ICOM

iDAS
ICOM DIGITAL ADVANCED SYSTEM

dPMR digital ™

VHF DIGITAL/ANALOG TRANSCEIVER

IC−F3200DEX
Series

UHF DIGITAL/ANALOG TRANSCEIVER

IC−F4200DEX
Series

Icom Inc.

The photo shows the VHF transceiver.

FOREWORD

READ ALL INSTRUCTIONS carefully and completely before using the transceiver.

SAVE THIS INSTRUCTION MANUAL— This instruction manual contains important operating instructions for the **IC-F3203DEX VHF DIGITAL/ANALOG TRANSCEIVER** and the **IC-F4203DEX UHF DIGITAL/ANALOG TRANSCEIVER**

• This instruction manual includes some functions which are usable only when they are preset by your dealer. Ask your dealer for details.
• To use in explosive atmospheres, read the leaflet "SAFETY MANUAL" comes with the transceiver.

EXPLICIT DEFINITIONS

WORD	DEFINITION
⚠**DANGER!**	Personal death, serious injury or an explosion may occur.
⚠**WARNING!**	Personal injury, fire hazard or electric shock may occur.
CAUTION	Equipment damage may occur.
NOTE	If disregarded, inconvenience only. No risk of personal injury, fire or electric shock.

VOICE CODING TECHNOLOGY

The AMBE+2™ voice coding Technology embodied in this product is protected by intellectual property rights including patent rights, copyrights and trade secrets of Digital Voice Systems, Inc. This voice coding Technology is licensed solely for use within this Communications Equipment. The user of this Technology is explicitly prohibited from attempting to extract, remove, decompile, reverse engineer, or disassemble the Object Code, or in any other way convert the Object Code into a human-readable form. U.S. Patent Nos.
#5,870,405, #5,826,222, #5,754,974, #5,701,390, #5,715,365, #5,649,050, #5,630,011, #5,581,656, #5,517,511, #5,491,772, #5,247,579, #5,226,084 and #5,195,166.

PRECAUTIONS

⚠ **DANGER! NEVER** short the terminals of the battery pack.

⚠ **DANGER!** Use and charge only specified Icom battery packs with Icom radios or Icom chargers. Only Icom battery packs are tested and approved for use with Icom radios or charged with Icom chargers. Using third-party or counterfeit battery packs or chargers may cause smoke, fire, or cause the battery to burst.

⚠ **WARNING! NEVER** hold the transceiver so that the antenna is very close to, or touching exposed parts of the body, especially the face or eyes, while transmitting. The transceiver will perform best if the microphone is 5 to 10 cm (2 to 4 inches) away from the lips and the transceiver is vertical.

⚠ **WARNING! NEVER** operate the transceiver with a headset or other audio accessories at high volume levels. Hearing experts advise against continuous high volume operation. If you experience a ringing in your ears, reduce the volume level or discontinue use.

⚠ **WARNING! NEVER** operate the transceiver while driving a vehicle. Safe driving requires your full attention—anything less may result in an accident.

CAUTION: MAKE SURE the flexible antenna and battery pack are securely attached to the transceiver, and that the antenna and battery pack are dry before attachment. Exposing the inside of the transceiver to water will result in serious damage to the transceiver.

DO NOT operate the transceiver near unshielded electrical blasting caps.

DO NOT push [PTT] when you do not actually intend to transmit.

DO NOT use or place the transceiver in direct sunlight or in areas with temperatures below–20°C (–4°F) or above +55°C (+131°F).

DO NOT modify the transceiver. The specifications may change and then not comply with the requirements of a corresponded regulation. The transceiver warranty does not cover any problems caused by unauthorized modification.

DO NOT use harsh solvents such as benzine or alcohol when cleaning, as they will damage the transceiver surfaces.

BE CAREFUL! The transceiver will become hot when operating it continuously for long periods of time.

BE CAREFUL! The transceiver meets IP67 requirements for dust-tight and waterproof protection.
However, once the transceiver has been dropped, dust-tight and waterproof protection cannot be guaranteed because of possible damage to the transceiver's case or the waterproof seal.

Even when the transceiver power is OFF, a slight current still flows in the circuits. Remove the battery pack or batteries from the transceiver when not using it for a long time. Otherwise, the installed battery pack or batteries will become exhausted, and will need to be recharged or replaced.

MAKE SURE to turn the transceiver power OFF before connecting the supplied/optional equipment.

TABLE OF CONTENTS

1 ACCESSORIES

■ **Supplied accessories**

The following accessories are supplied with the transceiver.

Battery pack*

Flexible antenna
(This illustration is for the VHF type.)
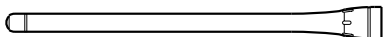
Battery charger*

AC adapter*
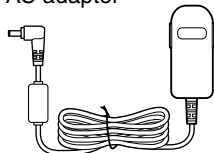
Belt clip*

Connector cover
(with screws)
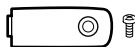
* Not supplied, or the shape is different, depending on the version.

■ **Accessory attachments**

◇ **Flexible antenna**
Connect the flexible antenna to the antenna connector.

CAUTION:
- **NEVER** carry the transceiver by holding only the antenna.
- **DO NOT** connect the antenna other than listed on page 42.
- Transmitting without an antenna may damage the transceiver.

1
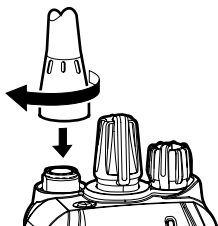
◇ **Belt clip**

To attach the belt clip:

➡ Slide the belt clip in the direction of the arrow until the belt clip locks in place, and makes a 'click' sound.
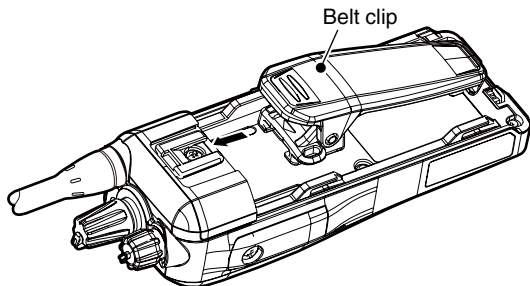
Belt clip

To detach the belt clip:

① Remove the battery pack from the transceiver, if it is attached. (p. 3)

② Lift the tab up (❶), and slide the belt clip in the direction of the arrow (❷).

❷

Tab

❶
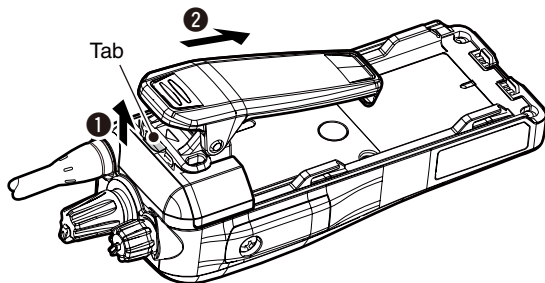
◇ **Battery pack**
To attach the battery pack:
Slide the battery pack on the back of the transceiver in the direction of the arrow (❶), then lock it with the battery release button.
• Slide the battery pack until the battery release button makes a 'click' sound.

To remove the battery pack:
Push the battery release button in the direction of the arrow (❷) as shown below. The battery pack can be removed.

NEVER remove or attach the battery pack when the transceiver is wet or soiled. This may result water or dust getting into the transceiver and/or battery pack and may result in them being damaged.

Battery release button
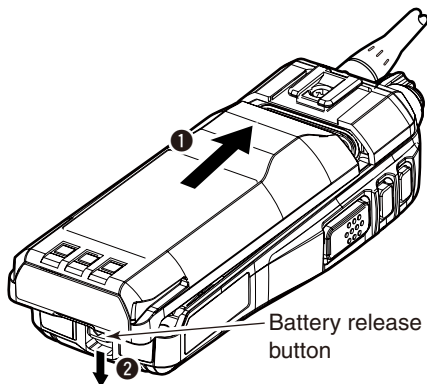
NOTE: Keep the battery pack terminals clean. It's a good idea to occasionally clean them.

1

◇ **Connector cover**

Attach the connector cover when optional equipment is not used.

To attach the connector cover:

① Attach the cover to the multi connector.

② Tighten the screw.
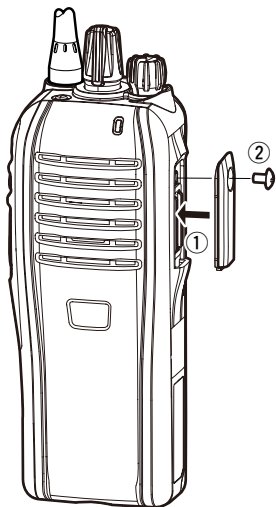
To detach the connector cover:

❶ Remove the screw with a phillips screwdriver.

❷ Detach the cover to connect the optional equipment.
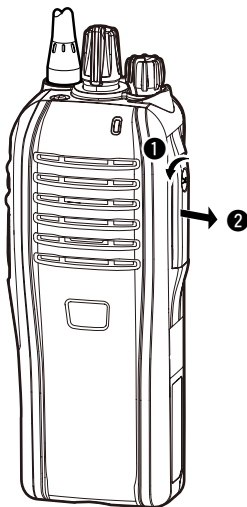
2 PANEL DESCRIPTION
■ Front, top and side panels

❶ **ROTARY SELECTOR**

❷ **VOLUME CONTROL**

❸ **LED INDICATOR**

Speaker

❹ **MULTI CONNECTOR**

Microphone

❽ **ANTENNA CONNECTOR**

❼ **UPPER KEY**

❻ **LOWER KEY**

❺ **PTT SWITCH**
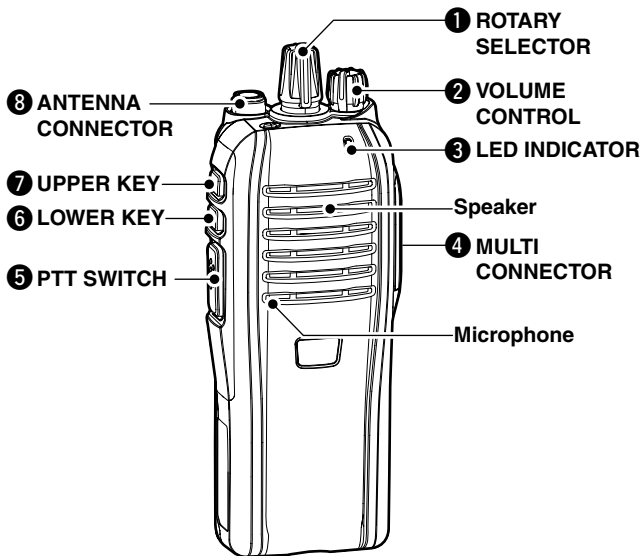
❶ **ROTARY SELECTOR**
Rotate to select the preprogrammed memory channels or scan lists, depending on the preprogramming.

❷ **VOLUME CONTROL [VOL]**
Rotate to turn the power ON or OFF, and adjust the audio level.

❸ LED INDICATOR (pp. 7–9)
➥ Lights red while transmitting.
➥ Lights green while receiving a signal, or when the squelch is open.
➥ Lights/blinks orange when the matched 2/5-tone code is received, depending on the presetting.

❹ MULTI CONNECTOR
Connect optional equipment.

Connector cover
NOTE: Attach the cover when optional equipment is not used. (p. 4)

❺ PTT SWITCH [PTT]
Hold down to transmit; release to receive.

❻ LOWER KEY [Lower]
❼ UPPER KEY [Upper]
A desired function can be assigned by your dealer. (p. 10)

❽ ANTENNA CONNECTOR
Connect the antenna.

6

■ **LED indicator**

The LED indicator indicates the status of various parameters of the transceiver as follows; (Reference: R=Red, G=Green, O=Orange)

• TX:

Lights Red while transmitting.

	R	

• RX busy:

On an analog channel, lights Green when in the noise squelch opens. On a digital or mixed channel, lights Green while detecting a frame synchronization.

	G	
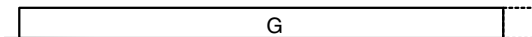
• Call LED:

Turns ON when receiving a matched 2/5-tone, or receiving a Status or SDM (Short Data Message) call.

O	

• Call LED:

Blinks when receiving a matched 2/5-tone, or receiving a Status or SDM call.

O		O	

• Call LED:

Blinks while waiting for a return signal.

| O | | O | | O | | | O | | O | | O | |
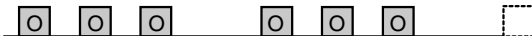
• Success:

Blinks slowly when your call was successful.

O		G	

2

- Call error:
  Blinks slowly when your call failed, or was refused.

O	R		

- Audible:
  Blinks slowly after a return signal is received when in the Audible mode*.

  *Mute is released. (Received signal will be heard.)

O		O	

- Fast/Slow scan or voting:
  Blinks when scanning for a channel to search for a signal or a repeater to register on.

G		G	
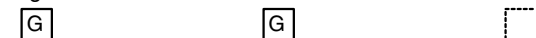
- Low Battery 1:
  You should charge the battery soon. (blinks slowly)

		G	G

- Low Battery 2:
  You must charge the battery. (blinks fast)

	G	G		G	G
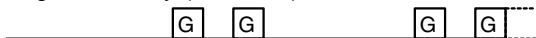
- TX low Battery 1:
  Low Battery was detected in the TX mode.

R		R
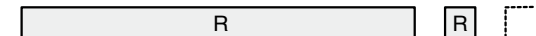
- TX low Battery 2:
  Very Low Battery was detected in the TX mode.

R		R		R		R

■ LED indicator (Continued)

• Channel Error:

Blinks when a non-programmed channel is selected.

| R | O | R | O | R | O | R | O | R | O | R | O | R | O | R | O |

• Power ON:

Blinks at transceiver startup.

| R | O | G | | R | O | G | |

• TX inhibit:

Blinks while in the TX inhibit mode such as when the TOT or Lockout function is activated.

| | R | | O | | O | | O | |

• Emergency:

Blinks when an Emergency call was received.

| G | O | R | | G | O | R | | G | O | R | | G | O | R | |

• Emergency Locator Ringer Siren:

Blinks while the Emergency locator, Ringer or Siren is activated.

| G | O | R | | G | O | R | | G | O | R | | G | O | R | |
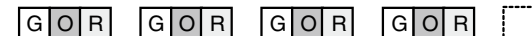
■ **Programmable function keys**

The following functions can be assigned to the [Upper] and [Lower] programmable function keys.
Consult your Icom dealer or system operator for details concerning your transceiver's programming.

SCAN

Push to start and cancel scanning.

• When the scan started with the Power ON Scan or Auto Scan function, push to pause the scan. The paused scan resumes after the specified time period has passed.

PRIORITY A CHANNEL, PRIORITY B CHANNEL

Push to select the Priority A or Priority B channel.

PRIORITY A CHANNEL (REWRITE), PRIORITY B CHANNEL (REWRITE)

➥ Push to select the Priority A or Priority B channel.
➥ Hold down [Prio A (Rewrite)] or [Prio B (Rewrite)] for 1 second to assign the operating channel to the Priority A or Priority B channel, respectively.

MEMORY CHANNELS 1, 2, 3, 4

Push to directly select memory channel 1, 2, 3 or 4, if programmed.
Consult your dealer for details.

LONE WORKER (p. 25)

➥ Hold down for 1 second to turn ON the Lone Worker function.
   • When the Lone Worker function is turned ON, and no operation is performed for the specified time period, the Emergency function is automatically turned ON.
➥ Push to turn OFF the Lone Worker function.

■ Programmed function keys (Continued)

MONITOR, MONITOR (AUDIBLE)
➥ Push to turn the CTCSS (DTCS) or 2/5-tone squelch Mute ON or OFF.
  • Only during LMR operation, push to open any squelch functions, or deactivate any mute functions.
  • Only during PMR operation, push to activate one or two of the following functions* on each channel.
    - Hold down to unmute the channel (Audible mode).
    - Push to mute the channel (Inaudible mode).
    - Push to send a 'reset code' after the communication is finished.
      *Ask your dealer for details.
  NOTE: The unmute condition may automatically return to the mute condition, after a specified time period.
➥ Depending on the presetting, holding down this key for 1 second cancels a scan.

LOCK
Hold down to electronically lock all programmable keys except [Moni(Audi)], [Call] (including Call A and Call B), [Emergency], Surveillance] and [Lone Worker].

HIGH/LOW (p. 24)
Select the transmit output power level temporarily or permanently, depending on the presetting.
• Ask your dealer for the output power level for each selection.

TALK AROUND
➥ Hold down for 1 second to turn ON the Talk Around function.
  • The Talk Around function equalizes the transmit frequency to the receive frequency for transceiver-to-transceiver communication.
➥ Push to turn OFF the Talk Around function.

DTMF AUTODIAL
Push to transmit a programmed DTMF code.

RE-DIAL

Push to transmit the last-transmitted DTMF code.

✗ **NOTE:** TX memories are cleared after turning OFF the transceiver.

WIDE/NARROW

Push to toggle the IF bandwidth between Wide, Mid* or Narrow.

* Depending on the presetting, the Mid channel width may not be selectable. Ask your dealer for details.

CALL, CALL A, CALL B

Push to transmit a 2/5-tone code.

• Tone call transmission may be necessary before you call another station, depending on your signalling system.
• [Call A] and/or [Call B] keys may be selectable when your system employs selective 'Individual/Group' calls. Ask your dealer which call is assigned to each key.

EMERGENCY

Hold down for specified time period to transmit an emergency call.

• The emergency call transmits with beeps, and the LED lights red.
• The transceiver can transmit an emergency call without the beep sounding and the LED indicator lighting. Ask your dealer for details.
• If you want to cancel the emergency call, hold down the key again before transmitting the call.
• The emergency call is transmitted one time only, or repeatedly until receiving an acknowledgement signal, or until the power is turned OFF. When a matched 5-tone code signal is received, the emergency function can be cancelled, depending on the presetting. (PMR operation only)

SURVEILLANCE

➡ Hold down for 1 second to turn ON the Surveillance function.
  • When this function is turned ON, the beep is not heard and the LED does not light when a signal is received, or a key is pushed.
➡ Push to turn OFF the Surveillance function.

■ Programmed function keys (Continued)

SIREN

Hold down for 1 second to emit a siren sound.

This function can be used for situations other than an emergency alert, such as a security alarm for example.

The transceiver emits the siren sound until the power is turned OFF.

SCRAMBLER

➥ Hold down for 1 second to turn ON the Voice Scrambler function while operating in the digital mode.

➥ Push to turn OFF the Voice Scrambler function.

ANNOUNCE

Push to turn the Channel Announce function ON or OFF.

• When this function is turned ON, the transceiver announces the position of [ROTARY SELECTOR] between 1 and 16 when rotating [ROTARY SELECTOR] to a desired number.

■ Turning ON the power

Prior to using the transceiver for the first time, the battery pack must be fully charged for optimum life and operation. (p. 33)

➡ Rotate [VOL] to turn ON the power.

[VOL]
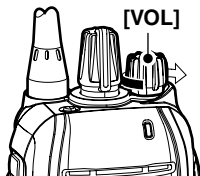
■ **Channel selection**

Several types of channel selections are available. Methods may differ, depending on the presetting.

To select a desired operating channel, do one of the following.
• Rotate [ROTARY SELECTOR].
• Push one of the memory channel keys, [MR-CH 1] to [MR-CH 4].
• Push [Prio A], [Prio B], [Prio A (Rewrite)] or [Prio B (Rewrite)].

AUTOMATIC SCAN TYPE:
Selecting a channel is not necessary. When turning ON the power, the transceiver automatically starts scanning. Scanning stops when a signal is detected.

◇ **Voting Operation**
The transceiver automatically starts scanning when a zone, specified for the voting operation, is selected.
The voting scan detects the signal of the repeater and automatically selects the strongest station.

■ Call procedure

When your system employs tone signalling (excluding CTCSS and DTCS), the tone call procedure may be necessary prior to voice transmission. The tone signalling that is employed in the transceiver may be a selective calling system, which allows you to call only specific station(s), and prevents unwanted stations from contacting you.

① Select a desired TX code channel or 2/5-tone code, according to your System Operator's instructions.
  • This may not be necessary, depending on the programming.
② Push [Call] (assigned to one of the dealer programmable keys.) (p. 12)
③ After transmitting a 2/5-tone code, the remainder of your communication can be carried out normally.

Selective calling   *Non-selective calling*

16
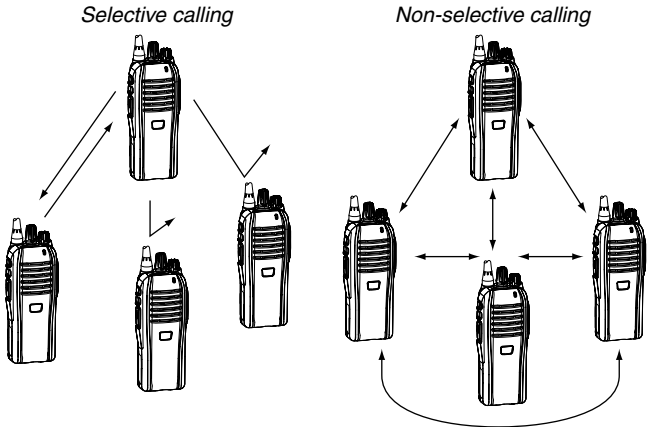
■ **Receiving and transmitting**

✗✗ **CAUTION:** Transmitting without an antenna will damage the *✗✗* transceiver. See page 1 for antenna attachment.

Receiving:
① Rotate [VOL] to turn ON the power.
② Rotate [ROTARY SELECTOR], or push one of the memory channel keys, [MR-CH 1] to [MR-CH 4], to select a channel.
③ When receiving a call, adjust the audio output to a comfortable listening level.

✗✗ **NOTE:** When a matched RX code signal is received, the trans-*✗✗* ceiver automatically transmits its microphone audio for a speci-*✗✗* fied time period, depending on the presetting. Ask your dealer *✗✗* for details.

Transmitting:
Wait for the channel to become clear to avoid interference.
① While holding down [PTT], speak into the microphone at a nor-mal voice level.
② Release [PTT] to receive.

✗✗ **IMPORTANT:** To maximize the readability of your signal;
✗✗ 1. Pause briefly after pushing [PTT].
✗✗ 2. Hold the microphone 5 to 10 cm (2 to 4 inches) from your
✗✗ mouth, then speak at a normal voice level.

3

◇ **Transmitting notes**

• **Transmit inhibit function**

The transceiver has several inhibit functions, which restrict transmission under the following conditions:

- The channel is muted. (PMR operation only)
- The channel is busy.
- A signal with an unmatched (or matched) CTCSS (or DTCS) tone is received.
- The selected channel is a 'receive only' channel.

• **Time-out timer**

After continuously transmitting longer than the preprogrammed time period, the time-out timer activates, and stops further transmitting.

• **Penalty timer**

Once the time-out timer activates, transmitting is further inhibited for a time period determined by the penalty timer.

• **PTTID call**

The transceiver automatically sends the ID code (5-tone, DTMF, BIIS or dPMR operations) when [PTT] is pushed (beginning of the transmission) and/or released (end of transmission), depending on the presetting.

◇ **DTMF transmission**

If the transceiver has [DTMF Autodial] assigned to it, the automatic DTMF transmission function is usable.

➥ Push [DTMF Autodial] to transmit the DTMF code.

◇ **Receiving a Stun, Kill and Revive command**

The dispatcher can send a signal that will stun, kill or revive your transceiver.

When the Stun command is received, a beep sounds*, and the transceiver becomes unusable. Receiving a Revive command is necessary to operate the transceiver again in this case.

When the Kill command is received, a beep sounds*, and the transceiver becomes unusable. Cloning the transceiver is necessary to operate the transceiver again in this case.

* Depending on the presetting. Ask your dealer for details.

■ **Setting the microphone gain**

Adjusts the microphone gain.

3

① Rotate [VOL] to turn the transceiver power OFF.
② Set [ROTARY SELECTOR] to Channel 16.
③ While holding down [Upper], rotate [VOL] to turn ON the power and enter the microphone gain adjustment mode.
④ Push [Upper] to increase, or push [Lower] to decrease the microphone gain.

[ROTARY SELECTOR]

[VOL]

[Upper]

[Lower]

  • The adjustable range is 1 (minimum) to 4 (maximum).
  • A beep sounds after pushing [Upper] or [Lower].
    An error beep sounds if you try to decrease more than 1 or try to increase more than 4.
    Therefore, you can determine the current level setting by the type of beep that sounds.
⑤ Rotate [VOL] to turn the power OFF, then ON again to exit the microphone gain adjustment mode.

// **NOTE:**
// This operation may not be available, depending on the preset-
// ting. Ask your dealer for details.

■ **Setting the squelch level**

The squelch circuit mutes the received audio signal, depending on the signal strength.

① Rotate [VOL] to turn OFF the transceiver power.
② Set [ROTARY SELECTOR] to any channel other than Channel 16.
③ While holding down [Upper], rotate [VOL] to turn ON the power and enter the squelch level adjustment mode.
④ Push [Upper] to increase the squelch level (tight squelch), or push [Lower] to decrease the squelch level (loose squelch).

[ROTARY SELECTOR]
[VOL]
[Upper]
[Lower]

  • The adjustable range is 0 (loose squelch) to 9 (tight squelch).
  • A beep sounds after pushing [Upper] or [Lower].
   An error beep sounds if you try to decrease more than 0 or try to increase more than 9.
   Therefore, you can determine the current level setting by the type of beep that sounds.
⑤ Rotate [VOL] to turn the power OFF, then ON again to exit the squelch level adjustment mode.

NOTE: This operation may not be available, depending on the presetting. Ask your dealer for details.

■ Setting the Beep level

The beep function can be turned ON or OFF, and its level can be adjusted between 1 and 5, or 1 (linked) and 5 (linked). When a Linked option is selected, the beep level is adjustable with [VOL].

3

① Rotate [VOL] to turn OFF the transceiver power.
② Set [ROTARY SELECTOR] to any channel other than Channel 16.
③ While holding down [Lower], rotate [VOL] to turn ON the power and enter the beep level adjustment mode.
④ Push [Upper] to change the beep level, or push [Lower] to turn the beep function ON or OFF.
  • The adjustable range is 1 to 5 or 1 (Linked) to 5 (Linked).
  • A beep sounds after pushing [Upper] or [Lower]. Therefore, you can determine the current level setting by the type of beep that sounds.
⑤ Rotate [VOL] to turn the power OFF, then ON again to exit the beep level adjustment mode.

NOTE: This operation may not be available, depending on the presetting. Ask your dealer for details.

[ROTARY SELECTOR]
[VOL]
[Upper]
[Lower]

[Upper] operation [Lower] operation

5
4
3
2
1
5 (Linked)
4 (Linked)
3 (Linked)
2 (Linked)
1 (Linked)

■ **Setting the Ringer level**

The Ringer level can be adjusted between 1 and 5, or 1 (Linked) and 5 (Linked). When a Linked option is selected, the Ringer level is adjustable with [VOL].
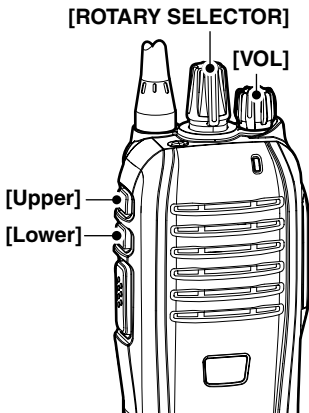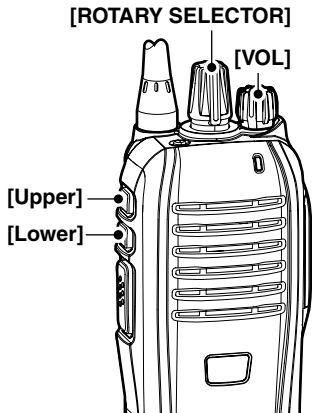
① Rotate [VOL] to turn OFF the transceiver power.
② Set [ROTARY SELECTOR] to Channel 16.
③ While holding down [Lower], rotate [VOL] to turn ON the power and enter the Ringer level adjustment mode.
④ Push [Upper] to increase, or push [Lower] to decrease the Ringer level.
 • The adjustable range is 1 to 5 or 1 (Linked) to 5 (Linked).
 • A beep sounds after pushing [Upper] or [Lower]. Therefore, you can determine the current level setting by the type of beep that sounds.
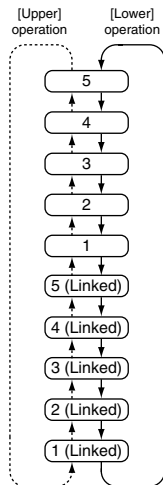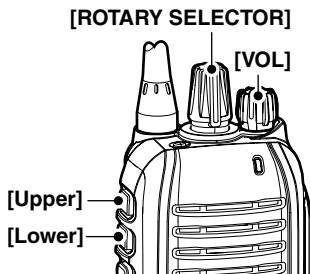⑤ Rotate [VOL] to turn the power OFF, then ON again to exit the beep level adjustment mode.

NOTE: This operation may not be available, depending on the presetting. Ask your dealer for details.

[ROTARY SELECTOR]
[VOL]
[Upper]
[Lower]

[Upper] operation | [Lower] operation

5
4
3
2
1
5 (Linked)
4 (Linked)
3 (Linked)
2 (Linked)
1 (Linked)

■ **Output power level selection**

If the transceiver has [High/Low] assigned to it, the transmit output power level can be selected, depending on the presetting.
When the battery voltage drops to a low power level and the LED indicator status is "Low Battery 2," the output power automatically switches to "Low 1." (pp. 8, 11)

3

➥ Push [High/Low] to select the transmit output power level.
  • One beep sounds when "Low 1" is selected.
  • Two beeps sound when "Low 2" is selected.
  • Three beeps sound when "High" is selected.

■ **Priority A channel selection**

When one of the following operations is performed, the transceiver automatically selects the Priority A channel.

•**Turning the power ON**
The Priority A channel is selected each time the transceiver power is turned ON.

• **Auto reset**
The Priority A channel is selected when the Auto Reset timer ends.

■ **Lone Worker Emergency Call**

When the Lone Worker function is turned ON, and no operation is performed for the specified time period*, the transceiver enters the emergency mode, and then the countdown for the emergency call transmission starts.

After the specified time period* has passed, an emergency call is automatically transmitted once, or repeatedly*.

If someone operates the transceiver before the call is transmitted, the transceiver exits the emergency mode, and the emergency call is cancelled.

* Depending on the presetting. Ask your dealer for details.

① Hold down [Lone Worker] for 1 second to turn ON the Lone Worker function.
② Push [Lone Worker] to turn OFF the Lone Worker function.

■ **Man Down Emergency Call**

When the transceiver has been left in a horizontal position for the preprogrammed time period, the transceiver enters the emergency mode, and then the countdown for the emergency call transmission starts.

After the preprogrammed time period, an emergency call is automatically transmitted once, or repeatedly, depending on the preprogrammed settings.

If the transceiver is placed in a vertical position before the first transmission, the transceiver exits the emergency mode and the emergency call is cancelled.

■ **Emergency Call**

When [Emergency] is held down for the specified time period*, the emergency signal is transmitted once, or repeatedly, on the specified emergency channel.

3

* Depending on the presetting. Ask your dealer for details.

A repeat emergency signal is automatically transmitted until you turn OFF the power.

Depending on the preprogrammed settings, receiving a matching 5-tone code cancels the transmission.

When no emergency channel is specified, the signal is transmitted on the previously selected channel.

If you want to cancel the emergency call, hold down [Emergency] again before transmitting the call.

If your transceiver is programmed for Silent operation, you can transmit an Emergency call without the beep sounding and the LED indicator lighting.

IMPORTANT: We recommend you set an emergency channel individually to provide for reliable emergency call operation.

◇ **NOTES**

Depending on the presetting, the following functions are automatically activated. Ask your dealer for details.

• **Auto TX function**

After the emergency call transmission, audio from the microphone is automatically transmitted for a specified time period.*

• **Auto RX function**

After the emergency call transmission, the transceiver stands by in the Audible mode for the specified time period.*

* Depending on the presetting. Ask your dealer for details.

4 dPMR OPERATION

■ dPMR operation

The transceiver providing digital Private Mobile Radio (dPMR) operation meets the 6.25 kHz bandwidth requirements for narrow band operation. This increases the efficiency of channel allocation and use of the spectrum.

NOTE: During dPMR operation, BIIS 1200 operation is disabled.

■ Receiving a call

◇ Receiving an Individual call
① When an Individual call is received:
   • The transceiver will automatically transmit a return signal.
   • The LED indicator blinks orange.
   • Beeps sound and the mute is released.
② Hold down [PTT], then speak into the microphone.
③ Release [PTT] to receive.
④ After the communication is finished, push [Clear] to send a 'Disconnect' signal to terminate the connection.

NOTE: The LED indicator and Beeps may differ, depending on the presetting. Ask your dealer for details.

◇ **Receiving a Group call**

① When a Group call is received:
  • The LED indicator blinks orange.
  • Beeps sound and the mute is released.
② Hold down [PTT], then speak into the microphone.
  NOTE: Only one station is allowed to speak at the same time.
③ Release [PTT] to receive.
④ After the communication is finished, push [Clear] to send a 'Disconnect' signal to terminate the connection.

NOTE: The LED indicator or Beeps may differ, depending on the presetting. Ask your dealer for details.

◇ **Receiving a Stun, Kill or Revive**

If an individual Stun or Kill call is received, the transceiver will automatically transmit an acknowledgement, and then you cannot receive* or transmit.

*Reception may be available, depending on the presetting of the received stun command.

➥ When a Stun command is received:
  • The transceiver cannot be operated until the individual revive call is received or until data cloning is performed.
  • Even if [ROTARY SELECTOR] is changed, the transceiver will stay on the same channel the Stun command received on.
➥ When a Kill command is received:
  • The LED indicator alternately blinks red and green.
  • The transceiver cannot be operated until data cloning is performed. Ask your dealer for details.

NOTE: Depending on the presetting, the transceiver may ignore the Stun, Revive and Kill commands, that are from a non-specified station.

■ Receiving a call (Continued)

◇ **Receiving a Status Polling call**
If a Status Polling call is received, the transceiver will automatically transmit its current status.*

◇ **Receiving an Ambience Listening call**
If an Individual call with an Ambience Listening command is received from a specified station, the transceiver will automatically transmit its microphone audio.*

*Depending on the presetting.

NOTE: If the transceiver receives an Ambience Listening command from a station other than the specified one, the call will be ignored, and the transceiver will not transmit its microphone audio.

◇ **Receiving an Emergency call**
When an Emergency call is received:
- The transceiver will automatically transmit a return signal.
- The LED indicator blinks orange.
- Beeps sound and the mute is released.

Push [Clear] to return to the standby mode.

◇ **Talk back function**
The Talk Back function allows you to select the same call mode (Analog or Digital) as the received call.

NOTE: When this function is not activated, the transceiver always transmits analog signals on "Mixed-Analog" channels, and digital signals on "Mixed-Digital" channels.
- On these channels, the transceiver can receive both analog and digital signals, regardless of the Talk Back function.

■ **Transmitting a call**

dPMR operation allows you to make a call to a specific station (Individual call) or to a particular group (Talkgroup call). Other digital mode transceivers on the channel will not receive a call that does not match their individual or talkgroup ID and/or CC.

◇ **Transmitting a Voice call**

1. Rotate [ROTARY SELECTOR], or push one of the memory channel keys, [MR-CH 1] to [MR-CH 4], to select a desired channel, Individual ID or Talkgroup ID, depending on the presetting.
2. Push [PTT] or [Call] to make a Voice call.
   • The LED indicator lights red while transmitting.
   • The LED indicator fast blinks orange.
   • After an acknowledgement is received, the LED indicator slowly blinks orange in the Audible mode, or it goes OFF when no acknowledgement is received.
3. Hold down [PTT], then speak at your normal voice level.
   • The LED indicator lights red while transmitting.
4. Release [PTT] to receive.
5. After you finish your communication, push [Clear] to send a 'Disconnect' signal to terminate the connection.

■ Transmitting a call (Continued)

◇ **Transmitting an Emergency call**

When [Emergency] is held down for the specified time period, the emergency signal (digital command) is transmitted once or repeatedly* on the specified emergency channel. When no emergency channel is specified, the signal is transmitted on the operating channel.

* When the Repeat Cancel function is ON, the transceiver cancels repeating after receiving a return signal.

When the Repeat Cancel function is OFF, the transceiver repeats calling according to the number of repeat cycles, even after receiving a return signal.

Individual or Talkgroup call types of emergency calls can be preset. If the call type is not preset, the default or selected call type is used.

If you want to cancel the emergency call, hold down [Emergency] again before transmitting the call.

If your transceiver is programmed for Silent operation, you can transmit an Emergency call without the beep sounding and the LED indicator lighting.

The transceiver can also be programmed to keep the microphone open during an emergency call, so others can monitor the situation.

Ask your dealer for details.

IMPORTANT: We recommend you set an emergency channel individually to provide the certain emergency call operation.

NOTE: If the Digital Request Ack function is activated, the transceiver transmits the emergency call with a request to send back a return signal.

■ **Status message transmission**

The status message can automatically be transmitted.
The status message is transmitted when the transceiver is turned ON or OFF.

- Select a status message to be transmitted in 'Power ON Status' or 'Power OFF Status' items, respectively.
- Select a target station ID in 'Power Status ID'.

■ **Scrambler function**

The voice scrambler function provides private communication between stations while operating in the digital mode.

① Hold down [Scrambler] for 1 second to turn ON the Scrambler function.
② Push [Scrambler] to turn OFF the Scrambler function.

5 BATTERY CHARGING

■ Caution

Misuse of Li-ion batteries may result in the following hazards: smoke, fire, or the battery may rupture. Misuse can also cause damage to the battery or degradation of battery performance.

⚠ **DANGER! NEVER** short terminals (or charging terminals) of the battery pack. Also, current may flow into nearby metal objects such as a necklace, so be careful when placing battery packs (or the transceiver) in handbags, etc.

Simply carrying with or placing near metal objects such as a necklace, etc. may cause shorting. This may damage not only the battery pack, but also the transceiver.

◇ Battery caution

⚠ **DANGER! DO NOT** hammer or otherwise impact the battery. Do not use the battery if it has been severely impacted or dropped, or if the battery has been subjected to heavy pressure. Battery damage may not be visible on the outside of the case. Even if the surface of the battery does not show cracks or any other damage, the cells inside the battery may rupture or catch fire.

⚠ **DANGER! NEVER** use the transceiver or the battery if either one is damaged, shows cracks, bruises or is deformed.

⚠ **DANGER! NEVER** use or leave battery packs in areas with temperatures above +55°C (+131°F). High temperature buildup in the battery, such as could occur near fires or stoves, inside a sun heated car, or in direct sunlight may cause the battery to rupture or catch fire. Excessive temperatures may also degrade battery performance or shorten battery life.

△ **DANGER! DO NOT** expose the battery to rain, snow, seawater, or any other liquids. Do not charge or use a wet battery. If the battery gets wet, be sure to wipe it dry before using. The battery is not waterproof.

△ **DANGER! NEVER** incinerate used battery packs, since internal battery gas may cause them to rupture, or may cause an explosion.

△ **DANGER! NEVER** solder the battery terminals or NEVER modify the battery pack. This may cause heat generation, and the battery may rupture, emit smoke or catch fire.

△ **DANGER!** Use the battery only with the transceiver for which it is specified. Never use a battery with any other equipment, or for any purpose that is not specified in this instruction manual.

△ **DANGER!** If fluid from inside the battery gets in your eyes, blindness can result. Rinse your eyes with clean water, without rubbing them, and see a doctor immediately.

△ **WARNING!** Immediately stop using the battery if it emits an abnormal odor, heats up, or is discolored or deformed. If any of these conditions occur, contact your Icom dealer or distributor.

△ **WARNING!** Immediately wash, using clean water, any part of the body that comes into contact with fluid from inside the battery.

△ **WARNING! NEVER** put the battery in a microwave oven, high-pressure container, or in an induction heating cooker. This could cause a fire, overheating, or cause the battery to rupture.

CAUTION: Always use the battery within the specified temperature range; −20°C to +55°C (−4°F to +131°F). Using the battery out of its specified temperature range will reduce the battery's performance and battery life.

CAUTION: Shorter battery life could occur if the battery is left fully charged, completely discharged, or in an excessive temperature environment (above +50˚C; +122°F) for an extended period of time. If the battery must be left unused for a long time, it must be detached from the radio after discharging.

You may use the battery until the remaining capacity is about half, then keep it safely in a cool dry place within the temperature range as shown below:

–20˚C to +50˚C (–4°F to +122°F) (up to a month)

–20˚C to +40˚C (–4°F to +104°F) (up to three months)

–20˚C to +20˚C (–4°F to +68°F) (up to a year)

BE SURE to replace the battery with a new one after five years, even if still holds a charge. The inside battery material will deteriorate after a period of time, even with little use.

◇ **Charging caution**

⚠ **DANGER! NEVER** charge the battery pack in areas with extremely high temperatures, such as near fires or stoves, inside a sun heated car, or in direct sunlight. In such environments, the safety/protection circuit in the battery will activate, causing the battery to stop charging.

⚠ **WARNING! DO NOT** charge or leave the battery in the battery charger beyond the specified time for charging. If the battery is not completely charged by the specified time, stop charging and remove the battery from the battery charger. Continuing to charge the battery beyond the specified time limit may cause a fire, overheating, or the battery may rupture.

⚠ **WARNING! NEVER** insert the transceiver (battery attached to the transceiver) into the charger if it is wet or soiled. This could corrode the battery charger terminals or damage the charger. The charger is not waterproof.

CAUTION: DO NOT charge the battery outside of the specified temperature range: BC-212EX (+10˚C to +40˚C; +50°F to +104°F). Icom recommends charging the battery at +20˚C (+68°F). The battery may heat up or rupture if charged out of the specified temperature range. Additionally, battery performance or battery life may be reduced.

CAUTION: DO NOT place the charger on unstable surfaces.

The BC-212EX will not fully charge a battery pack (about 90% of fully charged condition) for battery protection.

■ **Battery charger**

◇ **Using the BC-212EX to rapid charge the BP-277EX**

The BC-212EX rapidly charges the Li-ion battery pack.
Charging time: Approximately 2.5 hours (for the BP-277EX)

Following item is additionally required:
• An AC adapter (not supplied with some versions)

Transceiver
Turn OFF the power
Battery pack

AC adapter
(A different type, or no AC adapter is supplied, depending on the charger version.)

Status indicator
• Lights orange:
  While charging.
• Lights green:
  Charging is completed.

5
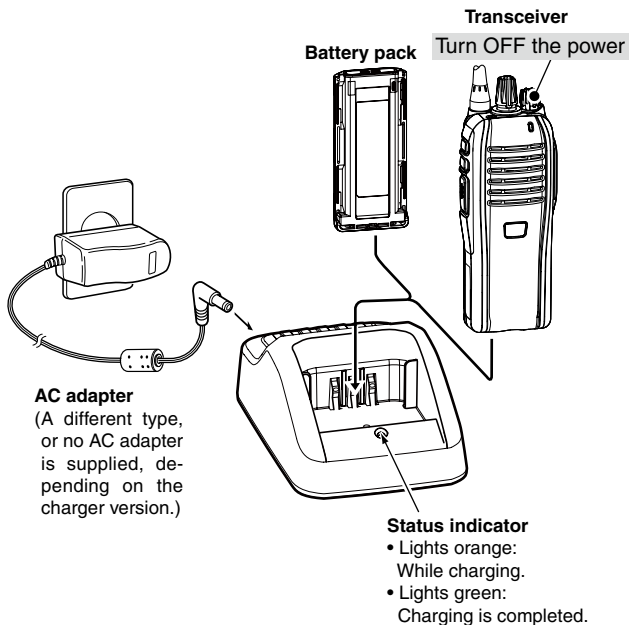
IMPORTANT:
Ensure the grooves on the battery pack are correctly aligned with the guide rails inside the charger.

Grooves

Guide rail
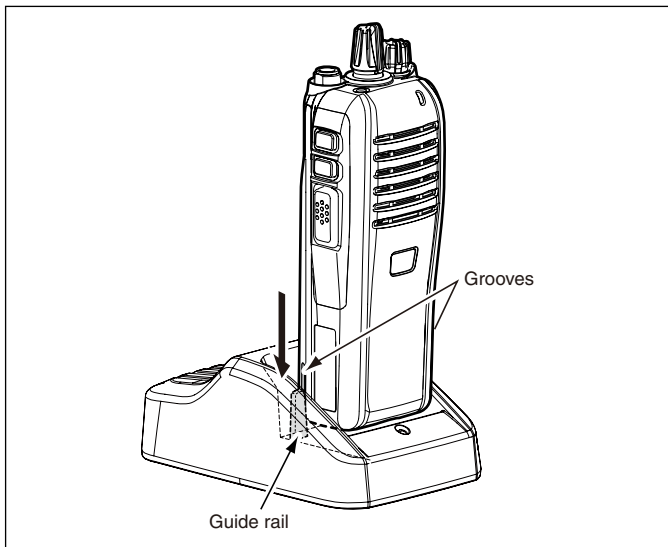
6 SPEAKER MICROPHONE
■ Optional HM-203EX description

PTT SWITCH
Hold down to transmit, release to receive.

Microphone

Speaker

Belt clip

Turn OFF the transceiver power when connecting or disconnecting the microphone.
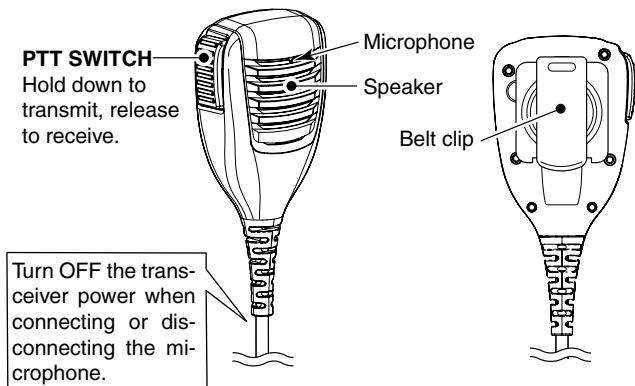
NEVER immerse the connector in water. If the connector becomes wet, be sure to dry it BEFORE connecting it to the transceiver.

NOTE: The microphone is located at the top of the speaker microphone, as shown in the diagram above. To maximize the readability of your transmitted signal (voice), hold the microphone approximately 5 to 10 cm (2 to 4 inches) from your mouth, and speak at a normal voice level.

■ **To attach**

*✍ **BE SURE** to turn OFF the power before attaching.

Attach the connector of the speaker microphone into the multi connector on the transceiver, and tighten the screw.
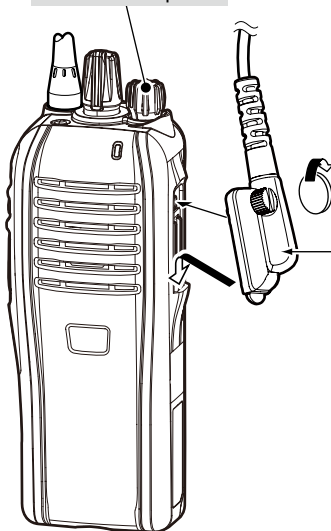

Turn OFF the power

CAUTION: Attach the multi connector snugly, but do not overtighten.
A loose connection will allow water intrusion into the connector. A overtightened connector will damage the connector pins in the transceiver.

*✍ **IMPORTANT: KEEP** the connector cover attached to the transceiver when the speaker microphone is not in use. (p. 4)
Water will not get into the transceiver even if the cover is not attached, however, the terminals (pins) will become rusty, or the transceiver will function abnormally if the connector becomes wet.

7 OPTIONS

◇ BATTERY PACK

- **BP-277EX** LI-ION BATTERY PACK
  Voltage: 7.4 V
  Capacity: 1800 mAh (min.) 1900 mAh (typ.)
  Battery life

VHF		UHF	
Digital mode	**Analog mode**	**Digital mode**	**Analog mode**
21.5 hrs.	21 hrs.	19 hrs.	

* When the power save function is turned ON, and the operating time is calculated under the following conditions;
  TX : RX : standby = 5 : 5 : 90

◇ BELT CLIP

- **MB-94EX** BELT CLIP
  Exclusive alligator-type belt clip.

◇ CHARGER

- **BC-212EX** DESKTOP CHARGER **+ BC-123S** AC ADAPTER
  To rapid charge the Li-ion battery pack. An AC adapter may be supplied with the charger, depending on the version.
  Charging time: Approximately 2.5 hours for the BP-277EX.

◇ ANTENNAS

• **FA-SC25U/FA-SC57U/FA-SC72U/FA-SC01U**
  FA-SC25V/FA-SC55V ANTENNAS
  FA-SC25U: 400–430 MHz   FA-SC57U: 430–470 MHz
  FA-SC72U: 470–520 MHz   FA-SC01U: 350–400 MHz
  FA-SC25V: 136–155 MHz   FA-SC55V: 146–174 MHz

◇ SPEAKER MICROPHONE

• **HM-203EX** SPEAKER-MICROPHONE
  Combination speaker microphone that provides convenient operation while hanging the transceiver on your belt.

7

Approved Icom optional equipment is designed for optimal performance when used with an Icom transceiver.
Icom is not responsible for the destruction or damage to an Icom transceiver in the event the Icom transceiver is used with equipment that is not manufactured or approved by Icom.

Some options may not be available in some countries. Please ask your dealer for details.

8 **SAFETY TRAINING INFORMATION**

WARNING

Your Icom radio generates RF electromagnetic energy during transmit mode. This radio is designed for and classified as "Occupational Use Only", meaning it must be used only during the course of employment by individuals aware of the hazards, and the ways to minimize such hazards. This radio is NOT intended for use by the "General Population" in an uncontrolled environment.

This radio has been tested and complies with the FCC and IC RF exposure limits for "Occupational Use Only". In addition, your Icom radio complies with the following Standards and Guidelines with regard to RF energy and electromagnetic energy levels and evaluation of such levels for exposure to humans:

- • FCC OET Bulletin 65 Edition 97-01 Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
- • American National Standards Institute (C95.1-1992), IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
- • American National Standards Institute (C95.3-1992), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields– RF and Microwave.
- • The accessories (antennas, batteries, belt clips, speaker-microphone, etc. that is listed on pages 41–42) are authorized for use with this product. Use of accessories other than those specified may result in RF exposure levels exceeding the FCC and IC requirements for wireless RF exposure.

CAUTION

To ensure that your expose to RF electromagnetic energy is within the FCC and IC allowable limits for occupational use, always adhere to the following guidelines:

43

- **DO NOT** operate the radio without a proper antenna attached, as this may damaged the radio and may also cause you to exceed FCC and IC RF exposure limits. A proper antenna is the antenna supplied with this radio by the manufacturer or antenna specifically authorized by the manufacturer for use with this radio.
- **DO NOT** transmit for more than 50% of total radio use time ("50% duty cycle"). "50% duty cycle" is also applicable to VOX/PTT mode. Transmitting more than 50% of the time can cause FCC and IC RF exposure compliance requirements to be exceeded. The radio is transmitting when the "LED indicator" lights red. You can cause the radio to transmit by pressing the "PTT" switch or VOX function.
- **ALWAYS keep** the antenna at least 2.5 cm (1 inch) away from the body when transmitting and only use the Icom belt-clip which is listed on page 41 when attaching the radio to your belt, etc., to ensure FCC and IC RF exposure compliance requirements are not exceeded. To provide the recipients of your transmission the best sound quality, hold the antenna at least 5 cm (2 inches) from your mouth, and slightly off to one side.

The information listed above provides the user with the information needed to make him or her aware of RF exposure, and what to do to assure that this radio operates with the FCC and IC RF exposure limits of this radio.

Electromagnetic Interference/Compatibility

During transmissions, your Icom radio generates RF energy that can possibly cause interference with other devices or systems. To avoid such interference, turn off the radio in areas where signs are posted to do so. **DO NOT** operate the transmitter in areas that are sensitive to electromagnetic radiation such as hospitals, aircraft, and blasting sites.

Occupational/Controlled Use

The radio transmitter is used in situations in which persons are exposed as consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

AVERTISSEMENT

Votre radio Icom produit une énergie électromagnétique de radiofréquences (RF), en mode de transmission. Cette radio est conçue pour un «usage professionnel seulement» et classée comme tel, ce qui signifie qu'elle doit être utilisée uniquement dans le cadre d'un travail par des personnes conscientes des dangers et des mesures visant à minimiser ces dangers. Elle N'EST PAS conçue pour une «utilisation grand public», dans un environnement non contrôlé.

Cet appareil a été évalué et jugé conforme, aux limites d'exposition aux RF de la FCC et d'IC, pour une «utilisation grand public». En outre, votre radio Icom satisfait les normes et directives qui suivent en matière de niveaux d'énergie et d'énergie électromagnétique de RF et d'évaluation de tels niveaux en ce qui concerne l'exposition humaine:

• Supplément C, édition 97-01, du Bulletin OET n° 65 de la FCC, «Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields».

• Norme de l'American National Standards Institute (ANSI): IEEE C95.1-1992 sur les niveaux de sécurité compatibles avec l'exposition humaine aux champs électromagnétiques de radiofréquences (3 kHz à 300 GHz).

• Norme de l'ANSI: IEEE C95.3-1992 sur la méthode d'évaluation recommandée du champ magnétique potentiellement dangereux des radiofréquences et des micro-ondes.

• Les accessoires illustrés à la p. 41–42 sont approuvés pour une utilisation avec ce produit. L'utilisation d'accessoires autres que ceux précisés peut entraîner des niveaux d'exposition aux RF supérieures aux limites établies par la FCC et d'IC en matière d'exposition aux RF sans fil.

MISE EN GARDE

Afin de vous assurer que votre exposition à une énergie électromagnétique de RF se situe dans les limites permises par la FCC et d'IC pour une utilisation grand public, veuillez en tout temps respecter les directives suivantes:

- **NE PAS** faire fonctionner la radio sans qu'une antenne appropriée y soit fixée, car ceci risque d'endommager la radio et causer une exposition supérieure aux limites établies par la FCC et d'IC. L'antenne appropriée est celle qui est fournie avec cette radio par le fabricant ou une antenne spécialement autorisée par le fabricant pour être utilisée avec cette radio.
- **NE PAS** émettre pendant plus de 50 % du temps total d'utilisation de l'appareil («50 % du facteur d'utilisation»). La notion «50% du facteur d'utilisation» s'applique également au mode VOX/PTT. Émettre pendant plus de 50 % du temps total d'utilisation peut causer une exposition aux RF supérieure aux limites établies par la FCC et d'IC. Lorsque le voyant DEL rouge s'allume, cette radio est en train d'émettre. La radio émettra si vous appuyez sur le bouton du microphone.
- **TOUJOURS tenir** l'antenne éloignée d'au moins 2,5 cm de votre corps au moment d'émettre et utiliser uniquement l'attache pour ceinture Icom illustrée à la p. 41, lorsque vous attachez la radio à votre ceinture, ou à autre chose, de façon à vous assurer de ne pas provoquer une exposition aux RF supérieure aux limites fixées par la FCC et d'IC. Pour offrir à vos interlocuteurs la meilleure qualité de transmission possible, tenez l'antenne à au moins 5 cm de votre bouche et légèrement de côté.

8

Les renseignements ci-dessus fournissent à l'utilisateur toute l'information nécessaire sur l'exposition aux RF et sur ce qu'il faut faire pour assurer que cette radio fonctionne en respectant les limites d'exposition aux RF établies par la FCC et d'IC.

Interférence électromagnétique et compatibilité
En mode de transmission, votre radio Icom produit de l'énergie de RF qui peut provoquer des interférences avec d'autres appareils ou systèmes. Pour éviter de telles interférences, mettez la radio hors tension dans les secteurs où une signalisation l'exige. **NE PAS** faire fonctionner l'émetteur dans des secteurs sensibles au rayonnement électromagnétique tels que les hôpitaux, les aéronefs et les sites de dynamitage.

Usage professionnel/contrôlé
Ce radio émetteur est utilisé dans des cas où des personnes sont exposées en raison de leur travail, pourvu qu'elles soient conscientes du risque d'exposition et qu'elles puissent exercer un contrôle sur cette exposition.
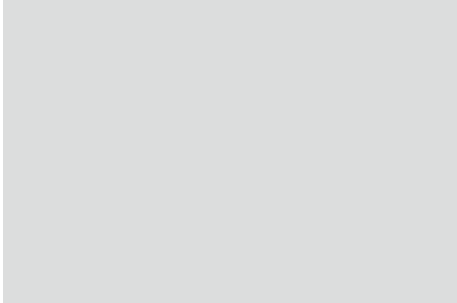
9 FCC INFORMATION

• FOR CLASS A UNINTENTIONAL RADIATORS:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAUTION: Changes or modifications to this device, not expressly approved by Icom Inc., could void your authority to operate this transceiver under FCC regulations.

9

Count on us!