MRP 70 - 1000C
(MRP - 70)

User Manual

Version 1.0

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1. GETTING STARTED

Welcome to the MRP 70 - 1000C programming software for the following radios:
Midland Z-273 Mobile,
AWA RT 85 Mobile.

This package contains the following parts.

- MRP 70 - 1000C EPROM programming unit
- 3½ inch floppy disk - IBM PC compatible format
- MRP 70 - 1000C User Manual

If any of these parts are missing, please contact your Dealer.

1.1 System Requirements

In order to use the MRP 70 - 1000C software, the following minimum computer hardware and software is required.

- IBM PC or Compatible Computer
- 3½ inch floppy disk drive
- Hard Disk
- 1 MB RAM
- Serial Cable
- Mouse (optional)
- Printer (optional)

A mouse and printer are optional, but to gain full ease of use, we suggest you have both.

1.2 Before You Begin

Before you can install MRP 70 - 1000C, you must have DOS 3.3 or later installed on your computer. For instructions on installing DOS on your computer, consult your computers documentation.
The release diskette contains the following files:

MRP70.EXE MRPHELP.HLP
README.TXT SAMPLE.DAT

If these files are not present on the diskette, or the diskette is defective, please contact your Dealer.

1.3 Installing MRP 70 - 1000C

It is highly recommended that you make a backup of the release diskette before installing the MRP 70 - 1000C software on your system.

Although the MRP 70 - 1000C software will run from your floppy drive, we recommend that you install the MRP 70 - 1000C software on your hard drive.

To install the MRP 70 - 1000C software on your hard disk, put the MRP 70 - 1000C software release diskette in drive A: or B: of your computer.

- Make a directory called MRP on your hard drive.
- Copy all the files on the distribution disk to this directory.

For example, to install the MRP 70 - 1000C software on the C: drive of a hard disk with the release diskette in drive A:, you would type the following:

```
MD C:\MRP

COPY A:\*.* C:\MRP
```

Once the MRP 70 - 1000C software has been installed, the hardware must be connected to your computer. The MRP 70 - 1000C has been configured as a DCE (Data Communication Equipment) device and can be connected to the PC (DTE device) using a standard Modem/Serial cable available from computer suppliers.

Connect the Serial Cable to COM 1: (COM 2: if mouse is on COM 1) on your computer and also to the MRP 70 - 1000C unit. Connect a +12V DC power supply via a 2.1mm Jack Plug to the MRP 70 - 1000C unit. Note that the centre pin of the socket is positive.

2. A QUICK TOUR OF THE MRP 70 - 1000C

This section introduces the fundamentals of using the MRP 70 - 1000C software. To start the MRP 70 - 1000C software, change directory to the one containing the MRP 70 - 1000C software. Type MRP70.EXE to start the program. To exit MRP 70 - 1000C, choose **File | Exit** or press **Alt X**.

2.1 The MRP 70 - 1000C screen

When starting the MRP 70 - 1000C software program, the following screen is displayed.

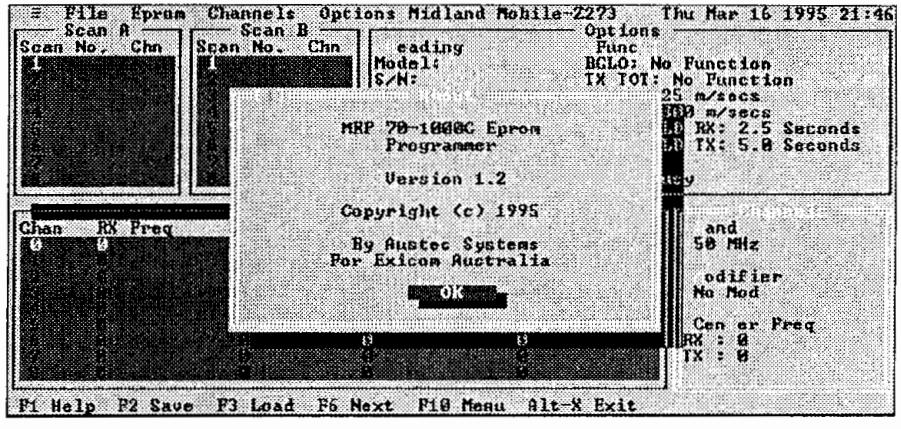

Figure 1. The Opening Screen.

Figure 1 shows a Message Box that gives information about the program including its Version.

On all Message Boxes that appear, there are a number of ways in which the Box can be closed.

- Use the mouse and click on the **OK** button
- Use the mouse and click on the close box in the upper left corner
- Press Enter to accept the currently highlighted command (in this case its the **OK** button)
- Press **Alt O** to select the **OK** option button
- Press **ESC** to exit the box and lose any saved data (if any)

Figure 2 shows the layout of the MRP 70 - 1000C screen. Across the top of the screen are a number of Menu Bar options. These can be selected either by the mouse clicking on the desired menu item and dragging the pointer down, by pressing **ALT** and the letter highlighted in each menu item or, finally, by pressing **F10** to move to the Menu Bar and pressing **ENTER** when the desired menu item is highlighted.

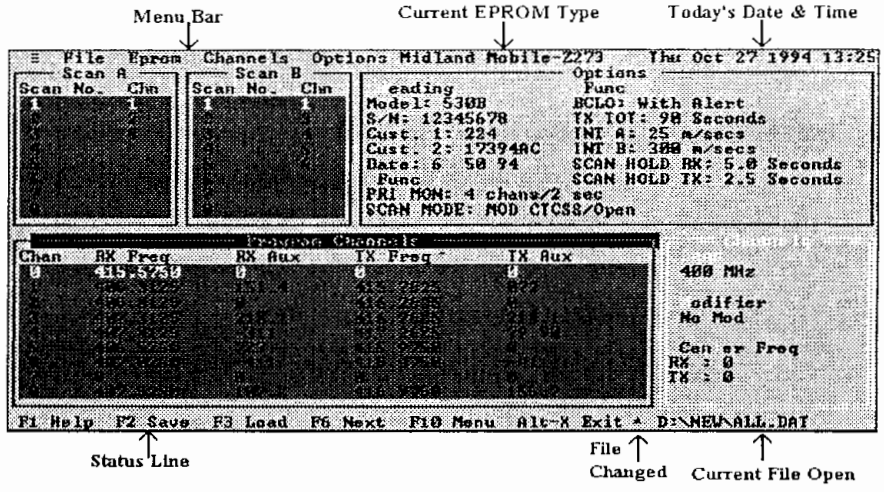

Figure 2. MRP 70 - 1000C Screen Layout.

The Menu Bar Items are :

- ≡ System Menu which is used to change Com Port, Colours and Mouse Options.
- **FILE** Menu is used to create, load, save or print files. It also allows the user to shell out to DOS and Exit the program.
- **EPROM** Menu contains different options for the EPROM, such as Reading and Writing. It also is used to perform Manual Edit on a file.
- **CHANNELS** Menu is used to change the Band and Modifier code for the EPROM. It also allows the user to enter a Centre Frequency (if available).
- **OPTIONS** Menu allows the user to change such options as Heading Data, BCLO, Scan Hold RX/TX and Scan Mode.

Next to the Menu Bar is the EPROM Type. This displays what the current EPROM Type is. Finally, the current Date and Time are displayed.

Along the bottom of the screen is the Status Line. This shows which "Hot Keys" are available. A Hot Key is a key that when pressed will jump straight to the action specified. The Hot Keys available are

- **F1** Help - This is a comprehensive on-line help facility available to the user at any time within the program. It lists current actions available as well as the values that can be entered.
- **F2** Save - This will save the current file name, as stated in the bottom right corner, or ask the user for a name to save the file as if a file has not yet been opened.
- **F3** Load - This will bring up a Box asking the user to specify the file they wish to load. If the current file has changed, then they are first prompted if they wish to save that data.
- **F6** Next - This changes the currently selected window. It cycles through all five windows in the order they were chosen.
- **F10** Menu - This moves the highlight to the Menu Bar and allows the user to select one of the Menu Bar items.
- **ALT-X** Exit - This will exit the program. If the current data has been changed then the user is prompted to save the file first.

Next to the Status Line is the File Changed Flag. When this flag is shown (as a *), then the data on the screen has been changed (changing Band does not effect this flag when first starting). When loading a new file from disk or EPROM, or when selecting **File|New** or Exiting the program, the File Changed Flag is checked. If activated, then the user is asked to save the current file before continuing.

Finally along the bottom line, the current file is displayed. This shows the name of the file and the path to it.

Between the top Menu Bar and the bottom Status Line, there are a number of windows. These windows are used to enter the Data that is to be programmed into the EPROM. The five windows are

- OPTIONS - allows the user to change such options as Heading Data, BCLO, Scan Hold RX/TX and Scan Mode.
- CHANNELS - is used to change the Band and Modifier code for the EPROM. It also allows the user to enter a Centre Frequency (if available).
- PROGRAM CHANNELS - is used to enter the RX and TX frequencies for use in the Radio. Also, RX and TX Auxiliary values can be entered.
- SCAN A - allows the input of channels already programmed to be entered. These are independently activated by corresponding scan pushbuttons on the transceiver.
- SCAN B - allows the input of channels already programmed to be entered. These are independently activated by corresponding scan pushbuttons on the transceiver.

The currently active window is shown by the double line around the border of the window. In Figure 3, the CHANNELS window is the currently active window.

Within the window, there may be a number of options (such as Band, Modifier and Center Frequency in the CHANNELS window). The option that is highlighted (in Figure 3 case it is Band) is the current item. Pressing **ENTER** will select that item and perform the action that it specifies.

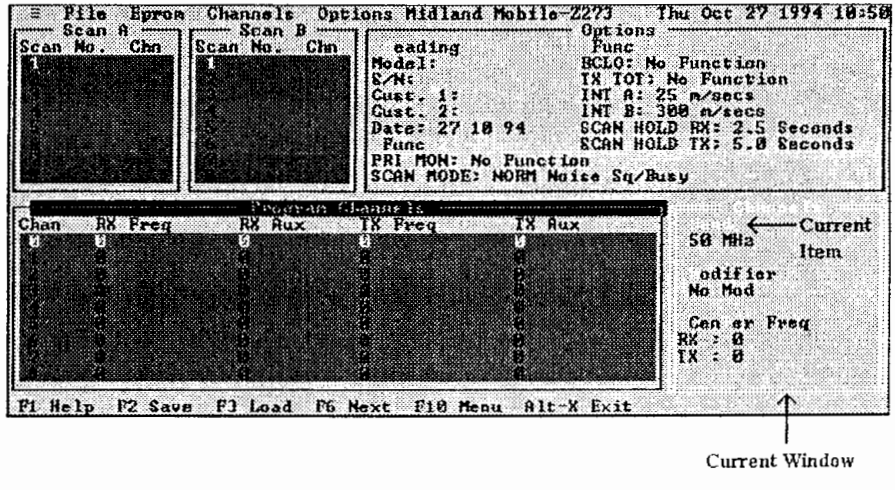

Figure 3. Current Window and Item

To move the highlight to the next item, press the ↑ arrow key to move up, or the ↓ arrow key to move down. To move to any item in the current window, press **ALT** and the letter in the item name that is highlighted.

The mouse can also be used to select an item by clicking once on the items name. To perform the action of an item, double click the mouse on the items name.

To move between windows, press the Hot Key **F6** (shown as Next in the Status Line). This will select the next window and allow the user to enter and change data in that window. Any window can be selected by using the mouse. To select a window with the mouse, just click once anywhere in the desired window. That window will then become the current window.

3. MENU DESCRIPTION.

This section gives a description of the Menu Bar Items and the Window contents and how to edit data in all areas.

3.1 ≡ System Menu

Figure 4 shows the different options available in the System Menu.

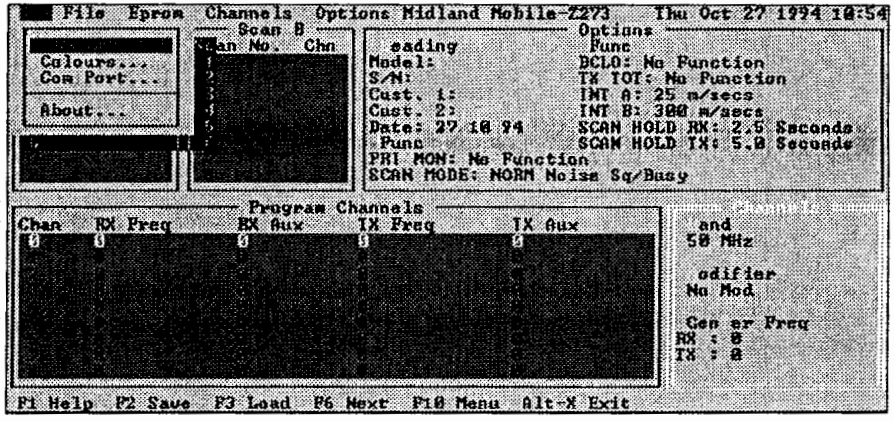

Figure 4. System Menu Item selected.

The System Menu contains the following options

- Mouse - which is used to change certain parameters involving the mouse such as double click speed.
- Colours - allows the user to change the colours on the screen.
- Com Port - allows the user to specify which Com Port the MRP 70 - 1000C hardware is connected to.
- About - this shows information about this release of the MRP 70 - 1000C software.

3.1.1 Mouse.

When the Mouse item is selected, Figure 5 appears.

The Double click speed sets the delay between recognising mouse clicks. The faster the speed set, the faster the user must double click the mouse buttons in order to be recognised.

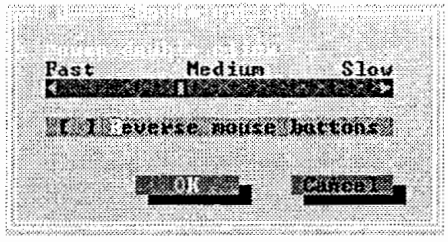

Figure 5. Mouse Options Dialog Box.

To change this setting, select the 'Mouse double click' option and then either

- press the left (←) arrow to move the selector to the left (Faster) or the right (→) arrow to move the selector to the right (slower).
- use the mouse to move the selector by pressing on the left arrow on the screen (◁) or the right arrow on the screen (▷) or click on the selector with the mouse and while holding the mouse button down, move the selector left or right.

The "Reverse mouse buttons" option is used to change which button on the mouse is used. The default value is the left button. For some users, such as left handers, selecting this option would make the right button active. To select this option, select the "Reverse mouse buttons" option and then press the **space** bar to select. A cross appears in the box to show it has been selected.

3.1.2 Colours

When the Colours item is selected, the following Box appears.

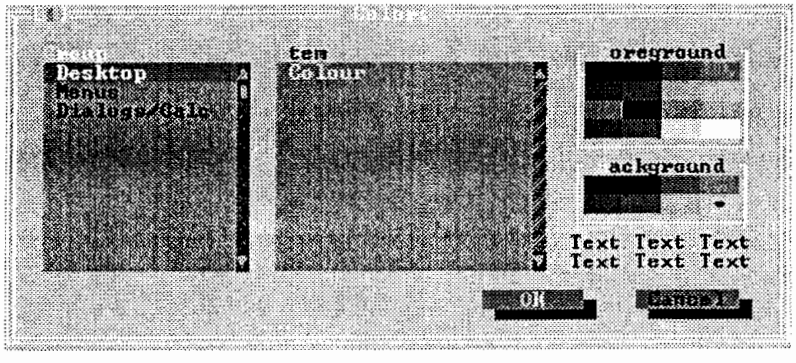

Figure 6. Colours Item Dialog Box.

The Colours Dialog Box is split into a number of areas. First is the Group area. This contains three options

- Desktop - set the colour of the Desktop. The Desktop is not visible most of the time as the windows cover all the screen.
- Menus - sets the colours of the Menu Bar and the Status bar. This includes the text, background, highlighted and short cut colours.

- Dialog/Calc - is used to set the colours for the windows including windows, background, borders, lists, scroll bars, buttons, highlighted and short cuts keys.

To select the option, move the arrow keys up (↑)or down (↓) or click on the option with the mouse.

Once a group is selected, the item the user wishes to change needs to be selected. Press **TAB** to change to the next window, or **Alt I** or click on that window with the mouse. As stated before, the Items window contains a number of options such as text, lists, scroll bars, highlighted, short cuts etc. To select the option, move the arrow keys up (↑)or down (↓) or click on the option with the mouse. As the user moves up and down the options, the current colour setting for that option is displayed where the six words of "Text" are shown.

To now change the colour of an item, press **TAB** to change to the next window, or **Alt I** or click on that window with the mouse. The user can now select which foreground and background colour they wish to use. When finished, press **ENTER**, **Alt O** or click on OK to save the change, or press **ESC**, **Alt C** or click on the CANCEL button or the button on the top left corner of the window. If the data is saved, the changes are made immediately to the display.

3.1.3 Com Port

When the Com Port item is selected, the following Box appears.

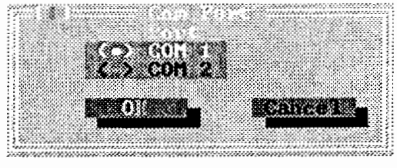

Figure 7. Com Port Dialog Box.

This Dialog box is used to change the Com Port on which the MRP 70 - 1000C hardware is attached. The default value is Com Port 1. To change the current setting, use the arrow key to move up (↑) or down (↓) to the desired Com Port. When the correct Com Port is selected, press the **space** bar to select it. When finished, press **ENTER**, **Alt O** or click on OK to save the change, or press **ESC**, **Alt C** or click on the CANCEL button or the button on the top left corner of the window. The data is now written to the disk. Next time MRP 70 - 1000C is started, the new Com Port is set as default.

3.1.4 About

The About box is used to display the current software version and other additional data. See Figure 1 for more information on the About Box.

3.2 File Menu

Figure 8 shows the options in the File Menu Item.

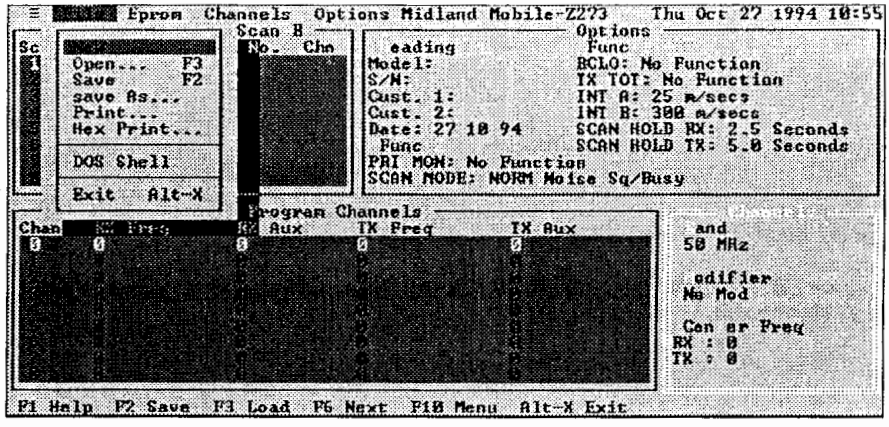

Figure 8. File Menu Item selections.

The File Menu contains the following options

- New - resets all data to default values.
- Open - Loads a file from disk.
- Save - saves a currently opened file.
- Save As - saves a file as a name requested by the user.
- Print - Prints out the data from a file.
- Hex Print - A Hex dump of a file to the printer.
- DOS Shell - Shells out to the DOS operating system.
- Exit - Quits the MRP 70 - 1000C program.

3.2.1 New

When the New Item is selected, the File Changed flag is checked. If it has been set, then data has been changed. A message Box will appear (Figure 9) telling the user that they will lose current data and if they should continue. If the user answers No then no change is made. If the answer is Yes then all data is ignored.

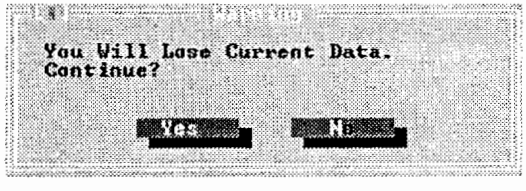

Figure 9. Lose Current Data Warning Box.

When selected and the user has ignored any changes, or there have been none, then all the data is reset to the default values. This means that all channels programmed, all scan data entered and any options (including Heading Data) are reset. The Band is set to 50mhz and no Modifier is used. The Filename and File Changed flag are also cleared

3.2.2 Open - F3

Open is used to load a file from the disk. The Open command can also be selected by pressing the hot key **F3.** When Open is selected, the following screen is displayed.

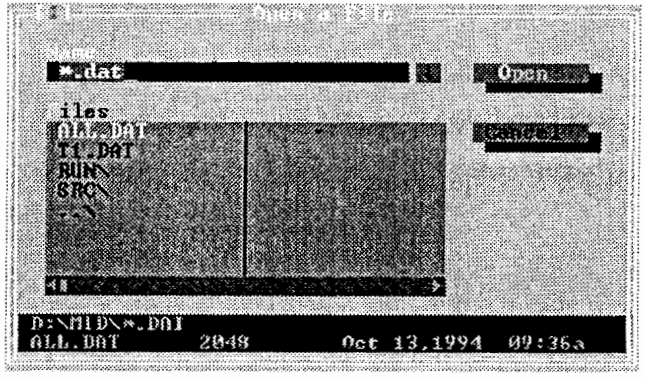

Figure 10. Open a File Dialog Box.

The "Open a File" Dialog box comprises of two main sections. The first section is "Name" where the name of the file to load is entered. When opening this box, a list of files in the current directory is shown in the section "Files". All files used to save and load Data use a ".DAT" extension.

To select a file from the "Files" list, press **TAB** or **Alt F** or click on the window. Use the up (↑) or down (↓) arrow keys to move up the file list. Details about the current file is shown in the bottom part of the window. This information includes the File's Path, Name, Size and last modified date. When the file you wish to load is found, press **ENTER**, **Alt O** or click on the name with the mouse. If the data file you require is in another directory, then select the directory and continue to look for the file.

When the file is opened, the current EPROM type changes to reflect the type in the file, and the name of the file is displayed at the bottom left of the screen. The windows are also updated to show the data loaded.

3.2.3 Save - F2

The Save item is used to save the data entered by the user to a file which can be used later. This command can also be called by pressing the Hot-Key **F2**. When the Save command is selected, the program checks to see if a file has been opened. If the user is working on a file that has been opened, then this data is saved to disk. If there is no file open, then the Save As command is executed.

3.2.4 Save As

The Save As item is used to save a file as a user defined name.

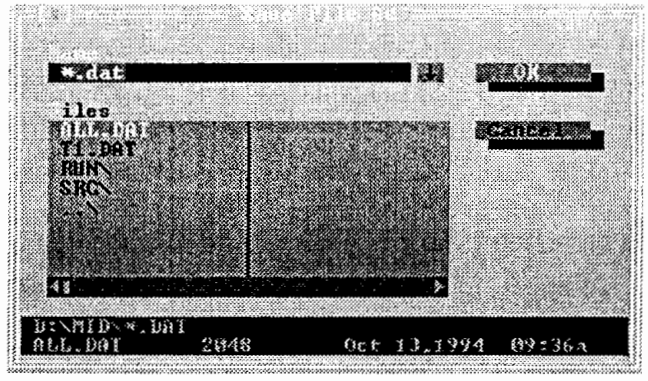

Figure 11. Save As Dialog Box.

If the user presses **F2** or selects Save (from above) and no file has been loaded, then this item is called. The window displayed when this is called is shown in Figure 11. As can be seen, this window is similar to the Open Window. All the same functions from Open are valid here. The only difference here is that instead of opening a file, it saves it.

3.2.5 Print

This item is used to print out the details of a file to the printer.

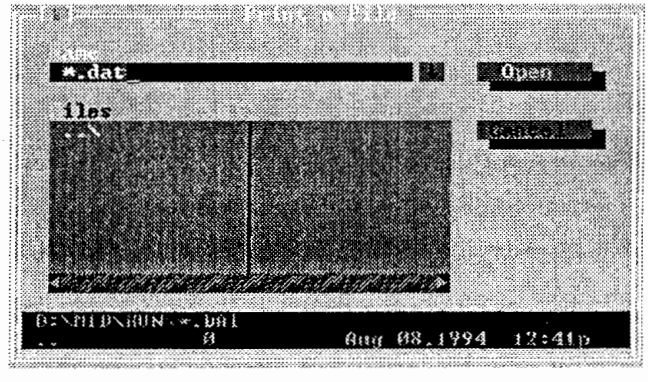

Figure 12. Print a File Dialog Box.

This Dialog box is similar to the Open and Save As Dialog Boxes. When a file is selected for printing, the data from the file is loaded and the printer is checked to if it is ready to print. If the printer is not ready then the following screen message displayed.

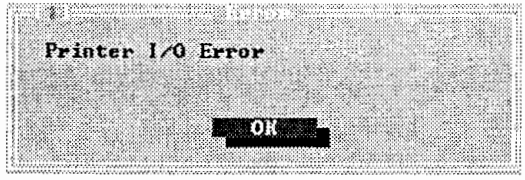

Figure 13. Printer Error.

Another error that can occur is if the printer is out of paper or the printer is off line. If this is the case then the a Box similar to Figure 13 is shown except the error is the Printer is out of Paper.

Sample printouts are shown in Appendix B.

3.2.6 Hex Print

This item is used to print out the details of a file in hex format to the printer. The same screen is used as Figure 12. The same error messages as above are applicable to Hex Prints. Sample printouts in Hex form are shown in Appendix B.

3.2.7 DOS Shell

This command is used to shell out to the DOS prompt. There, a user can perform such actions as directory listings, copy files, etc. To return to the MRP 70 - 1000C software, type **EXIT**.

3.2.8 Exit - Alt X

To exit the program, the user selects this option. When the program tries to exit, it checks the File Changed flag to see if any changes to the current file have been made. If this flag is present, then Figure 14 is displayed asking the user if they wish to continue. If they select NO then all changes are lost and the program closes, if they choose YES then the file is saved and the program closes otherwise program does not close and the data is not lost.

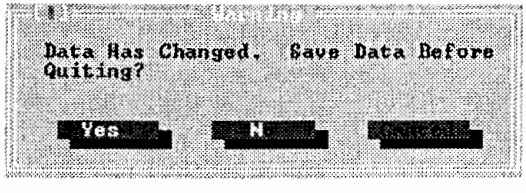

Figure 14. Warning when Exiting the Program.

3.3 EPROM Menu

Figure 15 shows the options in the File Menu Item.

The EPROM Menu Item contains the following options

- Type - selects the type of EPROM to be used.
- Blank - Does a blank check of the EPROM.
- Program - Program the data from a file to the EPROM.
- Auto (B & P) - Perform a Blank Check and then Programs the EPROM.
- Read - Read the data from an EPROM and save it in a file.
- Version Info - Get the Version info from the MRP 70 - 1000C unit.
- Manual Edit - Edit the Hex data of the loaded file.

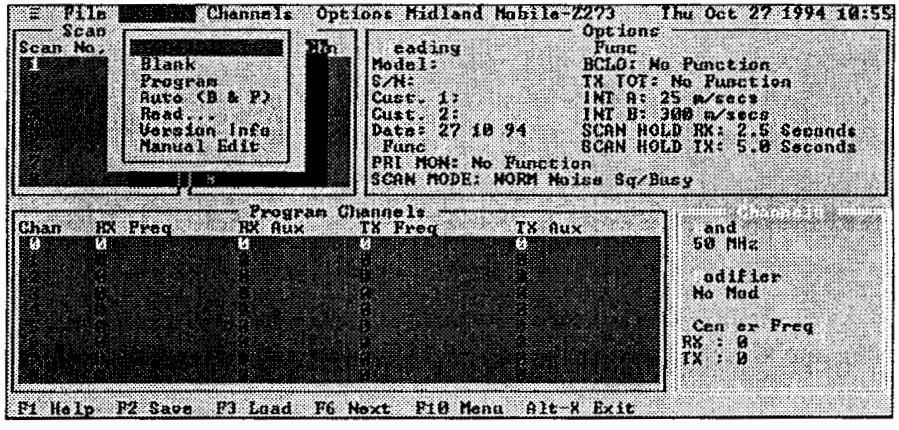

Figure 15. EPROM Menu Item selection.

Warning: The MRP 70 - 1000C programming unit must be switched off before an EPROM is connected or removed from the unit.

3.3.1 Type

When Type is selected from the EPROM menu, the following screen is displayed.

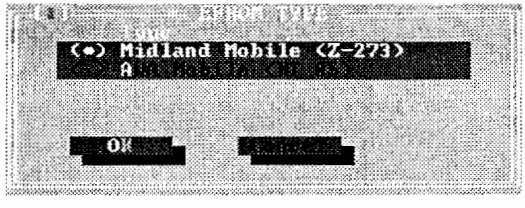

Figure 16. Different EPROM Types.

This Dialog box lists the different EPROM's that are available, which are

- Midland Mobile - Displayed as the Z-273 Mobile.
- AWA Mobile - Displayed as the RT-85 Mobile.

Each of these radio EPROM's has different options available, which are described in later sections.

3.3.2 Blank

The Blank function is used to perform a Blank check of the EPROM. The following screen is displayed.

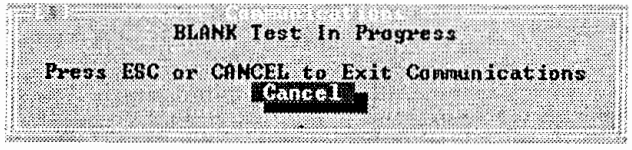

Figure 17. Blank Test.

This checks the EPROM in the MRP 70 - 1000C hardware unit to see if it is completely Blank. If it the software does not get a response then Figure 18 is displayed.

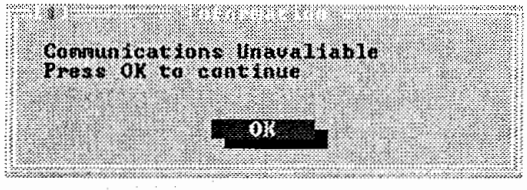

Figure 18. Unable to Communicate to the hardware.

In this case, check the hardware setup of the MRP 70 - 1000C unit and try again. If there is still no response, try changing the Com Port (as described in section 3.1.3 and try again.

If communications are successful, then there are two possible responses. The first one is if the Blank check is successful. If this is the case then Figure 19 is displayed. The EPROM can now be programmed with the user's data.

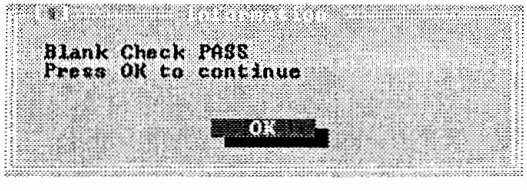

Figure 19. Blank Check Pass.

If the Blank Check is unsuccessful, the message in Figure 20 is displayed. The message contains the first byte in the EPROM that is not Blank. In this case the EPROM must be inserted under an Ultra Violet light and erased.

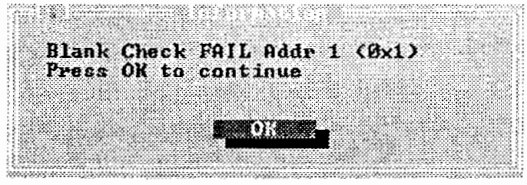

Figure 20. Blank Check Fails on Byte 0x01.

3.3.3 Program

This option is selected when the user wishes to program an EPROM with data they have saved to a file. If the data the user is currently working on has changed when they select this option, then the following Dialog Box is displayed. This allows the user to save their current data before continuing.

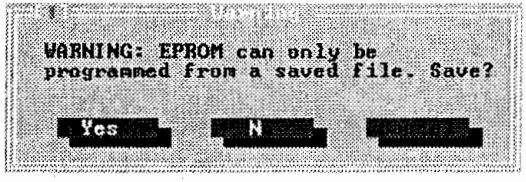

Figure 21. Program EPROM Warning Dialog Box.

The user is then asked to select which file they wish to use to program the EPROM. The screen that is displayed is similar to the **FileIOpen** screen shown in Figure 10.

Once a file has been detected and loaded, Programming takes place. The screen that is displayed is shown in Figure 22.

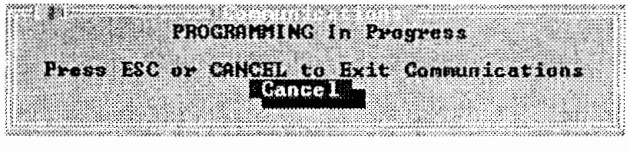

Figure 22. Programming the EPROM.

The same error condition apply as with a Blank check. That is, if there is no response from the MRP 70 - 1000C hardware unit then Figure 18 is displayed. If the Programming was successful then Figure 23 is shown. Otherwise, Programming failed and the EPROM may need to be erased before trying to Program again.

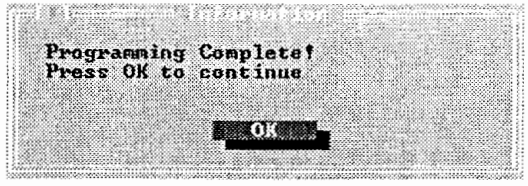

Figure 23. Programming EPROM successful.

3.3.4 Auto

The Auto option is a combination of the Blank check and the Programming. First, a Blank check is performed (see Section 3.3.2). If this passes then Programming takes place (see Section 3.3.3). All the same error conditions apply.

3.3.5 Read

The Read command is used to read the contents of an EPROM and store the result in a file, which is then loaded automatically. When selecting Read, the File Changed flag is first checked. If this flag is present, then Figure 9 is displayed.

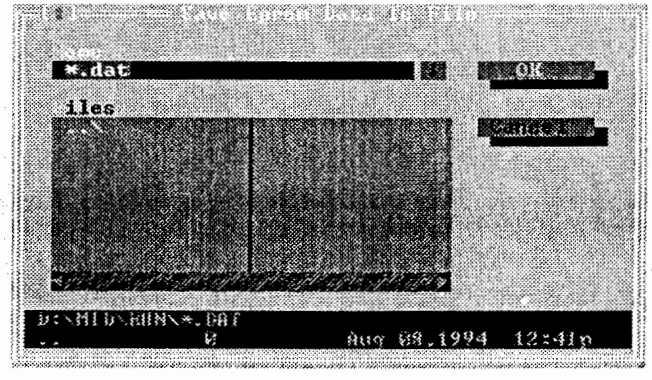

Figure 24. Save EPROM Read Data.

Before the actual Read can take place, the user must specify the name of the file to save the data to, as shown in Figure 24. This has the same format as the Save As screen from section 3.2.4.

Once a file name has been specified, the EPROM is read. The following figure displays this action.

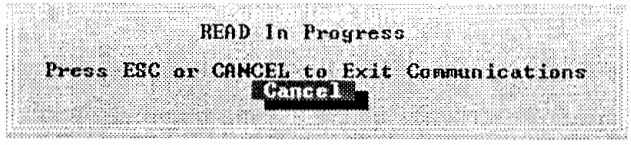

Figure 25. EPROM Read in Action.

The same error condition apply as with a Blank check. That is, if there is no response from the MRP 70 - 1000C hardware unit then Figure 18 is displayed. If the Read was successful then the MRP 70 - 1000C screen is automatically updated with the new data.

3.3.6 Version Info

The Version Info option is used to find the Version Number of the firmware on the MRP 70 - 1000C hardware unit. An EPROM is not required for this option. The following figure is displayed when this option is called.

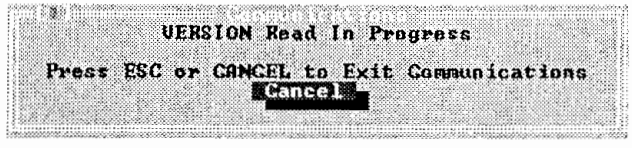

Figure 26. Find Version Info from Hardware.

The same error condition apply as with a Blank check. That is, if there is no response from the MRP 70 - 1000C hardware unit then Figure 18 is displayed. If the Version Info was successful then Figure 27 is shown.

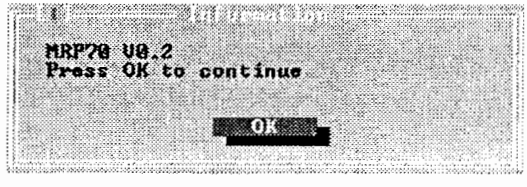

Figure 27. Hardware Firmware Version Number.

3.3.7 Manual Edit

This item is used to select the manual edit function. To use the manual edit, a file must be loaded and must not have any data changed. This can be checked by looking at the File Changed Flag at the bottom of the screen. If a file is not loaded or the file has been changed since it was loaded, then a message box will be displayed showing this fact.

The screen presented to the user contains a list of addresses relating to the memory map of the EPROM. The current settings are shown in the list while the currently selected value is highlighted. See the figure below.

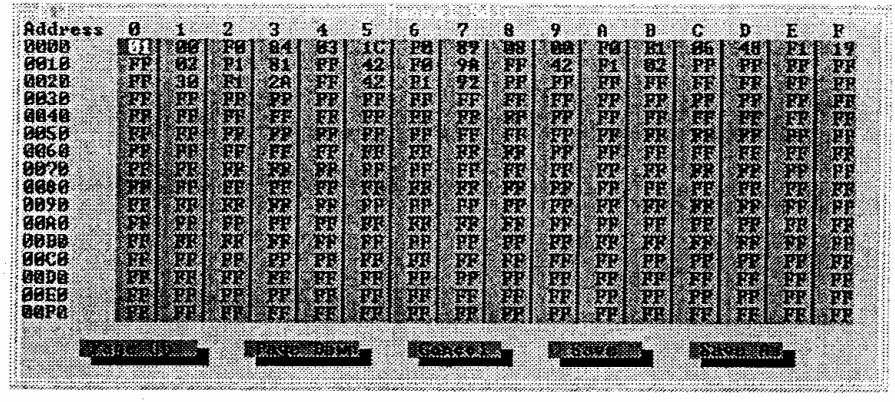

Figure 28. Manual Edit Screen.

There are several ways to move around the screen and edit values.

- Pressing Home moves the cursor to the top left corner.
- Pressing End moves the cursor to the bottom right corner.
- Pressing Page Down brings up the next page of Addresses.
- Pressing Page Up brings up the previous page of Addresses.
- Pressing arrow keys move you around the screen.
- Pressing Tab moves you to the options at the bottom of the screen.
- Use the mouse to change pages.

To edit the data, the user can

- Press enter at the current position. A Dialog box appears that shows the current setting and allows the user to enter a new setting.
- Double click on the memory location to edit. A Dialog box appears that shows the current setting and allows the user to enter a new setting.
- Just typing in the new value at the current position will change the data.

3.4 CHANNELS Menu

Figure 29 shows the options in the Channels Menu Item.

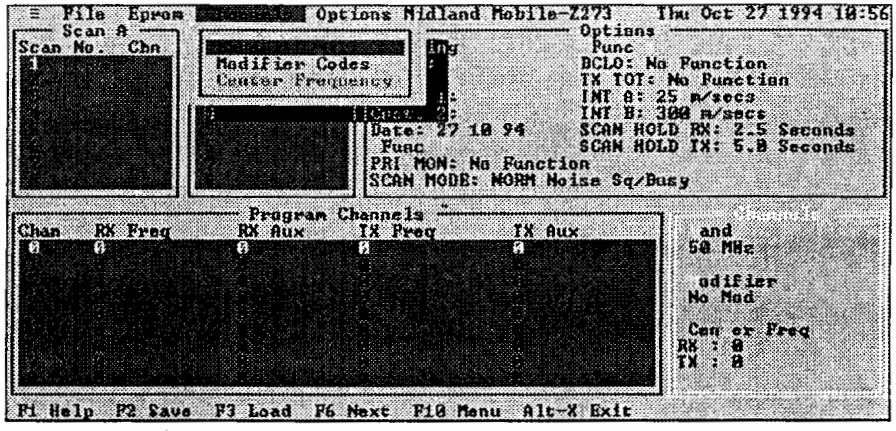

Figure 29. CHANNELS Menu Item selection.

The CHANNELS Menu Item contains the following options

- Band - To select the band in which the radio operates in.
- Modifier Code - Associated with the Band selection.
- Center Frequency - Set if appropriate Band and Modifier Code Selected.

3.4.1 Band

When selecting the Band option, the following screen is displayed.

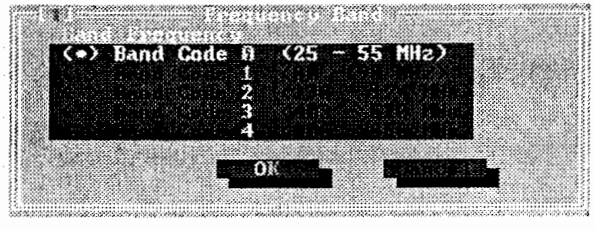

Figure 30. Band Dialog Box.

To prepare the Midland radio for channel frequency programming, a band selection code must be entered from the following table.

Band Code	Modifier Code	Bandwidth MHz	RX-IF MHz	TX-IF MHz	REF KHz	Local Injection
0	-	25-55	10.7	10.24	5.0	High
0	A	25-55	10.7	10.24	5.0	Low
0	B	25-55	10.7	9.6	12.5	High
0	C	25-55	10.7	9.6	12.5	Low
0	D	25-55	10.7	10.24	2.5	High
0	E	25-55	10.7	10.24	2.5	Low
1	-	60-90	21.4	20.48	5.0	High
1	A	60-90	21.4	20.48	5.0	Low
1	B	60-90	21.4	19.2	12.5	High
1	C	60-90	21.4	19.2	12.5	Low
1	D	60-90	21.4	20.48	2.5	High
1	E	60-90	21.4	20.48	2.5	Low
2	-	136-174	21.4	20.48	5.0	Low
2	A	136-174	21.4	20.48	5.0	High
2	B	136-174	21.4	19.2	12.5	Low
2	C	136-174	21.4	19.2	12.5	High
2	D	136-174	21.4	20.48	2.5	Low
2	E	136-174	21.4	20.48	2.5	High
3	-	403-520	21.4	19.2	12.5	Low
3	A	403-520	21.4	19.2	12.5	High
3	B	403-520	21.4	20.48	10.0	Low
3	C	403-520	21.4	20.48	10.0	High
3	D	403-520	21.4	20.48	5.0	Low
3	E	403-520	21.4	20.48	5.0	High
4	-	806-866	47.0	19.2	12.5	Low
4	A	806-866	47.0	19.2	12.5	High

Figure 31. Band Selection Table.

The current settings for the Band is shown in the CHANNELS window of the MRP 70 - 1000C software, as can be seen in Figure 29.

3.4.2 Modifier

When selecting the Modifier option, the following screen is displayed.

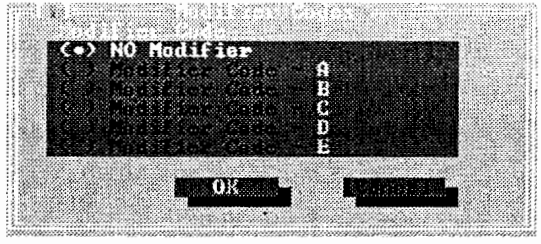

Figure 32. Modifier Dialog Box.

Modifier Codes must not be used unless the corresponding component or kit changes have been made to the radio. The available modifier codes and their effects on each Band is shown in Figure 32 above.

The current settings for the Modifier Code is shown in the CHANNELS window of the MRP 70 - 1000C software, as can be seen in Figure 29.

3.4.3 Center Frequency

The Center Frequency can only be set when the Band has been set to Band Code 2 (136 - 174 MHz range) and there is a Modifier Code set. If this is not the case, then the user is unable to select this option.

The screen that is displayed is

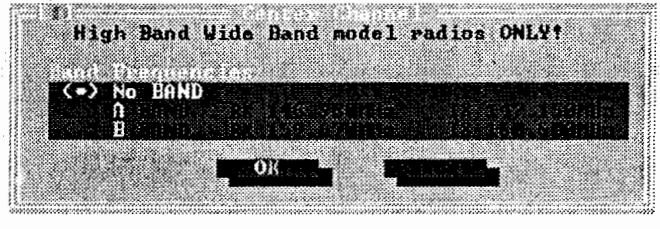

Figure 33. Center Frequency Dialog Box.

Depending on the Modifier selected, different Center Frequencies can be selected.

Band & Modifier	Radio Band	RX Frequency	TX Frequency
15A	A Band	146.980 MHz	147.150 MHz
15A	B Band	159.670 MHz	160.500 MHz
15B	A Band	147.000 MHz	147.000 MHz
15B	B Band	160.000 MHz	160.000 MHz
15C	A Band	147.000 MHz	147.000 MHz
15C	B Band	160.000 MHz	160.000 MHz
15D	A Band	148.120 MHz	147.200 MHz
15D	B Band	160.920 MHz	160.000 MHz
15E	A Band	146.920 MHz	147.840 MHz
15E	B Band	159.720 MHz	160.640 MHz

Figure 34. Center Frequency Data Table.

The current settings for the Modifier Code is shown in the CHANNELS window of the MRP 70 - 1000C software, as can be seen in Figure 29.

3.5 OPTIONS Menu

Figure 35 shows the options in the Options Menu Item.

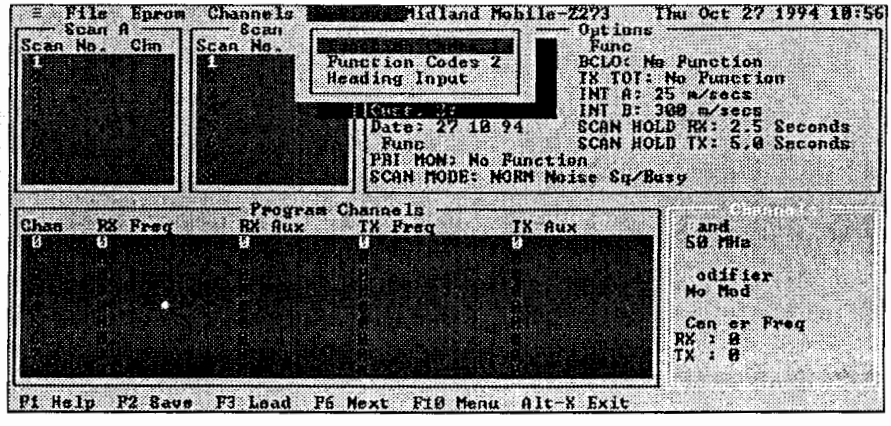

Figure 35. OPTIONS Menu Item selection.

The OPTIONS Menu Item contains the following options

- Functions Codes 1 - Used to set the BCLO, TX Time Out Timer, Interval A & B and Scan Hold Timer.
- Function Codes 2 - Used to set the Priority Monitor and Scan Mode.
- Heading Input - Sets the Model Number, Serial Number, Customer Number and Date.

3.5.1 Function Codes 1

When this item is selected, the following screen is displayed.

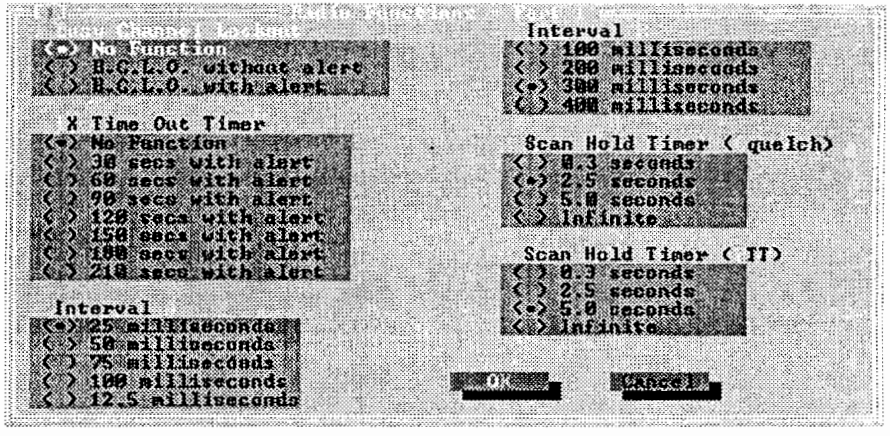

Figure 36. Function Codes 1 Dialog Box.

When first starting the MRP 70 - 1000C software, the current settings are set at their default values. Selecting a different setting for an option moves the highlight to the new setting. Only one setting can be selected for each option. The settings for Function Codes are displayed in the OPTIONS window at the top right of the MRP 70 - 1000C software screen.

Busy Channel Lockout. (BCLO)

The BCLO function, if programmed, inhibits the transmitter if the selected channel is busy. If BCLO with alert is selected, the operator will be warned by an audio beep when transmission is inhibited. The BCLO function can be jumper selected in the transceiver to operate (if programmed) on the presence of either CTCSS/CDCSS signal or carrier.

TX Time Out Timer. (TOT)

The TOT function, if programmed, automatically shuts off the transmitter and gives an audio beep when the programmed period of continues transmission has occurred. This function prevents repeater hangup or transmitter overheating if the transmitter is accidentally locked on.

Interval A.

Interval A, programmable for 12.5 (Handheld only), 25, 50, 75 or 100 msecs, is a time allocated for noise squelch operation while the scan is stopped on each scan channel. At the end of Interval A, based on the noise squelch output status, either causes the scan sequence to resume or activates Interval B (if CTCSS/CDCSS scan is programmed). For all mobiles, Interval A should be 25 msecs, the default condition. For all Handheld's, Interval A should be programmed for 12.5 msecs optimum scanning speed. Programming longer periods for Interval A will cause unnecessary delays in the scan sequence and result in slower scan operation.

Interval B.

Interval B is programmable for 100, 200, 300 or 400 msecs and is the time period allocated for operation of the CTCSS, CDCSS or other signalling systems during the scan stop period on each channel. Interval B is activated following Interval A in the scan stop period only if two conditions are met:

- The noise squelch must be open at the end of Interval A, indicating a busy channel condition.
- A non-zero Auxiliary code must be programmed on the channel being scanned (see Scan Mode section).

If either condition is not met, the scan sequence resumes immediately. All mobiles and Handheld's using CTCSS or CDCSS scan should be programmed for an Interval B of 300 msecs, the default condition. Longer Interval B periods will result in slower scan operation and shorter periods may cause improper CTCSS/CDCSS decoder operation.

Scan Hold Timer (after squelch close).
The Scan Hod Timer introduces a delay before resuming scan after the channel becomes clear. This is programmable for 0.3, 2.5, 5.0 seconds or and infinite time period. The choice of delay is highly dependant upon user preference and system requirements.

Scan Hold Timer (after PTT).
After completing a transmission, a second Scan Hold Timer delays scan resumption to allow reception of a reply. A programmable choice of 0.3, 2.5, 5.0 seconds or an infinite delay is available, with a default of 5 seconds.

3.5.2 Function Codes 2.

When this item is selected, the following screen is displayed.

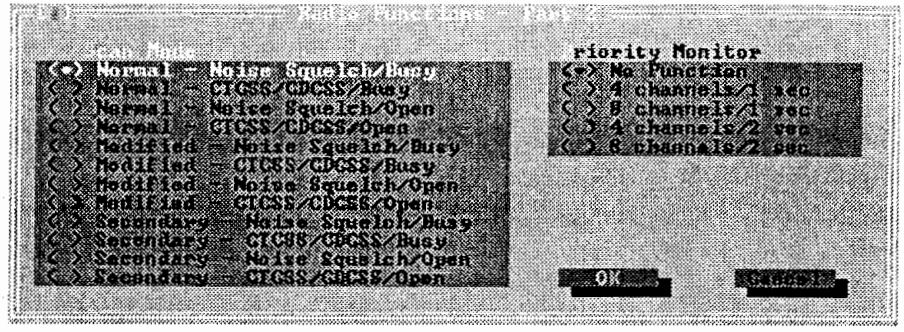

Figure 37. Function Codes 2 Dialog Box.

When first starting the MRP 70 - 1000C software, the current settings are set at their default values. Selecting a different setting for an option moves the highlight to the new setting. Only one setting can be selected for each option. The settings for Function Codes are displayed in the OPTIONS window at the top right of the MRP 70 - 1000C software screen.

Scan Mode.

Three separate modes of scan operation labelled "Normal", "Modified" and "Secondary" are available for selection by function code. The features of the selected mode are activated by two scan push buttons PRI and SCAN located on the transceiver front panel or control head. In addition to selecting one of the 3 scan modes, a selection between Noise Squelch and CTCSS/CDCSS scan type must be made. The final variable to be selected is between scan stop on a busy or open channel.

Priority Monitor.

Priority Channel monitoring is available in each of the three scan modes defined in Scan Mode above. This function can be deleted or programmed for frequency of occurrence by appropriate code entry. Programming "No Function" means that in all instances where Priority Channel monitoring is mentioned in the Scan Mode description above, this function will not occur. If Priority Channel monitoring is desired as described above, the sampling rate during scan (once every four or eight non-priority channels) and during scan hold on a non-priority channel (once every second or every 2 seconds) must be programmed. The default condition causes priority channel sampling after every eight channel during scan and once every second during scan hold.

3.5.3 Heading Input

This item is used to enter data about the radio's user.

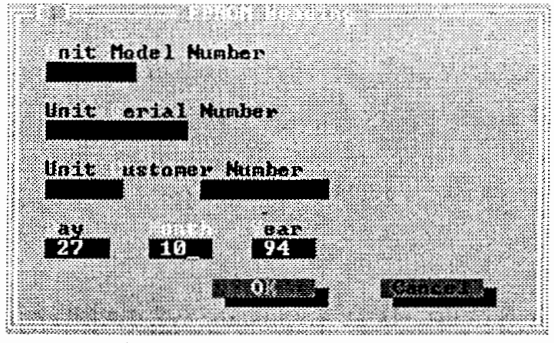

Figure 38. Heading Dialog Box.

This includes data on :

- Model Number (upto 4 characters),
- Serial Number (upto 8 characters),
- Customer Number 1 (upto 3 characters),
- Customer Number 2 (upto 7 characters),
- Date (dd-mm-yy).

The Model Number, Serial Number and Customer Number 1&2 can be any character in the range 0-9 and/or A-F. When the data has been set to its default values, the current date is inserted in the date field. This date can be changed to any other date required.

4. WINDOW DESCRIPTION.

The MRP 70 - 1000C screen is split into five windows. They are

- Channels - displays and allows the user to change the current Band, Modifier Code and Center frequency.
- Program Channels - displays and allows the user to change the RX and TX frequency as well as the RX and TX Auxiliary values.
- Scan A - displays and allows the user to set the scan channels for group A
- Scan B - displays and allows the user to set the scan channels for group B
- Options - shows the current settings for Heading, Function 1 and 2 Codes and allows the user to change them.

The currently active window is shown by the double line around the border of the window. In Figure 3, the CHANNELS window is the currently active window.

Within the window, there may be a number of options (such as Band, Modifier and Center Frequency in the CHANNELS window). The option that is highlighted (in Figure 3 case it is Band) is the current item. Pressing **ENTER** will select that item and perform the action that it specifies.

4.1 Channels Window

The following shows the Channels Window.

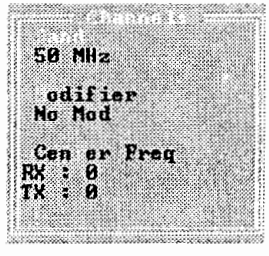

Figure 39. Channels Window.

The Channels window contains the following options.

- Band - To select the band in which the radio operates in.
- Modifier Code - Associated with the Band selection.
- Center Frequency - Set if appropriate Band and Modifier Code Selected.

These functions have already been covered in Section 3.4. Please refer to that Section for details.

4.2 Options Window

The following shows the Options Window.

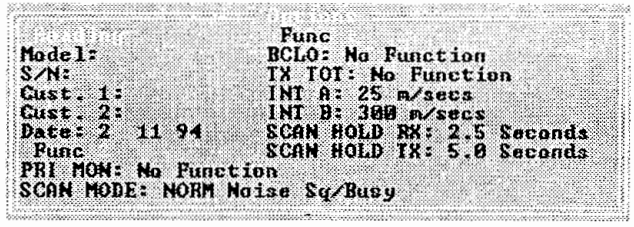

Figure 40. Options Window.

The OPTIONS Window contains the following options

- Functions Codes 1 - Used to set the BCLO, TX Time Out Timer, Interval A & B and Scan Hold Timer.
- Function Codes 2 - Used to set the Priority Monitor and Scan Mode.
- Heading Input - Sets the Model Number, Serial Number, Customer Number and Date.

These functions have already been covered in Section 3.5. Please refer to that Section for details.

4.3 Program Channels Window

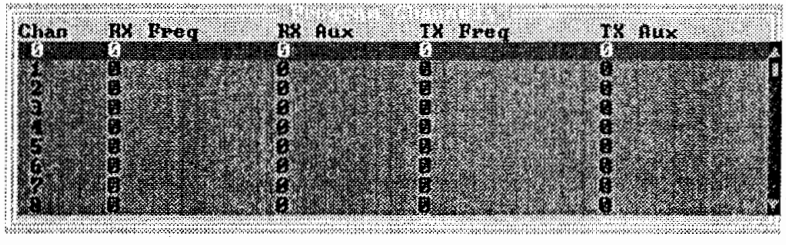

Figure 41. Program Channels Window.

This screen allows the user to enter upto 80 Channel Frequencies. Any Channel can be selected and in any order. Pressing the Up (↑) and down (↓) arrow keys moves the current selector up and down respectively. To move to the first channel, press **<CTRL PageUp>** while pressing **<CTRL PageDown>** moves to the last channel. The current channel is the one with the highlight on it. (in the Figure above, it is Channel 0). To select a channel to edit data for, either

- Press **ENTER** when the correct channel is highlighted
- Double click the mouse on the channel.

When a channel is selected, the Program Channel Dialog Box is displayed. See the Figure below. When entering data, only frequencies in the correct band may be entered. For the data to be valid, a RX frequency must be entered.

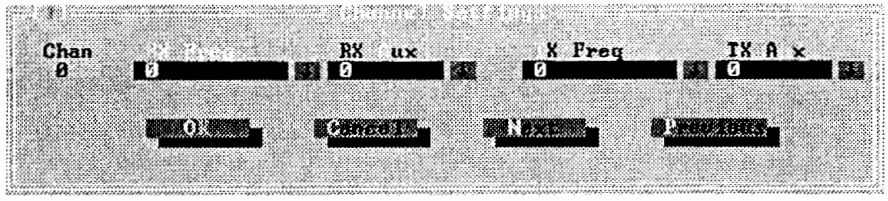

Figure 42. Program Channel Dialog Box.

The Program Channel Dialog Box is used to enter the RX and TX Frequencies for the selected channel. It also allows the RX and TX Auxiliary data to be entered. The RX and TX frequencies must be in the correct Band as selected with Band Code (see Section 3.4.1) and modifier with Modifier Code (see Section 3.4.2).

The RX and TX Auxiliary Data can either be CTCSS Frequencies or CDCSS Codes.

For CDCSS Codes, negative values can be entered. These are entered with a minus sign followed by the Code (eg -411).

Refer to CTCSS Frequencies and CDCSS Codes for possible values (Figure 43 below).

CTCSS Frequencies			CDCSS Codes			
Frequency	Frequency		CDCSS Code	CDCSS Code	CDCSS Code	CDCSS Code
0 Disabled	136.5 Hz		0	134	311	516
67.0 Hz	141.3 Hz		023	143	315	532
71.9 Hz	146.2 Hz		025	152	331	546
74.4 Hz	151.4 Hz		026	155	343	565
77.0 Hz	156.7 Hz		031	156	346	606
79.7 Hz	162.2 Hz		032	162	351	612
82.5 Hz	167.9 Hz		043	165	364	624
85.4 Hz	173.8 Hz		047	172	365	627
88.5 Hz	179.9 Hz		051	174	371	631
91.5 Hz	186.2 Hz		054	205	411	632
94.8 Hz	192.8 Hz		065	223	412	654
97.4 Hz	203.5 Hz		071	226	413	662
100.0 Hz	210.7 Hz		072	243	423	664
103.5 Hz	218.1 Hz		073	244	431	703
107.2 Hz	225.7 Hz		074	245	432	712
110.9 Hz	233.6 Hz		114	251	445	723
114.8 Hz	241.8 Hz		115	261	464	731
118.8 Hz	250.3 Hz		116	263	465	732
123.0 Hz			125	265	466	734
127.3 Hz			131	271	503	743
131.8 Hz			132	306	506	754

Figure 43. Auxiliary Code List.

To enter an negative CDCSS Code, enter a minus sign followed by the CDCSS Code. For example -365.

The Dialog box displays the current Channel Frequency number, the RX and TX Frequency, RX and TX Auxiliary Data and four buttons. These buttons are :

- OK - exits and saves the selected channel to the channel group list.
- Cancel - exits and does not save any data.
- Next - save the selected channel to the channel group list and increments the Channel Number by 1.
- Previous - saves the selected channel to the channel group list and decrements the Channel Number by 1.

When an incorrect RX frequency has been entered, the following error message is displayed. A TX frequency error generates the same basic screen.

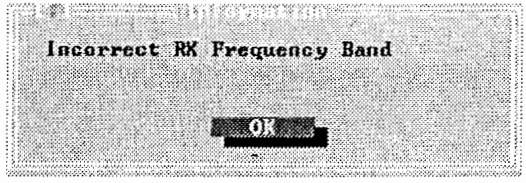

Figure 44. Incorrect RX frequency entered.

The same basic screen is displayed when an incorrect Auxiliary code is entered, except in this cas the display reads "Incorrect RX Auxiliary Code" or "Incorrect TX Auxiliary Code".

4.4 Scan Window

The following figure shows the Scan A and B windows, which can be considered equivalent.

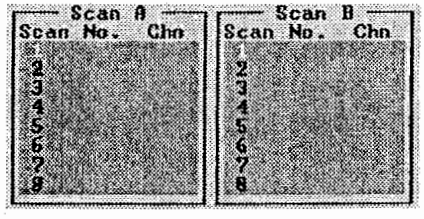

Figure 45. Scan A and B Windows.

This screen allows the user to enter upto 64 Scan Channels for two groups. Scan Channels can only be entered in order (from 1 onwards), otherwise the following error message is displayed.

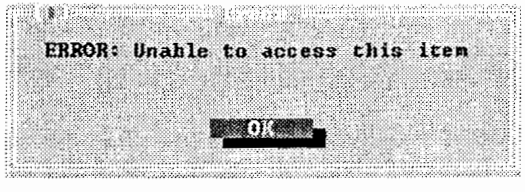

Figure 46. Accessing incorrect item.

Scan Channels can only contain channels that have been defined. That is, only channels that have had a RX frequency defined for them in the Program Channel window (see Section 4.3).

Both Scan groups can contain the same channels and each group

can contain repeated channels.

The Scan Channels are entered in the Scan Channel Dialog Box.

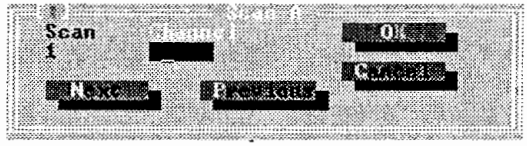

Figure 47. Scan Channel Dialog Box.

The Dialog box displays the current Scan Channel number, the channel to scan and four buttons. These buttons are

- OK - exits and saves the selected channel to the scan group list.
- Cancel - exits and does not save any data.
- Next - save the selected channel to the scan group list and increments the Scan Number by 1.
- Previous - saves the selected channel to the scan group list and decrements the Scan Number by 1.

If an invalid channel is entered, the following message is displayed.

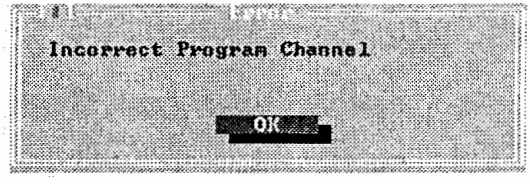

Figure 48. Incorrect Scan channel entered.

5. SAMPLE DATA ENTRY

The following gives a demonstration of how to enter some data and then program an EPROM.

The following is a description of what we want to enter.

EPROM Midland Mobile - Z 273
Model Number 530B
Serial Number 12345678
Customer Number 22417394AC
Date 27-10-94

Band 400 MHz
Modifier None

CH	RX MHz	RX-Aux	TX MHz	TX-Aux
01	406.3125	151.4	415.7625	072
02	406.8125		416.2625	
03	407.3125	218.1	416.7625	218.1
04	407.8125	311-	417.2625	79.7
05	406.5250	723	415.9750	
06	407.0250	411-	416.4750	411-
08	407.5250	107.2	416.9750	156.7
09	408.0250	67.0	417.4750	165

Scan A
01 02 08

Scan B
01 03 04 05 06

BCLO W/ALERT (2)
TX Total 90 sec (3)
INT A 25 msec (1)
INT B 300 msec (3)
Scan Hold Time RX 5 sec (2)
Scan Hold Time TX 2.5 sec (1)
PRI Mode 4/2 (2)
Scan Mode Modified/CTCSS/OPEN (7)

There are a number of steps that need to be performed in order to program an EPROM with this data. The following is a list of actions that need to be performed.

- Select EPROM type
- Select Band
- Select Modifier Code
- Enter Heading Data
- Enter Function Codes
- Enter Program Channels data
- Enter Scan Channels
- Save File

- Blank Check EPROM
- Program EPROM

5.1 EPROM Type

The first step that needs to be performed is to set the EPROM type. This can be achieved by selecting the EPROM Menu from the Menu bar and then selecting **EPROM I Type** . This will list two possible choices, as shown in Figure 49. Select the setting titled "Midland Mobile Z-273", as shown below.

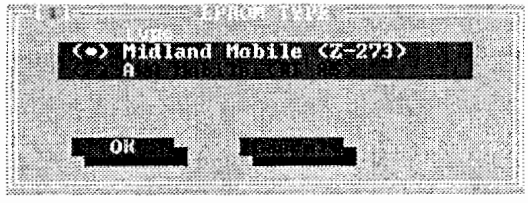

Figure 49. Select EPROM Type.

Press **ENTER**, press **Alt O** or click on **OK** to confirm your choice. This will set the current EPROM type to the Midland Mobile Z-273 EPROM. This can be confirmed by checking the EPROM type at the top of the screen. The screen should look like Figure 3.

5.2 Band and Modifier Code

The next step to perform is to change the Band (and if necessary the Modifier Code). Select the Channels window or Menu and then the Band Item. The screen that is displayed is shown in Figure 30. To change the Band to 400 Mhz select the "Band 3 (403 - 520 Mhz)" which then displays the following screen.

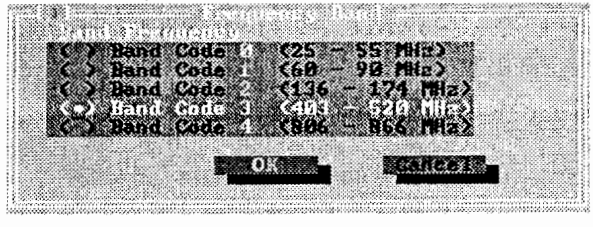

Figure 50. Band Selection Dialog Box after data entry.

Press **ENTER**, press **Alt O** or click on **OK** to confirm your choice. This will change the Band to 400 Mhz which can be confirmed in the Channel window, as shown in Figure 51 below.

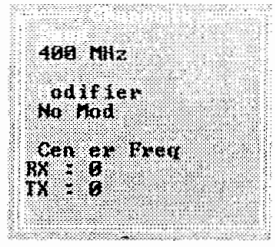

Figure 51. Channel Window showing new Band.

As there is no Modifier code, there is no need to change to enter the Modifier Dialog box and change the Modifier Code.

Now that the EPROM type and the Band (and Modifier when necessary) have been entered, the following steps can be performed in any order

- Heading Data
- Function Codes
- Program Channels.

5.3 Heading Data

To enter the Heading Data, select the Options Window or Menu and select Heading. This will display the screen as shown in Figure 38.

The cursor is currently set at the Model Number so start entering data from here. Type "530B" for the Model Number and press **TAB** to jump to the next option and type the Serial Number here. Continue on until all Heading data has been entered. The Date field shows today's date when entering the data. To enter the given date, just overwrite the old date. The screen would now look like this.

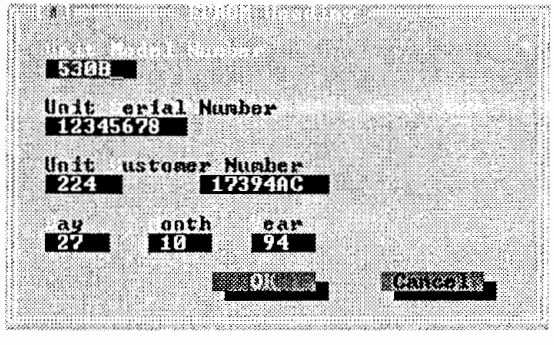

Figure 52. Heading Dialog Box after data entry.

When finished, press **ENTER**, press **Alt O** or click on **OK**. The data is now shown on the screen as can be confirmed in the Options window, as shown in Figure 53 below.

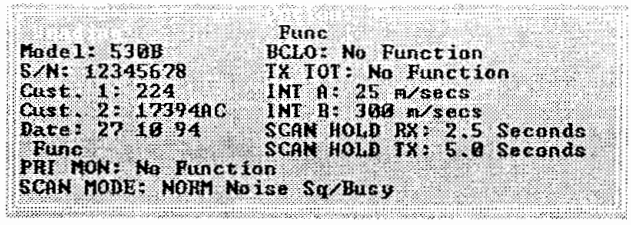

Figure 53. Options window after Heading Data Entered.

To enter the data, select the Function Code's that are to be modified. First off, we will edit the Function Codes 1.

When selected, Function Codes 1 displays a screen as shown in Figure 36. Enter the following data

- BCLO With/ALERT (2)
- TX Total 90 sec (3)
- INT A 25 msec (1)
- INT B 300 msec (3)
- Scan Hold Time RX 5 sec (2)
- Scan Hold Time TX 2.5 sec (1)

and when completed the screen will look like this.

5.4 Function Codes

The function Codes are also entered in the Options Window or Menu. There are two parts to the Function Codes.

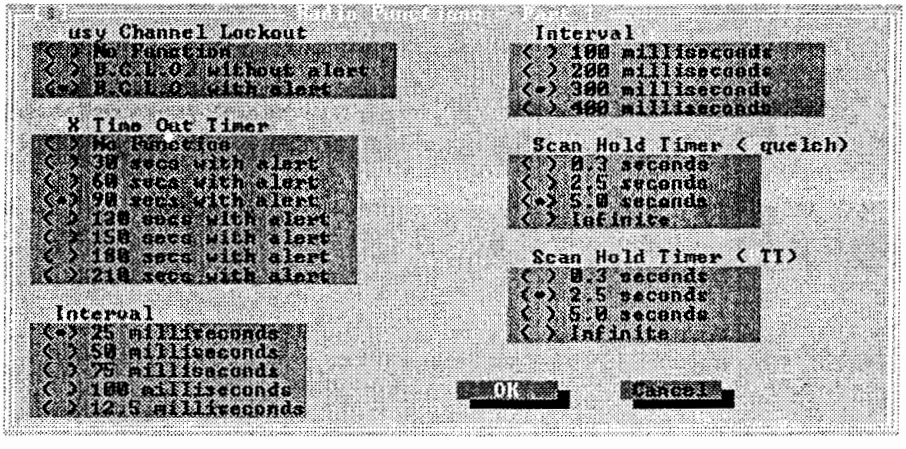

Figure 54. Function Code 1 Dialog Box after data entry.

Press **ENTER**, press **Alt O** or click on **OK** to confirm your choice.

Now we go to Function Code 2. When selected, Function Codes 2 displays a screen as shown in Figure 37. Enter the following data

- PRI Mode 4/2 (2)
- Scan Mode Modified/CTCSS/OPEN (7)

and when completed, the screen will look like this.

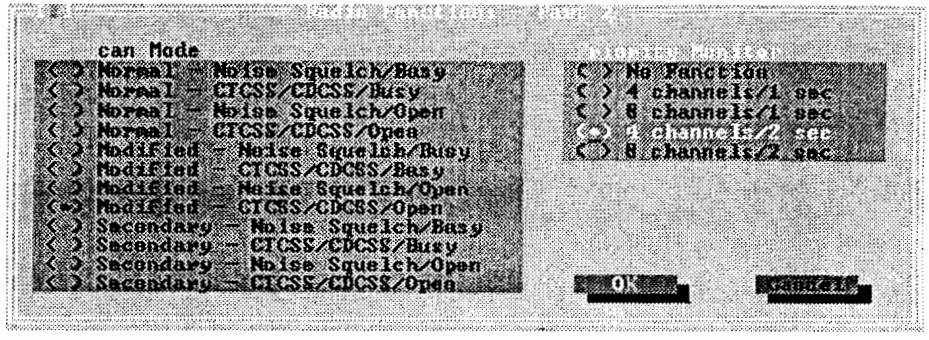

Figure 55. Function Code 2 Dialog Box after data entry.

Press **ENTER**, press **Alt O** or click on **OK** to confirm your choice. Now that Function Codes 1 and 2 have been entered, the Option window would look like Figure 56 below.

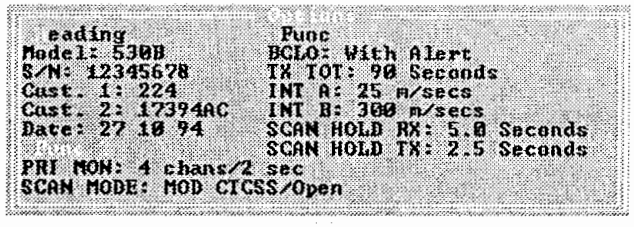

Figure 56. Options Window after Heading and Function Codes 1 & 2 entered.

5.5 Program Channels

To program the RX and TX frequencies for the required channels, select the Program Channels window. Once selected, move the highlight up (or down) the list of channels until the appropriate channel is reached. To then edit the values in this channel, press **ENTER**. (An alternative method is to use the mouse and double click on the channel that is to be edited). When selected, the Program Channel Dialog Box is displayed, as in Figure 42. The next step is to enter the RX and TX frequencies (and Auxiliary values, if any).

For our example, select channel 1. Enter the RX frequency of 406.3125 and press **TAB** or click on the next field. Here, enter the RX Auxiliary value of 151.4. At any time, press F1 to get on-line help. The on-line help here gives a list of valid CTCSS and CDCSS codes. Press **TAB** or click on TX Frequency field. Enter the TX frequency of 415.7625 and press **TAB** or click on the TX Auxiliary field and enter 072 (CDCSS code). The Dialog box would now look like this.

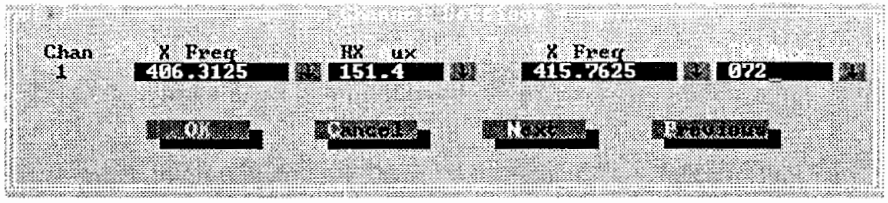

Figure 57. Program Channels Dialog Box after Channel 1 Data Entered.

As the next channel to enter data for is 2, press **Alt N** for Next or click on it. This will display the current values for channel 2. The alternative to this is to press **ENTER**, **Alt O** or click on **OK** with the mouse to confirm the data and then move the highlight to the next channel. Continue to enter the values for all necessary channels. When they have been entered, the Program Channel window will look like this.

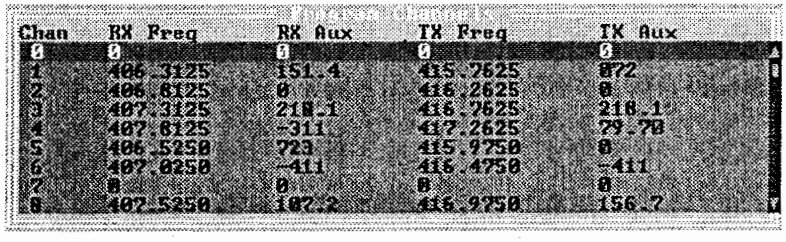

Figure 58. Program Window after all channel data entered.

5.6 Scan Channels

Now that the Channel frequency data has been entered, we can enter the Scan Channels. To do this, select the Scan A window, as in section 4.4. Scan channels must start from Scan Channel 1 so select this channel. This displays Figure 47.

The first channel to enter is 01, so type this in. The screen would now look like this.

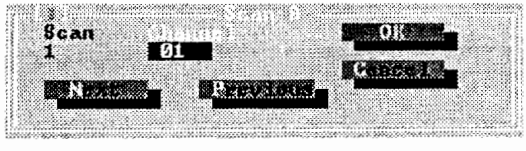

Figure 59. Scan A Dialog Box after Channel 1 Data Entered.

Press **Alt N** or click on **Next** to proceed to the next channel. Continue to enter the Scan A channel data and then perform the same actions for the Scan B channels. When finished, the Scan A and B windows would look like

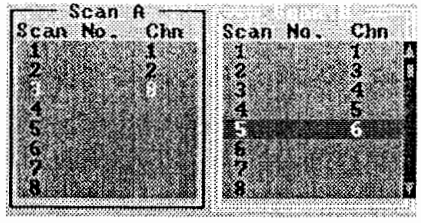

Figure 60. Scan Windows after all channel data entered.

All the relevant data has now been entered. The whole screen would like the following.

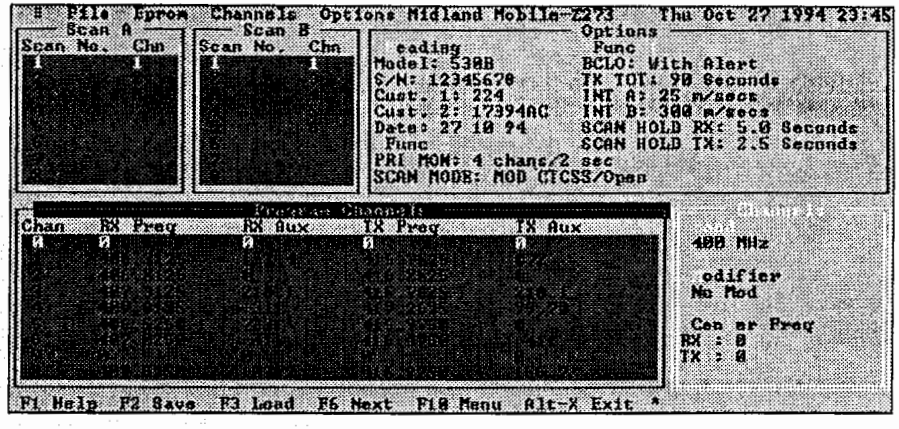

Figure 61. Screen after all Data has been entered.

Now, to make sure that we do not lose this data, we will save it.

5.7 Save Data.

In order to save the data that has been entered, select the Save or Save As command from the File Menu (see section 3.2.3 and 3.2.4). The screen which appears is shown in Figure 11. Enter the name to call the file in which the data is to be stored (for example Example.Dat). The screen would look like this.

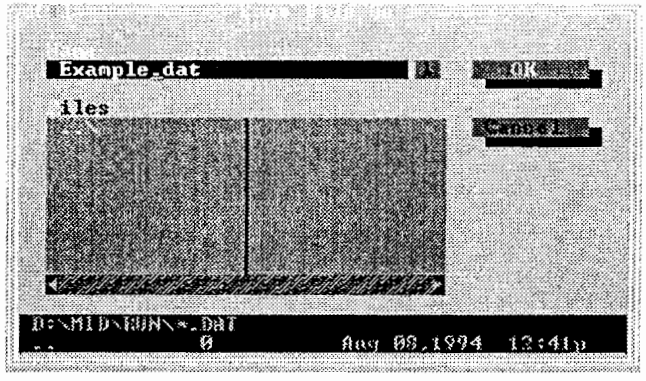

Figure 62. Save Data as file "Example.Dat".

Press **ENTER**, **Alt O** or click on **OK** with the mouse to save the data. A message box will be displayed showing that the data was saved. The file name is now shown in the bottom right hand corner of the screen.

5.8 Blank Check

A blank check must be performed on the EPROM before it can be programmed. In order to do this, switch OFF the MRP 70 - 1000C hardware programmer and insert the EPROM. Once EPROM has been inserted, turn the MRP 70 - 1000C programmer ON. The green light should come on.

Select Blank Check from the EPROM menu (see section 3.3.2) and Figure 17 should be displayed. The MRP 70 - 1000C programming unit's red light is briefly displayed, showing that the EPROM is being accessed. A message should then be displayed on the screen. This would either be Figure 19, in which case the EPROM is Blank and is ready to be programmed, or else a Figure such as Figure 20 is displayed, showing an error message that the EPROM is not Blank. In this case, the EPROM must be put under an Ultra Violet light to erase its contents.

5.9 Program EPROM

The final step to perform is to program the data into the EPROM. This is performed by selecting the Program option from the EPROM menu. This will display Figure 22. The Red light on the MRP 70 - 1000C programmer will come on while programming is in action.

On completion of programming the EPROM, Figure 23 will be displayed. An easier way in which to perform the Blank check and then Programming is to use the Auto command. This will perform the Blank check and, if that passes, the Programming step.

The EPROM has now been programmed with the data specified. To check that the right data has been programmed correctly, a Read can be performed.

5.10 Read EPROM

Selecting Read from the EPROM menu displays Figure 24. Type in a name to save the data that is Read from the EPROM. Once a name has been entered, Figure 25 will be displayed. The red light on the MRP 70 - 1000C programmer will turn on, showing that the EPROM is being Read. When the Read has been completed, the screen is updated to show the data that was Read in and should look like the Figure below.

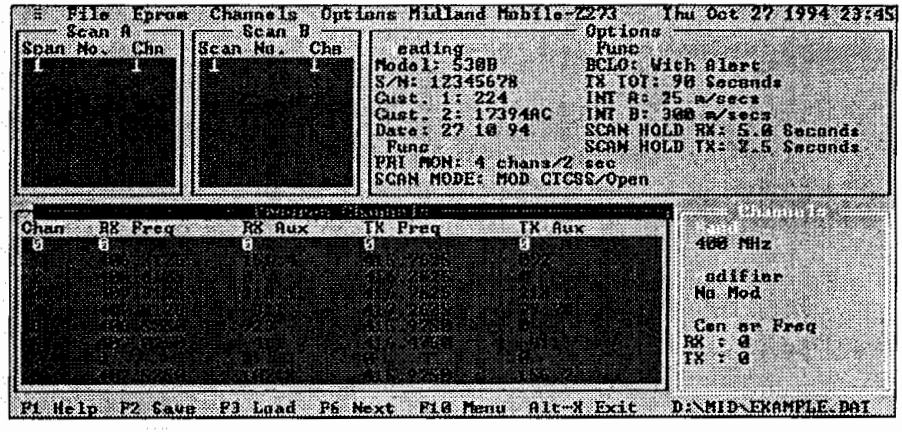

Figure 63. Screen after Read has been performed.

The example has now been completed. The EPROM is now ready to be inserted into the mobile unit, ready for use.

6. APPENDIX A - RT 85 Mobile.

This Appendix deals with the AWA RT-85 Mobile EPROM. Support for this EPROM is only for the Australian market, in which case the program execution file will be called MRP70A.EXE (see section 1.2 for distribution files) .

Although there are a number of similarities between the RT-85 and Z-273 EPROMS, there are some differences.

- Normal Options Unavailable - Special RT-85 Options instead
- Only Certain Bands and Modifiers allowed
- No Centre Frequencies
- Auxiliary Numbers are in different format
- Only Scan A channels can be entered - maximum of 31 channels

To change the EPROM type to RT-85, see section 3.3.1. When the RT-85 EPROM has been selected, the following screen will be displayed.

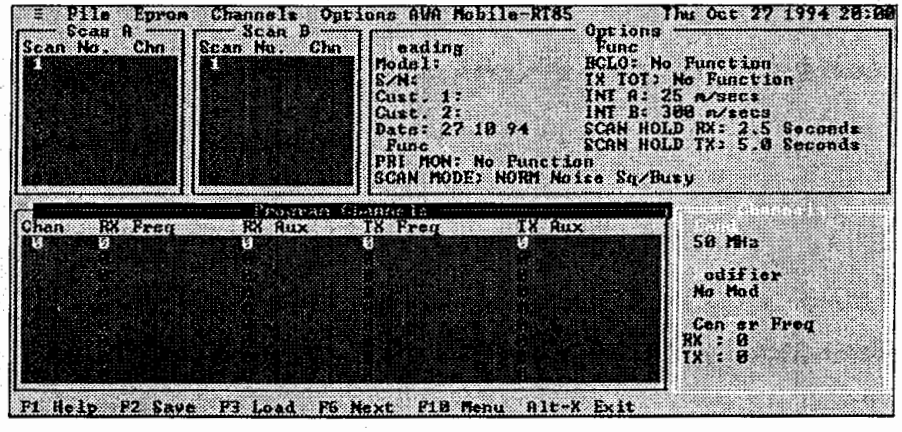

Figure 64. Main screen after EPROM changed to RT-85.

The name of the EPROM can be seen in the Menu Line as AWA Mobile-R85. The following sections details the differences between the RT-85 and the Z-273 EPROMS.

6.1 RT 85 Options Menu

Figure 65 below shows the options available in the Options Menu Item when RT-85 has been selected.

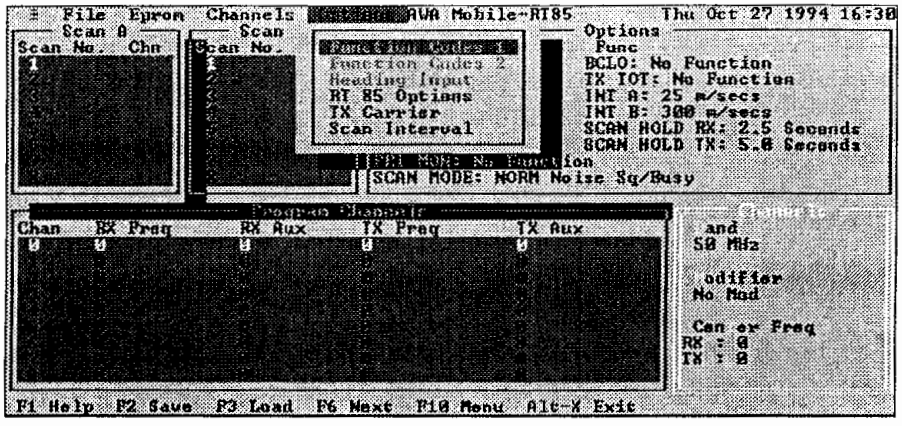

Figure 65. RT-85 OPTIONS Menu Item selection.

The RT 85 Options are only available when the AWA RT-85 Mobile EPROM is selected. Otherwise, the user cannot select these options. The other options (Heading Input and Function Codes) are not available when the AWA RT 85 EPROM is selected.

The Options Menu Item contains the following options

- RT 85 Options
- TX Carrier
- Scan Interval.

6.1.1 RT 85 Options

The RT 85 Options screen looks like

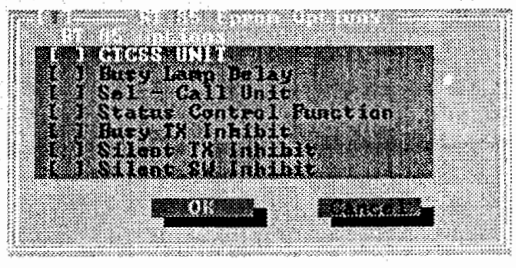

Figure 66. RT 85 Options Dialog Box.

The RT 85 Options screen allows the user to select a number of options that effect the use of the radio.

These options are :

- CTCSS Unit
- Busy Lamp Delay
- Sel - Call Unit

- Status Control Function
- Busy TX Inhibit
- Silent TX Inhibit
- Silent SW Inhibit

To select an option either use the mouse and click on the setting(s), or use the arrow keys to go up/down the list and press space bar to select. More than one option can be selected. When an option is selected, a cross appears next to the options name.

6.1.2 TX Carrier

The RT 85 TX Carrier Dialog Box consists a number of settings.

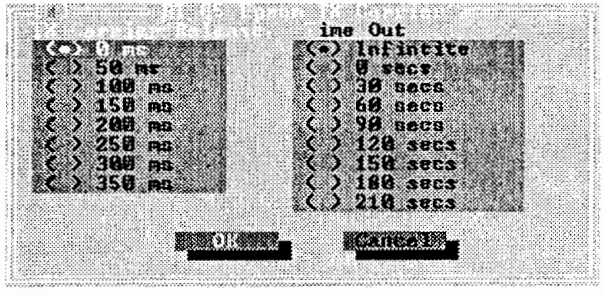

Figure 67. RT 85 TX Carrier Dialog Box.

To select an option either use the mouse and click on the setting(s), or use the arrow keys to go up/down the list and press space bar to select. Press TAB to jump from one Box to another or the Letter above the box that is highlighted.

Selecting a different setting for an option moves the highlight to the new setting. Only one setting can be selected for each option.

6.1.3 RT 85 Scan Interval

When selecting this option, the following figure is displayed.

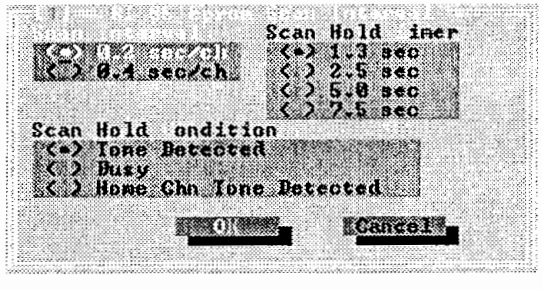

Figure 68. RT 85 Scan Interval Dialog Box.

The RT 85 Scan Interval screen allows the user to select the Scan Interval, Scan Hold Timer and the Scan Hold Condition.

To select an option either use the mouse and click on the setting(s), or use the arrow keys to go up/down the list and press space bar to select. Press TAB to jump from one Box to another or the Letter above the box that is highlighted.

Selecting a different setting for an option moves the highlight to the new setting. Only one setting can be selected for each option.

6.2 CHANNELS MENU

The same options are available for the RT-85 EPROM as the Z-273 EPROM except that the Center Frequency is never available. There some differences in the Band and Modifier options, which are discussed below.

6.2.1 BAND

When the Band menu item is selected, the following screen is displayed.

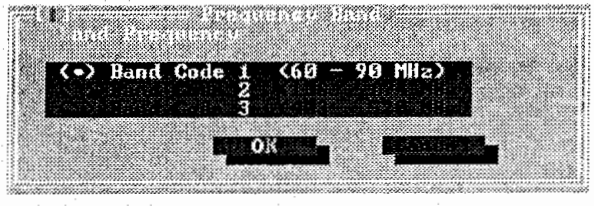

Figure 69. RT-85 Bands available.

As can be seen, there are only three bands available. They are

- Band 1 60 - 90 Mhz
- Band 2 136 - 174 Mhz
- Band 3 403 - 520 Mhz.

6.2.2 MODIFIER

The Modifiers used for each Band are also different. In the case of Band 3, there are the following Modifier Codes available.

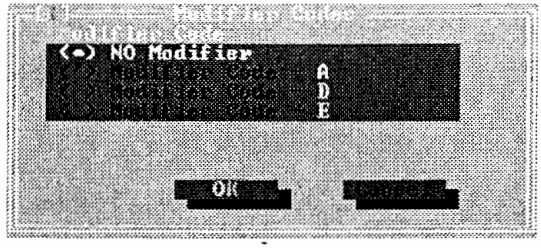

Figure 70. RT 85 Modifier Codes for Band 3.

As Figure 70 above shows, there are only four Modifier Codes available when Band 3 has been chosen.

6.2.3 CENTER FREQUENCY

When the EPROM type has been set to RT-85, Center Frequency values are not available. When the user tries to select this option, the following screen is displayed.

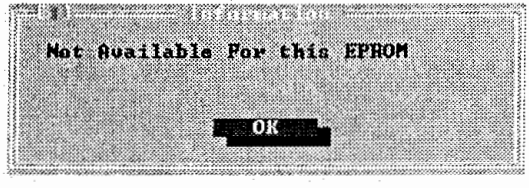

Figure 71. Message When Selecting Unavailable Option.

This message will also appear when the user tries to select any option that is not supported by the current EPROM. This includes the Heading Input and Function Codes from the OPTIONS Menu.

6.3 PROGRAMMING CHANNELS

The Programming Channels window is the same as used for other EPROMS (see Section 4.3). The only difference is in the way that Auxiliary values are used. While, with other EPROMS, either CDCSS or CTCSS could be entered, for the RT-85, only CDCSS codes can be entered, and these range from 0 (none) to 31. Figure 72 below shows an example Programming Channels screen with Auxiliary values.

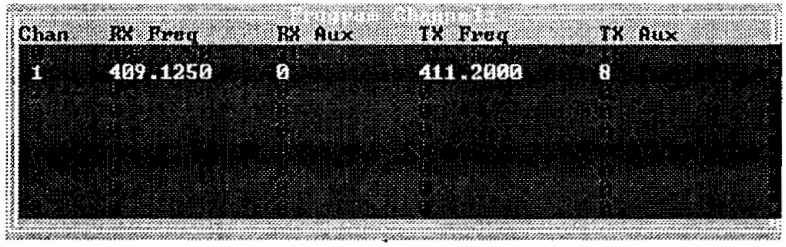

Figure 72. RT-85 Programming Channels Screen with Auxiliary Values.

When entering an invalid Auxiliary number of an invalid frequency, the same screen as shown in Figure 47 is displayed.

6.4 SCAN CHANNELS

Entering channels in the Scan Channels window is exactly the same as discussed in Section 4.4. The only difference with the RT-85 EPROM is that only the SCAN A window is available. If the user tries to select SCAN B, then the error message as shown in Figure 71 is displayed.

Within the SCAN A window, only 31 of the Scan Channels can be programmed. If the user tries to access a Scan Channel higher than that, an error message will be displayed.