

MICOM•X

Synthesized HF-SSB
Mobile/Fixed Radio



OWNER'S MANUAL



MOTOROLA INC.

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GLOSSARY

AME -	Amplitude Modulation Equivalent Used by those stations which still use AM receivers.	PRI -	Priority-channel-Emergency channel (2182 kHz).
HALF DUPLEX -	Receiver and transmitter operate on different frequencies.	P-TT -	Push-To-Talk—This is a switch on the microphone which must be pressed to initiate a transmission.
LCD -	Liquid Crystal Display—Used to display alpha and numeric characters.	SIMPLEX -	Transmitter and receiver operate on the same frequency.
LED -	Light emitting diode.	SSB -	Single-Side-Band suppressed carrier—Provides maximum power output with minimum spectrum.
PILOT -	Transmitted low level carrier. Used by receivers which have Automatic Frequency Control.		

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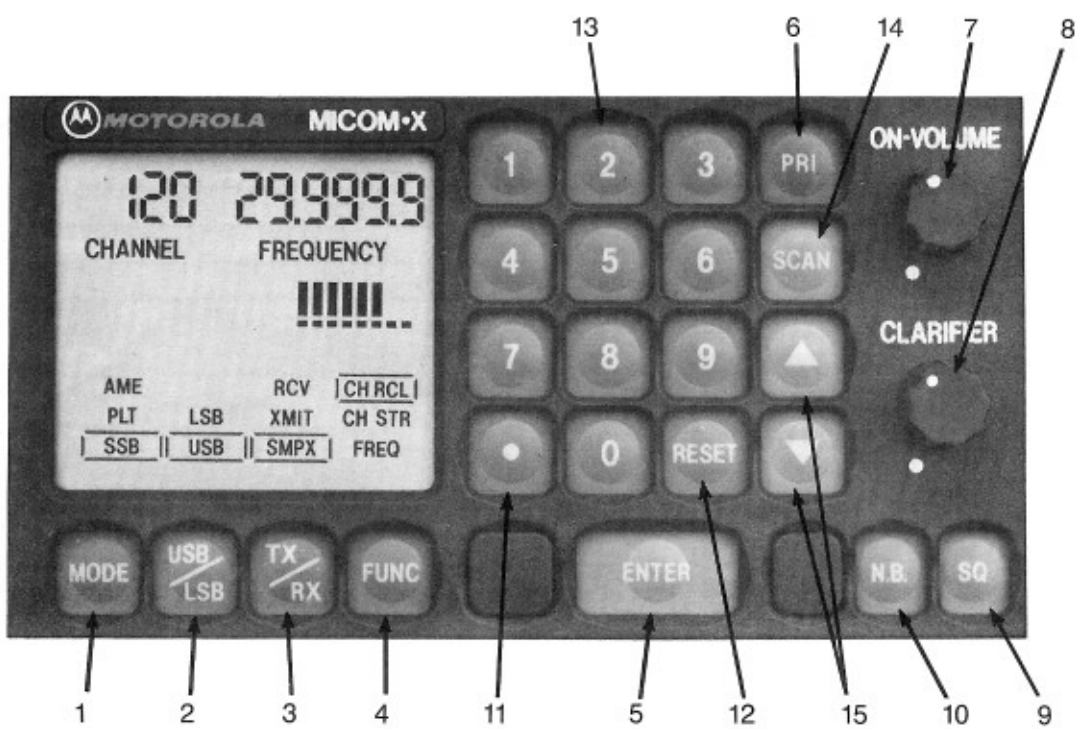


FIGURE 1. CONTROL PANEL CONTROLS AND INDICATORS

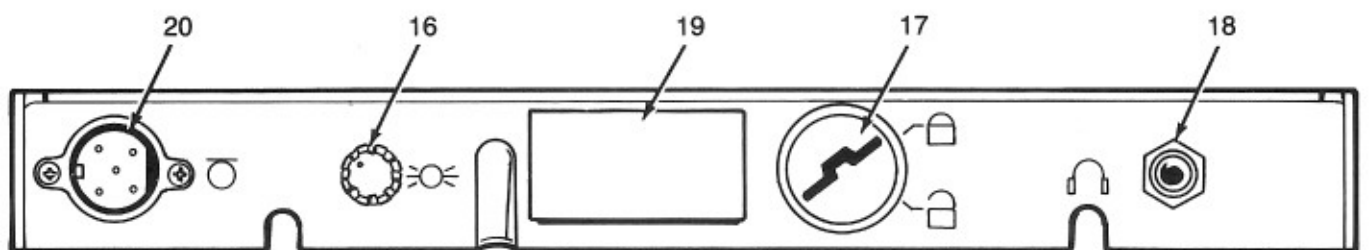


FIGURE 2. LOWER PANEL CONTROLS AND CONNECTORS

I. RADIO OPERATION

A. CONTROLS AND INDICATORS (Refer to Figures 1 and 2)

1. MODE

Selects one of the following emission types: SSB, AME, or PILOT

2. USB/LSB (Optional)

Selects either the upper or lower sideband for transmit and receive.

3. TX/RX

Selects simplex (SMPX) or half-duplex (RCV & XMIT) modes of operation. Also permits monitoring of the transmit frequency when in half-duplex mode.

4. FUNC

Permits entry of new frequencies, stores new frequencies in specific channels and recalls preprogrammed channels.

5. ENTER

The ENTER button serves three functions:

- In channelized operation, the selected channel is recalled.
- In the frequency programming mode, the frequency and modes of operation are stored in a specific channel.
- After storing the channel data, alternate I.F.s may be selected.

6. PRI (Priority Channel)

Recalls the priority or emergency channel.

7. ON-VOLUME

Turns the radio on or off and permits adjustment of the audio level.

8. CLARIFIER

The clarifier fine tunes the receiver to match the incoming signal frequency even if it is more than 150 Hertz off frequency. The OFF position of the control set the receiver exactly on frequency.

9. SQ (Squelch On/Off)

Permits the squelch to be turned on or off. When the squelch is turned on an LED lights under the button and the receiver mutes except when voice modulation is present on the received signal.

10. N.B. (Noise Blanker) (Optional)

Switches the noise blanker on and off. An LED under the button lights when the blanker is turned on.

11. POINT KEY

Used to add a decimal point in the frequency.

12. RESET

In the event a mistake is made when entering channel or frequency, the reset button will return the radio to the last legal channel and mode of operation.

13. NUMERIC KEYS

Used to input the appropriate channel or frequency data.

14. SCAN(On/Off)

Controls the scanning channels 101 through 110.

15. UP AND DOWN ARROWS

These buttons allow quick selection of channel or frequency without reentering from the keypad.

16. DIMMER

For night time viewing, a dimmer control is provided to adjust the keypad and LCD backlighting.

17. SECURITY KEY LOCK SWITCH

Permits access to the frequency programming mode.

18. AUDIO JACK

Provides a jack to connect a standard headset or ear-phones.

19. ACCESSORY PANEL

Covers the installation site of the optional two tone alarm generator controls.

20. MICROPHONE JACK

Accepts microphone plug.

LIQUID CRYSTAL DISPLAY LABELS

(Refer to figure 3)

- A. CHANNEL NUMBER Up to three digits are displayed.
Present in channelized operation.
Not visible when programming frequencies.
- B. 'CHANNEL' Present in channelized operation.
Not visible when programming frequencies.
Flashes when an invalid channel number has been entered.
- C. POWER METER
BAR GRAPH Present in transmit when power is being applied to the antenna system.
- D. 'AME' Present with the security key lock switch unlocked.
Present with a 'box' around it when the radio is in the AME mode of operation.
- E. 'PLT' Present with the security key lock switch unlocked.
Present with a 'box' around it when the radio is in the PILOT mode of operation.
- F. 'SSB' Present with the security key lock switch unlocked.
Present with a 'box' around it when the radio is in the single sideband mode of operation.
- G. 'USB' Present when the upper and lower sideband option has been installed.
Present with a 'box' around it when upper sideband has been selected.
- 'LSB' Present when the upper and lower sideband option has been installed.
Present with a 'box' around it when lower sideband has been selected.
- H. 'RCV' Present when programming in a new frequency.
Present with a 'box' around it when the radio is in the receive mode and the channel is programmed for half-duplex.
- I. 'XMIT' Present when programming in a new frequency.
Present with a 'box' around it when the radio is in the transmit mode and the channel is programmed or while being programmed for half-duplex.
Present with a 'box' around it when monitoring the transmit frequency of a half-duplex channel.
- J. 'SMPX' Present with the security key lock switch unlocked and the current channel is simplex.
Present with a 'box' around it when the channel is programmed for simplex operation.
- K. 'FREQ' Present with the security key lock switch unlocked.
Flashes when entering a new frequency.
- L. 'CH STR' Present with the security key lock switch unlocked.
Flashes when entering the channel number for the new frequency.
- M. 'CH RCL' Present when the radio is turned on.
Flashes when changing channels.
- N. P-TT UNDERLINER Present when the radio transmitter is keyed.
- O. 'FREQUENCY' Present in all modes of operation.
Flashes when an invalid frequency has been entered.

LIQUID CRYSTAL DISPLAY LABELS (Cont.)

P. FREQUENCY NUMBER

Up to 6 digits are displayed.
Present when the radio is on.

Q. 'S'

Present when the scan button is pushed to turn on the channel scanner.

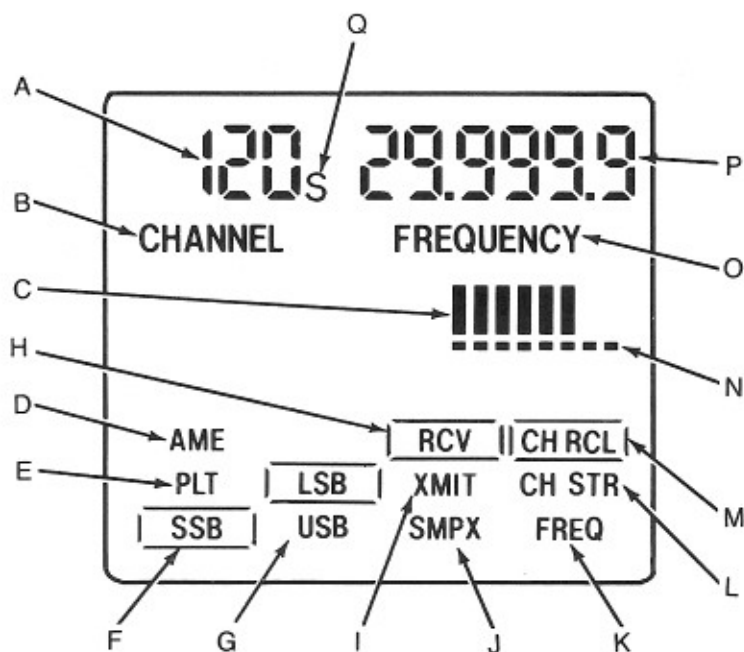


FIGURE 3. LIQUID CRYSTAL DISPLAY

B. BASIC RADIO OPERATION

The MICOM.X HF-SSB Radiotelephone is very easy to operate. The simplified procedures listed below are presented as a guide in operating the radio. The detailed radio operation which follows this section provides in depth operating procedures. Please read the entire operator's manual before attempting to operate the radio.

Start Up Sequence

1. Turn radio on and set volume level.
2. Key in channel number.
3. Press ENTER.
4. Adjust CLARIFIER as required.

Channel Scanning

1. To start scanning channels 101-110, push SCAN.
2. To stop scanning, push SCAN or key the microphone.
3. To return to previous channel press RESET.

Programming a New Channel Frequency

1. Insert security key and turn clockwise, if necessary.
2. Push FUNC button to select 'FREQ'.
3. Key in new frequency number.
4. Push MODE button to select 'AME', 'PLT', or 'SSB', if necessary.

5. Push TX/RX button to select 'RCV', 'XMIT', or 'SMPX'
6. Push ENTER
7. If tone is heard, press ENTER once or twice
8. Push FUNC button to select 'CH STR'
9. Key in channel number
10. Press ENTER
11. Turn security key counter-clockwise or push FUNC button to select 'CH RCL'

Free Access Operation

1. Insert security key and turn clockwise, if necessary.
2. Push FUNC button to select 'FREQ'
3. Key in new frequency number
4. Push MODE button to select 'AME', 'PLT', or 'SSB', if necessary.
5. Push TX/RX button to select 'RCV', 'XMIT', or 'SMPX'
6. Press ENTER
7. If tone is heard, press ENTER once or twice
8. For channelized operation, turn security key counter-clockwise or push FUNC button to select 'CH RCL' Priority Channel Operation Press PRI

Priority Channel Operation

Press PRI

LIQUID CRYSTAL DISPLAY LABELS (Cont.)

- P. FREQUENCY NUMBER Up to 6 digits are displayed.
Present when the radio is on.
- Q. 'S' Present when the scan button is pushed to turn on the channel scanner.

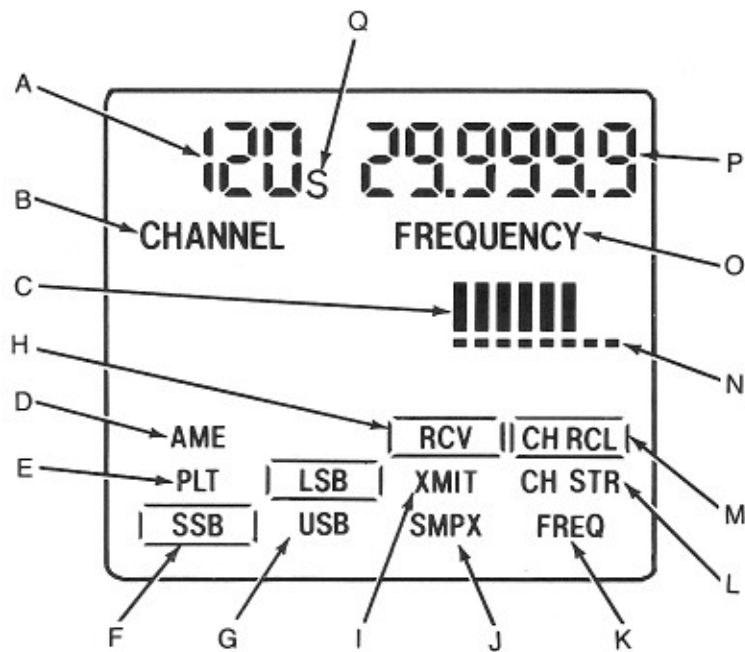


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Channel Selection Using the Up and Down Arrow Buttons

1. Press (up arrow) to step up to the next channel.
2. Press (down arrow) to step down to the next channel.

NOTE

The arrow buttons may also be used in the 'FREQ' mode to select frequencies.

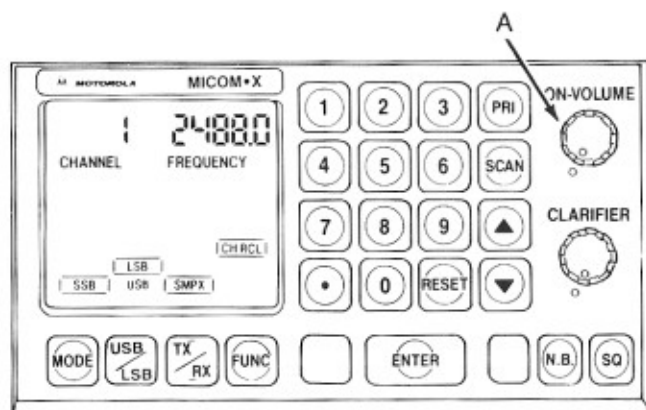
Transmit Frequency Monitor (Half-Duplex Channels)

1. 'RCV' must have the 'box' around it.
2. Press TX/RX to monitor transmit frequency.
3. Press microphone PUSH-TO-TALK button, RESET button or TX/RX button to return to 'RCV'.

C. DETAILED RADIO OPERATION

This section contains a detailed description of each step in the various operating sequences.

1. To turn the radio on, turn the ON-VOLUME knob(A) clockwise.
If the radio is connected to an antenna tuner, it automatically tunes the antenna each time the radio is turned on or the ENTER button is pushed.



2. The receiver becomes unsquelched (unmuted).
If the squelch light is on (the squelch circuit is turned on) and there is noise, the receiver squelches (mutes). If there is voice audio, the receiver remains unsquelched.
3. Adjust the VOLUME control to a comfortable listening level.

If the receiver is muted, unsquelch it and set the volume level.

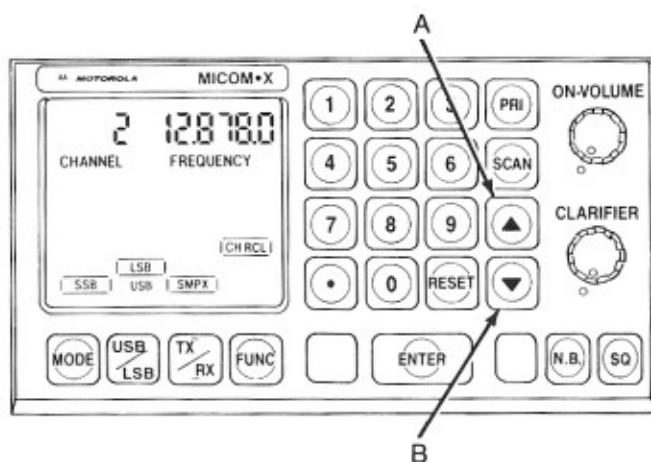
4. On voice audio, adjust the CLARIFIER control so that the received voice sounds natural and/or intelligible. The CLARIFIER is used to adjust the receiver frequency to match the incoming transmit frequency if it is off frequency. However, the CLARIFIER will not affect the radio's transmit frequency.
5. The radio will retain the last channel used in memory and will return to that channel the next time it is turned on. If for any reason the power to the radio is interrupted, this feature will keep the radio on the selected channel without operator attendance.
6. The keyboard provides a 'pop' feel when a button is pushed hard enough to close the internal switch contacts. Do not use sharp instruments to push the buttons. Damage may result which will render the radio inoperative.

7. Channel Selection

Channels may be selected two different ways: the up and down arrows and the numeric keypad for user programmable channels.

a. Up and Down Arrows

To select channels just above or below the current channel use the appropriate arrow button (A or B) to step up or down to the desired channel.



b. Numeric Key Pad

1. User Programmed Channels (1-120)

- a. A channel number is recalled from memory in the following manner: determine the channel number to recall. Channel '115' will

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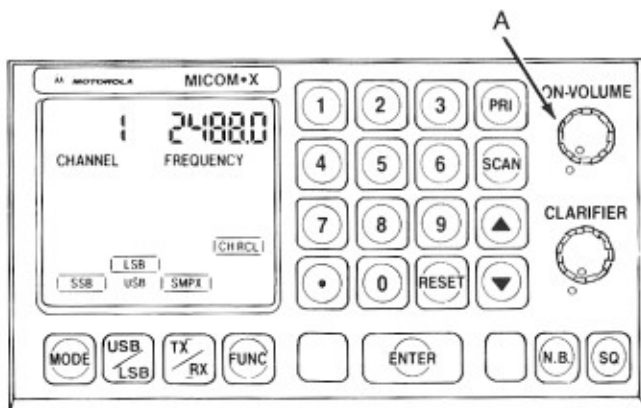
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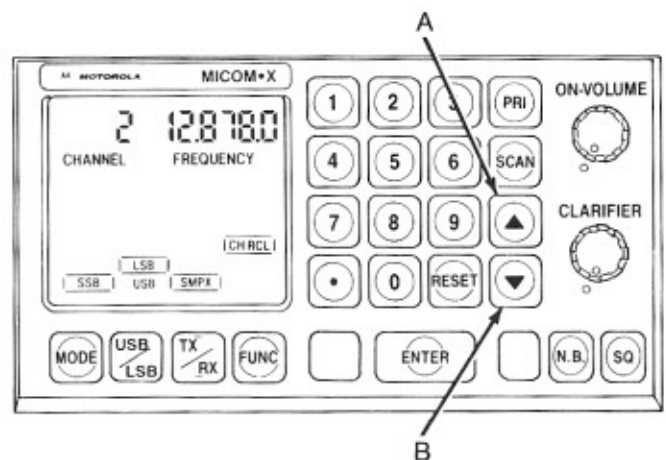
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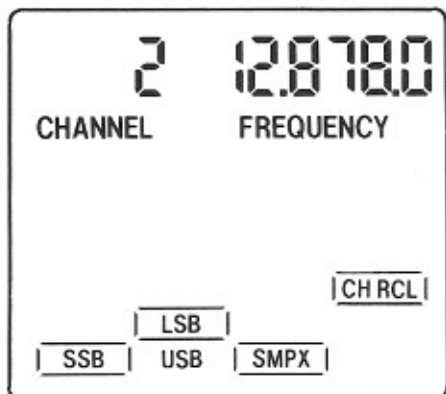


b. Numeric Key Pad

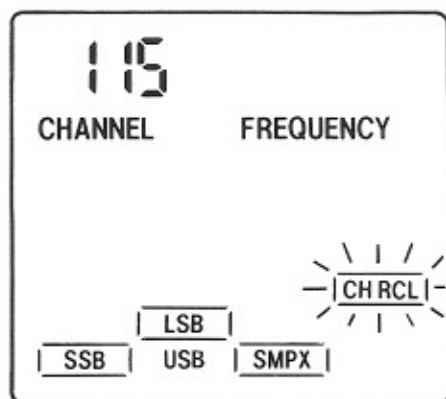
1. User Programmed Channels (1-120)

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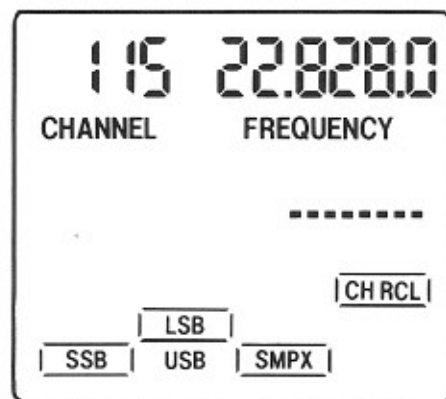
be used for this example. Press the button labeled 1. The frequency numbers disappear, the channel numbers are replaced by a '1' and the box around 'CH RCL' blinks. Press the 1 button again and the 5 button. The display shows '115', the desired channel (see figure B). Press the ENTER button. The 'box' around 'CH RCL' stops blinking. The new frequency appears (see figure C) in the frequency section of the display.



A BEFORE



B DURING



C AFTER

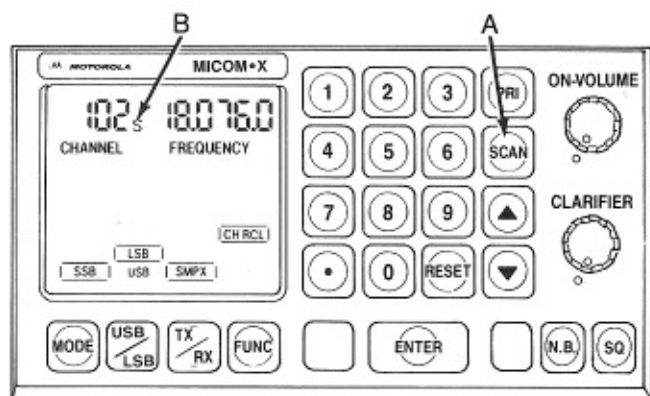
b. If an autotuner is connected to the radio, the PUSH-TO-TALK underliner appears momentarily.

c. Scan

To turn the scanner on, push the SCAN button (A). A small 's' appears behind the channel number and the radio steps through channels 101 to 110. If the squelch is on, only those channels with voice audio can be heard.

NOTE

The scanner stops on each channel for approximately 3 seconds. The channel and frequency displays change as the channels are scanned.



To turn the scanner off, push the SCAN button again or press the PUSH-TO-TALK button on the microphone. The scanner stops on the last active channel in the 101 to 110 channel group.

To scan less than ten channels, remove the frequency information by programming 0 in the channel for those channels between 101 and 110 that are not of interest. Push RESET to return to the channel being used before the SCAN button was pushed.

8. Transmit

a. Listen Before Keying Microphone

Unsquench the radio.

NOTE

The light behind the SQ button goes out.

For half-duplex channels, press the TX/RX button to monitor the transmit frequency for activity. The 'box' will stay around 'XMIT' until TX/RX is pressed again, the PUSH-TO-TALK button is

pushed and released or the 60 second reset timer resets the controls, whichever occurs first.

If the channel or frequency is not in use, a scratchy noise will be heard in the speaker. If the channel is being used, wait until it is clear before proceeding or change channels.

b. Hold Microphone Correctly

Remove the microphone from the hang up clip, holding it firmly, position the grill side about two inches (5 cm) in front of the lips.

c. Speak Clearly and Slowly

Press the PUSH-TO-TALK button on the side of the microphone. With the button fully depressed, the power meter bar graph underliner will appear. If the channel is simplex (receive and transmit on the same frequency), the displayed frequency won't change. If the channel is half-duplex (receive and transmit on different frequencies), the normally displayed frequency is the receive and changes to the transmit frequency when the microphone is keyed. Speak clearly and slowly in a normal voice. While speaking, observe the RF power bar graph for activity. The resultant RF output power is displayed in approximately 15 watt increments (bars) being added from left to right. If the antenna system is not properly tuned, the resultant reflected power is indicated by turning off bars from left to right. See the illustrations below.

If the two or more left hand bars disappear as full power is being applied (all the bars are added to the right) there is a problem in the antenna system. If the riggings have moved since the radio was used last, the tuner will not automatically compensate for the change. Press ENTER and the tuner will retune to compensate. If this procedure does not correct the situation, inspect the tuner, antenna, and ground plane for loose connections. Improper connections to the antenna system can cause this type of fault. If no loose connections are found, call the nearest authorized MODAR dealer for assistance.

d. Wait For a Response

After saying 'over' release the PUSH-TO-TALK button. Wait for a response, usually an operator that has heard the request will respond within a minute or two. If no response after 2-3 minutes, then try again. After three tries, change to another channel or frequency and try again.

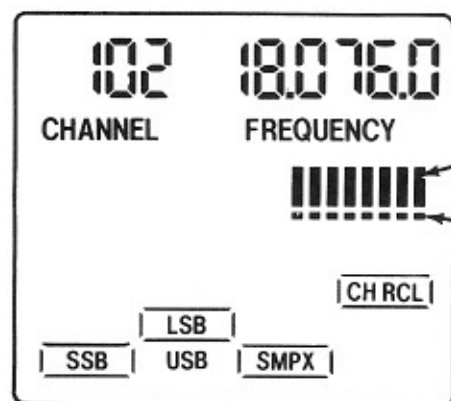
9. Programming a Frequency Into a Channel

a. Unlocking

To program channels 1-120 (including the 'PRI' channel) with new frequency information, begin by inserting the key in the lock switch and turning it clockwise.

b. The Display

When the security key lock switch is in the unlocked position, most of the available modes and functions are displayed on the LCD. The current modes and functions are highlighted by "boxes" around the labels on the LCD.

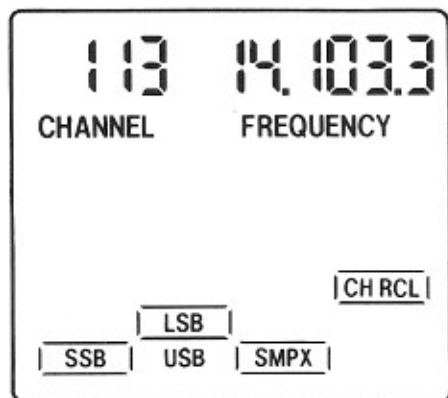


INDICATES APPROXIMATELY 125 WATTS FORWARD POWER

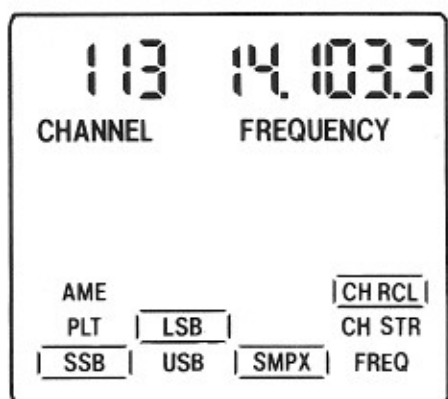
PUSH-TO-TALK UNDERLINER

INDICATES APPROXIMATELY 90 WATTS FORWARD POWER

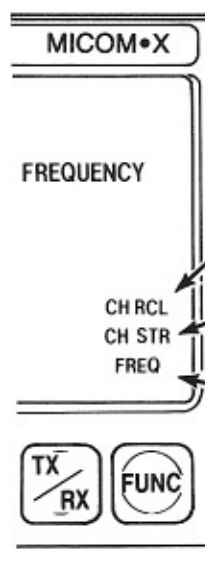
MISSING SEGMENTS INDICATES APPROXIMATELY 30 WATTS REFLECTED POWER



A LOCKED



B UNLOCKED



c. Function Selection

The FUNC button selects one of three different modes of operation.

1. Channel recall (CH RCL) the keyboard is used only for the selection of channels.
2. Channel store (CH STR) permits storing new frequency and mode data in a specific channel.
3. Frequency (FREQ) allows the keyboard to be used to load in new channel frequency information.

d. New Channel Frequency Selection

1. Frequency Programming Mode

Frequency programming can only be done with the security key lock in the unlocked position. The radio may be operated continuously in the programming mode with 'direct access' to all frequencies within the operating range.

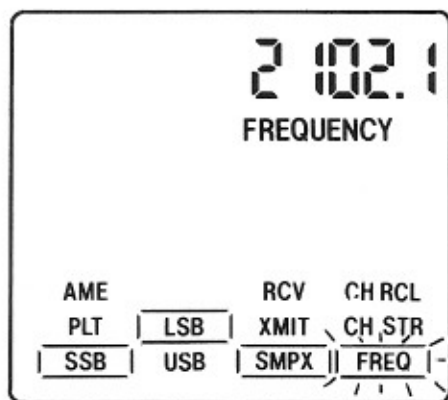
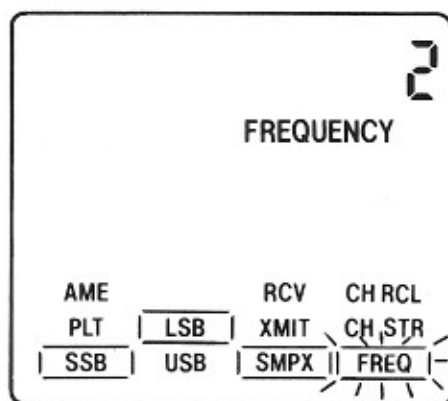
NOTE

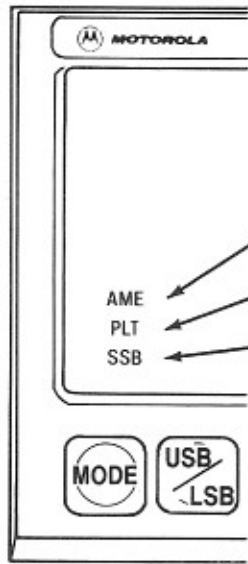
A built in timer (approximately 60 second) resets the radio back to the last valid channel if too much time is taken in the programming process.

2. Procedure

To enter a new frequency, push the FUNC button until the 'box' appears around 'FREQ'. Next, push the appropriate sequence of buttons on the numeric keypad to enter the new frequency. For example: enter frequency 2102.1 KHz in the following manner:

Press 2, The current frequency will be replaced with a '2' in the right most position and the 'box' around 'FREQ' will blink. 'RCV' and 'XMIT' will appear on the LCD. Continue entering the frequency by pressing 102.1.





e. Mode Selection

To select one of the following: AME, PILOT or SSB modes of operation depress the MODE button to move the 'box' to surround the desired mode. The mode select is operable only when the security key switch is unlocked.

'AME' stands for Amplitude Modulation Equivalent and is used by those stations which still use A.M. receivers.

'PILOT' is a term used for the transmission of low level carrier. It is used by receivers that have Automatic Frequency Control.

'SSB' means Single Side Band suppressed carrier. Maximum utilization of power and spectrum is achieved in this mode.

f. TX/RX Select

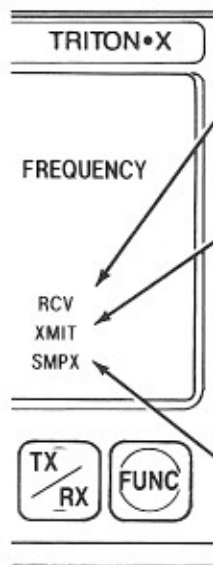
The TX/RX button is used to select simplex (SMPX) or half-duplex (RCV and XMIT) modes of operation.

'RCV' stands for receive and means that the receive frequency is currently being displayed. 'RCV' appears only for half-duplex channels or operation where the (receive and transmit frequencies are not the same. Push the TX/RX button until the 'box' is around 'RCV' to program the receive frequency. Push ENTER. The 'box' around 'RCV' moves to 'XMIT' so that the transmit frequency may be entered. For receive only push ENTER and proceed to step g. below.

'XMIT' means transmit. 'XMIT' appears only for half-duplex channels of operation. The transmit frequency in this mode can be recalled by keying the microphone or by pushing the TX/RX button to monitor the frequency before transmitting. Push the TX/RX button until the 'box' is around 'XMIT' to program the transmit frequency. If the receive frequency was programmed first, the 'box' automatically will go to 'XMIT'. If the transmit frequency is programmed first, then press ENTER and the 'box' goes to 'RCV' to program in the receive frequency. After programming in the receive frequency, press enter to store it. The box will again return to XMIT. Press enter again to confirm the transmit frequency.

NOTE

A 60 second timer returns the radio to 'RCV' when monitoring the transmit frequency.



'SMPX' indicates that the transmit and receive frequencies are the same. Push the TX/RX button until the 'box' is around 'SMPX' to program both the transmit and receive frequencies simultaneously.

g. I.F. Selection

If after reaching this step, there is a constant tone heard from the speaker, press the ENTER button once or twice to get rid of tone.

NOTE

The tone is present with or without an antenna cable connected to the radio.

h. Storing Channel Data

Upon completion of selecting a frequency and modes of operation, press the FUNC button to move the 'box' around 'CH STR'. Select and key in the desired channel number. Press the ENTER button to store the channel information.

10. Safety Information

a. General Safety Information

The United States Department of Labor, through the provisions of the Occupational Safety and Health Act of 1970 (OSHA), has established an electromagnetic energy safety standard which applies to the use of this equipment. Proper use of this radio will result in exposure below the O.S.H.A. limit.

The following precautions are recommended:

Do not operate the transmitter when someone is within two feet (.6 meters) of the antenna.

Do not operate the transmitter unless all RF connectors are secure and any open connections are properly terminated.

Do not operate this equipment near electrical blasting caps or in an explosive atmosphere.

All equipment must be properly grounded according to the installation instructions for safe operation.

All equipment should be serviced only by a qualified technician.

- b. Safety information for radios installed in vessels or vehicles powered by Liquefied Petroleum (LP) Gas

WARNING

It is mandatory that radio equipment installed in LP gas powered vehicles conform to the following standard:

National fire protection association standard NFPA 58 applies to radio installations in vehicles fueled by Liquefied Petroleum (LP) Gas with the LP Gas container in the trunk or other sealed-off space within the interior of the vehicles. This standard requires that:

1. Any space containing radio equipment shall be isolated by a seal from the space in which the LP Gas container and its fittings are located.
2. Remote (outside) filling connections shall be used.
3. Venting of the container space to the outside shall be provided.

II. CARE AND MAINTENANCE

A. CLEANING

1. Dust

If the front of the radio or the heat sink fins at the rear become covered with dust, use a soft bristled brush to remove the dust.

2. Dirt and Grime

Dirt and grime may, with normal usage, accumulate on the operating surfaces of the radio and microphone. To remove the grime, use a damp clean cloth and mild soap.

B. SERVICE CHECKS

1. Transmitter/Receiver

The licensee is responsible for the proper operation of the equipment. Therefore, it is recommended that a qualified technician check the transmitter performance yearly. The results of these checks may be recorded in the Service Log section of this manual.

2. Antenna System

The antenna system (antenna & ground plane) should be inspected frequently for loose connections, frayed wires and corrosion, all of which can reduce the performance of the radio.

3. Power Source

The power source may be a battery or power supply. The cables between the radio and the source should be inspected for frays and loose connections.

4. Serial and Model Number

The model and serial number tag is located at the back of the radio. The tag is installed on the heat sink fin next to the RF output connector.

STATION RECORD LOG

At the end of this manual is a page for entering the user programmable frequencies. Also at the end of the manual is a page for recording service data. In addition to the normal service entries there are provisions for recording the yearly maintenance and calibration checks.

III. PROPAGATION CHARTS

PROPAGATION CHARTS

How to use the following frequency charts

The following chart is based on typical propagation. In some cases, the maximum range and the minimum ranges shown will vary considerably. The type of antenna, the quality of the ground plane and the sunspot cycle will have the most effect on range. These charts are presented as a general guide in selecting the proper frequency for the time of day, distance and season.

To use the chart, three facts must be known. These are, distance to the desired station, time of day with respect to sunrise or sunset, and the season of the year for the hemisphere in which the stations are located.

First, select the chart with the proper season. Second, find the line corresponding to the time with respect to sunrise or sunset. Third, using the range information, find the band or bands of frequencies to use.

TABLE 1. TYPICAL* FREQUENCY PROPAGATION - SPRING AND SUMMER

Frequency (kHz)	4000		8000		12000		16000		22000	
Propagation (Miles)	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Hours after sunset										
1	50	250	200	1000	500	3500	750	6000	1500	7000
2	100	600	250	1500	500	3500	750	6000		
3	100	600	250	2000	500	3500				
4	100	800	250	2500						
5	100	1000	250	2500						
6	100	1500	400	3000						
7	100	1500	500	3500						
8	250	2000	750	4000						
9	250	2500	750	4000						
10	250	2500	750	4000						
11	100	1000	500	2500						
Hours after sunrise										
1	100	500	400	2000						
2	0	100	400	2000						
3	0	100	250	1500						
4	0	100	250	1500	500	1000				
5	0	100	250	1500	500	1500				
6	0	100	250	1500	500	2500	750	4000		
7	0	100	250	1500	500	3500	750	4000	1500	7000
8	0	100	250	1500	500	3500	750	4000	1500	7000
9	0	100	250	1500	500	3500	750	4000	1500	7000
10	0	100	250	1500	500	3500	750	4000	1500	7000
11	0	100	150	500	500	3500	750	6000	1500	7000
12	0	200	150	500	500	3500	750	6000	1500	7000
13	50	250	150	750	500	3500	750	6000	1500	7000

* Because atmospheric conditions, the type of antenna used, the quality of the ground plane, the sunspot cycle and other variables affect propagation, Motorola can not guarantee the range over which this product will work.

TABLE 2. TYPICAL* FREQUENCY PROPAGATION - FALL AND WINTER

Frequency (kHz)	4000		8000		12000		16000		22000	
Propagation (Miles)	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Hours after sunset										
1	100	600	400	2000	500	3500	750	6000	1500	7000
2	100	800	400	2000	500	4000	750	6000		
3	100	1000	400	2000	500	4000				
4	100	1000	400	2500	500	4000				
5	100	1000	400	3000	500	4000				
6	100	1500	400	3500						
7	250	2000	400	4000						
8	250	2500	500	4000						
9	500	3000	500	4000						
10	500	4000	500	4000						
11	500	3000	750	5000						
12	250	2500	750	5000						
13	250	1500	500	2500						
Hours after sunrise										
1	100	1000	400	2000						
2	100	500	400	2000						
3	0	100	400	2000	500	3500	750	4000		
4	0	100	400	2000	500	3500	750	4000	1500	3000
5	0	100	250	1500	500	3500	750	4000	1500	4000
6	0	100	250	1500	500	3500	750	4000	1500	5000
7	0	100	250	1500	500	4000	750	5000	1500	6000
8	0	100	250	1500	500	4000	750	5000	1500	7000
9	0	100	250	1500	500	4000	750	6000	1500	7000
10	0	100	250	1000	500	3500	750	6000	1500	7000
11	0	250	250	1500	500	3500	750	6000	1500	7000

* Because atmospheric conditions, the type of antenna used, the quality of the ground plane, the sunspot cycle and other variables affect propagation, Motorola can not guarantee the range over which this product will work.

TABLE 3. CHANNEL/FREQUENCY LIST (CUSTOMER PROGRAMMING)

CHAN NO.	FREQUENCIES		CHAN NO.	FREQUENCIES		CHAN NO.	FREQUENCIES	
	TX	RX		TX	RX		TX	RX
001			041			081		
002			042			082		
003			043			083		
004			044			084		
005			045			085		
006			046			086		
007			047			087		
008			048			088		
009			049			089		
010			050			090		
011			051			091		
012			052			092		
013			053			093		
014			054			094		
015			055			095		
016			056			096		
017			057			097		
018			058			098		
019			059			099		
020			060			100		
021			061			101		
022			062			102		
023			063			103		
024			064			104		
025			065			105		
026			066			106		
027			067			107		
028			068			108		
029			069			109		
030			070			110		
031			071			111		
032			072			112		
033			073			113		
034			074			114		
035			075			115		
036			076			116		
037			077			117		
038			078			118		
039			079			119		
040			080			120		

SERVICE LOG

MODEL # _____ SERIAL # _____ INSTALLATION DATE _____

MEASUREMENTS: DATE _____ DATE _____ DATE _____ DATE _____ DATE _____ DATE _____

OSCILLATOR OUTPUTS:

11.400000 MHz _____

9.216000 MHz _____

RF OUTPUT FREQUENCIES:

2.000000 MHz _____

7.000000 MHz _____

12.000000 MHz _____

18.000000 MHz _____

24.000000 MHz* _____

* NOT AVAILABLE ON SOME MODELS

RF OUTPUT POWER _____

RECEIVER SENSITIVITY _____

TECHNICIAN NAME _____

FCC LICENSE # (where applicable) _____

SERVICE COMPANY NAME _____

TELEPHONE # _____

SERVICE LOG

MODEL # _____ SERIAL # _____ INSTALLATION DATE _____

DATE _____ DATE _____ DATE _____ DATE _____ DATE _____ DATE _____

MEASUREMENTS:

OSCILLATOR OUTPUTS:

11.400000 MHz _____

9.216000 MHz _____

RF OUTPUT FREQUENCIES:

2.000000 MHz _____

7.000000 MHz _____

12.000000 MHz _____

18.000000 MHz _____

24.000000 MHz* _____

* NOT AVAILABLE ON SOME MODELS

RF OUTPUT POWER _____

RECEIVER SENSITIVITY _____

TECHNICIAN NAME _____

FCC LICENSE # (where applicable) _____

SERVICE COMPANY NAME _____

TELEPHONE # _____

MICOM-X PERFORMANCE SPECIFICATIONS

Model Number	Frequency Range	RF Power Output	Number of Channels
D80MLA1X41-K	2-30 MHz	125 watts PEP	120 channels simplex or half duplex
D80JMA1X41-K	2-18 MHz	125 watts PEP	120 channels simplex or half duplex
IF Frequency:	1st 75.0 MHz, 2nd 11.4 MHz		
Primary Voltage:	13.8 volts nominal $\pm 20\%$		
Maximum Current Drain: Oven Stabilized @ 25°C	Receive		Transmit
Ambient @ 13.8 VDC	Standby	Full Audio	Voice Duty
	1.25 A	2 A	13 A avg.
			2-Tone PEP
			21 A avg.
Controls:	On/Off/Volume, Key Pad, Function Select, Squelch, Clarifier, Dimmer, USB/LSB Select, Mode Select, Tx/Rx Select, Scan, Noise Blanker (Optional), Up and Down Buttons		
Memory Maintenance:	Lithium Battery, 10 years typical life		
Weight:	9.3 kg (20.5 lbs)		
Size	42 cm (16 $\frac{1}{4}$ ") L x 26.4 cm (10 $\frac{3}{8}$ ") W x 10 cm (4") H		

Transmitter

Intermodulation:	-32 dB reference to PEP
Spurious & Harmonic Emissions:	-64 dB reference to PEP
Hum and Noise:	-50 dB
Carrier Suppression:	-46 dB
Undesired Sideband Suppression:	1 kHz tone -55 dB reference to PEP
Audio Distortion:	5% total distortion
Frequency Stability:	± 10 Hz -20°C to +50°C ± 20 Hz -30°C to +60°C

FCC Information

Model Series:	D80MLA	D80JMA
Transmitter Peak Envelope Power (P.E.P.):	125 watts	125 watts
Frequency Range:	2-30 MHz	2-18 MHz
FCC Type Acceptance Number:	ABZ9QCC1609	ABZ9QCC1603
Emission Authorized:	A3A,A3J,A3H,3F1	
FCC Applicable Parts of Rules:	81,83,87,90	
FCC Type Acceptance Number:	ABZ9QCC1609	ABZ9QCC1603

MICOM-X Radios meet or exceed all applicable CCIR.

Receiver

Sensitivity:	10 dB SINAD 0.5 μ V $\frac{1}{2}$ rated audio power: 1.0 μ V/2.5 watts
Selectivity:	(-6 dB Minimum) 350 Hz to 2700 Hz
Spurious:	-70 dB (ref. 10 dB SINAD)
IF and Image:	-75 dB
Intermodulation:	-80 dB
Cross Modulation:	100 dB @ 100 kHz separation
Desensitization:	-100 dB @ 100 kHz separation
Frequency Stability:	± 10 Hz -20°C to +50°C ± 20 Hz -30°C to +60°C
Audio Output:	5 watts with less than 5% total distortion
AGC Characteristics:	Audio Output varies less than 2 dB signal between 10 μ V and 1 Volt (100 dB range) Dual Slope fast attack, slow decay AGC threshold 10 μ V or less
Squelch:	Constant SINAD
Clarifier Range:	± 175 Hz minimum

Specifications subject to change without notice. Motorola guarantees that this equipment, at time of proper installation, will meet or exceed the performance specifications listed above.



MOTOROLA

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