# LBI-38733B

# **Operator's Manual**

# EDACS<sup>®</sup> M-RK I PORTABLE RADIO



TABLE OF CONTENTS	
	5
CONTROLS AND INDICATORS BUTTONS AND KNOBS INDICATORS UNIVERSAL DEVICE CONNECTOR (UDC) ALERT TONES Call Originate Autokey (Trunked Mode Only) Call Queued (Trunked Mode Only) System Busy (Trunked Mode Only) Call Denied (Trunked Mode Only) System Busy (Trunked Mode Only) Call Denied (Trunked Mode Only) Call Denied (Trunked Mode Only) Call Denied (Trunked Mode Only) Call Denied (Trunked Mode Only) System Sterry Warning Low Battery Warning Low Battery Warning Low Battery Alert System Scanning A Call Emergency Operation Wide Area System Scanning	7 9 123 133 144 145 155 16 16 16 17 17 18 19 20 1

This manual is published by **Ericsson Inc.** without any warranty. Improvements and changes to this manual necessitated by typographical errors, inaccuracies of current information, or improvements to programs and/or equipment, may be made by **Ericsson Inc.** at any time and without notice. Such changes will be incorporated into new editions of this manual. No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of **Ericsson Inc.** 

Copyright© January 1993, Ericsson GE Mobile Communications Inc.

TABLE OF CONTENTS (CONT)	
SPECIAL CALLS      23        Receiving And Responding To A Special Call      23        Initiating And Sending A Special Call      24        CONVENTIONAL FAILSOFT      25        CONVENTIONAL MODE OPERATION      26        Receiving A Call      26        Sending A Call      27        Emergency Operation      28        Scanning Conventional Channels      29        AEGIS AND VOICE GUARD OPERATION      31        VOICE MODES      31        Clear Modes      32        Aegis Digital Modes      33	3345557891133
Aegis Private And Voice Guard        Private Modes      34        TRANSFERRING KEYS INTO THE RADIO      36        KEY ZERO      36        PRIVATE OPERATION      36        Receiving An Encrypted Call      36        Transmitting An Encrypted Call      37        Scanned Group Calls      37        PORTABLE DATA OPERATION      38        Data Off Operation      38        Data Off Operation      39        Exiting Data Calls      39        STATUS/MESSAGE OPERATION      40        Status Operation      41        EDACS CONVENTIONAL P1 SCAN      41        DYNAMIC REGROUP OPERATION      41	456677 889900111
DYNAMIC REGROUP OPERATION      41        Emergency Operation      42        MACRO KEY OPERATION      43	1 2 3
OPERATING RULES AND REGULATIONS 43	3

TABLE OF CONTENTS (CONT)	
OPERATING TIPS	45
BATTERY PACKS	46
CHARGING THE BATTERY PACK	46
RECHARGEABLE BATTERY PACK	17
INSTALLING THE BATTERY PACK	47
REMOVING THE BATTERY PACK	47
INTRINSICALLY SAFE USAGE	49
BATTERY PACKS	49
GLOSSARY	50
RADIO PROGRAMMING	54
WARRANTY	58
NICKEL-CADMIUM BATTERY WARRANTY	59

#### INTRODUCTION

This manual describes the operation of the Ericsson GE EDACS<sup>™</sup> M-RK I portable radio. The M-RK I is a synthesized, microprocessor-based, high-performance portable FM radio providing reliable two-way communications for Enhanced Digital Access Communications System (EDACS) trunking environments and conventional communication systems.

In the EDACS or trunked system mode the user selects a communications system and group. In this mode, radio channel selection is transparent to the user; it is controlled by digital communication with the EDACS site equipment. This provides advanced programmable features and fast access to communication channels.

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

The radio's exact operation will depend on its current operating mode, its programming, and the particular radio system. Many features described in this manual can be enabled or disabled through programming. Consult the system administrator for the particular features that are programmed into the M-RK I.



Figure 1- EDACS M-RK 1 Portable Radio

M-RK I operating controls are located on the top and side panels of the radio. The top panel houses a rotary SYSTEM/GROUP/CHANNEL knob, a POWER ON-OFF/VOLUME control knob and a protected red EMER-GENCY button. Controls located on the left side panel (viewed from front) include an OPTION button, a CLEAR/MONITOR button and a Push-To-Talk (PTT) button. The Universal Device Connector (UDC) is located on the right side panel (viewed from front). This connector is utilized for accessory connections. It is also used by the maintenance personnel when the radio is programmed.

The speaker, microphone and three (3) illuminating indicators are located on radio's front panel. These indicators light-up to show various operating conditions such as transmitter on, channel busy, scanning, or a low battery.



Figure 2 - Top And Side Panel Views

#### BUTTONS AND KNOBS

This section describes the basic functions of the button and knob controls.

SYSTEM/ This 16-position rotary control is primarily GROUP/ used to select the systems and groups or CHANNEL conventional radio channels programmed into the radio. If the radio is programmed to make special calls, this knob is also used to select the programmed special calls. Special calls include trunked mode individual calls and telephone interconnect calls. See the 'OPERATION' section for specificdetails.

**POWER** This control provides power and volume **ON-OFF**/ controlfortheradio.

VOLUME KNOB

**B** Rotating the control clockwise out of the detentpositionappliespowertotheradio.At powerup, the radio will beep if the power-up alert tone is programmed on (enabled). Thisbeepindicatestheradioisoperational.

Rotating this control clockwise increases volume and counter-clockwise rotation decreasesvolume. Minimum volume levels can be programmed into the radio to prevent missed calls due to a low volume setting.

# **EMER-** The EMERGENCY button provides instant **GENCY** emergency channel access when it is **BUTTON** pressed.

There are raised bars on each side that protect it from accidental activations. See the "Emergency Operation" sections in the "TRUNKED MODE OPERATION" or the 'CONVENTIONAL MODE OPERA-TION" sectionsforspecificdetails.

**OPTION** Thisbuttoncanbeprogrammedtoprovidea **BUTTON** toggle feature <u>or</u> to enable special call mode.

> If the OPTION button is programmed for a toggle feature, pressing it will toggle the programmed feature between two different (for example: on and off). states togale features that The can he programmed are: scan on/off. svstem/group/channel bank 1/2, repeater talkaround on/off. data on/off. Private/clear, status on/off, message on/off, P1 Conv. Scan on/off, and transmit output power high/low. The button can only providetogaleofonefeature.

> Trunked mode individual calls, and telephone interconnect calls are special callsthatcanbeprogrammed into the radio. If the OPTION button is programmed to enable special call mode, the particular special call must first be selected using the

SYSTEM/GROUP/CHANNEL knob. The special call is then initiated by pressing the OPTION button and then the PTT button.

CLEAR/ MONITOR This button serves several purposes BUTTON dependingontheoperatingmode.

> If the CLEAR/MONITOR button is pressed when the radio is operating intrunked mode, the radio will exit the current operation and return to the group receive mode.

> If the CLEAR/MONITOR button is pressed when the radio is operating on a conventional channel the receiver will unmute (unsquelch) so activity on the selected channel can be monitored. Holding the button depressed for approximately three (3) seconds will toggle tone decoding (Channel Guard, Digital Channel Guard) programmed for the selected channel on,- and off Selecting a new conventional channel will turn the decode function on if it was previously turnedoff.

PUSH-TO-<br/>TALKPressing this button enables the' 'radio's<br/>TALK (PTT) transmitter. Releasing it returns the<br/>BUTTON radiotoreceivemode.

The three (3) indicators on the front panel of the radio light-up to show various operating conditions such as transmitter on, channel busy, scanning, or a low battery. Each indicator can flash or light continuously (not flash) in different color combinations to indicate various modes as defined in Table 1.

OPERATING CONDITION	INDICATOR	CONDITION	COLOR
Transmitting	TX/BAT	Continuous	Red
Battery Low Warning	TX/BAT	Flashes	Red
Busy	BSY/SCN	Continuous	Green
Call Queued *	BSY/SCN	Flashes	Green
Scanning	BSY/SCN	Flashes	Red
BankSelect Enabled	OPT	Flashes	Green
Talkaround Enabled	OPT	Flashes	Green
Special Call Enabled*	OPT	Continuous	Green
High Power Transmit On	OPT	Flashes	Green
Emergency Transmit Enabled	OPT	Continuous	Red
Emergency Receive Enabled*	OPT	Flashes	Red
Private	OPT	Flashes	Green
No Data*	OPT	Flashes	Green
Status/Message	OPT	Flashes	Green
Conv. P1 Scan	OPT	Flashes	Green

**TABLE 1 - Indicators** 

\*Trunked Mode Only

UNIVERSAL DEVICE CONNECTOR (UDC)

The UDC provides connections for external accessories such as a headset or a speaker-microphone. When the radio is locked in a vehicular charger/repeater the UDC provides the audio and control connections between the radio and the vehicular charger/repeater The UDC is also used to program the radio.

#### ALERT TONES

The M-RK I radio also provides audible alert tones or "beeps' to indicate various operating conditions. Alert tones can be enabled or disabled through programming.

#### Call Originate

A short mid-pitched alert tone sounds after keying the radio (after pressing the PTT button). At this time, the TX/BAT indicator lights red and, in trunked mode, the BSY/SCN indicator lights green. This indicates the radio has been assigned a working channel or it is transmitting on a conventional channel and voice communication can begin immediately. In conventional mode, this alert tone may be delayed slightly after PTT activation due to GE-STAR signalling if GESTAR is enabled through programming.

#### Autokey (Trunked Mode Only)

The site calls the radio when a channel becomes available after a call is placed in queue or if the PTT button is released prior to a working channel assignment At this point, the radio automatically keys the transmitter (autokey) for a short period to hold the channel and it sounds a mid-pitched tone when it is clear to talk. The operator should immediately press the PTT button to keep the assigned channel.

# Call Oueued (Trunked Mode Only)

A high-pitched tone will sound and the BSY/SCN indicator will flash green if a call request is placed in queue after PTT activation. The receiving unit(s) also hear the tone to notify them that a call should be received shortly. If the PTT button is released when a call is queued, the radio will autokey whenever a channel becomes available (see "Autokey").

# System Busy (Trunked Mode Only)

Three (3) low-pitched beeps will sound if the radio is keyed when the system is busy, if no channels are available for sending the message, if the call queue is full, or if an individual call is being attempted to a radio that is transmitting. Release the PTT button and re-key the radio to re-initiate the call request.

# Call Denied (Trunked Mode Only)

A low-pitched tone will sound at PTT activation if the radio is not authorized to operate on the currently selected system.

#### Carrier Control Timer

If the programmed time for continuous transmission is exceeded, five (5) short high-pitched alert tones followed by a long low-pitched alert tone will sound. The transmitter will shut down shortly after hearing the alert tones and the TX/BAT indicator will turn off Communication is interrupted. Release and re-key the PTT button to maintain communications. This will reset the carrier control timer and turn the transmitter back on.

#### Low Battery Warning

If the battery pack's charge is/becomes low, a lowpitched tone will sound and the TX/BAT indicator will flash red. The radio will continue to receive and transmit normally however, the battery pack should be charged or replaced as soon as possible. If the radio is keyed during this time, the TX/BAT indicator will light continuously (not flash) to indicate the radio is transmitting.

#### Low Battery Alert

If the battery pack's charge is too low to allow the radio to transmit (usually after a low battery warning), the radio will sound a low-pitched tone, (continue to) flash the TX/BAT indicator red and disable any transmission. The radio will continue to receive calls until the battery pack is discharged beyond the point of operation. A short low-pitched alert tone will sound if no action is taken when a button is pressed. For example, if the currently selected conventional channel has the channel busy transmit lockout feature enable and the radio is keyed when the channel is busy the radio will sound this low-pitched alert tone to warn the operator that no transmission is occurring.

#### OPERATION

# TURNING ON THE RADIO

Be fore turning the radio on, verify the antenna and battery pack are properly connected. To turn the unit on, rotate the POWER ON-OFF/VOLUME knob clockwise out of the detent position. If enabled through programming, a short beep will sound to indicate the radio is operational. The radio will begin operation on the currently selected system/group or channel.

# SYSTEM/GROUP/CHANNEL SELECTION

The M-RK I is programmed with <u>one</u> of the following system/group/channel selection methods:

 The radio is programmed with up to sixteen (16) different system/group or channels that are selected with the SYSTEM/GROUP/CHANNEL knob. Radios programmed in this manner use the OPTION button to provide a toggle feature <u>or</u> to enable special call mode.

• The radio is programmed with up to thirty-two (32) different system/group or channels selected in two (2) different banks of sixteen (16). If programmed in this manner, the OPTION button is used to toggle between the two banks and then the SYS-TEM/GROUP/CHANNEL knob is rotated to select the system/group or channel. No special calls can be initiated by a radio programmed in this manner

# TRUNKED MODE OPERATION

Digital trunking provides fast communication access. In this mode the operator selects a communications system and group and the audio communication channel (working channel) is automatically allocated by the EDACS site.

# Receiving A Call

- 1. Turn the radio on by rotating the POWER ON-OFF/VOLUME knob clockwise out of the detent position. Adjust the volume to an approximate mid-range position.
- 2. Select the desired system and group using the SYS-TEM/GROUP/CHANNEL knob in accordance with the radio's programming. The radio is now ready to receive group and individual calls.

- 3. When a Call is received, the radio will unmute (unsquelch) on the assigned working channel and the BSY/SCN indicator will light-up green. Adjust the volume as necessary.
- GROUP CALL If the call is a group call and a reply is necessary, follow the instructions outlined in the section entitled "<u>Sending A Call</u>" (Steps 2 - 3).

INDIVIDUAL CALL - An individual call is a call directed to only one radio. The radio may be programmed to ring when it receives a call of this type. If not answered, the ring will continue until the call-back hangtime (programmable) expires.

Responding to an individual call prior to the call-back hangtime time-out will automatically direct the call to the originating unit on an individual basis. The OPT indicator lights green during the call-back hangtime. See the section entitled "**SPECIAL CALLS**" for additional details on individual calls.

# Sending A Call

- 1. Turn the radio on and set the desired volume level Select the desired system and group in accordance with the radio's programming.
- 2. Press and hold the PTT button. The radio will perform signalling required to obtain a working channel. When transmitting, it will light the TX/BAT indicator red. When the working channel is assigned, the radio will sound the short mid-pitched call originate alert tone

and light the BSY/SCN indicator green. If two or more tones, or a high-pitched tone is heard, the system is busy and the call request has been placed in queue or the request has been denied. Refer to the "ALERT TONES" section for details.

3. After the call originate alert tone sounds, hold the radio approximately three (3) inches from the mouth and speak in a normal voice into the microphone. Release the PTT button when the transmission is complete and listen for a reply.

# Emergency Operation (Trunked Mode)

The radio's ability to declare an emergency to clear an emergency and to remain locked on an emergency group, can each be enabled or disabled through programming.

#### Receiving An Emergency Call

The radio will sound an alert beep and flash the OPT indicator red when an emergency call on the selected system and group is received. Follow standard emergency procedures.

#### Declaring An Emergency Call

To declare an emergency call on the selected system and group or on a preprogrammed (optional) emergency group, proceed as follows: Press and hold the red EMERGENCY button on the top of the radio for approximately one second. This time is programmable and therefore could be longer or shorter - check with the system administrator If the radio is scanning when an emergency is declared, it will Stop scanning until the emergency is cleared.

- 2. When the working channel is assigned, the radio sounds a single beep (Autokey alert tone), the OPT indicator lights red, the TX/BAT indicator lights red and the BSY/SCN indicator lights green. This indicates the radio is ready for voice transmissions. The OPT indicator will remain lit until the emergency is cleared.
- 3. Press the PTT button and speak into the microphone in a normal voice. The TX/BAT indicator will continue to light red as the radio is transmitting.
- 4. Release the PTT button when the transmission is complete and listen for a reply

Clearing An Emergency Call

If the radio has supervisor privileges (enabled through programming) an emergency can be cleared by pressing and holding the CLEAR/MONITOR button followed by pressing the EMERGENCY button, and then releasing both buttons. The M-RK I can be programmed for wide area system scan operation for multi-site applications. Upon the loss of the currently selected system's control channel, the radio can be programmed to automatically scan the control channels of other systems. If a new control channel is found the radio will switch to the new system and sound an alert tone. If the radio is programmed for wide area system scan operation, the SYSTEM/GROUP/ CHANNEL knob is <u>normally</u> programmed to select only groups and channels, not systems.

The radio can also be programmed for priority system scan: A priority system can be assigned among the systems programmed into the radio. Radios programmed in this manner will check for the priority trunked system's control channel at a programmable rate ranging from one (1) to sixteen (16) minutes. This priority scan timer is reset each time the PTT button is pressed or when a call is received. If the priority system control channel is found the radio will automatically switch to the priority system.

#### Scanning Trunked Groups

If the radio is programmed to scan, each system will <u>normally</u> be programmed with a fixed scan list 'that consists of some or all of the <u>selectable</u> groups in the radio (16 maximum if One bank, 32 maximum if two banks). However, each system in the radio can be programmed with a fixed scan list of up to sixty-four (64) groups. The following rules apply to trunked mode scanning:

- The BSY/SCN indicator flashes red when the radio is scanning.
- The operator cannot add groups to or deleted groups from the fixed scan list(s).
- The OPTION button may be programmed to toggle scan on and off
- The radio will continue scanning if a new group is selected when scan is on.
- The currently selected group has priority over the groups being scanned. Therefore, if the radio detects a call on the selected group it will switch to this group for the duration of the call. After the call is completed, the radio will resume scanning.
- Depending upon programming, pressing the PTT button when the radio is scanning will cause it to transmit on the currently selected group <u>or</u> on the scanned group (during the scan hangtime).
- When a group call is received on one of the groups being scanned, the radio will stop scanning, unmute on the assigned channel, and alternately flash the BSY/SCN indicator green and green/red. If the radio is programmed to transmit on scanned groups, the operator can respond (transmit) to the scanned group call before the scan hangtime (programmable) expires by pressing the PTT button.

 If a particular system is programmed to scan groups that are not selectable from the SYS-TEM/GROUP/CHANNEL knob, it will only be possible to transmit on these groups before the scan hangtime expires.

# SPECIAL CALLS

Individual calls and telephone interconnect calls are handled using the radio's special call mode. An individual call is directed to only one radio. Individual calls are always handled when the radio is in trunked mode. The radio can be programmed to handle telephone interconnect calls when it is in trunked mode and when it is in conventional mode. A conventional channel must be equipped for telephone interconnect capability before a telephone interconnect call can be placed on the channel.

# Receiving And Responding To A Special Call

The radio may be programmed to ring when it receives a special call. If not responded to (answered), the radio will continue ringing until the call-back hangtime (programmable) expires. After time-out the radio will return to group receive operation.

When a special call is received the BSY/SCN indicator will light green and the OPT indicator will light green. The OPT indicator will remain lit until the call-back hangtime expires or the operator clears the special call mode by pressing the CLEAR/MONITOR button or by changing the system or group.

To respond to a special call, press the PTT button before the call-back hangtime expires and then use standard transmission procedures. The call will be automatically directed to the originating unit on an individual basis. When the call is completed, momentarily press the CLEAR/MONITOR button to hang-up or simply wait for the hangtime to expire.

#### Initiating And Sending A Special Call

The radio can be programmed with up to sixteen (16) special calls (individual calls and telephone interconnect calls). Special calls can only be initiated by the radio if the OPTION button is programmed to enable special call mode. The following procedure outlines procedures necessary to initiate and send a special call.

1. Each position of the SYSTEM/GROUP/CHANNEL knob can be programmed with a different special call. Rotate the knob to the position that corresponds to

NOTE

The M-RK I radio is capable of simplex communications only. The callee can Only hear the radio if the PTT button is pressed (the radio is transmitting) and the callee can only be heard when PTT is released (the radio is receiving).

desired special call.

- 2. Press the OPTION button to place the radio in the special call mode. The OPT indicator will light green to indicate the radio is in the special call mode.
- 3. Press and release the PTT button.
- 4. INDIVIDUAL CALL When the signalling is complete and it is clear to transmit the radio will sound the call originate alert tone. With the PTT button depressed, speak into the microphone in a normal voice. Continue with standard transmission procedures.

NOTE

Emergency and Special Call are not operational during conventional failsoft. Also, the **GROUP** control will not operate.

TELEPHONE INTERCONNECT CALL - The telephone rings will be heard until the called party with standard transmission procedures.

5. When the call is completed, momentarily press the CLEAR/MONITOR button to hang-up or simply wait for the hangtime to expire.

# CONVENTIONAL MODE OPERATION

The radio operates in the conventional mode (nontrunked mode) when a conventional channel is selected. Each channel consists of a preset transmit/receive frequency pair for repeater operation or a common transmit/receive frequency for talkaround (no repeater) operation. Each conventional channel can have one or more features, such as Channel Guard, programmed when the channel is selected.

If the CLEAR/MONITOR button is pressed when the radio is operating on a conventional channel the receiver will unmute (unsquelch) so activity on the selected channel can be monitored. If programmed for the selected channel, holding the button depressed for approximately three (3) seconds will toggle tone decoding (Channel Guard, Digital Channel Guard) between the on and off states. Selecting a new conventional channel will turn the decode function on if it was previously turned off.

#### **Receiving A Call**

1. Turn the radio on by rotating the POWER ON-OFF/VOLUME knob clockwise Out of the de ten t position. Adjust the knob to an approximate desired volume level.

- 2. Select the desired conventional channel using the SYSTEM/GROUP/CHANNEL knob in accordance with the radio's programming. The radio is now ready to receive calls.
- 3. The BSY/SCN indicator will light-up green when the radio receives any signal on the selected channel. The radio will unmute (unsquelch) when it receives a signal if the correct Channel Guard signal is decoded (if programmed and enabled).

# Sending A Call

- 1. Turn the radio on by rotating the POWER ON-OFF/VOLUME knob clockwise out of the detent position. Adjust the knob to an approximate desired volume level.
- 2. Select the desired conventional channel using the SYSTEM/GROUP/CHANNEL knob in accordance with the radio's programming. The radio is now ready to receive calls.
- 3. Verify the channel is not busy by observing that the BSY/SCN indicator is not lit-up green or by momentarily pressing the CLEAR/MONITOR button to unsquelch the radio.
- 4. Press and hold the PTT button. The TX/BAT indicator will light-up red and the short mid-pitched call originate alert tone will sound (if programmed). If the

channel busy transmit lockout feature is enabled for the selected channel, the radio will not transmit if the channel is busy at PTT In this case, the radio will sound a low-pitched alert tone when the PTT button is pressed to indicate it is not transmitting.

- 5. Hold the radio approximately three (3) inches from the mouth and speak in a normal voice into the microphone.
- 6. Release the PTT button when the transmission is complete and listen for a reply.

# Emergency Operation

If the radio is programmed for GE-STAR emergency signalling this signalling can be transmitted when the radio is operating on a conventional channel GE-STAR emergency signalling will transmit five (5) times with a delay between each transmission. GE-STAR is programmed to transmit in one of the following methods:

- GE-STAR emergency signal is transmitted on the selected channel. If the channel is changed the emergency transmissions will continue on the newly selected channel.
- GE-STAR emergency signal is transmitted on the selected channel and the radio locks onto the selected channel The channel cannot be changed until the emergency is cleared.

- GE-STAR emergency signal is transmitted on a predetermined conventional emergency channel regardless of the selected channel. In this case the selected channel is available for voice transmission and the radio will periodically "jump" to the predetermined emergency channel to send the emergency signal and then 'jump" back to the selected channel for voice transmissions.
- The radio switches to and locks on a predetermined conventional emergency channel for GE-STAR emergency and voice transmissions. The channel cannot be changed until the emergency is cleared.

If the radio is programmed to transmit GE-STAR emergency signalling, press and hold the red EMER-GENCY button on the top of the radio for approximately one second. This time is programmable and there fore could be longer or shorter - check with the system administrator. Follow standard emergency procedures.

The emergency state can be cleared by turning the radio off and then back on or by changing systems. System changes are always allowed during GE-STAR emergency transmissions; however, if a new system is selected, GE-STAR signalling will be cleared (stopped).

#### Scanning Conventional Channels

If the radio is programmed to scan, each conventional system will <u>normally</u> be programmed with a fixed scan list that consists of some or all of the <u>selectable</u> conven-

tional channels in the radio. However, each conventional system in the radio can be programmed with a fixed scan list of up to sixty-four (64) channels. The following rules apply to conventional mode scanning:

- The BSY/SCN indicator flashes red when the radio is scanning.
- The operator cannot add channels to or deleted channels from the fixed scan list(s). In addition to the fixed scan list(s), the radio may also be programmed to scan the selected channel even if it is not on the fixed scan list(s). Priority-one and priority-two scan channels may also be programmed.
- Scan rate will vary depending upon the number of channels on the fixed scan list(s) and whether or not the radio is programmed to scan for Channel Guard.
- The OPTION button may be programmed to toggle scan on and off
- The radio will continue scanning if a new channel is selected when scan is on.
- Depending upon programming, pressing the PTT button when the radio is scanning will cause it to transmit on the currently selected channel <u>or</u> on the scanned channel (during scan hangtime).

- When a call is received on one of the channels being scanned, the radio will stop scanning, unmute on the assigned channel, and the BSY/SCN indicator will alternately flashes green and green/red. If enabled through programming, the operator may respond (transmit) to the scanned call before the scan hang-time (programmable) expires by pressing the PTT button.
- If priority scan channels are programmed, the radio will periodically monitor these channels for activity. If active, the radio will stay on the priority channel for the duration of the call.
- If a particular conventional system is programmed to scan channels that are not selectable from the SYS-TEM/GROUP/CHANNEL knob, it will only be possible to transmit on these scanned channels before the scan hangtime expires. The radio must be programmed to transmit on the scanned channel instead of on the selected channel.
- If the radio is programmed to disable scan operation after transmitting, scan will turn off after transmitting. In this case, scan can only be turned back on if the OPTION button is programmed to toggle scan on and off

#### AEGIS AND VOICE GUARD OPERATION

#### VOICE MODES

Each system (trunked or conventional) in the radio is programmed for either Aegis or Voice Guard communications. Aegis programmed systems have three (3) different voice modes: clear (analog), digital and private. Voice Guard systems have two (2) voice modes: clear (analog) and private. The voice modes are programmed on a per-group basis within each trunked system and on a per-channel basis within each conventional system. A radio must be equipped with the encrypt/decrypt option before it will operate in Aegis or Voice Guard modes.

# TRANSMIT/RECEIVE MODE COMPATIBILITY FOR AEGIS OPERATION

GROUP/CHANNEL PROGRAMMING (TRANSMIT)	CLEAR RECEIVE	DIGITAL RECEIVE	PRIVATE RECEIVE
CLEAR	Yes	No	No

#### NOTE

Conventional Aegis or encrypted channels require Channel Guard on the channel to operate correctly.

DIGITAL	Yes	Yes	No
PRIVATE	Yes	No	Yes*

# TRANSMIT/RECEIVE MODE COMPATIBILITY FOR VOICE GUARD OPERATION

GROUP/CHANNEL PROGRAMMING (TRANSMIT)	CLEAR RECEIVE	PRIVATE RECEIVE
CLEAR	Yes	No
PRIVATE	Yes	Yes*

# \*assumes the proper cryptographic key is loaded

# Clear Modes

Aegis clear and Voice Guard clear modes are identical voice modes in which the radio transmits and receives only clear (analog) voice signals. These analog signals are non-digitized and non-encrypted. Clear mode transmissions can be easily monitored by unauthorized persons. Groups or channels programmed

#### Aegis Digital Mode

Aegis digital mode allows the radio to transmit and receive digitized voice signals. Aegis digital signals provide improved weak signal performance and they cannot be easily monitored with a standard receiver. Groups and channels programmed for Aegis digital operation transmit only digital signals. Private calls cannot be received or transmitted when the radio is in the Aegis digital mode because the radio does not know the cryptographic key used. Message trunked group calls and individual calls will be answered back in the mode they were received, assuming the call or hangtime is still active. Individual, phone, all and emergency calls will be transmitted clear if digital mode is disabled or inoperative.

- 1. If receiving an analog message trunked call, the radio will respond in analog mode during the hang time on the working channel.
- 2. If receiving an analog I-Call, the radio will respond in analog mode during the hang time.

# Aegis Private And Voice Guard Private Modes

The Aegis private and Voice Guard private modes allow the radio to transmit encrypted messages and receive clear or private transmissions. The radio will transmit private if the group/channel is programmed for private operation and forced operation is pre-programmed. If autoselect operation was pre-programmed and the radio is in private mode, the radio will transmit in the mode of the received call if the hang time is active. If no hang time is active, the radio will transmit private.

Aegis transmissions cannot be received by a radio set to receive a Voice Guard transmission. Accordingly, a Voice Guard transmission cannot be received by a radio set to receive an Aegis transmission.

Cryptographic keys are transferred to the radio using a cryptographic Keyloader. Up to seven (7) different cryptographic keys, numbered 1-7, can be transferred from a Keyloader and stored in the radio. An individual key is automatically selected on a per-group/channel basis according to the radio's programming. Groups and channels within Aegis systems can be programmed for keys 1-7. Groups and channels within Voice Guard systems can be programmed for keys 1-7.

DES radios require a DES Keyloader (Option V4025). VGE radios require a VGE Keyloader (Option V4028).

When operating on a group or channel programmed for private mode, all transmissions will be private transmissions and the radio will receive clear and private signals. The OPT indicator flashes green when the private mode is enabled. If the selected group or channel is programmed for autoselect capability, the mode may be toggled between private and clear with the OPTION button. Radios programmed for forced private operation do not allow a change of the transmit mode; therefore, the OPTION button has no effect.

# TRANSFERRING KEYS INTO THE RADIO

The following procedure outlines basic key transferring steps.

- 1. Turn the radio off.
- 2. Plug the modular connector of the Keyloader cable into the Keyloader modular jack.
- 3. Connect the Keyloader cable to the UDC on the radio.
- 4. Press the PWR button on the Keyloader and wait for the Keyloader to display "MASTER MODE".

- 5. Press the TRN button on the Keyloader. If necessary, select a different cryptographic key to be transferred into the radio.
- 6. Turn the radio on. A beep will indicate that the Keyloader is connected.
- 7. Press the EXE button on the Keyloader to transfer the key. The Keyloader will display "GOOD 1.x TRANS-FER" where "x" is the selected cryptographic key number.
- 8. Disconnect the cable from the radio's UDC. The radio will change to the selected group or channel as indicated in the display.

#### KEY ZERO

All cryptographic keys can be zeroed (erased from radio memory) by pressing the MONITOR/CLEAR button and while still pressing this button, press and hold the OPTION button. Press both buttons for 2 seconds. A series of beeps will begin at the start of this 2 second period and then switch to a solid tone after the keys have been zeroed.

If the cryptographic key(s) are zeroed, one or more keys must be transferred from the Keyloader into the radio before private communications may continue.

# PRIVATE OPERATION

# Receiving An Encrypted Call

When receiving, the radio automatically switches between clear or private operation. If the transmission being received is an encrypted transmission, it will be decrypted, the OPT indicator will flash green, the receiver will unsquelch and the message will be heard in the speaker. For this to occur, the selected group or channel must be programmed for private operation and the correct cryptographic key must be loaded into the radio.

# Transmitting An Encrypted Call

- 1. Select the desired group or channel.
- 2. Place the radio in private mode by pressing the OPTION button. When private mode is enabled, the OPT indicator will flash green.

If the last state of the radio was private mode, the private mode will be enabled on power up. Also the private mode will be enabled if forced operation has been programmed in the radio.

If the radio does not have the correct encryption key loaded, "NO KEY " repetitive tone will sound and the call will not be transmitted.

3. Continue with standard transmission procedures. A private mode access tone will be heard when the PTT button is pressed.

#### Scanned Group Calls

Receiving a scanned group call is the same as receiving a selected group call. During the scan hang time, if the radio was programmed for autoselect, it will transmit back in the same mode it received the call. For example, if a clear group is entered in the scan list, it will only receive clear calls. If the same group was available in private and entered in the scan list, it can receive clear and private calls, provided autoselect was programmed in the radio. The user can select transmitting on the scanned or selected group. If a group is entered in the scan list more than once and in different modes (clear, digital, private), only the first occurrence of the group will be used.

#### PORTABLE DATA OPERATION

The M-RK radios when operating in the EDACS configuration permit either voice or data calls to be transmitted or received. The radio can handle only one type of call at a time; however, selection of either data or voice is selected transparently by the operator through normal usage of the radio. Data communications is not supported in the conventional mode.

The radios may be connected to Mobile Data Terminals (MDT) or to a host computer. Any RS-232 compatible device that supports the Radio Data Interface (RDI) protocol (Version 1.91 or greater) may be connected to the radio. Support for MDT's or host computers is a programmable option per radio. Additionally, radios programmed for host computers may also be programmed for data only operation (no voice calls transmitted or received).

# DATA OFF OPERATION

The radio can be placed in the data disabled state by any of the following methods. When the data state is disabled, the radio beeps and the OPT indicator will flash green. An ongoing data call is allowed to complete except in the case of declaring an emergency.

- Declaring an emergency (not to be used unless an actual emergency condition exists). Alert tone will sound.
- Pressing the OPTION button (if pre-programmed as a no data button). Alert tone will sound.

# DATA ON OPERATION

The data state is enabled by one of the following (depending on how it was disabled).

- Pressing the OPTION button (if pre-programmed as a no data button) toggles data state on or off.
- Clearing an emergency but valid only if emergency caused data off operation.

#### EXITING DATA CALLS

Under normal conditions, the radio enters the scan lockout mode and returns to the control channel after completion of a data call (transmit or receive). If during a data call, one of the following conditions occurs, the data call is immediately terminated and the radio performs the desired function:

- PTT activated.
- Emergency declared by pressing the pre-programmed emergency button.

• A group or system change.

#### STATUS/MESSAGE OPERATION

Status and message operation is possible with the M-RK radio unit. The radio OPTION button must be reconfigured and pre-programmed for status/message operation. The radio can operate in either status or message but not both and can only transmit one status condition or one message text.

#### STATUS OPERATION

Status operation permits the transmission of a preprogrammed status condition to the EDACS site.

To send a status condition, press the OPTION button to select the pre-programmed status. After the time-out expires, the status will be transmitted to the site or stored in the radio memory where it can be polled by the site at a future time. If the site does not receive the status properly, the radio will sound a low pitched tone.

The status selection can also be cancelled by pressing the CLEAR button prior to the time-out period.

#### MESSAGE OPERATION

Message operation permits the transmission of a pre-programmed message text to an EDACS site.

To send a message, press the OPTION button to select the pre-programmed message text. After the timeout expires, the message text will be transmitted to the site. If the site does not receive the message properly, the radio will sound a low pitched tone.

The message text selection can also be cancelled by pressing the CLEAR button prior to the time-out period.

# EDACS CONVENTIONAL P1 SCAN

This feature permits the radio user to scan a pre-programmed conventional system Priority 1 (P1) channel while the radio is selected for EDACS trunked system. If activity is detected on the conventional P1 channel, the radio will unmute and remain on this conventional channel for the programmable hang time.

The radio must be pre-programmed to designate a key for scan on/off operation. In addition the scan condition must be programmed to unmute on squelch only clear voice (quick check mode) or unmute for both clear and digital voice (complete check mode).

# DYNAMIC REGROUP OPERATION

Dynamic regroup operation permits multiple talk groups (up to eight) to be added to a radio via the system manager. The radio must be pre-programmed to respond to regrouping. Dynamic regrouping will not be activated in a radio until an activation message is sent by the system manager. Each radio that receives and acknowledges the regrouping instructions is successfully regrouped.

Pressing and holding the CLEAR/MONITOR button for 2.5 seconds toggles the user into and out of the dynamic regroup groupset. A double beep will sound for entry or exit. The TX/BAT indicator will flash to indicate that dynamic group is active. The double beep and lack of the periodic low battery audible alarm will be an indication that the TX/BAT indictor is indicating dynamic regroup is active.

Also, when Systems and Groups are pre-programmed on the knob as in the M-RK I the knob becomes a group only knob when in dynamic regroup. This permits the user to get to all eight groups. To change systems, dynamic regroup must be exited by holding the CLEAR/MONITOR button for 2.5 seconds.

#### EMERGENCY OPERATION

If the pre-programmed groupset on the currently selected system contains an EMER/HOME group and the radio is in dynamic regroup, the radio will exit dynamic regroup and declare the emergency on the HOME group. If no EMER/HOME group is present, the radio will declare the emergency on the currently selected dynamic regroup group.

#### MACRO KEY OPERATION

Macro key operation permits the user to accomplish a series of key strokes with a single "macro" key stroke. Up to ten (10) macro keys can be defined, each capable of executing up to twenty (20) key strokes, to any pushbutton input (i.e., keypad buttons, OPTION button, etc.). Each macro keys can be pre-programmed to activate when pressed or when released.

A macro key may also be pre-programmed to change the keys stroke sequence the next time the macro key is activated. A macro key function will be aborted if the user changes a button or knob position.

For detail operation and assignment of macro keys, contact your communications supervisor or administrator.

# OPERATING RULES AND REGULATIONS

Two-way FM radio systems must be operated in accordance with the rules and regulations of the Federal Communications Commission (FCC). As an operator of two-way radio equipment, the user must be thoroughly familiar with the rules that apply to the intended type of radio operation. Following these rules will help to eliminate confusion, assure the most efficient use of existing radio channels, and result in a smoothly functioning radio network.

When using the radio, remember these rules:

 It is a violation of FCC rules to interrupt any distress or emergency message. In conventional mode the radio operates in much the same way as a telephone "party line" therefore always listen to make sure that the line is clear--that no one else is on the air--be fore sending any messages. If someone is sending an emergency message--such as reporting a fire or asking for help in an accident--KEEP OFF THE AIR!

- 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 brief and confined to business. To save time, use coded messages whenever possible.
- 5. Using the radio to send personal messages (except in an emergency) is a violation of FCC rules. Only those messages essential for the business operation may be sent.
- 6. It is against the Federal law to repeat or otherwise make known anything overheard on the radio. Conversations between others sharing a communications channel must be regarded as confidential.
- 7. The FCC also requires that the caller be identified at certain specific times by means of call letters. Refer to the rules that apply to the particular type of operation for the proper procedure.
- 8. No changes or adjustment shall be made to the equipment except by an authorized or certified electronic technician.

#### OPERATING TIPS

The following conditions tend to reduce the effective range of two-way radios and should be avoided whenever possible.

- Operating the radio in low areas of terrain or while under power lines or bridges.
- Operating the radio inside of a vehicle or in a metal or steel framed building unless using an outside antenna.
- Obstructions such as mountains or buildings between the sending and receiving parties.

In areas where transmission or reception is poor, some improvements may be obtained by insuring that the antenna is vertical. Moving a few yards in another direction or moving to a higher elevation may also improve communication.

# BATTERY PACKS

#### CHARGING THE BATTERY PACK

After receiving a new rechargeable battery pack from the factory, it should be fully charged before placing it into service. This also applies to rechargeable batteries that have been stored for long periods. When the battery pack requires charging the radio will signal the operator with an alert tone and the TX/BAT indicator will flash red. Chargers are available with nominal charge times of 1 hour (rapid) and 14 hours (standard). Combinations include single and multi-position, standard and rapid charge units. In addition, the vehicular chargers/repeaters simultaneously charge the battery packs while the radio is Operating. For specific instructions refer to the applicable charger Operating Manual.

The rechargeable batteries used with the radio can develop a reduced capacity condition some times called the "Memory Effect". This condition can occur when a battery is continuously charged for long periods or when a regularly performed duty cycle allows the battery to expend only a limited portion of its capacity. The battery pack may show a severe decrease in its ability to deliver full capacity for an extended period. Any rechargeable battery pack showing signs of reduced capacity should be returned to a qualified service center for inspection.

#### RECHARGEABLE BATTERY PACK DISPOSAL

The product that you have purchased contains a rechargeable battery. The battery is recyclable. At the end of its useful life, under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal. Call Toll Free 1-800-822-9362 for information and/or procedures for returning rechargeable batteries in your state.

# INSTALLING THE BATTERY PACK

1. Ensure the POWER ON-OFF/VOLUME knob is in the OFF (detent) position.



Figure 3 - Installing And Removing The Battery Pack

- 2. Align the battery pack grooves with the battery mounting plate rails on the bottom of the radio.
- 3. Insert the rails into the grooves and slide the battery toward the battery latch until the battery latch clicks into place.

# REMOVING THE BATTERY PACK

- 1. Ensure the POWER ON-OFF/VOLUME knob is in the OFF (detent) position.
- 2.

Release the battery latch by pushing it upward toward the top of the radio.

3. Remove the battery pack by sliding it away from the battery latch until it separates from the radio.

#### GLOSSARY

- agency- an agency is composed of multiple fleets. units can be programmed to initiate agency calls to access multiple fleets. (Trunked Mode Only)
- a programmed option used in some fleets so units can only hear and talk to a base dispatch unit, not to other mobiles or portable radios in the group. In this mode of operation, when a unit in a particular group is talking to the base dispatch unit, all other mobile and portable radios in that group will receive a "system busy" alert tone if they try to access the system. (Trunked Mode Only)
- control channel a radio channel in a trunked system that is used to digitally communicate with the radios operating on the system when they are not engaged in active voice communications.
- conventional channel a radio channel (transmit/receive) that is allocated for conventional (non-trunked) use and may be manually selected by the operator.
- conventional mode communicating on radio channels allocated for conventional use.
- CCT- Carrier Controlled Timer a programmable timer that will disable a transmission if the timer length is exceeded.
- CG Channel Guard a method of controlling mute with a tone or digital code.

dynamic regrouping

- fleet a fleet of users consists of multiple groups (sub fleets). Radios can be programmed to make fleet calls to simultaneously access multiple user groups. (Trunked Mode Only)
- group or subfleet a group of users share the same program group identification number in their mobile and portable radios. All units in the same group will receive a dispatch call placed by any one unit in the group. (Trunked Mode only).
- group scan
  programming that allows the radio to monitor up to 64 separate groups simultaneously (multi-group decode), permitting the user to receive calls from these groups. when a radio receives a call from one of these groups, it will "lock-out", and not send or receive calls from other groups for a programmed period of 5, 10 or 15 seconds, permitting the user to respond to the group call. (The radio may also be programmed for no lock-out period.) At the end of the 'lock-out" period, the radio sounds two short low-pitched "beeps" and is again ready to receive a call from any of the programmed aroups. (Trunked Mode Only)
- hangtime the time interval between when a call is initiated and when it will be dropped (cancel) by the system if not responded to by the called party
- individual call Every radio in the system is programmed with a unique individual identification code. A mobile or portable radio can be programmed to call another unit by selecting the individual unit based on I0 number. (Trunked Mode Only)

- queueing the process that occurs when all channels in a trunked system are busy and calls must be addressed on a priority basis.
- site controller the computer controlled radio equipment at the repeater site that controls a trunking system.
- system (area) the terms 'system" and "area" are used interchangeably to refer to the particular group of station repeaters currently providing service to the radio.
- system manager a computer that performs the data basing and system monitoring for the site controller.
- system scan a programmed feature to scan (monitor activity on) separate trunked systems and receive calls on any of these systems. (Trunked Mode Only)
- talk-around mode also referred to as "direct mode", talk-around provides a direct unit-to-unit short range communications link. It is intended to maintain communications outside of the main system coverage area.
- telephone this feature allows the user to initiate or receive interconnect telephone calls through the radio if the system is con figured for this operation. (Trunked Mode Only)

trunked group

- a radio communications path shared by two or more users.
- trunked operation a set of radio frequency channels used by multiple users. By using high speed digital data the radio goes to an unused channel when a call is initiated and will also only respond to calls in the same user group. In this way conversation privacy between user groups is assured.
- trunked radio system a radio system in which a limited number of radio channels is dynamically allocated to groups of people for communication purposes.
- trunked system a set of one or more trunked groups.
- wide area en code a programmed option which ensures all system scanning mobile and portable radios have time to lock onto the call before the initiating unit is allowed to talk.
- working channel a radio channel (transmit/receive) that is automatically assigned by the site controller for voice or data communications.

# **RADIO PROGRAMMING**

RADIO TYPE:	
FREQUENCY BAND:	
OPERATOR'S NAME:	
EMERGENCY GROUP:	
EMERGENCY CHANNEL	÷
OPTION BUTTON:	

SYSTEM NAME	TRK/ CONV	GROUP/CHANNEL NAME	USE
	SYSTEM NAME	SYSTEM NAME      TRK/ CONV        I      I <td>SYSTEM NAMETRK CONVGROUP/CHANNEL NAMEII<td< td=""></td<></td>	SYSTEM NAMETRK CONVGROUP/CHANNEL NAMEII <td< td=""></td<>

# NOTES

# 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 tille) 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:
  - for fuses, incandescent lamps, vacuum tubes and non-rechargeable batteries, operable on arrival only.
  - 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 Buver'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. 1-800-528-7711 (Outside USA, 804-528-7711).

ECX-3625

# NICKEL-CADMIUM BATTERY WARRANTY

- A. Ericsson Inc. (hereinafter "Seller") warrants to the original purchaser for use (hereinafter "Buyer") that nickel-cadmium batteries supplied by Seller shall be free from defects in material and workmanship, and shall conform to its published specifications for a period of twelve (12) months from the date of purchase.
- B. For purposes of this warranty, batteries shall be deemed defective if (1) the battery capacity is less than 80% of rated capacity, or (2) the battery develops leakage.

C. If any battery fails to meet the foregoing warranty, Seller shall correct the failure by issuing a replacement battery upon receipt of the defective battery at an Authorized Service Center (ASC). To obtain the name and address of an ASC, ask your salesperson, consult the Yellow Pages, or call the number printed at the bottom of this page.

D. Replacement batteries shall be warranted only for the remaining unexpired warranty period of the original battery. This warranty becomes void if:

(1)The battery has been subjected to any kind of misuse, detrimental exposure, or has been involved in an accident.

(2)The battery is used in equipment or service other than the radio equipment for which it is specified.

E. The preceding paragraphs set forth the exclusive remedies for claims (except as to title) based upon defects in or non-conformity of any battery, 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 warrantes, whether oral, written, expressed, implied or statutory. NO IMPLED OR STATUTORY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE SHALL APPLY. IN NO EVENT SHALL THE COMPANY BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, INDIRECT OR EXEMPLARY DAMAGES.

This warranty applies only within the United States. 1-800-528-7711 (Outside USA, 804-528-7711).

ECX-841C

# **EMERGENCY NUMBERS**

Police		
State Police		
Fire		
Poison Control		
Ambulance		

Life Saving and Rescue Squad

Ericsson Inc. Private Radio Systems Mountain View Road Lynchburg, Virginia 24502 1-800-528-7711 (Outside USA, 804-528-7711) Printe

Printed in U.S.A.