivante pour chaque radio achetée. (La licence est renouvelée le 1er avril de chaque année et est émise pour une période de 12 mois).
5. Postez votre demande remplie ainsi que votre chèque ou votre mandat-poste au bureau de district ISED le plus près, conformément à la liste des pages.

Pour obtenir le plus récent formulaire de demande de licence canadienne, veuillez visiter http://www.ic.gc.ca/ic_wp-pa.htm.

Renseignements sur l'utilisation sécuritaire des batteries et des chargeurs

Ce document contient des instructions d'utilisation et de sécurité importantes. Veuillez lire attentivement ces instructions et la conserver pour vous y référer ultérieurement. Avant d'utiliser le chargeur de batterie, lisez toutes les instructions et marquages d'avertissement sur :

- le chargeur
- la batterie
- la radio avec batterie

1. Pour réduire les risques de blessure, ne chargez que les batteries rechargeables agréées Motorola Solutions. Le chargement d'autres batteries peut provoquer une explosion, des blessures corporelles et des dommages.
2. L'utilisation d'accessoires non recommandés par Motorola Solutions pourrait occasionner des risques d'incendie, de décharge électrique ou de blessure.
3. Afin de réduire la possibilité d'endommager la fiche et le cordon d'alimentation, débranchez le chargeur en tirant sur la fiche au lieu du cordon.
4. Il n'est pas recommandé d'utiliser une rallonge, sauf en cas de nécessité. L'utilisation d'une rallonge inappropriée pourrait causer un risque d'incendie et de décharge électrique. Si une rallonge doit être utilisée, assurez-vous que le format du cordon est de calibre 18 lorsque sa longueur est de 30,48 m (100 pi) ou moins et de calibre 16 lorsque sa longueur est de 45,72 m (150 pi).
5. N'utilisez pas un chargeur défectueux ou endommagé de quelque façon que ce soit. Confiez-le à un représentant de service Motorola Solutions.
6. Ne désassemblez pas le chargeur. Il ne peut être réparé et aucune pièce de rechange n'est disponible. Le désassemblage du chargeur pourrait occasionner des risques de décharge électrique ou d'incendie.
7. Pour réduire les risques de décharge électrique, débranchez le chargeur de la prise c.a. avant de procéder à une maintenance ou à un nettoyage.

Directives d'utilisation sécuritaire

- Mettez la radio hors tension pendant la charge.
- Le chargeur n'est pas conçu pour une utilisation à l'extérieur. Utilisez-le dans des conditions ou environnements secs uniquement.
- Débranchez le chargeur de la tension de secteur en retirant la fiche principale.
- Branchez l'appareil dans une prise murale facile d'accès et suffisamment proche.
- Pour les appareils utilisant des fusibles, les pièces de rechange devront être conformes aux instructions fournies dans la documentation.
- La température ambiante maximale autour du bloc d'alimentation ne doit pas dépasser 40 °C (104 °F).
- La puissance de sortie du bloc d'alimentation ne devra pas dépasser la puissance indiquée sur l'étiquette du produit apposée sous le chargeur.
- Assurez-vous que le cordon est placé à un endroit où il ne sera pas écrasé ou endommagé, ne gênera pas le passage, ne sera pas tendu de façon anormale et ne sera pas exposé à une source d'humidité.