198 MOBILE RADIO

LBI-31635A
(Replaces LBI-31635)

MPD RADIO
(STANDARD & SYSTEM VERSIONS)

PROGRAMMING INSTRUCTIONS

USING

TQ2310 PROGRAMMER

GENERAL ELECTRIC

Table of Contents

1.0 Purpose

This document describes operating instructions and procedures for programming the MPD radio (System & Standard) with the Universal Radio Programmer.

2.0 Hardware Required

The Universal Radio Programmer (TQ2310) is a suitcase containing:

1. a standard Panasonic 8K Hand Held Computer, Panasonic Part #RL-H1800,
2. Panasonic I/O Adapter, Panasonic Part #RL-P6001,
3. Panasonic AC adapter, Panasonic Part #RD-9498,
4. a Panasonic mini Printer, Panasonic Part #RL-P1004,
5. a Panasonic RS-232C Serial Interface, Panasonic Part #RL-P3001,
6. a General Electric Program Storage Module,

Additionally, the following is required for programming the MPD radio.

1. The MPD eprom TQ2360 (a set of 2 eproms)
2. Level Converter TQ2362

3.0 Getting Started

Refer to the Panasonic literature describing the Hand Held Computer system and system operations. These manuals provide excellent descriptions of the standard units, including the keyboard keys and display, and the "Primary Menu".

The Universal Radio Programmer uses a series of multiple choice menu prompts to guide you through a programming session. Selection of an item causes a new menu to be displayed until the operation to be performed has been defined.

When the operation has been defined, the Programmer switches from multiple choice menu prompts to fill-in-the-blanks type prompts guiding you through the programming session.

You may "freeze" (i.e. temporarily suspend) the current operation at any time be depressing the "STP/SPD" (stop/speed) key. Action may be resumed by depressing the "STP/SPD" key a second time.

You may change the speed of display operations by depressing the "STP/SPD" key and typing a number from 1 thru 9 (1 is slowest). Typing this number also resumes the operation in progress.

You may abort the current operation at any time by depressing the CLEAR key.

As indicated above, the system is "menu driven" where you select operations and options from menu items displayed on the LCD display. When the unit is initially powered "on", the PRIMARY menu usually will be displayed one line at a time, such as:

```
 --------------------------
| 1=Calculator             |
 --------------------------

 --------------------------
| 2=Clock/Controller       |
 --------------------------

 --------------------------
| 3=File System            |
 --------------------------

 --------------------------
| 4=Run Snap Programs      |
 --------------------------

 --------------------------
| 5=PHOENIX-MOBILE         |
 --------------------------

 --------------------------
| 6=MPD (SYSTEM & STANDARD)|
 --------------------------

 --------------------------
| 7=SELF TEST              |
 --------------------------

 --------------------------
| 8=(and so on ...)        |
 --------------------------
```

NOTE

A word of CAUTION is in order concerning the clear key. The system is designed to be powered on/off without losing the "state" prior to power off. The unit further powers itself off after about a 10 minute period of no operator action. Therefore, DO NOT indiscriminately depress CLEAR a few times every time you power on the system as you may wipe out some of your work from an incomplete session.

"MPD (SYSTEM & STANDARD)" is the selection for programming the MPD radio. Entry into the MPD program is via depressing the number (or letter) key displayed in front of the menu item: "MPD (SYSTEM & STANDARD)". (Such as the number "6" key in the above example menu).

3.1 Data Entry

Data entry for this program takes one of the following forms:

1) entering a value to select a menu item

2) entering numbers to fill out a form

3) entering characters to fill out a form

4) answering a question with yes (Y) or no (N)

5) entering program control commands e.g. ->, <-, ↑, ↓, or ENTER

The LEFT and RIGHT ARROW keys (<-, ->) on the system keyboard can be used to move the flashing cursor on the display to assist with data entry. The system will restrict cursor movements to the specified or implied field positions. While entering purely numeric entries the system allows only the numerals 0 . . . 9.

The UP and DOWN ARROW keys (v, ^) on the system keyboard are used to input the data from the current display, then display the next applicable screen. If at display 'N', DOWN ARROW will take you to display 'N'+1, if 'N'+1 exists. If UP ARROW is used at display 'N', display 'N'-1 will be shown.

Many of the special keys and functions described in the Panasonic literature are not applicable while programming a radio.

DO NOT attempt to use the "HELP" key as described in the Panasonic literature during execution of the MPD program. The "HELP" key for use in defining the function keys f1, f2, f3 (if desired) should be done prior to selecting the MPD program.

The control keys c1, c2, c3, c4 are not defined for this application.

The ROTATE key has no definition during execution of the MPD program.

4.0 Programmer I/O Options

The Universal Radio Programmer provides the capability to store and access MPD radio data using two different media, the MPD radio, and a file stored in the RAM area of the Panasonic HHC.

1. MPD Radio -- To read from and write to the MPD radio, the RS-232 Serial Interface, the TQ2362 Level Converter and cables

must be present and attached.

-- IMPORTANT NOTE!!! The RS-232 must be set to a BAUD rate of 1200. The following describes how to set the RS-232 to 1200 BAUD.

1. Remove the RS-232 Serial Interface from the suitcase.

2. On the bottom of the RS-232, there is a sliding cover. Remove this cover. Inside you will see a row of 8 small switches. Move all of these switches except #5 to the ON position. #5 should be in the off position.

3. Replace the sliding cover.

4. Put the RS-232 Serial Interface back in the suitcase.

2. MPD File -- The Programmer file system can store a single copy of a MPD's data in an internal file that remains intact as long as the Hand Held Computer batteries are not completely discharged, the unit is not powered off with the slightly hidden "all-off" switch in the back of the unit, or until the file data is modified or "overwritten" by the user via a "copy" operation. (Of course, the Programmer system can simultaneously store single copies of Radio data for each different radio: CELLULAR, PHOENIX, etc.). Data be read and previewed, printed, reprogrammed, etc. in the MPD fil

See Appendix A for additional discussions of the file system and file manipulation.

COPY utility operations enable data transfer between these media.

The programmer asks the operator for the INPUT device (i.e. "READ FROM") and OUTPUT device (i.e. "WRITE TO") at appropriate stages in the various programming functions.

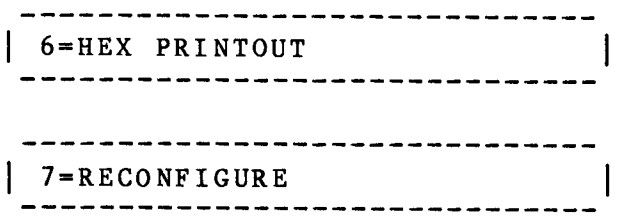
5.0 MPD Program Descriptions

When you select the MPD program via the PRIMARY system menu the following menu is cycled until a selection is made:

```
 ------------------------------
| SELECT RADIO TYPE            |
 ------------------------------

 ------------------------------
| SELECT 1= MPD SYSTEM         |
 ------------------------------

 ------------------------------
| SELECT 2= MPD STANDARD       |
 ------------------------------
```

After the MPD radio type is selected, the MPD main menu is cycled as follows:

```
 ------------------------------
| SELECT DESIRED OPERATION     |
 ------------------------------

 ------------------------------
| 1=PRIMARY MENU               |
 ------------------------------

 ------------------------------
| 2=PROGRAM/REVIEW             |
 ------------------------------

 ------------------------------
| 3=PRINTOUT                   |
 ------------------------------

 ------------------------------
| 4=COPY-SINGLE                |
 ------------------------------

 ------------------------------
| 5=COPY-MULTIPLE              |
 ------------------------------
```



These are all of the operational functions of the Universal Radio Programmer associated with programming the MPD STANDARD and MPD SYSTEM verisons.

5.1 PRIMARY MENU

Typing key #1 returns you to the PRIMARY system menu. This should be the last operation after completing a PROGRAM/REVIEW session.

5.2 PROGRAM/REVIEW (STANDARD VERSION)

PROGRAM/REVIEW is the operation for programming, modifying, and/or reviewing the various data required by the MPD. This section (5.2) describes the programming for the MPD STANDARD. The programming of the MPD SYSTEM version is described in section 5.3.

5.2.1 PROGRAM/REVIEW Displays

First you are asked if this session is to create New data or modify existing OLD data via the menu:

```
 -------------------------
| 1=REVISE EXISTING DATA  |
 -------------------------

 -------------------------
| 2=(ERASE ALL) START ANEW |
 -------------------------
```

5.2.1.1 If REVISE EXISTING DATA is selected, the system further prompts for a source via the following menu:

```
 -------------------------
| READ FROM 1=MPD STD RADIO |
 -------------------------

 -------------------------
| READ FROM 2=MPD STD FILE  |
 -------------------------
```

If an I/O error of any type occurs in the "READ FROM" procedure, the entire "READ FROM" is repeated.

If the selection is made is MPD RADIO, the following screen is displayed.

```
 ------------------------------
| READING------                |
 ------------------------------
```

If 'ERASE ALL' is chosen, the system asks for the frequency range of the channels via the following display and menu.

```
 ------------------------------
| SELECT FREQUENCY RANGE       |
 ------------------------------

 ------------------------------
| 1=VHF BAND                   |
 ------------------------------
```

```
 -------------------------------
| 2=UHF BAND                    |
 -------------------------------

 -------------------------------
| 3=806 - 870 MHZ               |
 -------------------------------
```

After selecting the frequency range, the system prompts you for the band split within that range with the following display and menus.

```
 -------------------------------
| SELECT BAND SPLIT             |
 -------------------------------
```

If the range is VHF BAND, the following menu will be shown.

```
 -------------------------------
| 1=136 - 160 MHZ               |
 -------------------------------

 -------------------------------
| 2=150 - 174 MHZ               |
 -------------------------------
```

If the range is UHF BAND, the following menu will be shown.

```
 -------------------------------
| 1=403 - 423 MHZ               |
 -------------------------------

 -------------------------------
| 2=410 - 430 MHZ               |
 -------------------------------

 -------------------------------
| 3=420 - 440 MHZ               |
 -------------------------------

 -------------------------------
| 4=440 - 460 MHZ               |
 -------------------------------

 -------------------------------
| 5-450 - 470 MHZ               |
 -------------------------------

 -------------------------------
| 6=470 - 488 MHZ               |
 -------------------------------
```

```
 ---------------------------------
| 7=482 - 500 MHZ                 |
 ---------------------------------

 ---------------------------------
| 8=494 - 512 MHZ                 |
 ---------------------------------
```

If the range is 806 - 870 MHZ, no band split menu is displayed.

5.2.2 MPD STANDARD PROGRAM REVIEW Menu

Next the system prompts you with the MPD PROGRAM/REVIEW menu:

```
 --------------------------
| 1=CHANNELS               |
 --------------------------

 --------------------------
| 2=OPTIONS                |
 --------------------------

 --------------------------
| 3=PRINT                  |
 --------------------------

 --------------------------
| 4=REVIEW/MODIFY COMPLETE |
 --------------------------
```

5.2.2.1 CHANNEL displays

```
 --------------------------
| ENTER CHANNEL (1-xx): 01 |
 --------------------------
```

You must select a channel number between 1 and the HIGHEST CHANNEL.

```
 --------------------------
| CH xx NAME               |
 --------------------------
```

'xx' is the channel selected (display only).
A channel name of up to eight characters may be entered.

```
 --------------------------
| CH xx  TX aaa.aaaaa MHZ  |
 --------------------------
```

'xx' is the channel selected (display only).

'aaa.aaaaa' is the input field for the desired transmit frequency.

```
| CH xx  TX-CG:NONE          |
```

'xx' is the channel selected (display only).
'NONE' is the input field for the transmit channel guard.

```
| CH xx  RX aaa.aaaaa MHZ    |
```

'xx' is the channel selected (display only).
'aaa.aaaaa' is the input field for the desired receive frequency.

```
| CH xx  RX-CG:NONE          |
```

'xx' is the channel selected (display only).
'NONE' is the input field for the recieve channel guard.

```
| CH xx  CCT 0:00            |
```

'xx' is the channel selected (display only).
'0:00' is the input field for the carrier control timer.

NOTE - the CCT screen will not be shown if no TX frequency has been entered for this channel

```
| CH xx  ENABLE STE       Y  |
```

'xx' is the channel selected (display only).

NOTE- This question will be shown only if the channel contains either a TX or RX channel guard.

```
| CH xx NORMAL OPTIONS?   Y  |
```

'xx' is the channel selected (display only).
If this question is answered 'Y', the next four displays will be skipped. If answered 'N', they will be shown.

```
 ---------------------------
| CH xx DISPLAY LIGHT DSBL N |
 ---------------------------
```

'xx' is the channel selected (display only).

```
 ---------------------------
| CH xx ALERT TONE DISABLE N |
 ---------------------------
```

'xx' is the channel selected (display only).

```
 ---------------------------
| CH xx BUSY TX DISABLE    N |
 ---------------------------
```

'xx' is the channel selected (display only).

```
 ---------------------------
| CH xx HI POWER FLAG DSBL N |
 ---------------------------
```

'xx' is the channel selected (display only).

5.2.2.2 OPTIONS displays

```
 ---------------------------
| HIGHEST CHANNEL aa        |
 ---------------------------
```

```
 ---------------------------
| HOME CHANNEL bb           |
 ---------------------------
```

```
 ---------------------------
| PWR ON: LAST CH Y/SEL CH N |
 ---------------------------
```

This question is used to input the Power On Channel option. If the cursor is positioned at the 'LAST CH' part of the screen, and a 'Y' is input, the radio will power up on the last channel previously used. If a 'N' is input the radio will power up on the selected channel. The following screen will appear if the radio is to power up on a selected channel.

```
 ---------------------------
| POWER ON CHANNEL cc       |
 ---------------------------
```

```
 ---------------------------
| POWER ON VOLUME LEVEL dd  |
 ---------------------------
```

```
 ----------------------------
| MINIMUM VOLUME LEVEL ee    |
 ----------------------------

 ----------------------------
| BEEP ON POWER UP         Y |
 ----------------------------
```

5.2.2.3 PRINT

If item #3(PRINT for review) was selected from the PROGRAM/REVIEW menu, the following print menu will be cycled until #3(COMPLETE) on the print menu is selected.

```
 ----------------------------
| PRINT: 1=CHANNELS          |
 ----------------------------

 ----------------------------
| PRINT: 2=OPTIONS           |
 ----------------------------

 ----------------------------
| PRINT: 3=COMPLETE          |
 ----------------------------
```

5.2.2.4 PROGRAM/REVIEW COMPLETE

If item #4(PROGRAM/REVIEW COMPLETE) is selected from the PROGRAM/REVIEW menu, you will be asked to select the output destination with the following menu:

```
 ----------------------------
| WRITE TO: 1=MPD STD RADIO  |
 ----------------------------

 ----------------------------
| WRITE TO: 2=MPD STD FILE   |
 ----------------------------
```

If an I/O error of any type occurs in the "Write to" procedure the entire "Write to" sequence is repeated.

If MPD RADIO has been chosen the following screens will appear:

```
 ----------------------------
| READING------              |
 ----------------------------

 ----------------------------
| WRITING------              |
 ----------------------------
```

```
 ------------------------------
| VERIFYING------               |
 ------------------------------
```

5.3 PROGRAM/REVIEW (SYSTEM VERSION)

PROGRAM/REVIEW is the operation for programming, modifying, and/or reviewing the various data required by the MPD.

5.3.1 PROGRAM/REVIEW Displays

First you are asked if this session is to create New data or modify existing OLD data via the menu:

```
 --------------------------
| 1=REVISE EXISTING DATA   |
 --------------------------

 --------------------------
| 2=(ERASE ALL) START ANEW |
 --------------------------
```

5.3.1.1 If REVISE EXISTING DATA is selected, the system further prompts for a source via the following menu:

```
 --------------------------
| READ FROM 1=MPD SYS RADIO |
 --------------------------

 --------------------------
| READ FROM 2=MPD SYS FILE  |
 --------------------------
```

If an I/O error of any type occurs in the "READ FROM" procedure, the entire "READ FROM" is repeated.

If the selection is made is MPD RADIO, the following screen is displayed.

```
 ------------------------------
| READING------                 |
 ------------------------------
```

If 'ERASE ALL' is chosen, the system asks for the frequency range of the channels via the following display and menu.

```
 ------------------------------
| SELECT FREQUENCY RANGE        |
 ------------------------------
```

```
 ------------------------------
| 1=VHF BAND                   |
 ------------------------------

 ------------------------------
| 2=UHF BAND                   |
 ------------------------------

 ------------------------------
| 3=806 - 870 MHZ              |
 ------------------------------
```

After selecting the frequency range, the system prompts you for the band split within that range with the following display and menus.

```
 ------------------------------
| SELECT BAND SPLIT            |
 ------------------------------
```

If the range is VHF BAND, the following menu will be shown.

```
 ------------------------------
| 1=136 - 160 MHZ              |
 ------------------------------

 ------------------------------
| 2=150 - 174 MHZ              |
 ------------------------------
```

If the range is UHF BAND, the following menu will be shown.

```
 ------------------------------
| 1=403 - 423 MHZ              |
 ------------------------------

 ------------------------------
| 2=410 - 430 MHZ              |
 ------------------------------

 ------------------------------
| 3=420 - 440 MHZ              |
 ------------------------------

 ------------------------------
| 4=440 - 460 MHZ              |
 ------------------------------

 ------------------------------
| 5-450 - 470 MHZ              |
 ------------------------------
```

```
 ---------------------------------
| 6=470 - 488 MHZ                 |
 ---------------------------------

 ---------------------------------
| 7=482 - 500 MHZ                 |
 ---------------------------------

 ---------------------------------
| 8=494 - 512 MHZ                 |
 ---------------------------------
```

If the range is 806 - 870 MHZ, no band split menu is displayed.

Next, the system asks for the type of keypad on the radio that is to be programmed.

```
 ---------------------------------
| SELECT KEYPAD TYPE              |
 ---------------------------------

 ---------------------------------
| SELECT 1= 2 KEYS                |
 ---------------------------------

 ---------------------------------
| SELECT 2= 16 KEYS               |
 ---------------------------------
```

If '16 KEYS' is selected, the following is shown to input number of modes desired.

```
  ---------------------------------
 | ENTER NUMBER OF MODES      x    |
  ---------------------------------
```

'x' is the input field for number of modes

```
  ---------------------------------
 | NO. OF CHNL'S PER MODE    yy    |
  ---------------------------------
```

'yy' is the input field for number of channels per mode.

5.3.2 MPD SYSTEM PROGRAM REVIEW Menu

Next the system prompts you with the MPD PROGRAM/REVIEW menu:

```
 --------------------------
| 1=CHANNELS               |
 --------------------------
```

```
 --------------------------
| 2=OPTIONS                |
 --------------------------

 --------------------------
| 3=SCAN OPTIONS           |
 --------------------------

 --------------------------
| 4=TYPE 99 TONES          |
 --------------------------

 --------------------------
| 5=DTMF DATA              |
 --------------------------

 --------------------------
| 6=GE STAR DATA           |
 --------------------------

 --------------------------
| 7=PRINT                  |
 --------------------------

 --------------------------
| 8=REVIEW/MODIFY COMPLETE |
 --------------------------
```

5.3.2.1 CHANNEL displays

If the keypad type is 16 keys and number of modes is greater than 1, the first display seen when ´1=CHANNELS´ is selected is:

```
 --------------------------
| SELECT MODE x CHANNEL yy |
 --------------------------
```

´x´ is the input field for the desired mode and ´yy´ is the input field for the desired channel within that mode.

If the keypad type is 4 keys or if only 1 mode is selected, the first CHANNEL display is as follows:

```
 --------------------------
| ENTER CHANNEL (1-xx): 01 |
 --------------------------
```

You must select a channel number between 1 and the HIGHEST CHANNEL.

After channel and/or mode number are selected, the program advances to the channel name screen.

```
---------------------------
| My CH xx NAME           |
---------------------------
```

'y' is mode number (display only).
'xx' is the channel selected (display only).
A channel name of up to eight characters may be entered.

```
---------------------------
| My CH xx  TX aaa.aaaaa  |
---------------------------
```

'y' is mode number (display only).
'xx' is the channel selected (display only).
'aaa.aaaaa' is the input field for the desired transmit frequency.

```
---------------------------
| My CH xx  TX-CG:NONE    |
---------------------------
```

'y' is mode number (display only).
'xx' is the channel selected (display only).
'NONE' is the input field for the transmit channel guard.

```
---------------------------
| My CH xx  RX aaa.aaaaa  |
---------------------------
```

'y' is mode number (display only).
'xx' is the channel selected (display only).
'aaa.aaaaa' is the input field for the desired receive frequency.

```
---------------------------
| My CH xx  RX-CG:NONE    |
---------------------------
```

'y' is mode number (display only).
'xx' is the channel selected (display only).
'NONE' is the input field for the recieve channel guard.

```
---------------------------
| My CH xx  CCT 0:00      |
---------------------------
```

'y' is mode number (display only).
'xx' is the channel selected (display only).

'0:00' is the input field for the carrier control timer.

NOTE - the CCT screen will not be shown if no TX frequency has been entered for this channel

```
-----------------------------
| My CH xx  ENABLE STE    Y |
-----------------------------
```

'y' is mode number (display only).
'xx' is the channel selected (display only).

NOTE- This question will be shown only if the channel contains either a TX or RX channel guard.

```
-----------------------------
| My CH xx IN SCAN        Y |
-----------------------------
```

'y' is mode number (display only).
'xx' is the channel number (display only).
This question is answered 'Y' if this channel is to be included in scan.

NOTE - the IN SCAN screen will not be shown if the SCAN OPTION is not enabled.

```
-----------------------------
| My CH xx SEND GE STAR ID N |
-----------------------------
```

'y' is mode number (display only).
'xx' is the channel number (display only).

```
-----------------------------
| My CH xx SEND CG WITH ID N |
-----------------------------
```

'y' is the mode number (display only).
'xx' is the channel number (display only).

NOTE - this screen will not be shown if SEND GE STAR ID is answered N.

```
-----------------------------
| My CH xx TYPE 99 ENABLED N |
-----------------------------
```

'y' is the mode number (display only).
'xx' is the channel number (display only).

```
-----------------------------
| My CH xx NORMAL OPTIONS? Y |
-----------------------------
```

'y' is mode number (display only).
'xx' is the channel selected (display only).
If this question is answered 'Y', the next five displays will be skipped. If answered 'N', they will be shown.

```
 ---------------------------
| My CH xx BACK LIGHT DSBL N |
 ---------------------------
```

'y' is mode number (display only).
'xx' is the channel selected (display only).

```
 ---------------------------
| My CH xx ALERT TONE DSBL N |
 ---------------------------
```

'y' is mode number (display only).
'xx' is the channel selected (display only).

```
 ---------------------------
| My CH xx BUSY - TX DSBL? N |
 ---------------------------
```

'y' is mode number (display only).
'xx' is the channel selected (display only).

```
 ---------------------------
| My CH xx H/L TX PWR LVL  H |
 ---------------------------
```

'y' is mode number (display only).
'xx' is the channel selected (display only).
This question is answered with an 'H' if it is to be a HIGH power channel. It is answered with an 'L' if it is to be a low power channel.

```
 ---------------------------
| My CH xx H/L PWR FR KYBD Y |
 ---------------------------
```

'y' is the mode number (display only).
'xx' is the channel number selected (display only).
This question is answered 'Y' if the power level for this channel is selectable from the keyboard on the radio.

NOTE - if the keypad type is four keys or only one mode is selected, the MODE number display (My) on the CHANNELS displays will not be shown.

5.3.2.2 OPTIONS displays

```
-----------------------------
| HIGHEST CHANNEL aa        |
-----------------------------
```

NOTE - This screen will be shown only if the keypad type is 4 keys or if only one mode is desired.

```
-----------------------------
| BEEP ON POWER UP        Y |
-----------------------------
```

```
-----------------------------
| POWER ON VOLUME LEVEL dd  |
-----------------------------
```

```
-----------------------------
| MINIMUM VOLUME LEVEL ee   |
-----------------------------
```

```
-----------------------------
| PWR ON: LAST CH Y/SEL CH N |
-----------------------------
```

This question is used to input the Power On Channel option. If the cursor is positioned at the 'LAST CH' part of the screen, and a 'Y' is input, the radio will power up on the last channel previously used. If a 'N' is input the radio will power up on the selected channel. The following screen will appear if the radio is to power up on a selected channel.

```
-----------------------------
| POWER ON MODE           x |
-----------------------------
```

'x' is the input field for the mode on which the radio is to operate when powered up.
NOTE - This question will be shown only if POWER ON SELECTED CHANNEL is chosen and the number of modes is greater than one.

```
-----------------------------
| POWER ON CHANNEL cc       |
-----------------------------
```

'cc' is the input field for the channel on which the radio is to operate when it is powered up.
NOTE - this question will be shown only if POWER ON SELECTED CHANNEL is chosen.

```
-----------------------------
| HOME CHANNEL PER RADIO  Y |
-----------------------------
```

This question is answered 'Y' if only one Home Channel for radio is desired. It is answered 'N' if a Home Channel

for each mode is desired.
NOTE - this question will be shown only if the number of modes is greater than one.

```
-----------------------------
| HOME CHANNEL MODE        m |
-----------------------------
```

'm' is the input field for the mode in which the Home Channel is to be located.
NOTE - this question will be shown only if HOME CHANNEL PER RADIO is 'Y'.

```
-----------------------------
| HOME CHANNEL            cc |
-----------------------------
```

'cc' is the input field for desired Home Channel.
NOTE - this question will be shown only if HOME CHANNEL PER RADIO is 'Y'.

If HOME CHANNEL PER RADIO is 'N', the previous two questions will be skipped and the following screen will be displayed to input a Home Channel for each mode.

```
-----------------------------
| My HOME CHANNEL         cc |
-----------------------------
```

'y' is the Mode Number (display only). 'cc' is the input field for the Home Channel within Mode 'y'.
NOTE - this screen will be shown for each mode.

5.3.2.3 SCAN OPTIONS Displays

```
-----------------------------
| SCAN ENABLED             Y |
-----------------------------
```

This question is answered 'Y' if scan is to be enabled.
NOTE - If the question is answered 'N', all following SCAN questions will be skipped.

```
-----------------------------
| SCAN ADD/DELETE?         Y |
-----------------------------
```

This question is answered Y if Scan Channels are to be added and deleted from the keypad on the radio.

```
-----------------------------
| SCAN HANG/DELAY    xxxxx MS|
-----------------------------
```

| SCAN WITHIN MODES N |

NOTE - This question is shown only if number of modes is greater than one.

NOTE - If this question is answered 'Y', the next screen to be displayed will be 'PRIORITY 2 DISIRED?'

| PRIORITY 1 FIXED? Y |

| PRIORITY 1 DESIRED? Y |

NOTE - This screen will be shown only if PRIORITY 1 FIXED = N
If this question is answered 'N', the next screen to be displayed will be 'PRIORITY 2 DESIRED?'

| PRIORITY 1 MODE m |

NOTE - This question is shown only if number of modes is greater than one, SCAN WITHIN MODE = N and either PRIORITY 1 FIXED = Y or PRIORITY 1 DESIRED = Y.

| PRIORITY 1 CHANNEL cc |

NOTE - This screen is shown only if SCAN WITHIN MODE = N and either PRIORITY 1 FIXED = Y or PRIORITY 1 DESIRED = Y.

| Mx PRIORITY 1 CHANNEL c |

'x' is the current mode (display only).
This screen is for input of the Priority Channel for each mode. This screen will be shown for each mode.
NOTE - This screen will be shown only if SCAN WITHIN MODE = Y.

| PRIORITY 2 DESIRED? Y |

NOTE - If this question is answered 'N', it will be the la screen displayed for SCAN OPTIONS.

```
-----------------------------
| PRIORITY 2 MODE          m |
-----------------------------
```

´m´ is the input field for the mode in which Priority 2 Channel is to be.
NOTE - This screen will be shown only if PRIORITY 2 DESIRED= Y, SCAN WITHIN MODE = N and number of modes is greater than 1.

```
-----------------------------
| PRIORITY 2 CHANNEL      cc |
-----------------------------
```

´cc´ is the input field for the Priority 2 Channel.
NOTE - This screen will be shown only if PRIORITY 2 DESIRED =Y, and SCAN WITHIN MODE = N.

```
-----------------------------
| Mx PRIORITY 2 CHANNEL   cc |
-----------------------------
```

´x´ is the current mode (display only). ´cc´ is the input field for the Priority 2 Channel within each mode.
NOTE - this screen will be shown only if PRIORITY 2 DESIRED =Y, SCAN WITHIN MODE = Y and number of modes is greater than one.

5.3.2.4 TYPE 99 DATA

```
-----------------------------
| CG + T99 ON ANY ONE CH?  N |
-----------------------------
```

This question is answered ´Y´ if there are to be any channels with both Channel Guard and Type 99.

```
-----------------------------
| DECODE EITHER OR BOTH    B |
-----------------------------
```

This question is answered with a ´B´ or an ´E´. If a ´B´ is entered, then a radio with Channel Guard and Type 99 must decode BOTH Channel Guard AND Type 99 before the receive audio is opened. If an ´E´ is entered, the a radio with Channel Guard and Type 99 must decode EITHER Channel Guard OR Type 99 before receive audio is opened.
NOTE - This screen will be shown only if the previous question is answered ´Y´.

```
-----------------------------
| T99 GRP @ TONE * 0000.0 HZ |
-----------------------------
```

´@´ is the Tone Group designator, A or B (display only).
´*´ is Tone designator (A - D) within the Group. (display only).
000.0 is the input field for the desired T99 Tone.
NOTE - this screen will be shown a total of 8 times, 4 times for group A and 4 times for group B.

```
 ----------------------------
| Mx T99 GRP g  GE FORMAT? Y |
 ----------------------------
```

'x' is the Mode number (display only). This screen contains two questions. On the left-hand side of the screen, 'g' is the input field for the Type 99 Tone Group (A or B) to be used in mode x. On the right-hand side of the screen, there is a Y/N question to determine whether or not T99 is to be GE Format or not.
NOTE - This screen will be shown for each mode.

5.3.2.5 DTMF DATA

```
 ----------------------------
| Mx  DTMF ENABLE          Y |
 ----------------------------
```

'x' is the Mode number (display only). This question is answered 'Y' if DTMF is to be enabled in the mode indicated by 'x'.
NOTE - This screen will be shown for each mode.

```
 ----------------------------
| DTMF TONES AUDIBLE       N |
 ----------------------------
```

If this question is answered 'Y', then DTMF tones will be audible as they are sent.

```
 ----------------------------
| DTMF TONE LENGTH  tttt MS  |
 ----------------------------
```

'tttt' is the input field for DTMF tone length.

```
 ----------------------------
| *,# TONE LENGTH   tttt MS  |
 ----------------------------
```

'tttt' is the input field for tone length of * and #.

```
 ----------------------------
| DTMF DASH DELAY   tttt MS  |
 ----------------------------
```

```
 ----------------------------
| PHONE #1:                  |
 ----------------------------
```

This is the input screen for Phone # 1. This screen is repeated for Phone # 2 - Phone # 9.

5.3.2.6 GE STAR DATA

```
-----------------------------
| GE STAR EMER ENABLED     N |
-----------------------------
```

```
-----------------------------
| GESTAR EMR FROM HOME KEY N |
-----------------------------
```

This question is answered 'Y' if GE STAR emergency is to be controlled from the Home Channel Key.
NOTE - this question will be shown only if GE STAR EMERGENCY is enabled.

```
-----------------------------
| LOCK ON EMER. CHANNEL    N |
-----------------------------
```

If this question is answered 'Y', then when the emergency switch is operated, the radio locks on the emergency channel until the emergency switch is restored to its normal state and the radio is switch off and on.
NOTE - this question will be shown only if GE STAR EMERGENCY is enabled.

```
-----------------------------
| GESTAR EMER CH = SEL CH? N |
-----------------------------
```

If this question is answered 'Y', then the Emergency Channel will be the channel on which the radio is currently operating.
NOTE - this question will be shown only if GE STAR EMERGENCY is enabled.

```
-----------------------------
| GE STAR EMER. MODE       m |
-----------------------------
```

'm' is the input field for the mode in which the GE STAR Emergency Channel is to be.
NOTE - this question will be shown only if GE STAR EMERGENCY is enabled and number of modes is greater than one.

```
-----------------------------
| GE STAR EMER. CHANNEL   cc |
-----------------------------
```

'cc' is input field for the GE STAR Emergency Channel.
NOTE - this question will be shown only if GE STAR EMERGENCY is enabled.

```
-----------------------------
| GESTAR ID:           gggg  |
-----------------------------
```

'gggg' is the input field for GE STAR ID.

```
-----------------------------
| GESTAR START DELAY dddd MS |
-----------------------------
```

'dddd' is the input field for the GE STAR Star Delay

5.3.2.7 PRINT

If item #7(PRINT for review) was selected from the PROGRAM/REVIEW menu, the following print menu will be cycled until #7(COMPLETE) on the print menu is selected.

```
 ---------------------------
| PRINT: 1=CHANNELS         |
 ---------------------------

 ---------------------------
| PRINT: 2=OPTIONS          |
 ---------------------------

 ---------------------------
| PRINT: 3=SCAN OPTIONS     |
 ---------------------------

 ---------------------------
| PRINT: 4=TYPE 99 DATA     |
 ---------------------------

 ---------------------------
| PRINT: 5=DTMF DATA        |
 ---------------------------

 ---------------------------
| PRINT: 6=GESTAR DATA      |
 ---------------------------

 ---------------------------
| PRINT: 7=COMPLETE         |
 ---------------------------
```

5.3.2.8 PROGRAM/REVIEW COMPLETE

If item #8(PROGRAM/REVIEW COMPLETE) is selected from the PROGRAM/REVIEW menu, you will be asked to select the output destination with the following menu:

```
 ---------------------------
| WRITE TO: 1=MPD SYS RADIO |
 ---------------------------

 ---------------------------
| WRITE TO: 2=MPD SYS FILE  |
 ---------------------------
```

If an I/O error of any type occurs in the "Write to" procedu the entire "Write to" sequence is repeated.

If MPD RADIO has been chosen the following screens will appear:

```
 ------------------------------
| READING------                |
 ------------------------------

 ------------------------------
| WRITING------                |
 ------------------------------

 ------------------------------
| VERIFYING------              |
 ------------------------------
```

5.4 PRINTOUT

If PRINTOUT is selected from the MPD main menu, the system further prompts you for the media from which the printout is to be taken via the following menu:

```
 ----------------------------
| READ FROM: 1=MPD RADIO     |
 ----------------------------

 ----------------------------
| READ FROM: 2=MPD FILE      |
 ----------------------------
```

If an I/O error occurs in the "READ FROM" sequence the entire "READ FROM" sequence will be repeated.

Following this, the data will be printed in the following format.

5.4.1 SAMPLE PRINTOUT

5.5 COPY-SINGLE

COPY-SINGLE is a utility function providing the capability to copy the MPD data to or from any of the two storage media Selecting COPY-SINGLE prompts you to select the input or copy from device via the following menu:

```
 ----------------------------
| READ FROM: 1=MPD RADIO     |
 ----------------------------

 ----------------------------
| READ FROM: 2=MPD FILE      |
 ----------------------------
```

If an I/O error occurs in the "READ FROM" procedure, the entire "READ FROM" sequence is repeated.

Following a successful "READ FROM" operation the system prompts the user for a "copy-to" device via the following menu:

```
 ----------------------------
| WRITE TO: 1=MPD RADIO      |
 ----------------------------

 ----------------------------
| WRITE TO: 2=MPD FILE       |
 ----------------------------
```

If an I/O error occurs in the "WRITE TO" procedure, the entire "WRITE TO" sequence is repeated.

5.6 COPY-MULTIPLE

COPY-MULTIPLE is much like COPY-SINGLE except that the write operation is repeated as many times as the operator responds "Y" to the following prompt:

```
 ----------------------------
| AGAIN                    Y |
 ----------------------------
```

5.7 HEX PRINTOUT

HEX PRINTOUT gives you a hexadecimal dump of either the MPD file, MPD radio or eeprom. After selecting HEX PRINTOUT from the MPD main menu, you are presented with the following menu:

```
 ----------------------------
| READ FROM: 1=MPD RADIO     |
 ----------------------------

 ----------------------------
| READ FROM: 2=MPD FILE      |
 ----------------------------
```

5.7.1 SAMPLE HEX PRINTOUT

5.8 RECONFIGURE

If item #7(RECONFIGURE) is selected from the main MPD menu, a WARNING MESSAGE will be displayed as follows:

```
-------------------------------
| WARNING: SEE MANUAL 1ST      |
-------------------------------
```

The user must be sure that he understands what he is doing before attempting to enter this section of the program. For more information see APPENDIX D.

6.0 Helpful Suggestions.

The following could prevent some frustrations with the Hand Held Computer and Universal Radio Programmer system.

1. Select a display speed not greater then 6 or 7 for most convenient data entry.

2. If the MPD program does not show up in the Primary menu, try removing the Hand held Computer from the suitcase; turning it "ON" (with "ON KEY"); type the CLEAR key a few times; turn the unit "OFF" with the normal "OFF KEY"; then re-insert into the suitcase; and try again. If this fails to reveal the MPD, remove the GE Program Storage Module, open it and extract the MPD eprom. Examine the eprom for any physical damage (e.g. broken or bent pins). If the eprom appears to be undamaged return it to the Program Storage Module, but be sure to insert it in a different socket than the one it was just extracted from. Replace the Program Storage Module and try again to gain access to the program.

3. DO NOT Plug/Unplug peripherals when the system is executing an application program. To be sure of the state of the unit depress CLEAR a few times until you see the PRIMARY menu being displayed. Then turn the unit off via the normal "OFF KEY" prior to inserting or removing modules or capsule programs.

4. The Panasonic BASIC Capsule program options (purchase from Panasonic) has special exiting procedures that one should carefully observe else one may have to play the "ALL OFF" game with the ALL OFF switch in the back of the Hand Held Computer.

5. You may purchase a variety of peripherals and software capsules for the Hand Held Computer from Panasonic. However, this MPD software is designed for use only with the basic computer, the GE Program Storage Module and GE I/O Module. As such, inclusion of other devices or other Capules programs may cause problems. If a problem arises, simply unplug the problem Peripheral/Capsule when executing MPD.

APPENDIX A

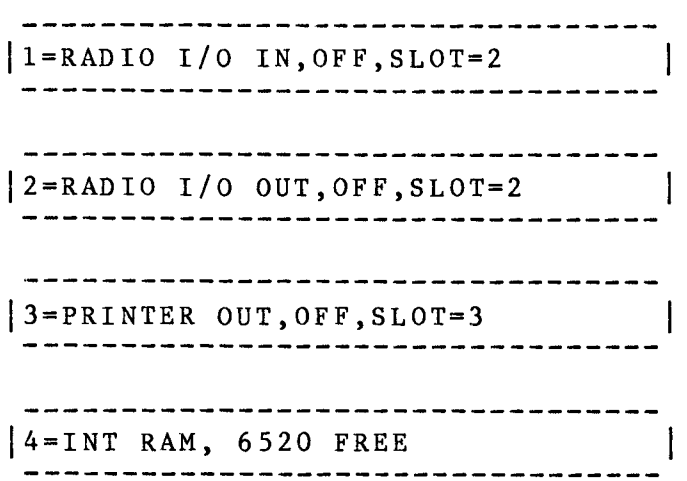
FILE OPERATIONS.

The programmer offers several facilities for managing radio data saved in files. For more detailed information, consult the sections of the Panasonic Hand Held Computer - Instructions for Use titled "File System" and "Beyond the Primary Unit with the I/O Key". MPD data written to (and read from) the MPD FILE is written to (and read from) a file named MPD, which is created automatically the first time radio data is written. The file can be deleted, renamed, or copied as required.

A.0 Expanding File Storage with Programmable Memory Peripherals

Optional Panasonic Programmable Memory (RAM) Peripherals can be added to increase file storage capacity. Peripherals are available in several capacities, and one peripheral can be installed in each unused I/O adapter slot.

Each Programmable Memory Peripheral, and internal RAM, are separate memory areas. Only one area can be active at a time, and only files stored in that area are available to the MPD program, or other programs. To find the current area, or change the current area designation, press the I/O key to enter the I/O menu. Each peripheral, and each memory area is displayed, with the space remaining, and the current area is in reverse image. For example:



```
 ---------------------------------
|5=EXT RAM, 7542 FREE,SLOT=4      |
 ---------------------------------
```

Change the current memory by pressing the number displayed with the desired memory area.

A.1 Deleting a File

It may be desireable to delete the MPD file if the memory space occupied by it is required for other files.

1. Return to the primary menu if not already there.

2. Select the file system by pressing "3" (3=FILE SYSTEM). The computer will display a menu listing all (visible) files. Items 1 and 2 are special functions used to copy and create files.

```
 ---------------------------
| 1=NEW FILE                |
 ---------------------------

 ---------------------------
| 2=COPY FILE               |
 ---------------------------

 ---------------------------
| 3=DELTA MOBILE            | (for example)
 ---------------------------

 ---------------------------
| 4=MPD                     | (for example)
 ---------------------------

 ---------------------------
| 5=etc.                    |
 ---------------------------
```

3. Choose the MPD file by pressing the number displayed with it (4 in this example). "MPD" will appear in reverse image.

4. Delete the file by depressing the "DELETE" and "DN ARROW" keys. The programmer will begin displaying the menu of files (less the deleted file).

5. Return to the primary menu by pressing the "CLEAR" key twice.

A.2 Renaming a File

Any file in the current memory area can be renamed.

1. First make certain that the desired radio data has been written to MPD FILE.

2. Return to the primary menu if not already there.

3. Select the file system by pressing "3" (3=FILE SYSTEM). The computer will display a menu listing all (visible) files, as described above.

4. Choose the MPD file, or any other desired file, by pressing the number displayed with it (4 in the example). The file name will appear in reverse image and the blinking cursor will be left after the last character of the filename.

```
-----------------------------
| MPD                       |
-----------------------------
```

5. Use the RIGHTARROW and LEFTARROW keys to reposition the cursor and type in the new name. The new name can be longer than the original name, up to 24 characters. Delete excess characters by pressing the DELETE key and then the RIGHTARROW or LEFTARROW keys, to delete the character at the cursor.

NOTE

It is better to add characters to the filename than to replace the filename. The added characters can simply be deleted if it is necessary to program another radio from the file, and the type of radio is not forgotten.

```
--------------------------------
|ace plumbing                  |
--------------------------------
```

or

```
--------------------------------
| MPD ace plumbing             |
--------------------------------
```

6. Press the ENTER key when the name is correct. The programmer will beep, flash "CAN'T EDIT", and begin displaying the file menu again. The modified filename should appear in the menu.

A.3 Restoring the Renamed File

The file must be renamed back to MPD (must be uppercase) for the MPD program to use it. Use the renaming procedure described above. Be careful to rename or delete any MPD file that already exists, to avoid confusing the computer with two identically-named files.

NOTE

MPD is not a text file and cannot be edited by the editing commands described in the Panasonic literature. In addition, the MPD program will reject text files, or files created by other programs, that have been renamed MPD. Do not name non-MPD files MPD.

A.4 Printing the file list

A list of all (visible) files in the current memory can be printed using the following procedure.

1. First make certain the computer is in the primary menu.

2. Press the I/O key to display the I/O menu. The computer will display a menu of I/O devices and RAM. A typical I/O menu is displayed below:

```
 ---------------------------------
|1=RADIO I/O IN,OFF,SLOT=2        |
 ---------------------------------

 ---------------------------------
|2=RADIO I/O OUT,OFF,SLOT=2       |
 ---------------------------------

 ---------------------------------
|3=PRINTER OUT,OFF,SLOT=3         |
 ---------------------------------
```

```
|4=INT RAM,6860 FREE                |
```

3. If the printer is off (PRINTER OUT,OFF,SLOT=x), press the number displayed with the printer (3 in the example).

4. Press the I/O key to return to the primary menu.

5. Press the "3" key to enter the file system. The printer will print everything that appears on the display.

6. When a complete list of files has been printed, press the CLEAR key twice to return to the primary menu.

7. Press the I/O key to display the I/O menu. Then press the key corresponding to the printer to turn the printer off. Press the I/O key again to return to the primary menu.

A.5 Copying a File

You may wish to copy a file from one memory area to another or to create a duplicate copy of a file. First make sure that the file to be copied is in the current memory area. If not, change the current memory designation as required, using the I/O menu.

1. If not in the primary menu, press clear twice to return to the primary menu.

2. Press the "3" key to enter the file system.

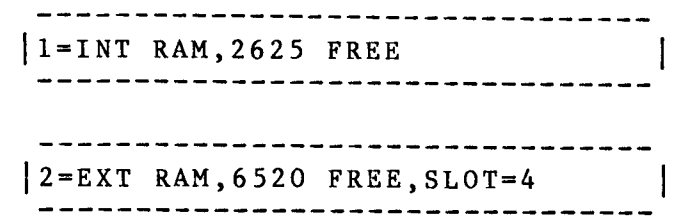
3. Press the "2" key for COPY FILE; this prompt appears:

```
|SELECT FILE                        |
```

A menu of all the file names in the current memory will be displayed. Press the number of the file to be copied; and the following prompt appears:

```
|SELECT DESTINATION RAM             |
```

followed by a menu of destination memory areas. The current memory is displayed in reverse image. For example:



Press the number corresponding to the desired destination memory area. When the copying is complete, the original file system menu will return.

APPENDIX B

DEFAULTS AND ACCEPTABLE VALUES

MPD STANDARD

SUBJECT	ACCEPTABLE VALUES	DEFAULTS
Channel #	1 thru 48	1
Channel Name	up to 8 characters out of the following set: 1. letters A - Z. 2. digits 0 - 9. 3. the following special characters: + - < > = * / \ ' ( ) @	
TX Frequency	0 or range selected by the user	0
RX Frequency	0 or range selected by the user	0
Channel Guard	67.0 thru 210.7 or Digital EIA standards	NONE
CCT	0:00, 0:30, 1:00 1:30, 2:00, 2:30	0:00
STE	Y or N	Y
Display Light Disable	Y or N	N
Alert Tone Disable	Y or N	N
Busy TX Disable	Y or N	N
Move Micro Xtal	Y or N	N
Hi/Lo Power	H or L	H
Beep On Power Up	Y or N	Y
Highest Channel	1 - 48	48
Home Channel	1 - Highest Channel	01
Power on Channel	1 - Highest Channel	01
Power on Volume Level	0 - 31	00
Minimum Volume Level	0 - 31	00
Power on Last Chan	Y or N	Y

MPD SYSTEM

SUBJECT	ACCEPTABLE VALUES	DEFAULTS
Modes	1 Thru 8	1
Channel #	1 thru (48 / NUMBER OF MODES)	1
Channel Name	up to 8 characters out of the following set: 1. letters A - Z. 2. digits 0 - 9. 3. the following special characters: + - < > = * / \ ' ( ) @	
TX Frequency	0 or range selected by the user	0
RX Frequency	0 or range selected by the user	0
Channel Guard	67.0 thru 210.7 or Digital EIA standards	NONE
CCT	0:00, 0:30, 1:00 1:30, 2:00, 2:30	0:00
STE	Y or N	Y
Channel In Scan	Y or N	N
Send GE Star ID	Y or N	N
Send CG With ID	Y or N	N
Type 99 Enable	Y or N	N
Back Light Disable	Y or N	N
Alert Tone Disable	Y or N	N
Busy TX Disable	Y or N	N
Move Micro Xtal	Y or N	N
Hi/Lo Power Level	H or L	H
Hi/Lo Pwr From Keybd	Y or N	Y
Highest Channel	1 - 48	48
Power on Volume Level	0 - 31	00
Minimum Volume Level	0 - 31	00
Power on Last Chan	Y or N	Y
Power on Mode	1 - Number of Modes	1

Power on Channel	1 - (48 / Number of Modes)	1
Home Ch per Radio	Y or N	Y
Home Mode	1 - Number of Modes	1
Home Channel	1 - Highest Channel	01
Mode 1-8 Home Channel	1 - (48 / Number of Modes)	1
Scan Enabled	Y or N	Y
Scan W/Channel Guard	Y or N	N
Scan Add/Delete	Y or N	Y
Scan Hang/Delay	100 - 25,500	100
Scan Within Modes	Y or N	Y
Priority1=Selected	Y or N	N
Priority 1 Fixed	Y or N	Y
Priority 1 desired	Y or N	Y
Priority 1 Mode	1 - Number of Modes	1
Priority 1 Channel	1 - (48 / Number of Modes)	1
Mode 1-8 Pr 1 Ch	1 - (48 / Number of Modes)	1
Priority 2 Desired	Y or N	Y
Priority 2 Mode	1 - Number of Modes	1
Priority 2 Channel	1 - (48 / Number of Modes)	1
Mode 1-8 Pr 2 Ch	1 - (48 / Number of Modes)	1
CG/T99 on any Ch	Y or N	N
Decode Either/Both	Y or N	B
Type 99 Tones		000.0
Type 99 Tone Group	A or B	A
GE Tone Format	Y or N	Y
Mode 1-8 DTMF Enable	Y or N	Y
DTMF Tones Audible	Y or N	N

DTMF Tone Length	27 - 6885	
*,# Tone Length	27 - 6885	216
DTMF Dash Delay	100 - 25,500	1,000
Phone #1 - 9	up to 16 characters of the following 1. 0 - 9 2. #, spaces, -	
Ge Star Enabled	Y or N	N
Ge Star F/Home Ch Key	Y or N	N
Lock on Emer. Channel	Y or N	N
Ge Star on Mode	1 - Number of Modes	1
Ge Star on Channel	1 - (48 / Number of Modes)	1
Ge Star Id	1 - 2047	0
Ge Star Start Delay	36 - 9180	360

APPENDIX C

ERROR CODES/MESSAGES/CONDITIONS

The Programmer system will display a number of error messages when certain error conditions are encountered.

1. NO SPACE

   This message may occur if somehow there is not enough unused Ram memory to execute this program. This could result from other uses of the Hand Held Computer such as with the FILE system, or perhaps with basic. The MPD will not attempt to execute until you provide enough RAM. The ultimate "fix" to a Ram problem (i.e. the last resort) is to turn the "ALL OFF" switch OFF for a few minutes.

2. VERIFY ERROR Indicates data written to or read from the eeprom socket did not check during the verify read operation.

3. I/O ERROR -xxx Where "xxx" is an I/O error resulting from invalid I/O of some sort and will cause the system to repeat the I/O sequences until the error condition is cleared.

4. NO FILE or WRONG TYPE

   NO FILE is not actually an error. If no data has been written to the MPD File, this message results from an attempt to READ the file data.

5. NO ROOM FOR FILE-CONT Y/N?

   This is also not actually an error. This message appears when there is insufficient file space to store a MPD file. If you do not need to make a file copy, but rather want to write to the eeprom socket or the radio you can still get full access to the program by answering yes (Y). Answering no (N) returns the system to the HHC's main menu. If a file is desired it will be necessary to enter the HHC's file system and delete a file or files until enough space in RAM is created to hold the MPD file.

6. LEGAL VALUES ARE

   This message, followed by either a range or a list of numbers, is given when an attempt has been made to enter an unacceptable

value. The message will remain on the screen until the ENTER key is hit. The program will then return to the screen containing the invalid data which you can then correct.

7. LAST ENTRY, ENTER TO LEAVE

   This message is flashed when you try to go past the last screen available in the current menu item. After flashing, the program automatically returns to the last screen.

8. INVALID FREQUENCY

   This message appears when the frequency is in range but is invalid. This message will remain on the screen until the ENTER key is hit.

9. INVALID CHANNEL GUARD

   This message appears when an attempt is made to input a channel guard that is invalid.

10. INVALID CHANNEL NAME

    This message appears when an attempt is made to input a channel name which contains an invalid character.

APPENDIX D

RECONFIGURE

Upon entering the RECONFIGURE section the programmer will display the following question:

```
-----------------------------
| IS RADIO ATTACHED?        |
-----------------------------
```

If this question is answered No (N) the program returns to the MPD PROGRAM/REVIEW menu.

If this question is answered Yes (Y) the program will display the following screen:

```
-----------------------------
| READING------             |
-----------------------------
```

If an error occurs during the READ sequence the program will return to the MPD PROGRAM/REVIEW menu, otherwise the following RECONFIGURE menu will then be cycled:

```
-----------------------------
| RECONFIGURE:1=CHANNELS    |
-----------------------------

-----------------------------
| RECONFIGURE:2=FIXED DATA  |
-----------------------------

-----------------------------
| RECONFIGURE:3=COMPLETE    |
-----------------------------
```

A.1 RECONFIGURE/CHANNELS displays (MPD STANDARD)

```
-----------------------------
| ENTER CHANNEL (1-aa): xx  |
-----------------------------
```

'aa' is the HIGHEST CHANNEL and is display only.
'xx' is the input field for the channel number desired.

```
-----------------------------
| CH xx SQLCH OPEN yy       |
-----------------------------
```

'yy' is the input field for squelch open and is entered as a hex number between 0 and FF.

If a new value is entered for SQUELCH OPEN the program will write the new SQUELCH OPEN and SQUELCH CLOSE values to the radio and display the following screen:

```
-----------------------------
| CH xx SQLCH OPEN yy OK?   |
-----------------------------
```

If the new SQUELCH values are not satisfactory the user should answer No (N) to this question and the program will return to the SQUELCH OPEN screen so that a new value can again be entered.

If these values are satisfactory the user should answer Yes (Y) to the question and the program will proceed to the next screen.

```
-----------------------------
| CH xx TX POWER zz         |
-----------------------------
```

'zz' is the input field for TX power and is entered as a hex number between 0 and FF.

If a new value is entered for TX POWER the program will write the new value to the radio and the following screen will appear:

```
-----------------------------
| CH xx TX POWER zz  OK?    |
-----------------------------
```

If the new TX POWER value is not satisfactory the user should answer No (N) to this question and the program will return to the TX POWER screen so that a new value can again be entered.

If these values are satisfactory the user should answer Yes (Y) to the question and the program will proceed to the next screen.

```
-----------------------------
| CH xx MODULATION vv       |
-----------------------------
```

'vv' is the input field for modulation and is entered as a hex number between 0 and 1F.

```
-----------------------------
| CH xx MODULATION vv  OK?  |
-----------------------------
```

If the new MODULATION value is not satisfactory the user should answer No (N) to this question and the program will return to the MODULATION screen so that a new value can again be entered.

If these values are satisfactory the user should answer Yes (

to the question.

A.2 RECONFIGURE/CHANNELS displays (MPD SYSTEM)

If the keypad type is 16 keys and number of modes is greater than 1, the first display seen when ´1=CHANNELS´ is selected is:

```
-----------------------------
| SELECT MODE x CHANNEL yy   |
-----------------------------
```

´x´ is the input field for the desired mode and ´yy´ is the input field for the desired channel within that mode.

If the keypad type is 4 keys or if only 1 mode is selected, the first CHANNEL display is as follows:

```
-----------------------------
| ENTER CHANNEL (1-xx): 01  |
-----------------------------
```

You must select a channel number between 1 and the HIGHEST CHANNEL.

```
-----------------------------
| M@ CH xx SQLCH OPEN yy     |
-----------------------------
```

´@´ is the current mode (display only).
´xx´ is the current channel.
´yy´ is the input field for squelch open and is entered as a hex number between 0 and FF.

If a new value is entered for SQUELCH OPEN the program will write the new SQUELCH OPEN and SQUELCH CLOSE values to the radio and display the following screen:

```
-----------------------------
| M@ CH xx SQLCH OPEN yy OK? |
-----------------------------
```

If the new SQUELCH values are not satisfactory the user should answer No (N) to this question and the program will return to the SQUELCH OPEN screen so that a new value can again be entered.

If these values are satisfactory the user should answer Yes (Y) to the question and the program will proceed to the next screen.

```
 ----------------------------
| M@ CH xx TX HI POWR zz     |
 ----------------------------
```

'@' is the current mode (display only).
'yy' is the current channel (display only).
'zz' is the input field for TX Hi Power and is entered as a hex number between 0 and FF.

If a new value is entered for TX Hi POWER the program will write the new value to the radio and the following screen will appear:

```
 ----------------------------
| M@ CH xx TX HI POWR zz  OK?|
 ----------------------------
```

If the new TX POWER value is not satisfactory the user should answer No (N) to this question and the program will return to the TX POWER screen so that a new value can again be entered.

If these values are satisfactory the user should answer Yes (Y) to the question and the program will proceed to the next screen.

```
 ----------------------------
| M@ CH xx MODULATION vv     |
 ----------------------------
```

'@' is the current mode (display only).
'yy' is the current channel (display only).
'vv' is the input field for modulation and is entered as a hex number between 0 and 1F.

```
 ----------------------------
| M@ CH xx MODULATION vv  OK?|
 ----------------------------
```

If the new MODULATION value is not satisfactory the user should answer No (N) to this question and the program will return to the MODULATION screen so that a new value can again be entered.

If these values are satisfactory the user should answer Yes (Y) to the question.

```
 ----------------------------
| M@ CH xx TX LO POWR zz     |
 ----------------------------
```

'@' is the current mode (display only).
'yy' is the current channel (display only).
'zz' is the input field for TX Low Power and is entered as a hex number between 0 and FF.

If a new value is entered for TX Low Power the program will write the new value to the radio and the following screen will appear:

```
 ----------------------------
| M@ CH xx TX LO POWR zz  OK?|
 ----------------------------
```

If the new TX Low Power value is not satisfactory the user should answer No (N) to this question and the program will return to the TX POWER screen so that a new value can again be entered.

If these values are satisfactory the user should answer Yes (Y) to the question and the program will proceed to the next screen.

A.3 RECONFIGURE/FIXED DATA displays

```
 ----------------------------
| LOC 00--03 aa bb cc dd     |
 ----------------------------

 ----------------------------
| LOC 04--07 ee ff gg hh     |
 ----------------------------
       .
       .
       .
 ----------------------------
| LOC 28--31 ii jj kk ll     |
 ----------------------------
```

Upon leaving this section, the fixed data will be written back to the radio and the following screen will appear:

```
 ----------------------------
| WRITING-------             |
 ----------------------------
```

A.4 If item #3(COMPLETE) is chosen the program will return to the MPD PROGRAM/REVIEW menu.

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This addendum identifies the test equipment used to program the M-PD radio and how to set it up. It also contains the procedures to change the reconfiguration data i.e., squelch opening level and modulation level.

EQUIPMENT REQUIRED TO PROGRAM RADIO

1. URP Programmer, TQ2310 with Serial Interface Module TQ2318 and PROM TQ2325
2. Socket adapter, TQ2330 EXTERNAL PROM ADAPTER
3. Software modules, TQ2360 (quantity 2)
4. Level converter, TQ2362, with Cables:
   RS-232 Serial Cable, TQ2326
   DB-9 Cable (19A705092P1)

EQUIPMENT REQUIRED TO CHANGE RECONFIGURATION DATA

1. Items 1 thru 4 above
2. Communications Monitor
3. Signal Generator (1000 Hz @ 120 mvrms)

PROCEDURE

CAUTION

Be sure to turn the radio OFF before connecting test equipment. Failure to do so may cause QI5 to blow. If this transistor is faulty, you must connect DC power (7.5-10.0 Vdc) across the two DC terminals on the TQ2362 Level Converter.

PROGRAMMING THE LOGIC INTERFACE

1. Connect test equipment as shown in Figure 1. The Communications Monitor and the Signal Generator are not required unless you are going to change the reconfiguration data.

2. Refer to page 3 of the Programming Instructions "GETTING STARTED" and proceed as instructed.

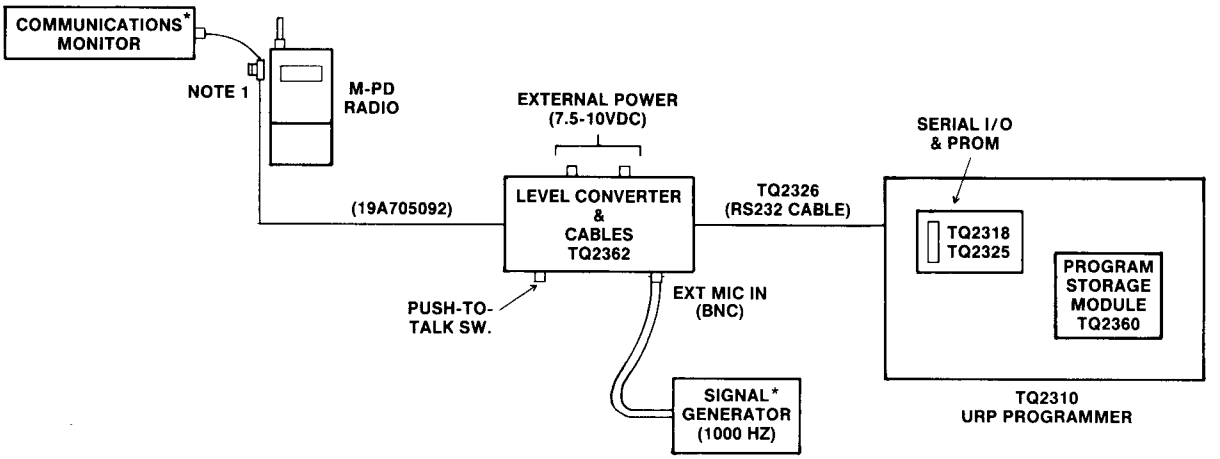
PROGRAMMING RECONFIGURATION DATA

1. Refer to Figure 1 and connect the Test Equipment as shown. Do not connect the external power source to Level Converter TQ2362.

2. When changing squelch open and close leels, set the Communications Monitor to the channel frequency and set output to the desired squelch opening level.

3. When changing the modulation level, set the audio generator to 1000 Hz and the output level to 120 millivolts.

4. Refer to Appendix D in Programmers manual LBI-31635A (page 47) and proceed as instructed.



* Required only when reprogramming radio configuration data.

NOTE:

1. Always turn radio off before connecting/disconnecting test cable from radio UDC connector.

RC-5563

Figure 1- Programming Test Setup Diagram

This Addendum provides additions and corrections for the URP programming instructions.

Page 9, Paragraph 5.2.1.1

Adds new display and corrects two following displays:

READ FROM 1=STORAGE EEPROM

READ FROM 2=MPD STD RADIO

READ FROM 3=MPD STD FILE

Page 12 & 13, Paragraph 5.2.2.1

New location and display:

CH xx H/L TX PWR LVL H

'H' is the input field--'H' for high power, 'L' for low power

CH xx NORMAL OPTIONS? Y

'xx' is the channel selected (display only).
If this question is answered 'Y', the next four displays will be skipped. If answered 'N', they will be shown.

CH xx **BACK** LIGHT DSBL N

'xx' is the channel selected (display only).

CH xx ALERT TONE **DSBL** N

'xx' is the channel selected (display only).

CH xx BUSY - **TX DSBL?** N

'xx' is the channel selected (display only).

Added display:

CH xx MOVE MICRO XTAL N

'xx' is the channel selected (display only).

Display removed:

CH xx HI POWER FLAG DSBL N

'xx' is the channel selected (display only).

ADDENDUM NO. 2 TO LBI-31635A
(PC91)

Page 14, Paragraph 5.2.2.3

Revise display:

PRINT: 3=**RETURN TO PROG/REV**

Page 14, Paragraph 5.2.2.4

Adds new display and corrects two following displays:

WRITE TO: 1=STORAGE EEPROM
WRITE TO: 2=MPD STD RADIO
WRITE TO: 3=MPD STD FILE

Page 15, Paragraph 5.3.1.1

Adds new display and corrects two following displays:

READ FROM 1=STORAGE EEPROM
READ FROM 2=MPD SYS RADIO
READ FROM 3=MPD SYS FILE

Page 17, Paragraph 5.3.1.1

Adds additional information for last display:

Shown only if number of modes selected >1

Page 17 & 18, Paragraph 5.3.2

Corrects displays and adds additional displays:

Menu for 16-Key Radio

1=CHANNELS
2=OPTIONS
3=SCAN OPTIONS
4=TYPE 99 **DATA**
5=DTMF DATA
6=GE STAR DATA
7=PRINT
8=REVIEW/MODIFY COMPLETE

Menu for 4-Key Radio

1=CHANNELS
2=OPTIONS
3=SCAN OPTIONS
4=DTMF DATA
5=GE STAR DATA
6=PRINT
7=REVIEW/MODIFY COMPLETE

Page 20 & 21, Paragraph 5.3.2.1

Adds NOTE and moves H/L pwr display:

NOTE - T99 not shown if radio is 4-Key version

My CH xx H/L TX PWR LVL H

'y' is mode number (display only).
'xx' is the channel selected (display only).
This question is answered with an 'H' if it is to be a HIGH power channel. If it is answered with an 'L' it is to be a low power channel.

My CH xx NORMAL OPTIONS? Y

Adds new display in place of old H/L pwr display on Page 21:

M1 CH 01 MOVE MICRO XTL N

Page 22, Paragraph 5.3.2.2

Adds new display

ENTER NUMBER OF MODES aa

NOTE - Shown only if keypad is 16-key and original number of modes is)1.

BEEP ON POWER UP Y

Page 23, Paragraph 5.3.2.3

Adds new display:

SCAN WITH CH GUARD N

SCAN ADD/DELETE? Y

Page 24, Paragraph 5.3.2.3

Adds new display and adds additional information for existing display:

PRIORITY 1=SELECTED CH N

NOTE - If this question is answered 'Y', the next screen to be displayed will be 'PRIORITY 2 DISABLED?'.

PRIORITY 1 FIXED? Y

NOTE - This question will not be shown if 'SCAN ADD/DEL?' = N

Page 28, Paragraph 5.3.2.7

Adds information for existing display:

PRINT: 4=TYPE 99 DATA

NOTE - This display will not be shown for 4-key radio.

Corrects display:

PRINT: 7=RETURN TO PROG/REV

Page 28, Paragraph 5.3.2.8

Adds new display and corrects following two displays:

WRITE TO: 1=STORAGE EEPROM

WRITE TO: 2=MPD SYS RADIO

WRITE TO: 3=MPD SYS FILE

Page 29, Paragraph 5.4

Adds new display and corrects following two displays:

READ FROM: 1=STORAGE EEPROM

READ FROM: 2=MPD RADIO

READ FROM: 3-MPD FILE

Page 31, Paragraph 5.5

Adds new display and corrects following two displays:

READ FROM: 1=STORAGE EEPROM

READ FROM: 2=MPD RADIO

READ FROM: 3=MPD FILE

Adds new display and corrects following two displays:

```
WRITE TO: 1=STORAGE EEPROM
```

```
WRITE TO: 2=MPD RADIO
```

```
WRITE TO: 3=MPD FILE
```

Page 32, Paragraph 5.7

Adds new display and corrects following two displays:

```
READ FROM: 1=STORAGE EEPROM
```

```
READ FROM: 2=MPD RADIO
```

```
READ FROM: 3=MPD FILE
```

Page 51, Paragraph A.3

Adds new display and additional information:

```
WRITE DATA TO RADIO   Y/N?
```

If this is answered 'Y', the following display will appear.

```
WRITING------
```