

BENDIX/KING

Mobile Communications Division

**LAA 0760
UCOM Editor
Software Manual**

BK REF 006-01284-0000

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INTRODUCTION

This preliminary manual provides instructions for using UCOM software to program Tone Decode and Inversion Scrambling in Bendix/King radios equipped with the Universal Communications Options Module (UCOM). Tone Decode is a standard feature of UCOM. Inversion Scrambling is an option that can be enabled only at the factory (LAA 572).

To use this software, you will need:

An IBM or compatible computer with a floppy disk drive, an RS-232 serial port, and MS-DOS 3.3 or later

An RS-232 Interface Cable, available from Bendix/King

A mouse pointing device (optional)

The UCOM software diskette (LAA 760)

START THE PROGRAM

1. Connect the interface cable to the radio and the computer's serial port. Note whether the serial port is COM 1 or COM 2.
2. Turn the computer and the radio on.
3. Place the UCOM software diskette in the computer's disk drive. If desired, copy the program to a directory in a hard disk drive.
4. At the DOS prompt, type **UCOM** and press **Enter**.

The default serial port is COM 1.

Start the program by typing **UCOM 2** if using COM 2.

The UCOM Editor program displays information in three screen formats:

Channel Edit Screen	Alt-H
Scramble Frequencies Screen	Alt-S
Codeset Edit Screen	Alt-C

CHANNEL EDIT SCREEN

Ucom Editor			
File	Edit	Radio	Help
Group 1			
		Codeset	*Mode*
Ch 1			NONE
Ch 2			NONE
Ch 3			NONE
Ch 4			NONE
Ch 5			NONE
Ch 6			NONE
Ch 7			NONE
Ch 8			NONE
Ch 9			NONE
Ch 10			NONE
Ch 11			NONE
Ch 12			NONE
Ch 13			NONE
Ch 14			NONE

The opening screen in the UCOM program is the Channel Edit Screen. This screen allows tone signalling codesets or scramble frequencies to be selected for individual channels.

If tone signalling codesets or scramble frequencies have not yet been created, open the Codeset Edit screen to create them.

To open the Codeset Edit Screen press **Alt-C** or select **Codeset edit** from the Edit Menu.

To return to the Channel Edit Screen press **Alt-H** or select **Channel edit** from the Edit Menu.

Function keys for the Channel Edit Screen include:

Page Up	Next Group
Page Down	Previous Group
Tab or right arrow	Move right one field
Shift-Tab or left arrow	Move left one field
up arrow	Move up one field
down arrow	Move down one field

Alt-F	Open File menu
Alt-E	Open Edit menu
Alt-R	Open Radio menu
F1	Open Help screen
Esc	Cancel an operation
Spacebar or Double-click	Open menu for current field

CODESET

Press the **spacebar** or **double-click** the mouse to display a list of four available Scramble frequencies or Decode codesets.

Freqs - Select from the list by clicking the mouse or pressing the arrow keys, then the Enter key. If scrambling is installed in this radio, enter or change scramble frequencies on the Scramble Frequencies Screen or the Codeset Edit screen, both under the Edit Menu at the top of the screen.

Codeset - Select from the list by clicking the mouse or pressing the arrow keys, then the Enter key. Create or modify a codeset on the Codeset Edit Screen, under the Edit Menu at the top of the screen.

MODE

Press the **spacebar** or **double-click** the mouse to select:

NONE	No UCOM functions enabled for the current channel.
SCRAMBLE	If installed, enables scrambling on the current channel.
DECODE	Allows tone decoding on the current channel.

NOTE: You must select a MODE for the channel before selecting a CODESET.

NOTE: If you are using a mouse, select a field or open a menu by clicking on it. Double-click to open a menu of options for that field.

NOTE: Inversion Scrambling is an option that can be enabled only at the factory.

MENU BAR

The menu bar at the top of the screen contains **File**, **Edit**, and **Radio** menus plus **Help**. Open a menu by pressing **Alt-F** for File, **Alt-E** for Edit, or **Alt-R** for Radio. If you are using a mouse, open a menu by clicking on it. Select a menu option by pressing the arrow keys (and Enter), clicking with the mouse, or pressing the highlighted letter in the first word.

FILE MENU Alt-F

Open data file	Read data from a file into editor
Save data file	Save current editor data to a file
Exit	Exit program

EDIT MENU Alt-E

Codeset edit	Alt-C	Edit tone signalling codeset
Channel edit	Alt-H	Edit channel programming data
Scramble edit	Alt-S	Edit scramble frequencies
Clear scramble channels		Clears scramble operation on any channels for which it is programmed
Clear decode channels		Clears decode operation on any channels for which it is programmed

RADIO MENU Alt-R

Upload data from radio	Transfer radio from radio to editor.
Download data to radio	Transfers current editor data to radio.

HELP F1

Press **F1** or click the mouse on the **HELP** option of the top menu to display help relevant to the current operation. Repeat to display increasingly more general help. Press any other key or click the mouse anywhere else to exit HELP.

NOTE: The Help screen displays information about the current field, menu, or screen. Press **F1** several times to display different levels of help information.

SCRAMBLE FREQUENCIES SCREEN

```
Format: 1
Scramble Frequencies

Freq 1:      0000
Freq 2:      0000
Freq 3:      0000
Freq 4:      0000
```

To open the Scramble Frequencies Screen press **Alt-S** or select **Scramble edit** from the Edit Menu.

Press the arrow keys or click the mouse to change fields, then type in a frequency.

Press **Alt-space** to exit and save changes.

Press **ESC** to exit and cancel changes.

NOTE: The numbered frequencies 1 through 4 are linked with the codeset of the same number. The same value entered for Freq 1 in the Scramble Frequencies Screen is also shown with Codeset 1 in the Codeset Edit Screen.

NOTE: Inversion Scrambling is an option that can be enabled only at the factory.

CODESET EDIT SCREEN

Ucom Editor			
File	Edit	Radio	Help
Codeset: 1 Codeset name CODESET1			
Muting mode	CLOSED/SQUELCH	Traffic Monitor	DISABLED
Group tone mode	Other	Decode always	DISABLED
Reminder	ENABLED	Scramble always	DISABLED
Tone set	Custom		
# tones	00		
Tone 1	0000	Group Tone	0000
Tone 2	0000	Repeat Tone	0000
Tone 3	0000	Scramble Freq	0000
Tone 4	0000	Tone Spacing(mS)	0000
Tone 5	0000	Tone duration(mS)	0000
Tone 6	0000	Group tone duration(mS)	0000
Tone 7	0000	Message time(Sec/8)	00
Tone 8	0000		

To open the Codeset Edit Screen press **Alt-C** or select **Codeset edit** from the Edit Menu . This screen allows a tone signalling codeset to be created or modified.

Function keys for the Codeset Edit Screen include:

Page Up	Next codeset
Page Down	Previous codeset
Tab or right arrow	Move right one field
Shift-Tab or left arrow	Move left one field
up arrow	Move up one field
down arrow	Move down one field
Alt-F	Open File menu
Alt-E	Open Edit menu
Alt-R	Open Radio menu
F1	Open Help screen
Esc	Cancel an operation
Spacebar or Double-click	Toggle field setting or Open menu for current field

NOTE: The scramble frequencies for all four codesets are displayed in the Scramble Frequencies Screen.

NOTE: Inversion Scrambling is an option that can be enabled only at the factory.

CODESET NAME

Enter a name that describes the current codeset. This name will be appear in a menu when you are selecting a Codeset in the Channel Edit Screen.

MUTING MODE

CLOSED/SQUELCH— All traffic is ignored until the radio is called. The radio then switches to carrier/codeguard squelch for the period of time specified in the Message Time field.

SQUELCH/OPEN— The radio operates in carrier/codeguard squelch mode until the radio is called. It then unmutes for the period of time specified in the Message Time field.

CLOSED/OPEN— All traffic is ignored until the radio is called. The radio then unmutes for the period of time specified in the Message Time field.

SQUELCH/BEEP— Radio operates in normal carrier/codeguard squelch and beeps when the radio is called. If REMINDER inhibit is not set, the radio continues to beep until a knob or switch is changed, indicating that a message was received.

GROUP TONE MODE

TWO TONE— Select this for a two tone system with a long group tone. The GROUP TONE DURATION controls the length of this tone if the option is selected.

Other— Select this for all other systems.

REMINDER

If enabled, the radio will beep at regular intervals if the radio is called and the Muting Mode is SQUELCH/BEEP.

TONE SET

Press the **spacebar** or **double-click** to display a list of predefined tonesets. Use the mouse or arrow keys to move the cursor and select a toneset. Selecting a toneset will set configuration parameters for the specified signalling system and make available a list of valid tones when editing a tone field.

The **CUSTOM** setting allows tone frequencies and parameters to be entered directly. All tone set frequencies are rounded to the nearest Hertz. Only with the **CUSTOM** setting will you be able to modify **GROUP TONE**, **REPEAT TONE**, **TONE SPACING**, **TONE DURATION**, or **GROUP TONE DURATION** settings.

TONES

If TONE SET is CUSTOM, enter the number of tones in the ID tone sequence (e.g. 2 for a two tone system or 5 for a 5/6 tone system). The maximum is 8 tones. The number of tones is preset if TONE SET is not CUSTOM.

tone 1 tone 2...

Enter a tone frequency (Hz) for each tone in the ID tone sequence. If TONE SET is not CUSTOM, press the **spacebar** or **double-click** the mouse to display and select valid tones for the Tone Set.

TRAFFIC MONITOR

If enabled, any traffic on the current channel will be monitored after the radio is called. The radio will return to normal operation when any knob or switch is changed.

DECODE ALWAYS

If enabled, the action of the Muting toggle switch will be ignored and the radio will always be in tone decode mode for all channels for which this current codeset is programmed.

If disabled, muting is turned on and off using the left toggle switch, marked HI/LO or TA.

SCRAMBLE ALWAYS

If enabled, the action of the Scrambler toggle switch will be ignored and the radio will always be in scramble mode for all channels for which the current scramble frequency is programmed.

If disabled, the scrambler is turned on and off using the left toggle switch, marked HI/LO or TA.

GROUP TONE

Enter the frequency (Hz) of the Group tone for the desired signalling system. It is only used if the GROUP TONE MODE is OTHER. If TONE SET is not CUSTOM, this field cannot be modified.

REPEAT TONE

Enter the frequency (Hz) of the repeat tone for the desired signalling system. If TONE SET is not CUSTOM, this field cannot be modified.

SCRAMBLE FREQ

Enter a scrambler inversion frequency (Hz). If a channel programmed with this codeset has SCRAMBLE mode selected in the Channel Edit Screen, this frequency will be used as the scrambler inversion frequency. Note that this frequency can also be edited in the Scramble Frequencies Screen.

TONE SPACING(ms)

Enter the gap (milliseconds) between tones in the ID tone sequence. If TONE SET is not CUSTOM, this field cannot be modified.

TONE DURATION

Enter the length of the ID tone (milliseconds). If TONE SET is not CUSTOM, this field cannot be modified.

GROUP TONE DURATION

Enter the length of the GROUP TONE (in milliseconds). This parameter is ignored unless the GROUP TONE MODE is OTHER. If TONE SET is not CUSTOM, this field cannot be modified.

MESSAGE TIME

Enter the length of time (1/8ths of a second) the radio will remain unmuted after being called.

UCOM SUPPLEMENT

UNIVERSAL
COMMUNICATIONS
OPTIONS
MODULE



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9-95

BK RADIO, INC.

INTRODUCTION

The Universal Communications Options Module (UCOM) is an options board that can be installed in BK Radio E Series portable radios. UCOM has built-in Tone Decode capability and can be purchased with optional Inversion Scrambling.

UCOM comes from the factory ready to be programmed with the Tone Decode and/or Inversion Scrambling options to suit the user's needs. Dealers can program UCOM options by computer using UCOM Editor software (LAA 0760) and an RS-232 serial cable (LAA 0725), both of which are available from BK Radio, Inc.

This supplement to the Owner's Manual describes special operating procedures for radios equipped with UCOM. It is written for the radio end user. Standard operating procedures for radios with or without UCOM are described in the Owner's Manual.

Each section of this supplement describes a typical UCOM configuration. Because of the many possible configurations, consult your dealer or communications manager to determine the actual operation procedures for your radio. A check box is placed beside each section for the dealer to indicate which procedures apply.

Check for Installed UCOM

You can tell whether a UCOM board is installed by turning the radio on. The radio gives a power up beep and UCOM gives another beep. If the radio does not give two beeps when turned on, it is not equipped with a UCOM board. However, this test does not indicate whether or not UCOM has been programmed.

TONE DECODING

The UCOM module can be programmed to decode various tone signalling systems such as 5/6 tone (CCIR, ZVEI, EEA, etc.) and 2 tone sequential (Quik Call II, Reach, etc.). Up to 4 codesets can be controlled using the Channel Select knob. Muting can be turned On and Off automatically by using the Channel Select knob or manually by using a toggle switch. Muting can be combined with Code Guard operation. Channels can also be programmed for clear operation only (no tone decode).

No Muting—Alert tones only

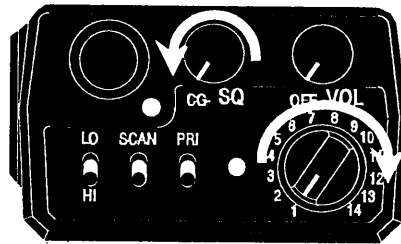
Turn the Channel Select knob to the channel with the proper codeset. The UCOM module beeps when it receives the correct tone sequence. After 20 seconds* the radio beeps again, indicating the end of the timeout period.

The UCOM module beeps every 20 seconds* to alert you that you have been called. To reset UCOM after the message, turn the Squelch knob clockwise off the detent and then back on. A beep indicates that UCOM has reset.

Before transmitting on a Code Guard channel, monitor the channel by turning the Squelch knob clockwise off the detent position. If the channel is clear, press the PTT switch and talk, releasing the PTT switch to listen.

Muting—Channel Knob

Turn the Channel Select knob to the channel with the proper codeset. With the Squelch knob in the detent position (full counterclockwise), no traffic will be heard until the correct tone sequence is received. The UCOM module beeps when it receives the correct tone sequence, and the radio unmutes for 20 seconds*. After 20 seconds* the radio beeps again, indicating the end of the timeout period, and resumes the original muting condition.



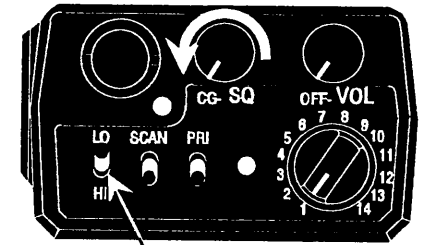
The UCOM module beeps every 20 seconds* to alert you that you have been called. To reset UCOM after the message, turn the Squelch knob off the detent and then back on. A beep indicates that UCOM has reset.

Before transmitting, monitor the channel by turning the Squelch knob clockwise off the detent position. If the channel is clear, press the PTT switch and talk, releasing the PTT switch to listen.

* The 20-second delay can be programmed to a different duration.

Muting—Toggle Switch

Turn the Channel Select knob to the channel with the proper codeset and turn on the Muting toggle switch (the left toggle switch marked HI/LO or TA). With the Squelch knob in the detent position (and the toggle switch on), no traffic will be heard until the correct tone sequence is received. The UCOM module beeps when it receives the correct tone sequence, and the radio unmutes for 20 seconds*. After 20 seconds* the radio beeps again, indicating the end of the timeout period, and resumes the original muting condition.



Muting Toggle Switch
(LO or TA = "on")

The UCOM module beeps every 20 seconds* to alert you that you have been called. To reset UCOM after the message, turn the Squelch knob off the detent and then back on, or turn the toggle switch off and then back on. A beep indicates that UCOM has reset.

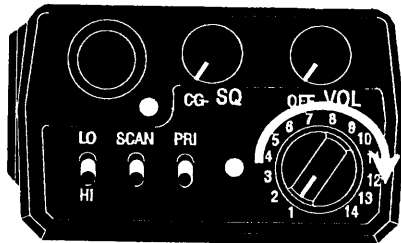
Before transmitting, monitor the channel by turning the Squelch knob clockwise off the detent position. If the channel is clear, press the PTT switch and talk, releasing the PTT switch to listen.

SCRAMBLING OPERATION

If optional Inversion Scrambling is installed, UCOM can be programmed to scramble transmit audio, making it unintelligible to the casual listener. The receiving UCOM radio unscrambles the audio using the proper code. Up to 4 codes can be controlled using the Channel Select knob. Scrambling can be turned On and Off automatically with the Channel Select knob or manually with a toggle switch (the left toggle switch marked HI/LO or TA). Scrambling can be combined with Code Guard operation. Channels can also be programmed for clear operation only (no scrambling).

Scrambling—Channel Knob

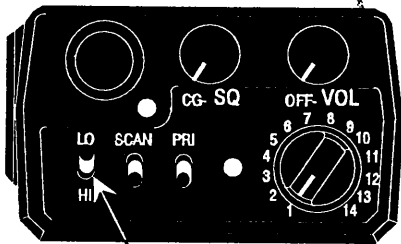
To receive a scrambled message, turn the Channel Select knob to the channel with the proper code. Signals with the same code will be unscrambled and heard. All other signals (including clear) will be unintelligible or distorted. To receive these other signals, turn the Channel Select knob to the proper position.



To transmit a scrambled message, turn the Channel Select knob to the channel with the proper code. Before transmitting on a Code Guard channel, monitor the channel by turning the Squelch knob clockwise off the detent. Regardless of the signal distortion, wait until the channel is unoccupied before transmitting.

Scrambling—Toggle Switch

To receive a scrambled message, turn the Channel Select knob to the channel with the proper code. Turn on the Scrambler toggle switch (the left toggle switch marked HI/LO or TA). Signals with the correct code will be unscrambled and heard. All other signals (including clear) will be unintelligible or distorted.



Scrambler Toggle Switch
(LO or TA = "on")

To receive a signal that has not been scrambled, turn off the Scrambler toggle switch. To receive other coded traffic, turn the Channel Select knob to the channel with the proper code and turn on the Scrambler toggle switch.

To transmit a scrambled message, turn the Channel Select knob to the channel with the proper code, and turn on the Scrambler toggle switch. Before transmitting on a Code Guard channel, monitor the channel by turning the Squelch knob clockwise off the detent. Regardless of the signal distortion, wait until the channel is unoccupied before transmitting.