LBI-38838B

Operator's Manual

DUAL FORMAT MDR™
MOBILE RADIO

ERICSSON

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NOTICE!

This manual covers Ericsson and General Electric products manufactured and sold by Ericsson Inc.

NOTICE!

Repairs to this equipment should be made only by an authorized service technician or facility designated by the supplier. Any repairs, alterations or substitution of recommended parts made by the user to this equipment not approved by the manufacturer could void the user's authority to operate the equipment in addition to the manufacturer's warranty.

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*Indicates EDACS And GEMARC Applications

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SAFETY INFORMATION

The operator of any mobile radio should be aware of certain hazards common to the operation of vehicular radio transmissions.

A list of possible hazards follows:

1. Explosive Atmospheres

Just as it is dangerous to fuel a vehicle with the motor running, be sure to turn the radio off while fueling the vehicle. Do not carry containers of fuel in the trunk of the vehicle when the radio is mounted in the trunk.

2. Interference to Vehicular Electronics Systems

Electronic fuel injection systems, electronic anti-skid braking systems, etc., are typical of the type of electronic devices that may malfunction due to the lack of protection from radio frequency energy present when transmitting. If the vehicle contains such equipment, consult the dealer of your vehicle and enlist his aid in determining if such electronic circuits perform normally when the radio is transmitting.

3. Dynamite Blasting Caps

Dynamite blasting caps may be caused to explode by operating a radio within 500 feet of the blasting caps. Always obey the **"Turn Off Two Way Radios"** signs posted where dynamite is being used. When transporting blasting caps in your vehicle:

a. Carry the blasting caps in a closed metal box with a soft lining.

b. Leave the radio **OFF** whenever the blasting caps are being put into or removed from the vehicle.

4. Radio Frequency Energy

To prevent burns or related physical injury from radio frequency energy, do not operate the transmitter when anyone outside of the vehicle is within two feet of the antenna.

5. Liquefied (LP) Gas Powered Vehicles

Mobile radio installations in vehicles powered by liquefied petroleum gas with the LP gas container in the trunk or other sealed-off space within the

interior of the vehicle must conform to the **N**ational **F**ire **P**rotection **A**ssociation standard **(NFPA) 58** requiring that:

a. The space containing the radio equipment shall be isolated by a seal from the space containing the LP gas container and its fittings.

b. Outside filling connections shall be used for the LP gas container.

c. The LP gas container shall be vented to the outside of the vehicle.

SAFE DRIVING RECOMMENDATIONS FOR USERS OF MOBILE RADIOS*

Read the literature on the safe operation of the radio.

Keep both hands on the steering wheel and the handset in its cradle whenever the vehicle is in motion.

Place calls only when vehicle is stopped. Use on-hook dialing and recall dialing to speed the time it takes to call.

When talking from a moving vehicle is unavoidable, drive in the slower lane. Keep conversations brief.

If conversation requires taking notes or complex thought, stop the vehicle in a safe place and continue the call.

Whenever using a mobile radio exercise caution.

*As recommended by the AAA.

OPERATING PROCEDURES

Two-way FM radio systems must be operated in accordance with the rules and regulations of the Federal Communications Commission (FCC). Operators of two-way radio equipment must be thoroughly familiar with the rules that apply to the intended type of radio operation. Following these rules helps to eliminate confusion, assures the most efficient use of existing radio channels, and results in a smoothly functioning radio network. When using this two-way radio remember these rules:

1. It is a violation of FCC rules to interrupt any distress or emergency message. As the radio operates in much the same way as a telephone

"party line", always listen to make sure that the line is clear - that no one else is on the air - before sending messages. If someone is sending an emergency message - such as reporting a fire, or asking for help in an accident - **KEEP OFF THE AIR!** Emergency calls have priority over all other messages.

2. Use of profane or obscene language is prohibited by Federal law.

3. It is against the law to send false call letters, or a false distress or emergency message.

4. The FCC requires that conversations be kept brief and confined to business. To save time, use coded messages whenever possible.

5. Using a radio to send personal messages (except in an emergency) is a violation of the FCC rules. Send only those messages that are essential for business operation.

6. It is against Federal law to repeat or otherwise make known anything overheard on the radio. Conversations between others sharing a channel must be regarded as confidential.

7. The FCC requires the operator to transmit station identification at certain times by means of call letters. Refer to the FCC rules for your station's particular type of operation for the proper procedure.

NOTE

The GE-MARC and EDACS trunking environments have automatic identification features built in and do not require the user to identify by means of call letters.

8. No changes or adjustments shall be made to the equipment except by an authorized or certified electronics technician.

INTRODUCTION

This manual describes how to use the Dual Format MDR Mobile Radio. The Dual Format MDR is a synthesized, microprocessor-based, high performance duplex mobile FM radio providing reliable two-way communications in both the GE-MARC and Enhanced Digital Access Communications System (EDACS) trunking environments. The radio also provides non-trunked operation for use with conventional communications systems. An optional talk-around kit provides direct mobile to mobile communication when out of repeater range.

Duplex operation is provided in EDACS and GE-MARC systems while operating in the Telephone Interconnect Mode. At all other times, the radio provides simplex communications, i.e. when placing group calls in either the EDACS or GE-MARC environments or when operating in the conventional mode.

In an EDACS trunked environment the user selects a communications system and group. In this mode, channel selection is transparent to the user and is controlled via digital communication with the system controller. This provides advanced programmable features and fast access to communication channels.

In a GE-MARC trunked environment the user selects a communications area and group. In this mode, channel selection is automatic and is controlled via tone signalling.

In the conventional mode, the user selects a channel and directly communicates on that channel. In this mode, a system refers to a set of channels and a channel is a transmit/receive radio frequency pair.

The exact operation of the radio depends on the operating mode, the radio's programming, and the particular radio system. Most features described in this manual may be enabled or disabled through programming. Consult the system administrator for the required features to be programmed into the radio.

USER INTERFACE

All of the Dual Format MDR operating controls are located on the radio's handset. A 22-button keypad, an internal speaker and a liquid crystal display (LCD) for radio status information are located on the top side of the handset for convenience while the handset is secured in its holder. An earpiece and microphone are positioned on the handset's bottom side as found on a basic telephone. Viewed from the handset's top side, a **VOLUME UP** button, **VOLUME DOWN** button are located on the left side.

The keypad is used for manual number entry for individual calls, access to a telephone interconnect system and activation of various EDACS, GE-MARC or conventional features. The keypad is divided into both a function portion and a numeric portion as is found on a basic push-button telephone.

The display has an eight alphanumeric character line used to show the operational mode of the radio. Eight status indicators, used to indicate various operating conditions, such as; function key pressed, transmitter on, service not available, radio in use, horn alert active, radio locked or transmit muted, are located above and below the character line within the display. A back light function illuminates the display and keypad for nighttime use.

BUTTONS

This section describes the function of the three buttons on the side of the handset.

VOLUME UP BUTTON Increases the volume level. 15 is the maximum level.

VOLUME DOWN BUTTON Decreases the volume level. 00 is the minimum level unless programmed otherwise.

NOTE

When the **VOLUME UP** or **VOLUME DOWN** button is pressed, the volume setting can be momemtarily displayed on the handset LCD (e.g., VOL=15) if the radio is not actively receiving a call and the function is enabled through programming. If not programmed with a power up volume level, the radio retains the last setting used when the radio was powered off.

PUSH-TO-TALK 

Enables the radio's transmitter. SEND must be held down to transmit during simplex operation.

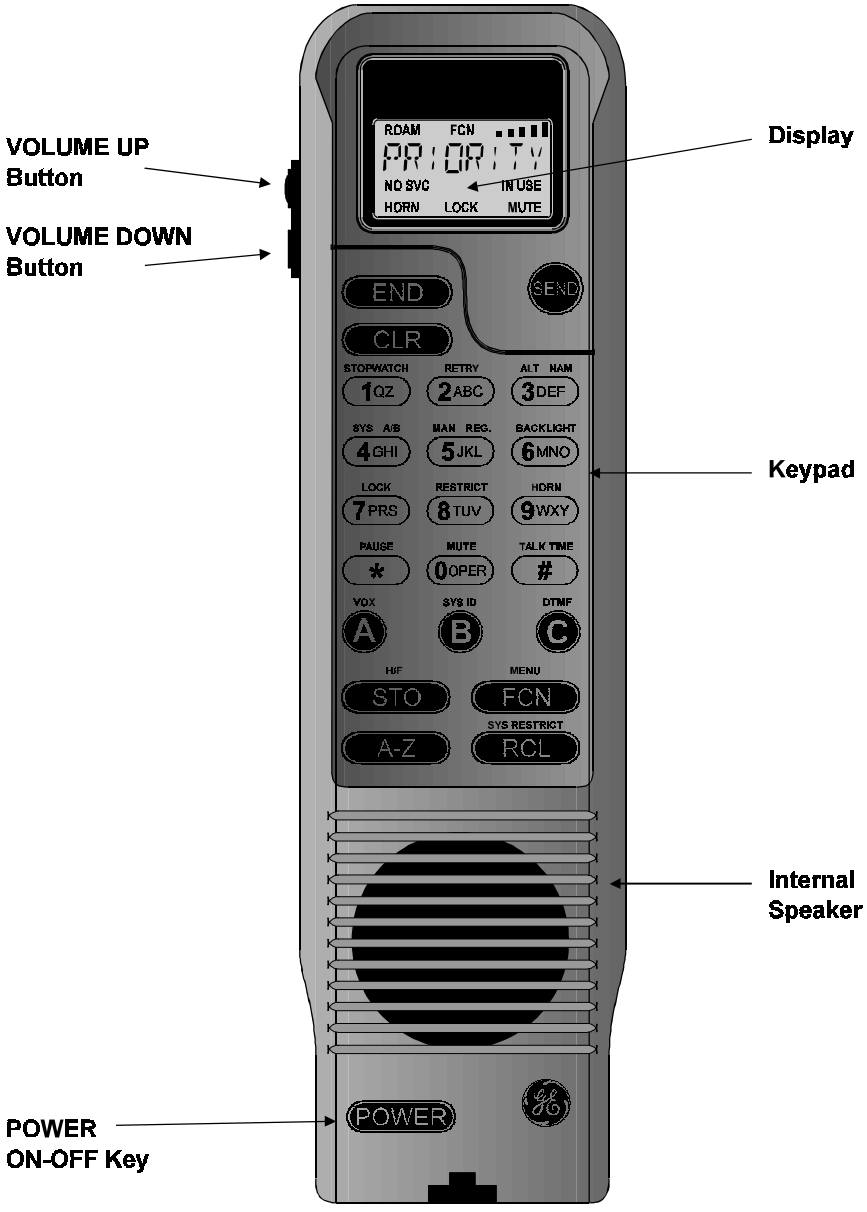

Figure 1 - Dual Format MDR Handset

KEYPAD

Function Portion

END Terminates any ongoing activity. If the radio is designated as supervisory, it drops any ongoing group call.

SEND Initiates a call by sending the number shown in the display or functions as the **PTT** button if no number has been previously entered.

CLR Clears the last digit entered when pressed and released. Press and hold for at least one second to clear the entire number.

A, B, C Flex Keys that can be used in two ways: 1) quick dial frequently called or emergency numbers or 2) extended functions such as Special Calls, Public Address, Horn Alert, Emergency (EDACS), or Home System/Group. Each **"Flex Key"** can store one number for a total of three.

STO Stores numbers in memory locations.

FCN Activates extended features. The extended features are labeled above each associated key on the keypad. **FCN** is pressed before the associated key to enable the secondary function of that key.

RCL Recalls numbers from memory locations.

POWER Applies power to the radio. Press once to turn the radio on. All status indicators turn on momentarily. Press a second time to turn the radio off. When turned off, the radio retains the last user selections (unless programmed for a particular power up option).

A-Z Not Used.

Numeric Portion

0 OPER-9 WXY Enters telephone numbers and activates extended features.

***** Ramps through the system and area list and selects a system or area.

DURING A CALL - sends the DTMF (Dual-Tone Multi-Frequency) tone for *.

IN DISPATCH MODE - brings up the dial tone.

#	Ramps through the group and channel list and selects a group or channel. DURING A CALL - sends the DTMF tone for #. In GE-MARC applications, it terminates the telephone call.

Extended Features

Press **FCN** first then one of the following keys or buttons.

Key	Function	Comments
1 QZ	HORN	Enables/disables the horn alert feature. Once to turn on, again to turn off.
2 ABC	BACKLIGHT	Enables/disables the backlight. Once to turn on, again to turn off.
3 DEF	OVERDIAL	Enables overdial mode for placing/storing dispatch overdial calls. (GE-MARC only.)
4 GHI	EXTERNAL SPEAKER	Enables/disables the external speaker in duplex and simplex.
5 JKL	SIMPLEX	Toggles between simplex only and duplex operation.
6 MNO	MUTE	Enables/disables microphone mute during duplex operation.
7 PRS	LOCK	Locks the radio and keypad. (Provided code has been pre-programmed).
8 TUV	SCAN ON/OFF	In EDACS applications, it enables/disables group scan operation. In GE-MARC applications, it enters the conference call mode.
9 WXY	SCAN ADD/ DELETE	Adds or deletes groups from the scan list. (EDACS operation only.)
0 OPER	SPC	Enters Special Call Mode.
*	SYSTEM /AREA	Changes the ramp direction for systems or areas or directly accesses systems.

#	GROUPS/ CHANNELS	Changes the ramp direction for groups or channels or directly accesses groups.
A	TESTMODE	Enters testmode (if enabled).
B	PAUSE	Provides a pause during keypad entry of DTMF numbers.
C	TALK TIME	Displays call timer (active if call is in progress, last call length if call is not in progress).
(STO)RE	DISPLAY	Hold **STO** key to display current software Group and Version (as **GXX VXX**).
VOLUME UP	VOLUME UP	Sets the volume at the maximum setting. (VOL = 15).
VOLUME DOWN	VOLUME DOWN	Sets the volume at the minimum setting. (VOL = 00).

DISPLAY

The radio's display is shown below. The character line is used to display system or area and group or channel names and also operational messages to the user. The line contains eight 14-segment alphanumeric characters. The 8 characters are used to show the various operating conditions of the radio.

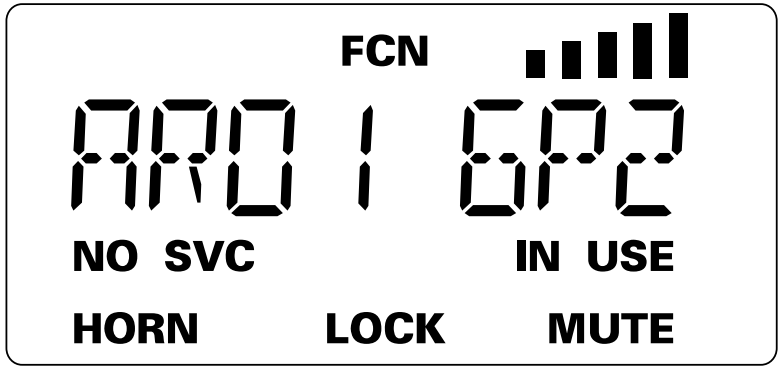

Figure 2. Sample Dual Format MDR Display

Messages

During GE-MARC radio operation, messages are displayed on the 8-character line to show control information, such as system busy or call denied, or messages associated with the radio's operation such as volume, or **RETRYING**. These messages are described below.

BUSY Indicates an attempt to place a call has been made but the selected trunked system does not have any available channels. If the "Call Retry" option has been enabled through radio programming, **RETRYING** is displayed instead and the radio retries at 5 second intervals, up to 15 times unless **END** is pressed, a channel is acquired, or an out-of-range condition occurs.

RETRYING Indicates the radio is attempting to establish a channel.

WAIT Indicates the radio is acquiring a channel after call origination has begun.

Status Indicators

Eight status indicators show the various operating characteristics of the radio. Indicators are displayed to show the current operating status of the radio.

FCN Indicates an extended function is currently being selected.

 Indicates the transmitter is active.

NO SVC Indicates the radio is out of range of a system or the control channel is not available.

IN USE Indicates the radio is receiving a signal on the selected channel or group.

HORN Indicates the radio is configured to notify the user via an external alarm that an individual call has been received.

LOCK Indicates the handset keypad is locked.

MUTE Indicates the handset has the transmit audio disabled (only valid during duplex operation).

ALERT TONES

The DUAL FORMAT MDR radio generates a set of unique alert tones to indicate operating status. The following section identifies and describes the alert tones used in the DUAL FORMAT MDR radio for Conventional, GE-MARC, and EDACS applications.

EDACS APPLICATIONS

CALL ORIGINATE ALERT If programmed, a short tone is sounded whenever the Push-To-Talk (SEND) button is keyed and the radio has acquired a channel. This tone indicates the user may begin communications.

CALL QUEUED If one short, high pitched tone sounds after the transmitter is keyed, this indicates that the system has placed the request in a queue. This tone sounds at both the transmitting unit and the receiving unit(s), indicating to the user on the receiving end that they will receive a call shortly. If the SEND is unkeyed while in queue, the radio autokeys (Automatically keys) push-to-talk when a channel becomes available (see AUTOKEY).

AUTOKEY When the SEND is keyed to place a call on the system, but the SEND is released before the channel is assigned (e.g. a queued call), the radio automatically keys on the channel when it gets the assignment. The radio generates a long beep and holds the transmitter keyed for two seconds. Pressing the SEND key keeps the channel and sends the message before this two second time-out has expired.

SYSTEM BUSY If you key the SEND key and hear three short, medium pitched tones, this indicates that the receiving party is already on the system or the system is busy and its queue is full. You must rekey later to access the system.

CALL DENIED A single low pitch beep sounds when the SEND key switch is keyed and the request is denied by the system. This happens if the unit is an invalid user or if the unit is requesting an unavailable service.

OUT OF RANGE SYSTEM INOPERATIVE A single low pitched tone sounds immediately after the SEND key switch is keyed /indicating the radio is out of range of the repeater. The radio tries to place the call for a short period (3 seconds) after the initial attempt. The radio generates a second low pitched tone when it gives up trying to place the call. The

system is off the air or the radio needs servicing when the radio is within calling range, and these tones are heard.

GE-MARC APPLICATIONS

CALL RECEIVED ALERT If programmed, a single alert tone sounds when a group call is received and a two tone alert (one high followed by one low tone) sounds for an individual call.

CALL ORIGINATE ALERT **WAIT** is momentarily displayed when a call is being placed. Then a three-tone alert sequence is sounded to indicate the call origination is complete. This indicates a channel was acquired and is ready for normal conversation.

INVALID CALL ORIGINATE ALERT A low frequency tone is sounded for one second immediately after pressing SEND and the display does not show **WAIT**. This indicates a call was attempted within a group that is not enabled for call originate or an invalid dispatch overdial call was attempted.

SYSTEM TONES A low frequency tone is sounded for one second after attempting to place a trunked call and **BUSY** is displayed. This indicates that the GE-MARC system is busy. If the "Call Retry" option has been enabled through programming, the radio retries at 5 second intervals, up to 15 times unless **END** is pressed, a channel is acquired, or an out-of-range condition occurs.

OUT OF RANGE ALERT If **NO SVC** is displayed and five beeps are sounded after attempting to place a trunked call, then the radio is out of range of the GE-MARC system. If the beeps sound when the radio is within known range of the system, the radio may need servicing. Once these tones have sounded, the user cannot initiate another call for 20 seconds.

CARRIER CONTROL TIMER (GE-MARC and Conventional operation) A pulsed tone signal is sounded continuously for a pre-programmed time SEND after is pressed. After nine seconds of pulsing the alert tone, the radio unkeys the transmitter and communications are interrupted. While the tone is pulsing, the user can release and press SEND again to reset the timer and resume the conversation. In conventional mode, the radio unkeys and beeps until SEND is released.

SYSTEM TONES The GE MARC radio may generate other system tones to alert the user of custom programmed events. Contact the GE-MARC system operator for details about these alert tones.

OPERATION

GENERAL

Removing and Replacing Handset

The positive latch handset holder can be mounted vertically or horizontally without worry of the handset being easily dislodged. The large knurled nut on the bottom of the holder can be loosened and the holder adjusted for proper usage. Tighten the knurled nut securely after the holder is adjusted.

Remove the handset by grasping it and simultaneously pressing the release button on the handset holder, while lifting upward and away from the holder. Replace it in the holder with the top portion of the handset resting in the latch depression and press the handset firmly onto the holder until the latch mechanism snaps into place.

Turning The Radio ON/OFF

The radio is powered **ON** by pressing the **POWER** button at the bottom of the handset. A self diagnostic test is performed when the radio is first turned on if enabled through programming. To turn the radio **OFF** press **POWER** again.

Volume Adjust

The user can adjust the volume at any time using the **VOLUME UP** and **VOLUME DOWN** buttons. If the volume is adjusted while a call is in progress, no audible beeps are heard. If no call is in progress, a short beep is heard, in addition to the visual indication, if enabled. Additionally, the user selected off-hook volume level is saved separately from the user selected on-hook volume level.

Squelch Adjustment

The squelch adjustment setting may be adjusted by pressing and holding the "FCN" key for 10 seconds. After the 10 second time period, the display will change to "SQL ADJ" and the user may decrement the current squelch value by pressing the system/* button or decrement the squelch value by pressing the

group/# button. Additionally, the squelch adjust state can only be entered into while the radio is on a conventional or an EDACS working channel.

Note that entry into and exit from this function has been defined within tight constraints in order to keep from accidentally entering the squelch adjust state, (i.e. if the user presses the "FCN" key for longer than 10 seconds the squelch adjust state is exited or if no key press takes place within 2 seconds, the squelch adjust state is exited).

EDACS OPERATION

(Features marked * are available in GE-MARC and EDACS systems.) (Area applies to GE-MARC only.)

System/Area Selection-Ramping Names*

The operator can ramp through the programmed system names list by pressing and releasing the ***** key.

If the radio is programmed for a non-split display then the selected talk group or conventional channel name is displayed when the radio is idling. The first time the ***** key is pressed the radio displays the selected system name. This name remains on the display for the programmed display timeout period. If the ***** is released and then pressed again during this time the radio ramps to the next system name in the list.

If the radio is programmed for a split display then both the selected system and group are displayed when the radio is idling. The first time the ***** key is pressed the radio ramps to the next system name in the list.

The ramp direction through the system name list is selectable. It is toggled by pressing the **FCN** key.

System/Area Selection-Direct Number Entry*

Direct system/area selection can be made by entering (1) the system/area selection digit(s), (2) pressing **FCN**, (3) pressing *****. If an invalid number is entered, the first system/area is selected.

Group Selection-Ramping Names*

The desired group is selected by pressing and releasing **#**. The ramp direction of the group selection is changed by pressing **FCN** and then **#**.

Group Selection-Direct Number Entry*

Direct group selection can be made by entering (1) the group selection digit(s), (2) pressing **FCN**, (3) pressing **#**. If an invalid group number is entered, the first group is selected.

Unlocking The Radio*

After the mobile is locked the user can unlock the mobile by keying in the lock code. If an incorrect digit is entered simply start over with the correct code. If the lock code is forgotten, contact the system operator.

Locking The Radio*

The radio can be locked by pressing **FCN** followed by **7 PRS**. The LOCK icon is displayed. In this mode calls cannot be originated. This feature is operational only if a lock code is entered during radio programming. Lock codes can be 1 to 15 digits long.

Backlight*

The backlight function can be toggled on or off by pressing **FCN** followed by **2 ABC**. The intensity of the backlight cannot be changed.

Programmable Flex Keys*

Flex keys automatically recall and execute the function stored at that location without further user intervention. Pressing **A**, **B** or **C** activates the function.

Interconnect Dialing

To place an interconnect call, the user simply enters the desired number using the digit (9-0) keys and presses the SEND key.

REDIAL Key*

Pressing the **FCN** key and then the SEND key, redials the last number dialed.

Individual Call Dialing

To place an individual call, the user enters the desired **LID** number and presses the SEND.

Individual Call Dialing - Con't.

To program the Flex Keys enter the following key sequence:

1. Enter the desired phone number/**LID**.

2. Press the "*" key if the number is a phone number or the "#" if the number is a radio **LID** or dispatch overdial/ID.

3. Press the **STO** key.

4. Press the **A**, **B**, or **C** key that is to be associated with this call number.

When a Flex Key is PC programmed, it is locked, thus preventing the user from re-programming its function.

Individual Call Notification (EDACS Only)

When an individual call is received the caller's ID is stored and is displayed for a programmable time period. After the display time has expired, the last individual call received is recallable by pressing the **RCL** button or entering Special Call mode. The caller's ID is not saved if the radio is turned off.

The user is alerted to the presence of missed individual calls via one of two methods. The default first method is for the radio to display "**C***" as the first two characters in the display. The alternate method allows the user to PC program an eight character alphanumeric such as "***MSG***". In combination with these notification methods, the personality can be set-up so that the radio beeps until the user clears the call or toggles the hookswitch.

Storing An Individual Call ID

This type of call is dynamically stored to the call list by following the following steps:

1. Enter the desired individual call ID then "**#**" followed by the **STO** key.

2. Enter the two digit storage location for the number (00 to 50).

The new individual call ID is now added to the call list.

Using Special Call Lists*

In the Dual Format MDR, the difference between a "Call List" and "Special Call List" is that the Call List consists of user modifiable phone numbers and radio **LID**s. It operates similarly to a pre-stored phone list in a cellular phone. A "Special Call List" is PC programmable and is not user modifiable.

Storing A Telephone Number To The Call List*

The number of dial locations (10, 20, 30, 40, or 50) available is set through radio programming. The maximum number of digits stored in any location is 14. The user may dynamically add phone numbers to the call list by following these steps:

1. Enter the phone number, then "*****", followed by **STO**.

2. Enter the two digit storage location for the number (00 to 50).

The new phone number is now added to the call list at the specified location.

Recalling calls from the call list*

Each pre-stored call number has a corresponding phone number. To dial the phone number, select the 2 digit call number and press **RCL**. Alternately, the user can scroll through the call list using the **RCL** key to scroll forward through the list.

Simplex Operation*

The user can choose to terminate duplex operation and still maintain the interconnect call in progress by pressing **FCN** followed by **5 JKL**. This key sequence toggles between simplex and duplex operation.

***/System Key usage**

The "***/System**" ramp button is used in multiple contexts. When pressed while in monitor mode (i.e. radio is not in a special or interconnect call) the radio ramps through available systems in one direction. If **FCN** followed by "***/System**" is pressed, system ramping takes place in the opposite direction. If this key is pressed after any key other than **FCN** the "*****" is returned.

END key Usage

The **END** key is used to terminate interconnect and individual calls. Additionally, if the radio is programmed as a supervisory radio this key can be used to terminate activity, i.e. clear emergencies, drop calls, etc.

Last Digit Clear And Display Clear*

To clear the last digit entered in the display, momentarily press **CLR**. To clear the entire display, press and hold **CLR** for at least one second.

For functions without associated icons the current status is displayed by pressing **FCN** key followed by the desired function. At that time the current state is displayed in the handset's character display. If the state is to be changed, the user must again press the desired function key at which time the new state is displayed. Once the user is satisfied with the selection, let the display expire by not pressing any keys, or press **END** to signify that the current activity has ended.

1/HORN Key*

The horn alert option can be pre-programmed to: 1) generate a 1 second horn blast, 2) generate three 1/2 second horn blasts, or 3) generate a continuous horn blast when a call is received. This function is enabled or disabled by pressing **FCN** and then **1 QZ**. Pressing  during the alert tone prevents blowing the horn. The horn alert remains enabled for subsequent calls until disabled.

4/EXT SPK*

The external speaker option routes receive audio to an externally mounted speaker. To enable the external speaker, press **FCN** followed by **4 GHI**. Toggling this function provides the user with the capability to have private conversations or allow other passengers in the vehicle to hear the conversation. The character display shows "**INT SPKR**" if the internal speaker is currently active. To toggle the state of the external speaker press "**4/EXT SPK**" key twice while the "**FCN**" icon is on.

NOTE

The external speaker is disabled in the duplex mode when the handset is off-hook. This is set up by PC programming.

5/SIMPLX

When operating in the simplex mode, the **MUTE** icon follows the state of the transmit audio. While in simplex mode, SEND must be pressed prior to speaking. (NOTE: Applicable only in the interconnect mode.)

6/MUTE*

This function enables the user to mute the transmit audio when operating in the duplex mode. To disable the microphone so the called party cannot hear the conversation, press **FCN** followed by **6 MNO**. **MUTE** is displayed. Re-enable the microphone using the same key press sequence. The call is muted only for the duration of the current interconnect call.

8/SCAN (EDACS and Conventional Modes Only)

Scan operation is controlled by this key sequence (i.e. **FCN** followed by **8/SCAN**).

9/SCAN ADD (EDACS and Conventional Modes Only)

Press **FCN** followed by **9/SCAN ADD** to enter scan add/delete mode. In this mode, group ramping is available using **#/Group**. If the group displayed has scan enabled the first letter of the group contains an "S". In conventional mode the first character may be a **1** or **2** indicating priority.

0/SPC

Entering **FCN** followed by **0/SPC** accesses the Special Call List. This list is a programmable set of call numbers that the user can invoke by scrolling to the desired call number in the alpha-numeric display and then depressing the SEND. Scrolling forward through this list is done by pressing **#/GROUP**. Scrolling backward through this list is done by pressing **FCN** followed by **#/GROUP**. (See Special PC programming functions in TQ-3373, for programming of the Special Call List.) Terminate Special Call List access by pressing **END**.

A/Testmode

Test Mode is entered when the operator presses **FCN** followed by **A**. This function can be disabled by PC programming.

B/Pause

A pause is entered into a stream of DTMF numbers being dialed via the keypad. The operator enters **FCN** followed by **B**. The length of pause is PC programmable.

C/Call Timer*

The call timer function (C/CAL TMR) causes the time duration for the current interconnect call to be displayed. Note that the call timer starts when an interconnect call is initiated. To display the call timer during a conversation, press **FCN** and then **C**. The time display is automatically removed after a preset time-out or can be removed from the display by pressing **CLR**.

PROGRAMMABLE OPTIONS

Call Time-outs

The Dual Format MDR provides several time-out options to accomodate user needs. They are summarized below:

- Carrier Control Timer (CCT)

  This timer is provided to limit continuous transmit time (when not in a duplex mode of operation). A single value can be selected that applies to all trunked operation. Each conventional channel has the option of enabling or disabling the timer on a per channel basis.
- Voice Scan Lockout Timer

Provides a time limit that disables group scanning following initiation of a voice call.

- Special Call time-out

  Drops the radio out of special call mode after a specified period of operator inactivity.

- Individual/Interconnect Call time-out

  A time-out that drops the radio out of an individual/interconnect call after a specified period of time.

Emergency

Any one of the three Flex Keys (**A**, **B**, or **C**) can be programmed to function as the emergency button.

If the radio is programmed as a supervisory radio, it is allowed to clear emergencies from the system. When the message "**EMRGNCY**" is displayed, pressing the **END** button followed by the Emergency button (**A**, **B**, or **C**) causes the radio to attempt to clear the emergency.

Automatic Login

The Dual Format MDR supports Automatic Login for EDACS trunked systems.

Wide Area System Scan

The Dual Format MDR supports Wide Area Roaming. When scanning, there is a programmable time interval that determines when the radio starts scanning the next site.

Supervisory Mode

When a Dual Format MDR radio is programmed as supervisory, it is capable of handling all normal supervisory functions.

Programmable Audio/Display

Each EDACS system has a programmable option to handle display and audio during emergency conditions. When an emergency occurs, the display

option can be programmed to hold the display unchanged until the SEND button is pressed or the emergency is cleared. The audio option, similarly, causes the radio to remain muted until SEND is pressed or the emergency is cleared.

Priority System Scan

This option allows the MDR to search for a second operating system while locked onto the control channel of the selected system. If a second control channel is found, the radio switches to that system. The scan frequency is programmable.

Group Options

Each EDACS trunked system uses a set of groups. Each set allows for a home Group ID, Dynamic Regroup/encoding, and Emergency calls. In addition to each group ID the following options are supported.

TX Disable-Group Option

This option prevents keying a radio on a particular group (monitor only).

Rx Disable-Group Option

This option prevents unmuting a radio on a particular group.

Control Channel Limits

This option provides for limited scanning of a frequency set for a control channel. When programmed, the radio is only capable of scanning a subset of channels for a control channel. This is useful in large wide area scanning systems to speed up the scan process.

Conventional Failsoft Channel

This option selects the channel within a site for operation should the site drop into conventional failsoft mode.

GE-MARC OPERATION

Placing A Dispatch Call

1. Select desired system/area and group.

2. Press SEND.

3. The display changes from the selected system/area and group display to **WAIT** while the radio is acquiring a repeater.

4. The radio sounds a three-tone alert signal when the communications channel is acquired.

5. If the radio is out of range of the selected system, 4 short and 1 long beep is heard and **NO SVC** is displayed for approximately 20 seconds. While **NO SVC** is displayed, no attempts can be made to place a call. If a new area is selected **NO SVC** turns off and the call can now be attempted in the new service area. If all available repeaters are busy when the call is attempted, 1 long beep is heard and **BUSY** is displayed. If the call retry option has been enabled through programming, **RETRYING** displays instead of the **BUSY** message.

6. The selected group or Special call item is displayed again after the call is completed.

Placing An Interconnect Or Dispatch Overdial Call

There are four methods to place an interconnect or dispatch overdial call.

METHOD 1: For interconnect, enter phone number and press **SEND**. For overdial, press **FCN** and then **3 DEF**. **OVERDIAL** is displayed on the character line. Enter the dispatch ID (2 or 4 tone sequence; e.g., *1809 or 18092310). Press **SEND**.

METHOD 2 Press **FCN** followed by **SEND** to automatically redial the last phone number or dispatch ID.

METHOD 3 Recall a previously stored dispatch ID or phone number from memory and then press **SEND**.

METHOD 4 Enter the Special Call mode by pressing **FCN** and then **0/SPC**, or enter Conference Call mode by pressing **FCN** and then **8/CNF CALL**, selecting a dispatch overdial or interconnect call from the Special Call list and then pressing **SEND**.

Storing A Dispatch Overdial Call

This type of call is dynamically stored to the call list by following these steps:

1. Enter the desired individual call ID then press **#** followed by **STO**.

2. Enter the two digit storage location for the number (00 to 50).

The new individual call ID is now added to the call list.

3/OVERDIAL

Press **FCN** and then **3/OVERDIAL** to enter the dispatch overdial mode and **OVERDIAL** is displayed. In this mode the user may enter a tone set for a dispatch overdial call and press SEND to send the call.

8/CNF CALL

Press **FCN** and then **8/CNF CALL** to enter the Conference Call mode. This mode allows the user to encode a call from the Special Call list using the selected group tone set.

Ending A Call

Calls can be ended three ways:

METHOD 1 Press **END**.

METHOD 2 A system disconnect or time out occurs. During a dispatch call the time out occurs after 6 seconds of channel silence. During an interconnect call timeout occurs after 30 seconds of channel silence.

METHOD 3 Returning the handset to the holder.

NOTE

If a channel disconnect occurs before the conversation ends, the call must be initiated again. To avoid confusion it is recommended that a procedure be set up requiring the originator of the call to re-establish communications. Two omore operators originating a call simultaneously normally acquire two different channels making communication impossible.

Receiving A Call

When a call is received by the radio, the call is decoded. If enabled, a single alert tone sounds indicating a group call was received or a two tone alert sounds if an individual call was received. The display shows the group identity

when receiving a group call and the *** INDV *** display when an individual call is received.

To answer a simplex dispatch call, pick up the handset and use SEND to transmit to the caller. To receive an interconnect call, press ***** to answer the call and place the unit in duplex.

Duplex operation must be enabled by the system operator for the tone set being used during duplex mode. If auto-interconnect is enabled for the system/area and the individual tone set being decoded, the user enters duplex by removing the handset from the cradle. If the handset has already been removed from the cradle when the call is received, the user presses ***** to enter duplex mode.

NOTE

Pressing **FCN** and then **5 JKL** during duplex operation toggles the radio into simplex mode.

CONVENTIONAL MODE OPERATION

1. Select the conventional mode of operation by pressing *****. If more than one channel is available in the conventional system, press **#** to select the other channels.

2. Determine if the channel is in use before making the call. Press **END** to momentarily disable the squelch and monitor the channel for activity. Alternatively, remove the handset from the holder to disable Channel Guard. This allows you to monitor the channel without disabling the squelch.

3. Press SEND and send the message.

Direct Mode Operation (Optional)

The direct mode provides short range, line of sight communications for radios with the talk-around option installed. While in the direct (or talk-around) mode, the radio will not function in the trunked mode.

1. Select a direct mode channel using the **#**.

2. Determine if the channel is in use before making the call. To monitor the channel press **END** to momentarily disable the squelch. Alternately, removing the handset from the holder allows monitoring of the channel

without disabling the squelch (Busy Tone is disabled). If the channel is in use, **IN USE** is displayed.

3. Press SEND and send the message. **BUSY** is displayed when the channel is active.

MAINTENANCE AND BASIC CARE

ANTENNA REMOVAL

It is strongly recommended that your antenna be removed from its mounting prior to passing through an automatic car wash in order to prevent antenna and/or vehicle damage. See your antenna instruction guide for instructions on how to safely remove the antenna from its mounting.

FUSE REPLACEMENT

The radio is protected by one or more fuses located in the cables connected to the vehicle power source(s). If the radio fails to operate, the problem may be a defective fuse. Replace the fuse(s) with a similar type and size (see list below). These fuses may be obtained from the radio supplier or most electrical supply stores. If, however, the trouble persists (continues to blow fuses or inoperative radio), check with the radio supplier.

Radio Power (Orange lead) 15 amp Fast Blow Type AGC15

Ignition Sense (Red lead) 2 amp Fast Blow Type AGC2

JUMP STARTING THE VEHICLE

Before jump starting or charging the vehicle battery, it is strongly suggested that the main power fuse, located in the orange lead, be removed. This insures that the radio is protected from damage in the battery charging process. Replace the fuse when charging is completed.

CLEANING INSTRUCTIONS

The handset can be cleaned with a damp cloth, using a mild solution of liquid detergent and water or with a soft cloth and furniture polish. Never use an abrasive or a petroleum based solvent cleaner.

AVAILABLE OPTIONS

The following equipment options are available for the radio. Refer to your radio supplier for ordering information.

Table 1. Dual Format MDR Optional Accessories

OPTION	DESCRIPTION	PART NUMBER
PMAN1L	800 MHz roof mount antenna with TNC connector	19B209568P5
PMCC1H	Handset extension cable (no coil), 18 feet, requires option PMCN1A	19B801636P1
PMCC3S	Handset cable (coiled), 6 feet stretched	19D901619P4
PMCC9M	External speaker cable, 18 inches	19A149590P8
PMCD1W	External speaker cable, 16 feet, requires option PMZM1K	19A149590P10
PMCD7Z	External option cable, 3 feet	19C851585P14
PMCD9A	Power cable, 18 feet	19B801358P17
PMCN1A	In line connector	19A705839P1
PMLS1F	Speaker, MIL-STD-810C & D, 5" x 5", requires options PMCD7Z & PMCC9M	19A149590P1
PMPD1A	Noise suppression kit	19A148539G1
PMSU1C	Alarm (horn) relay kit, requires option PMCD7Z	19A705499P1
PMTA1B	Talk-around kit	344A3803G2
PMZM1K	External speaker kit, requires option PMCD7Z, includes options PMLS1F and PMCC9M	
PMZM5V	Handset extension cable kit, includes options PMCC3S, PMCC1H and PMCN1A (2)	

FREQUENTLY CALLED NUMBERS

MEMORY LOCATION	NAME	TELEPHONE NUMBER
01		
02		
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05		
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07		
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44		
45		

FREQUENTLY CALLED NUMBERS

MEMORY LOCATION	NAME	TELEPHONE NUMBER
46		
47		
48		
49		
50		

NOTES:

WARRANTY

A. Ericsson Inc. (hereinafter "Seller") warrants to the original purchaser for use (hereinafter "Buyer") that Equipment manufactured by Seller shall be free from defects in material, workmanship and title, and shall conform to its published specifications. With respect to any Equipment not manufactured by Seller (except for integral parts of Seller's Equipment to which the warranties set forth above shall apply). Seller gives no warranty, and only the warranty, if any, given by the manufacturer shall apply. Batteries are excluded from this warranty but are warranted under a separate Nickel-Cadmium Battery Warranty.

B. Seller's obligations set forth in Paragraph C below shall apply only to failures to meet the above warranties (except as to title) occurring within the following periods of time from date of sale to the Buyer and are conditioned on Buyer's giving written notice to Seller within thirty (30) days of such occurrence:

1. for fuses, incandescent lamps, vacuum tubes and non-rechargeable batteries, operable on arrival only.

2. for parts and accessories (except as noted in B.1) sold by Seller's Service Parts Operation, ninety (90) days.

3. for all other Equipment of Seller's manufacture, one (1) year.

C. If any Equipment fails to meet the foregoing warranties, Seller shall correct the failure at its option (i) by repairing any defective or damaged part or parts thereof, or (ii) by making available at Seller's factory any necessary repaired or replacement parts. Any repaired or replacement part furnished hereunder shall be warranted for the remainder of the warranty period of the Equipment in which it is installed. Where such failure cannot be corrected by Seller's reasonable efforts, the parties will negotiate an equitable adjustment in price. Labor to perform warranty service will be provided at no change only for the Equipment covered under Paragraph B.3, and only during the first three (3) months following the date of sale to the Buyer. Thereafter, labor will be charged at prevailing rates. To be eligible for no-charge labor, service must be performed by an Authorized Service Center or other Servicer approved for these purposes either at its place of business during normal business hours, for mobile or personal equipment, or at the Buyer's location, for fixed location equipment. Service on fixed location equipment more than thirty (30) miles from the Service Center or other approved Servicer's place of business will include a charge for transportation. Equipment located off-shore is not eligible for no-charge labor.

D. Seller's obligations under Paragraph C shall not apply to any Equipment, or part thereof, which (i) has been modified or otherwise altered other than pursuant to Seller's written instructions or written approval or, (ii) is normally consumed in operation or, (iii) has a normal life inherently shorter than the warranty periods specified in Paragraph B, or (iv) is not properly stored, installed, used, maintained or repaired, or, (v) has been subjected to any other kind of misuse or detrimental exposure, or has been involved in an accident.

E. The preceding paragraphs set forth the exclusive remedies for claims (except as to title) based upon defects in or nonconformity of the Equipment, whether the claim is in contract, warranty, tort (including negligence), strict liability or otherwise, and however instituted. Upon the expiration of the warranty period, all such liability shall terminate. The foregoing warranties are exclusive and in lieu of all other warranties, whether oral, written, expressed, implied or statutory. NO IMPLIED OR STATUTORY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE SHALL APPLY. IN NO EVENT SHALL THE SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, INDIRECT OR EXEMPLARY DAMAGES.

This warranty applies only within the United States.

ECX-362S

EMERGENCY NUMBERS

Police

State Police

Fire

Poison Control

Ambulance

Life Saving and Rescue Squad

Ericsson Inc.
Private Radio Systems
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Printed in U.S.A.

ADDENDUM TO LBI-38838B

The Dual Format MDR Mobile Radio Unit can be supplied and used with two different handsets. One handset (344A3783P2) has a Push-to-Talk (PTT) button on the left side located below the VOLUME UP/DOWN buttons. This button must be held down to transmit during simplex operation.

The second type of handset (344A3783P3) does not have this PTT button. On this handset the SEND key has been programmed to function as the PTT operation. This key must be held down to transmit during simplex operation..

When using the procedures in this manual, use the corresponding button or key for the PTT function as determined by the type of handset used with the MDR radio unit.

For example:

3. Press SEND and send the message. (Using the 344A3783P3 handset.)

3. Press **PTT** and send the message. (Using the 344A3783P2 handset.)

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