

Maintenance Manual

**EDACS™ UTILITY
PROGRAMMING**

NOTICE!

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

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SYSTEM HOOK-UP

Connect all peripheral equipment to your computer prior to configuring the PC Programming Software items. Remember to refer to the operating manuals of each device for correct installation procedures.

If your system is already established, check to see that you have all the equipment necessary to execute the program. Isolate all cables connecting computer to devices to prevent tangling, interference and damage.

Step One:

Refer to Figure 1, Programming System Hook-Up, and then look at your computer to locate a serial port. This port will usually be located at the rear of the computer. However, since this is dependent upon the design of your computer refer to the computer operator's manual for directions.

The IBM PC/XT/AT systems support up to two serial ports. There are two physical standards for the serial port configurations of personal computers. The first standard is a 25 pin RS-232 output that has a DB-25 male connector at the computer. The other standard is a DB-9 male connector at the computer (used on the IBM-AT and many portable lap-top computers). The PC Interface Module, like most data communications equipment, uses a standard RS-232, DB-25, female connector. If your computer uses a DB-9 connector, you will need to purchase a DB-9/DB-25 adapter cable from your local computer dealer.

Please note at this point that the M-PA/MTL and the M-PD Radio PC Programming Software only communicates with the radio and its interface on the serial port designated as COM1 or COM2. Your computer references will assist you in determining which serial port has been so designated. Once located, examine the keyed plug on the RS-232 cable for the correct keyed end and insert it carefully into the appropriate serial port on the computer.

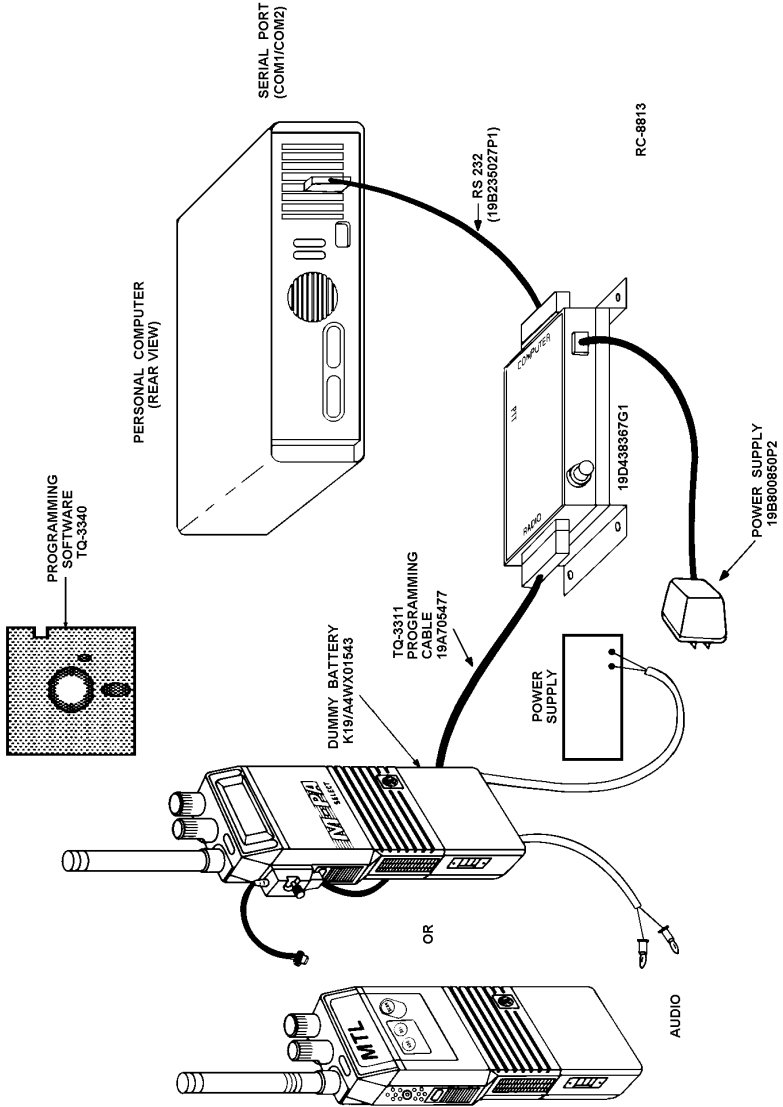


Figure 1 - Programming System Hook-up

The other end of the RS-232 cable should now be connected into the computer receptacle on the PC Interface Module. Check carefully to ensure that plugs are fully seated in the receptacle and, if retaining screws are included, that they are carefully tightened to firmly hold the plug in place. Should the plug not seat correctly to its receptacle, remove the plug and examine the pins to determine if the proper plug was inserted and to determine if pins are aligned and undamaged. Damaged pins and broken connections will cause the PC Programming Software to fail.

Step Two:

Position your M-PD or M-PA/MTL Radio on your work area in a convenient place. In order to program the unit, you must connect the radio to a DC power supply. Ensure that power is applied to the radio prior to attempting programming.

Connect the PC Programming Cable (TQ-3311) as depicted in Figure 1. The Programming Cable is inserted into the receptacle on the side of the radio. Again, you should ensure that the plug is fully seated in its receptacle. Connect Power Supply (19B800850P2) to the Serial Programming Interface Module as indicated in Figure 1. This power supply must be connected while programming the radio unit.

PROCEDURE

MAINTENANCE

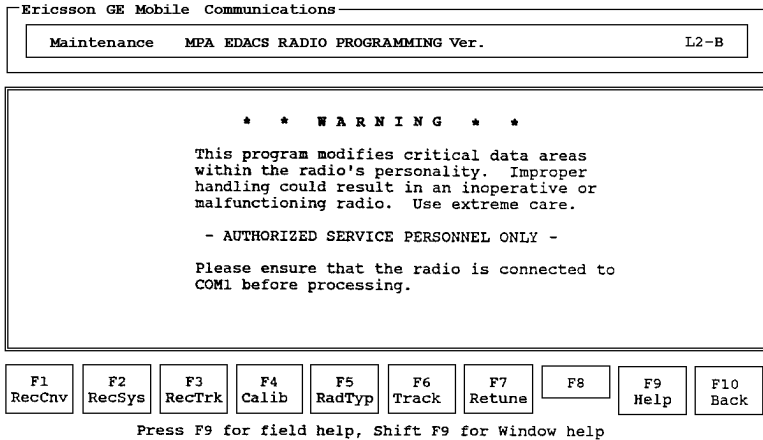


Figure 2 - M-PA/MTL Maintenance Window

Once the PC is initialized, enter the Maintenance Program from a DOS prompt by typing:

cd\GE <enter>

PSTMaint <enter>

This will start the program and bring up the introductory screen. From the introductory screen, enter the Maintenance Window by selecting **F1** for M-PD radios or **F2** for M-PA/MTL radios. The M-PA/MTL Maintenance Window is shown in Figure 2.

From the Maintenance Window, your options are:

- F1 - RecCnv** Select this option if you want to:
Align the power, modulation and squelch settings for an individual channel in conventional mode.
- *F2 - RecSys** Select this option if you want to:
Change the squelch setting on individual trunked systems.
- *F3 - RecTrk** Selection this option if you want to:
Set the power or modulation settings for individual channels in trunked sets.
- F4 - Calib** Select this option if you want to:
Set the power, modulation, and squelch tracking data across the band split.
- F5 - RadTyp** Select this option if you want to:
Change the radio type and frequency setting.
- F6 - Track** Select this option if you want to:
Enter tracking data information.

NOTE

When one of these function keys is depressed, a message will appear in the program letting you know the handshake sequence has begun. The radio window will display the message URP 9600.

- *F7 - Retune** **M-PA/MTL only.** Select this option if you want to:
Retune the radio to another band split.
- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field area.
- F10 - Back** Select this option if you want to:
Exit the Maintenance program.

***Note:** These options are provided for special applications and are not recommended for normal use.

RECONFIGURING THE RADIO

NOTES

When a radio is programmed with a particular personality, the parameters for the power, modulation and squelch settings are determined by the reference values stored in the Tracking Data field. The PC programmer software calculates the values for the individual channels and stores them in the radio.

These values may be changed on a per-channel basis by reconfiguring the radio. However, whenever the radio is re-programmed with the same or a new personality, these reconfigured values will be changed to new values based on the tracking data.

The following description applies to PC Programmer Software version 6.0. Earlier versions behave in a similar manner, with the exception that no provision was made to select a Data Test channel on M-PA/MTL radios.

Ericsson GE Mobile Communications

(1) Reconfigure M-PA EDACS RADIO PROGRAMMING Ver. L3-A

Freq Set: XXXXXXXX (2)M-PA EDACS Reconfigure Conventional

(3) (4) Chan: XXX	(10) Min	(11) Pwr Hgh: XXX	(12) Max
(5) Name: XXXXXXXXXX	(13) Min	(14) Pwr Low: XXX	(15) Max
(6) Tx: XXX.XXXX	(16) Min	(17) Mod: XXX	(18) Max
(7) Rx: XXX.XXXX	(19) Min	(20) Sq Opn: XXX	(21) Max
(8) Power: XXXX	(9) Test: No	(22)	

+ increments, - decrements, or enter number

F1 Accept	F2 Find	F3 Decmal	F4 Test	F5 Tx On	F6	F7 Restre	F8	F9 Help	F10 Back
--------------	------------	--------------	------------	-------------	----	--------------	----	------------	-------------

Press F9 for field help, Shift F9 for Window help

Figure 3a - M-PA/MTL Reconfiguration Window

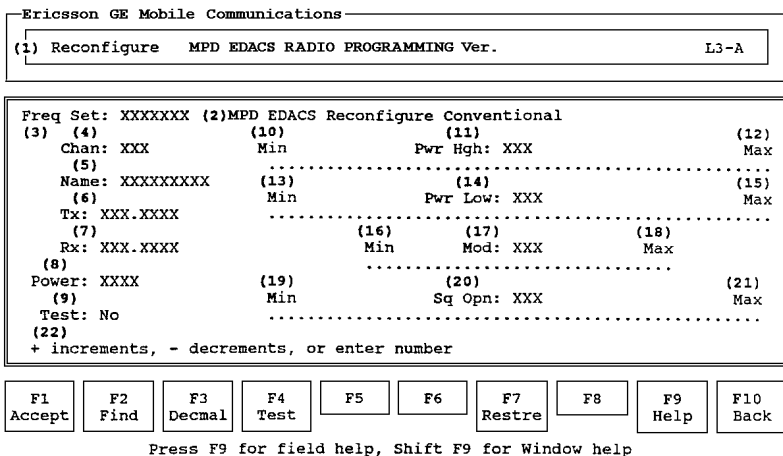


Figure 3b - M-PD Reconfiguration Window

- | | |
|------------------------|--|
| (1) Function | - indicates reconfigure function |
| (2) Window Title | - reconfiguration window |
| (3) Freq Set | - displays the current frequency set |
| (4) Chan | - displays the current channel |
| (5) Name | - displays the current channel name |
| (6) Tx | - current transmit frequency display |
| (7) Rx | - current receive frequency display |
| (8) Power | - displays the power level setting |
| (9) Test | - indicates whether this is a test channel for data signals. (M-PA/MTL only) |
| | Also indicates whether the radio is keyed |
| (10) Min | - minimum transmit power high level |
| (11) Pwr Hgh | - adjusts transmit power high level |
| (12) Max | - maximum transmit power high level |
| (13) Min | - minimum transmit power low level |
| (14) Pwr Low | - adjusts transmit power low level |
| (15) Max | - maximum transmit power low level |
| (16) Min | - minimum transmit modulation level |
| (17) Mod | - adjusts transmit modulation level |
| (18) Max | - maximum transmit modulation level |
| (19) Min | - minimum receive squelch opening level |
| (20) Sq Opn | - adjusts receive squelch opening level |
| (21) Max | - maximum receive squelch opening level |
| (22) Key Action Prompt | - indicates key action for field |

```

Freq Set: XXXXXXXX (2)M-PA EDACS Reconfigure Conventional
(3) (4) (10) (11) (12)
Chan: XXX Min Pwr Hgh: XXX Max
(5) .....
Name: XXXXXXXXXX (13) (14) (15)
(6) Min Pwr Low: XXX Max
Tx: XXX.XXXX .....
(7) (16) (17) (18)
Rx: XXX.XXXX Min Mod: XXX Max
(8) .....
Power: XXXX (19) (20) (21)
(9) Min Sq Opn: XXX Max
Test: No .....
(22)
+ increments, - decrements, or enter number

```

The fields on the left side of the Reconfiguration Window are "Display" fields. They are used to indicate the current frequency set (3), channel (4), channel name (5), transmit and receive frequencies (6, 7), and the power setting (8). The Min fields (10, 13, 16, 19) and the Max fields (12, 15, 18, 21) indicate the size and location of the display level slides for each interpolation field. These fields can be entered in decimal or hexadecimal characters. The key action prompt line (22) indicates which keys to press to increment or decrement the input fields.

The four interpolation fields (11, 14, 17, 20) provide for either decimal or hexadecimal entries. The **F3 Decimal/Hex** key can be used as a toggle switch to shift these fields between decimal and hexadecimal values. Determine which values you will be using to reconfigure this channel and toggle the field to the desired setting.

Transmitter Power Setup

Before any Power Level adjustments can be made, the following steps must be performed from the Maintenance Window:

1. Connect the radio to the PC using the PC interface.
2. Connect the antenna pigtail to a power meter.
3. Power the radio using the power cable and a 7.5V bench supply. (If a battery must be used, make certain it is fully charged).
4. With the radio on, press **F1 RecCnv** to enter the reconfigure mode. The programmer will read the current personality from the radio and the Reconfiguration Window will appear.

NOTE

The radio must remain connected to the PC interface box while any Maintenance Utility function is in process, or the radio may be left inoperable.

Power Level Adjustment

NOTE

When performing power level adjustments, the radio only responds to the power level field identified by the Power field (8). In other words, if the Power field is set to High, the Pwr Low field (14) will have no effect on the radio's output level. In the same way, if the Power field is set to Low, the Pwr Hgh field (11) will have no effect on the radio's output level.

Once in the Reconfiguration Window, your cursor will appear on the Pwr Hgh field. Before inputting data in this field (or cursoring into the Pwr Low field) you need to be sure the frequency set (3) and channel (4) displayed, reflect the channels you want to reconfigure. To change the frequency set and/or channel, you can use the **Pg Up** and **Pg Dn** keys to increment or decrement. Or, you can select **F2 Find**. This causes a "pop-up" window to appear in the center of the Reconfiguration Window. From this window you can type in the frequency set and channel number you want displayed. The M-PA/MTL radio will automatically change set/channel as set/channel is changed. On the M-PD radio, the corresponding channel must be selected. Selecting **F1 Yes** will return you to the Reconfiguration Window with the selection displayed in the set/channel fields. Selecting **F2 No** or **F10 Back** will return you to the Reconfiguration Window without changing the set/channel displays.

```
Freq Set: XXXXXXXX (2)M-PA EDACS Reconfigure Conventional
(3) (4) (10) (11) (12)
Chan: XXX Min Pwr Hgh: XXX Max
(5) .....
Name: XXXXXXXXXX (13) (14) (15)
(6) Min Pwr Low: XXX Max
Tx: XXX.XXXX (16) (17) (18)
(7) .....
Rx: XXX.XXXX Min Mod: XXX Max
(8) .....
Power: XXXX (19) (20) (21)
(9) Min Sq Opn: XXX Max
Test: No .....
(22)
+ increments, - decrements, or enter number
```

Having determined which set and channel you wish to reconfigure, press **F4 Tx On** for M-PA/MTL radios or, operate the PTT switch on the Interface unit for M-PD radios. This will cause the TRANSMITTER ON field (9) to begin blinking on and off. This indicates that the radio is transmitting. The radio will remain transmitting until **F4 Tx Off** is pressed on M-PA/MTL radios, the PTT switch is released on M-PD radios or the timeout period is exceeded (which will cause the window to display a blinking TRANSMITTER TIMEOUT display). The transmitter will also be disabled if the squelch field is changed or a new set/channel is selected.

Now you can adjust the numeric value for the indicated channel. If the Power field (8) indicates High, you will want to adjust the Power High field (11). If the Power field (8) indicates Low, you will want to adjust the Power Low field (14). You can use the + key to increment the field value, the - key to decrement the field value, or you can type in the desired value between the minimum (10 or 13) and maximum (12 or 15) slide level.

NOTE

If you are using decimal characters in this field, the minimum slide level will be 0 and the maximum will be 255. If you are using hexadecimal characters the minimum slide level will be 00 and the maximum slide level will be FF.

Press the **F1 Accept** key to update the radio personality. For the M-PD radio the corresponding channel must be selected each time the value is changed. After adjusting the value in this field, check the level indicated on the power meter. If the level is too high, lower the value in this field. If the level is too low, increase it.

After the desired value is found, press **F1 Accept**. This will cause the value in this field to be saved to the radio personality.

Note: Pressing the **F7 Restre** key will restore the initial values for this channel.

Transmitter Modulation Setup

Before any Modulation adjustments can be made, the following steps must be performed from the Maintenance Window:

1. Connect the radio to the PC using the PC interface. Apply 1 kHz sinewave at 110 mV RMS to PC interface microphone input.
2. Connect the antenna pigtail to a modulation monitor using the appropriate attenuator.
3. Power the radio using the power cable and a 7.5V bench supply. (If a battery must be used, make certain it is fully charged).
4. With the radio on, press **F1 RecCnv** to enter the reconfigure mode.

NOTE

The radio must remain connected to the PC interface box while any Maintenance Utility function is in process, or the radio may be left inoperable.

```
Freq Set: XXXXXXXX (2)M-PA EDACS Reconfigure Conventional
(3) (4) (10) (11) (12)
Chan: XXX Min Pwr Hgh: XXX Max
(5)
Name: XXXXXXXXXX (13) (14) (15)
(6) Min Pwr Low: XXX Max
Tx: XXX.XXXX
(7) (16) (17) (18)
Rx: XXX.XXXX Min Mod: XXX Max
(8)
Power: XXXX (19) (20) (21)
(9) Min Sq Opn: XXX Max
(22)
Test: No
+ increments, - decrements, or enter number
```

Modulation Adjustments

For the M-PA/MTL radio, press **F4 Tx On** to cause the TRANSMITTING ON field (9) to blink. For the M-PD the radio is keyed by operating the PTT on the Interface Unit.

The corresponding channel must be selected on the M-PD radio each time any value is changed.

You can now adjust the numeric value for the modulation setting (17). You can use the + key to increment the field value, the - key to decrement the field value, or you can type in the desired value between the minimum (16) and maximum (18) slide level.

NOTE

If you are using decimal characters in this field, the minimum slide level will be 0 and the maximum will be 31. If you are using hexadecimal characters the minimum slide level will be 00 and the maximum slide level will be 1F.

After the desired value is entered in the Modulation field, press **F1 Accept**.

Note: Pressing the **F7 Restre** key will restore the initial values for this channel.

Receiver Squelch Open Setup

Before any Squelch Open adjustments can be made, the following steps must be performed from the Maintenance Window:

1. Connect a SINAD meter and an RF generator to the radio antenna pigtail.
2. Power the radio using the power cable and a 7.5V bench supply. (If a battery must be used, make certain it is fully charged).
3. Adjust the RF level to obtain the desired SINAD for squelch opening. The radio's monitor button may have to be temporarily pressed.
4. With the radio on, press **F1 RecCnv** to enter the reconfigure mode.

NOTE

The radio must remain connected to the PC interface box while any Maintenance Utility function is in process, or the radio may be left inoperable.

Squelch Open Adjustment:

Align the numeric value for the squelch opening field (20) until the audio is just observed. Adjust the RF level to verify squelch opening and closing are as desired. Iterate as necessary. You can use the + key to increment the field value, the - key to decrement the field value, or you can type in the desired value between the minimum (19) and maximum (21) slide level.

NOTE

If you are using decimal characters in this field, the minimum slide level will be 0 and the maximum will be 248. If you are using hexadecimal characters the minimum slide level will be 00 and the maximum slide level will be F8.

```
Freq Set: XXXXXXXX (2)M-PA EDACS Reconfigure Conventional
(3) (4) (10) (11) (12)
Chan: XXX Min Pwr Hgh: XXX Max
(5) .....
Name: XXXXXXXXXX (13) (14) (15)
(6) Min Pwr Low: XXX Max
Tx: XXX.XXXX
(7) (16) (17) (18)
Rx: XXX.XXXX Min Mod: XXX Max
(8) .....
Power: XXXX (19) (20) (21)
(9) Min Sq Opn: XXX Max
Test: No .....
(22)
+ increments, - decrements, or enter number
```

After the desired value is entered in the Squelch Open field, press **F1 Accept**. Note that for the M-PD radio the corresponding channel must be selected each time any value is accepted.

Note: Pressing the **F7 Restre** key will restore the initial values for this channel.

Test Channel Option

With the radio connected in the Reconfigure Conventional mode, pressing **F4 Test** will toggle the Test function "Yes" or "No". If selected and the **F1 Accept** key operated, this channel will be indicated by TEST RX in the display.

When keyed, the display will change to TEST TX. When this signal is received on another radio similarly programmed, its display will show DATA DET.

From the Reconfiguration Window, your options are:

- | | |
|-------------------------------|--|
| F1 - Accept | Select this option if you want to:
Save the values entered to the radio personality. |
| F2 - Find | Select this option if you want to:
Advance to mode and channel to be reconfigured. |
| F3 - Decimal/
Hex | Select this option if you want to:
Toggle the input field values between decimal and hexadecimal characters. |
| F4 - Test | Select this option if you want to:
Make this a test channel for data signals. |
| F5 - Tx On/
Tx Off | M-PA/MTL only. Select this option if you want to:
Either key the radio or stop the radio from transmitting. |
| F7 - Restre | Select this option if you want to:
Restore the information in the window and radio to what it was when the channel was first entered. |
| F9 - Help | Select this option if you want to:
Receive further information pertaining to a field area. |
| F10 - Back | Select this option if you want to:
Return to the Maintenance Window. |

After all the desired data has been entered in the Reconfiguration Window press **F10 Back** to return to the Maintenance Window. If you have made changes to any of the input fields in the Reconfiguration Window and have not saved them to the radio personality, the screen in Figure 4 will appear.

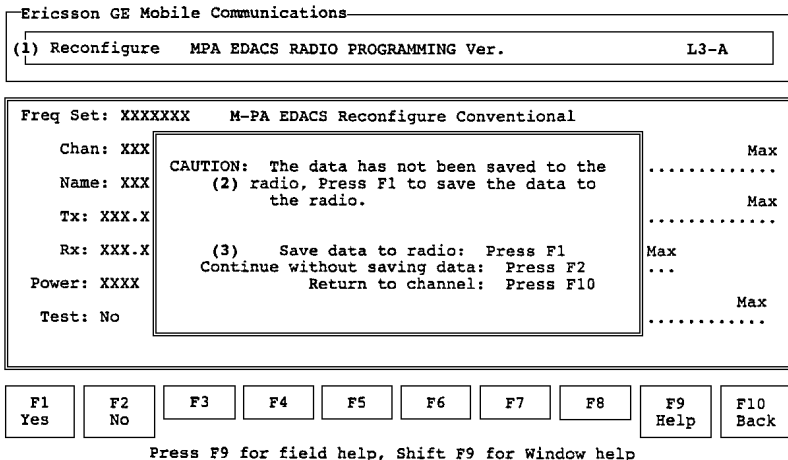


Figure 4 - Reconfiguration Message Window

- (1) Function - indicates reconfigure function
- (2) Message - reconfiguration message window
- (3) Continue Prompt - continue or abort option

The Reconfiguration Message Window will only appear if one of the Reconfiguration Window input fields has been changed and that information was not saved to the radio. Select the desired function and continue on to the Maintenance Window.

From the Reconfiguration Message Window, your options are:

- F1 - Yes** Select this option if you want to:
Save the data to the radio and proceed.
- F2 - No** Select this option if you want to:
Proceed without saving the data to the radio.
- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field area.
- F10 - Back** Select this option if you want to:
Return to the Reconfiguration Window.

CALIBRATING THE RADIO

After calibrating the radio, the final values selected in the calibration window for the various channels are used to establish the values stored in the Tracking Data field of the radio's memory.

The personality RAM memory map includes areas which are reserved for Tracking and Channel Data.

Tracking Data establishes individual radio parameters and tailors the operation of the unit across the band. The four parameters include high RF power, low RF power, modulation level and receiver squelch opening. This data is programmed into the RAM at the factory after the front and rear covers are "married". The PC Programmer allows alteration of this data if necessary.

Channel Data is the individual channel information such as TX and RX frequencies, CG information, CCT information, and the four previously mentioned parameters. This data is stored in the Personality on a per-channel basis as each channel is programmed. The PC Programmer allows alteration of this data (on a per-channel basis) if necessary.

Values for the low, medium and high-side of the band are programmed into the radio for each Tracking parameter. When a channel is added to the radio, the Programmer reads the Tracking values and calculates necessary values for each channel using a linear interpolation technique. The Programmer stores the newly calculated values in the Channel Data area of memory along with the associated channel information.

Changing the Tracking Data will not alter Channel Data of previously programmed channels. Tracking Data should not normally be altered; however, it may be necessary to reprogram some of the values after aligning circuitry, or replacing modules or other components which obsolete the previously programmed values. If Tracking Data is altered for the above reason, it will be necessary to reprogram all channels to establish the new default data for each channel.

For the M-PD 800 and UHF radios the typical values of the tracking data parameters are shown in Table 1 and may be used as a starting point when re-calibrating the radio.

For M-PA radios, refer to the appropriate manual for this information.

Table 1 - M-PD Tracking Data Parameters

PARAMETER	M-PD 800	M-PD UHF	HEX VALUE*
High Power	3.0 Watts	5.0 Watts	85
Low Power	1.0 Watt	1.0 Watt	50
Modulation	4.3 KHz	4.3 KHz	0A
Squelch Opening	8 dB Sinad	8 dB Sinad	A0

* Values shown are approximate. Final calibrated values will vary from unit to unit, and within each band.

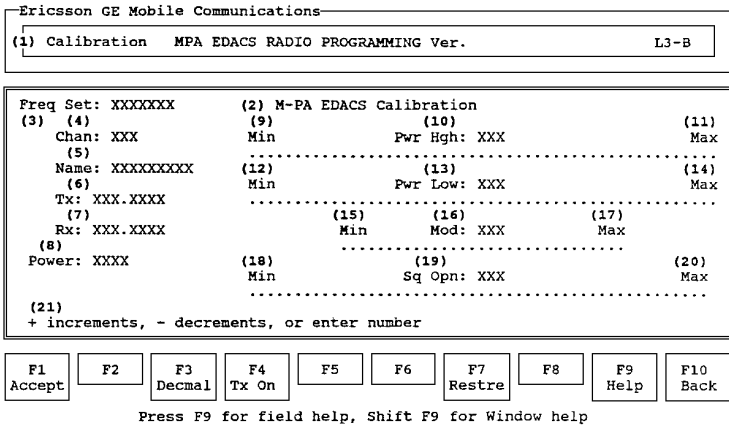


Figure 5a - M-PA/MTL Calibration Window

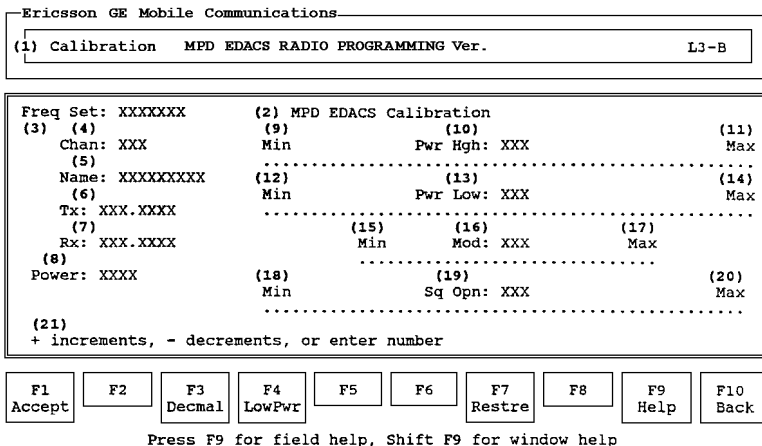


Figure 5b - M-PD Calibration Window

- | | |
|------------------------|---|
| (1) Function | - indicates calibrate function |
| (2) Window Title | - calibration window |
| (3) Freq Set | - displays the current frequency set |
| (4) Chan | - displays the current channel |
| (5) Name | - displays the current channel name |
| (6) Tx | - current transmit frequency display |
| (7) Rx | - current receive frequency display |
| (8) Power | - displays the power level setting |
| (9) Min | - minimum transmit power high level |
| (10) Pwr Hgh | - adjusts transmit power high level |
| (11) Max | - maximum transmit power high level |
| (12) Min | - minimum transmit power low level |
| (13) Pwr Low | - adjusts transmit power low level |
| (14) Max | - maximum transmit power low level |
| (15) Min | - minimum transmit modulation level |
| (16) Mod | - adjusts transmit modulation level |
| (17) Max | - maximum transmit modulation level |
| (18) Min | - minimum receive squelch opening level |
| (19) Sq Opn | - adjusts receive squelch opening level |
| (20) Max | - maximum receive squelch opening level |
| (21) Key Action Prompt | - indicates key action for field |

```

Freq Set: XXXXXXXX      (2) M-PA EDACS Calibration
(3) (4)                (9)                (10)                (11)
Chan: XXX              Min                Pwr Hgh: XXX      Max
(5)
Name: XXXXXXXXXXXX     (12)                (13)                (14)
(6)                Min                Pwr Low: XXX      Max
Tx: XXX.XXXX
(7)                (15)                (16)                (17)
Rx: XXX.XXXX          Min                Mod: XXX          Max
(8)
Power: XXXX           (18)                (19)                (20)
                Min                Sq Opn: XXX      Max
(21)
+ increments, - decrements, or enter number

```

Initial Setup

Before any adjustments can be made, the following steps must be performed from the Maintenance Window:

1. Connect the radio to the PC using the PC interface.
2. Connect the antenna pigtail to a power meter.
3. Power the radio using the power cable and a 7.5V bench supply. (If a battery must be used, make certain it is fully charged).
4. With the radio on, press **F4 Calib** to enter the calibration mode. The programmer will read the current personality from the radio and the Calibration Window will appear.

NOTE

The radio must remain connected to the PC interface box while any Maintenance Utility function is in process, or the radio may be left inoperable.

Power Level Adjustment:

NOTE

When performing power level adjustments, the radio only responds to the power level field identified by the Power field (8). In other words, if the Power field is set to High, the Pwr Low field (13) will have no effect on the radio's output level. In the same way, if the Power field is set to Low, the Pwr Hgh field (10) will have no effect on the radio's output level.

When the Calibration window appears, the PC programmer will check the tracking data checksum. If the checksum is correct, the current tracking data will be used as the default for the interpolation fields (10, 13, 16, 19). Otherwise, the programmer will default the tracking data to zeros.

If the radio does not contain valid band split information, a band split window will appear instead of the Calibration Window. If this should occur, go to the Frequency Range section of this supplement before proceeding.

Once in the Calibration Window, your cursor will appear on the Pwr Hgh field (10). Before inputting data in this field (or cursoring into the Pwr Low field (13)) you may need to change the Channel field (4). When calibrating the radio, only three channels can be adjusted for VHF and UHF band splits. (Six channels can be adjusted when calibrating 800 band splits.) When the calibration routine is entered, the radio personality is read and saved into the computer's memory for later. The PC programmer then programs Channel 1 to represent the low end of the band split. Channel 2 is programmed to the mid-split frequency and Channel 3 is set to the high end of the band split. (For 800 band splits, the other three channels are for talk-around.) To indicate the channel desired, use the **Pg Dn** and **Pg Up** keys to increment and decrement the channel.

For the M-PA/MTL radio, having determined which channel you wish to calibrate, press **F4 Tx On**. This will cause the TRANSMITTING ON field to begin blinking on and off. This indicates that the radio is transmitting. The radio will remain transmitting until **F4 Tx Off** is pressed, or the timeout period is exceeded. The transmitter will also be disabled whenever the power level field is changed or a new channel is selected.

Freq Set: XXXXXXXX		(2) M-PA EDACS Calibration	
(3) (4)	Chan: XXX	(9) Min	(10) Pwr Hgh: XXX
(5)	Name: XXXXXXXXXX	(11) Max	
(6)	Tx: XXX.XXXX	(12) Min	(13) Pwr Low: XXX
(7)	Rx: XXX.XXXX	(14) Max	
(8)	Power: XXXX	(15) Min	(16) Mod: XXX
		(17) Max	
		(18) Min	(19) Sq Opn: XXX
		(20) Max	
(21)	+ increments, - decrements, or enter number		

Now you can adjust the numeric value for the indicated channel. If the Power field (8) indicates High, you will want to adjust the Power High field (10). If the Power field (8) indicates Low, you will want to adjust the Power Low field (13). You can use the + key to increment the field value, the - key to decrement the field value, or you can type in the desired value between the minimum (9 or 12) and maximum (11 or 14) slide level. After adjusting the value in this field, press the **F1 Accept** key, then the **F4 Tx On** key and check the level indicated on the power meter. If the level is too high, lower the value in this field. If the level is too low, increase it.

NOTE

If you are using decimal characters in this field, the minimum slide level will be 0 and the maximum will be 255. If you are using hexadecimal characters the minimum slide level will be 00 and the maximum slide level will be FF.

After the desired value is found, press **F1 Accept**. This will cause the value in this field to be saved to the radio personality.

The M-PD radio is keyed from the PTT button on the Interface Unit. The corresponding channel must be selected each time the value is changed by operating the **F1 Accept** key.

Transmitter Modulation Setup

Before any Modulation adjustments can be made, the following steps must be performed while still in the Calibration mode:

1. Apply 1 kHz sinewave at 110 mV RMS to the PC interface microphone input.
2. Connect the antenna pigtail to a modulation monitor using the appropriate attenuator.
3. Power the radio using the power cable and a 7.5V bench supply. (If a battery must be used, make certain it is fully charged).
4. Turn the radio on.

Modulation Adjustment:

Data for the first channel will be displayed. Radio will be placed on first channel. You will be able to access the first three channels only (the first six in the case of 800 band radios). The first three channels indicate low, middle, and high frequencies for the particular band split. For 800 band radios, the additional three channels are for talk around. To calibrate a different channel, press **Pg Dn** or **Pg Up**. Use the up-arrow and down-arrow to select modulation parameter. For M-PA/MTL radios press **F4 Tx On** to key the radio. This will cause the TRANSMITTING ON field to blink. For M--PD radios, select the corresponding channel and key the radio using the PTT switch on the Interface Unit.

You can now adjust the numeric value for the modulation setting (**16**). You can use the + key to increment the field value, the - key to decrement the field value, or you can type in the desired value between the minimum (**15**) and maximum (**17**) slide level.

NOTE

If you are using decimal characters in this field, the minimum slide level will be 0 and the maximum will be 31. If you are using hexadecimal characters the minimum slide level will be 00 and the maximum slide level will be 1F.

Freq Set: XXXXXXXX	(2) M-PA EDACS Calibration		
(3) (4) Chan: XXX	(9) Min	(10) Pwr Hgh: XXX	(11) Max
(5) Name: XXXXXXXXXX	(12) Min	(13) Pwr Low: XXX	(14) Max
(6) Tx: XXX.XXXX	(7) Min	(15) Min	(16) Mod: XXX
(8) Rx: XXX.XXXX	(17) Max	(18) Min	(19) Sq Opn: XXX
Power: XXXX	(20) Max	(21)	
+ increments, - decrements, or enter number			

After the desired value is entered in the Modulation field, press **F1 Accept**.

The M-PD radio is keyed from the PTT button on the Interface Unit. The corresponding channel must be selected each time the value is changed by operating the **F1 Accept** key.

Receiver Squelch Open Setup

Before any Squelch Open adjustments can be made, the following steps must be performed while still in the Calibration mode:

1. Connect a SINAD meter to the Interface Unit and an RF generator to the radio.
2. Power the radio using the power cable and a 7.5V bench supply. (If a battery must be used, make certain it is fully charged).
3. Adjust the RF level to obtain the desired SINAD for squelch openings. The radio's monitor button may have to be temporarily pressed.
4. Turn the radio on.

Squelch Open Adjustment:

Data for the first channel will be displayed. You will be able to access the first three channels only (the first six in the case of 800 band radios). The first three channels indicate low, middle, and high frequencies for the particular band split. For 800 band radios, the additional three channels are for talk around. To calibrate a different channel, press **Pg Dn** or **Pg Up**. Use the up-arrow and down-arrow to select squelch opening parameter. For the M-PD radio select the corresponding channel on the radio.

Adjust the numeric value for the squelch opening field (**19**) until the audio is just observed. After the desired value is entered in the Squelch Open field, press **F1 Accept**.

For the M-PD radio, the corresponding channel must be selected each time the value is changed by operating the **F1 Accept** key.

Adjust the RF level to verify squelch opening and closing are as desired. Iterate as necessary. You can use the + key to increment the field value, the - key to decrement the field value, or you can type in the desired value between the minimum (**18**) and maximum (**20**) slide level.

NOTE

If you are using decimal characters in this field, the minimum slide level will be 0 and the maximum will be 248. If you are using hexadecimal characters the minimum slide level will be 00 and the maximum slide level will be F8.

From the Calibration Window, your options are:

- | | |
|---------------------------------|--|
| F1 - Accept | Select this option if you want to:
Save the values entered to the radio personality. |
| F3 - Decmal/
Hex | Select this option if you want to:
Toggle the input field values between decimal and hexadecimal characters. |
| F4 - Tx On/
Tx Off | M-PA/MTL only. Select this option if you want to:
Either key the radio or stop the radio from transmitting. |
| F4 - Low Pwr/
Hi Pwr | M-PD only. Select this option if you want to:
Toggle between the low and high power settings. |
| F7 - Restre | Select this option if you want to:
Restore the information in the window and radio to what it was when the channel was first entered. |
| F9 - Help | Select this option if you want to:
Receive further information pertaining to a field area. |
| F10 - Back | Select this option if you want to:
Return to the M-PA/MTL Maintenance Window. |

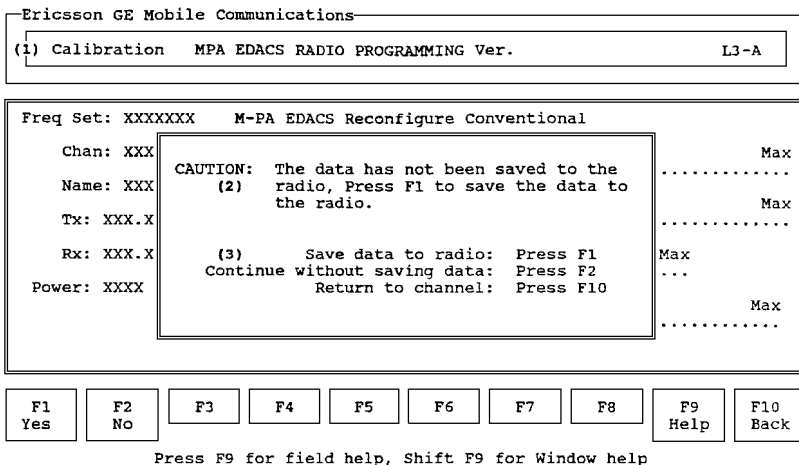


Figure 6 - Calibration Message Window

- (1) Function - indicates calibrate function
- (2) Message - calibration message window
- (3) Continue Prompt - continue or abort option

The Calibration Message Window will only appear if one of the Calibration Window input fields has been changed and that information was not saved to the radio. Select the desired function and continue on to the Exit Calibration Window.

From the Calibration Message Window, your options are:

- F1 - Yes** Select this option if you want to:
Save the data to the radio and proceed.
- F2 - No** Select this option if you want to:
Proceed without saving the data to the radio.
- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field area.
- F10 - Back** Select this option if you want to:
Return to the Calibration Window.

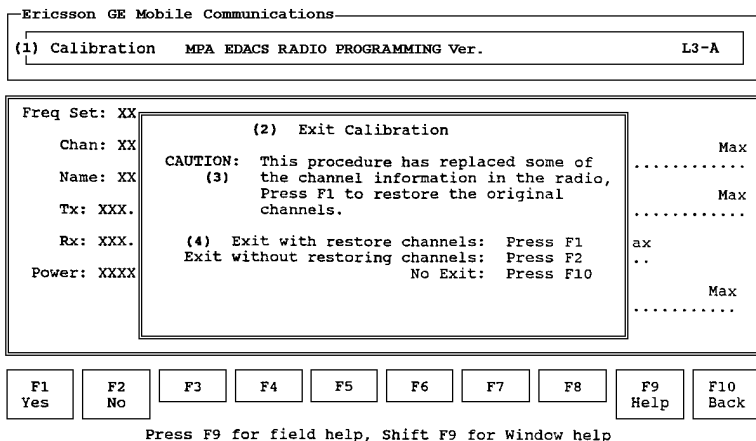


Figure 7 - Exit Calibration Window

- | | |
|---------------------|--------------------------------|
| (1) Function | - indicates calibrate function |
| (2) Window Title | - exit calibration window |
| (3) Message field | - caution message |
| (4) Continue Prompt | - continue or abort option |

The Exit Calibration Window will appear upon pressing **F10 Back** while in the Calibration Window or **F1 Yes** or **F2 No** from the Calibration Message Window. This window is used to inform you that any changes you have made in the Calibration Window have also changed some of the channel information in the radio and to allow you to restore the frequencies that were overwritten. Select the desired function and return to the Maintenance Window.

From the Exit Calibration Window, your options are:

- | | |
|-------------------|---|
| F1 - Yes | Select this option if you want to:
Rewrite the radio with the original channel frequencies. |
| F2 - No | Select this option if you want to:
Exit calibration without restoring the original channel frequencies |
| F9 - Help | Select this option if you want to:
Receive further information pertaining to a field area. |
| F10 - Back | Select this option if you want to:
Return to the Calibration Window. |

SELECTING A NEW RADIO TYPE

Ericsson GE Mobile Communications

(1) Initialize MPA EDACS RADIO PROGRAMMING Ver. L1-A

<p>(2) Radio Type</p> <p>(3) MTL</p> <p>(4) M-PA Select</p> <p>(5) M-PA Scan</p> <p>(6) M-PA System</p> <p>(7) Use cursor keys to select type</p>	<p>(8) Frequency Range</p> <p>(9) VHF - 136 - 150.8 146 - 162</p> <p>(10) 157 - 174</p> <p>UHF - 403 - 423 410 - 430*</p> <p> 450 - 470 420 - 440*</p> <p> 470 - 492 440 - 460*</p> <p>(11) 492 - 512</p> <p>800 - 806 - 870</p> <p>* These splits require optional tuning of the RF section</p> <p>(12) Select the frequency band split</p>
--	---

F1 Switch F2 F3 F4 F5 Accept F6 F7 F8 F9 Help F10 Back

Press F9 for field help, Shift F9 for window help

Figure 8a - M-PA/MTL Radio Type/Frequency Range Window

Ericsson GE Mobile Communications

(1) Initialize MPD EDACS RADIO PROGRAMMING Ver. L1-A

<p>(2) MPD 16 Plus Radio Type</p> <p>(3) Standard</p> <p>(4) Scan (4 key Radio)</p> <p>(5) System (16 key Radio)</p> <p>(6) Scan VG (4 key Radio)</p> <p>(7) System VG (16 key Radio)</p>	<p>(8) Frequency Range</p> <p>(9) VHF - 136 - 160 150 - 174</p> <p>(10) 420 - 440 440 - 460</p> <p>UHF - 403 - 423 410 - 430</p> <p> 450 - 470 470 - 488</p> <p>(11) 482 - 500 494 - 512</p> <p>800 - 806 - 870</p> <p>(12) Select the frequency band split</p>
--	--

F1 Switch F2 F3 F4 F5 Accept F6 F7 F8 F9 Help F10 Back

Press F9 for field help, Shift F9 for window help

Figure 8b - M-PD Radio Type/Frequency Range Window

M-PA/MTL Figure 8a

- | | |
|------------------|-------------------------------------|
| (1) Function | - indicates setup function |
| (2) Window Title | - radio type |
| (3) MTL | - indicates MTL model radio |
| (4) M-PA Select | - indicates M-PA Select model radio |
| (5) M-PA Scan | - indicates M-PA Scan model radio |
| (6) M-PA System | - indicates M PA System model radio |
| (7) Prompt Line | - current field instruction line |
| (8) Window Title | - frequency range window |
| (9) VHF | - indicates VHF band splits |
| (10) UHF | - indicates UHF band splits |
| (11) 800 | - indicates 800 band split |
| (12) Prompt Line | - current field instruction line |

M-PD Figure 8b

- | | |
|-------------------|---------------------------------------|
| (1) Function | - indicates setup function |
| (2) Window Title | - radio type window |
| (3) MPD Standard | - indicates MPD Standard model radio |
| (4) MPD Scan | - indicates MPD Scan model radio |
| (5) MPD System | - indicates MPD System model radio |
| (6) MPD Scan VG | - indicates MPD Scan VG model radio |
| (7) MPD System VG | - indicates MPD System VG model radio |
| (8) Window Title | - frequency range window |
| (9) VHF | - indicates VHF band splits |
| (10) UHF | - indicates UHF band splits |
| (11) 800 | - indicates 800 band split |
| (12) Prompt Line | - current field instruction line |

Setup

Before another Radio type can be selected, the following steps must be performed from the Maintenance Window:

1. Connect the radio to the PC using the PC interface.
2. Power the radio using the power cable and a 7.5V bench supply. (If a battery must be used, make certain it is fully charged).
3. With the radio on, press **F5 RadTyp** to enter the radio type mode.

NOTE

The radio must remain connected to the PC interface box while any Maintenance Utility function is in process, or the radio may be left inoperable.

<p>(2) Radio Type</p> <p>(3) MTL</p> <p>(4) M-PA Select</p> <p>(5) M-PA Scan</p> <p>(6) M-PA System</p> <p>(7) Use cursor keys to select type</p>	<p>(8) Frequency Range</p> <p>(9) VHF - 136 - 150.8 146 - 162</p> <p>(10) 157 - 174</p> <p>UHF - 403 - 423 410 - 430*</p> <p>450 - 470 420 - 440*</p> <p>470 - 492 440 - 460*</p> <p>(11) 492 - 512</p> <p>800 - 806 - 870</p> <p>* These splits require optional tuning of the RF section</p> <p>(12) Select the frequency band split</p>
---	--

For the M-PA/MTL

Position the cursor on the radio type (3, 4, 5, or 6) that is to be selected. Once a selection has been made press **F1 Switch** to enter the Frequency Range Window (8).

Once in the Frequency Range Window, move the cursor over the range (9, 10, or 11) that corresponds with the RF split that is indicated on the back of the radio.

Once selection has been made press **F5 Accept** to save the changes and exit the window.

<p>(2) MPD 16 Plus Radio Type</p> <p>(3) Standard</p> <p>(4) Scan (4 Key Radio)</p> <p>(5) System (16 key Radio)</p> <p>(6) Scan VG (4 key Radio)</p> <p>(7) System VG (16 key Radio)</p>	<p>(8) Frequency Range</p> <p>(9) VHF - 136 - 160 150 - 174</p> <p>(10) UHF - 403 - 423 410 - 430</p> <p> 420 - 440 440 - 460</p> <p> 450 - 470 470 - 488</p> <p>(11) 482 - 500 494 - 512</p> <p>800 - 806 - 870</p> <p>(12) Select the frequency band split</p>
---	---

For the M-PD

Position the cursor on the radio type (3, 4, 5, 6 or 7) that is to be selected. Once a selection has been made press **F1 Switch** to enter the Frequency Range Window (8).

Once in the Frequency Range Window, move the cursor over the range (9, 10, or 11) that corresponds with the RF split that is indicated on the back of the radio.

Once selection has been made press **F5 Accept** to save the changes and exit the window.

From the Radio Type Window, your options are:

- | | |
|--------------------|--|
| F1 - Switch | Select this option if you want to:
Toggle between the Radio Type Window and the Frequency Range Window. |
| F5 - Accept | Select this option if you want to:
Save the values entered to the radio personality. |
| F9 - Help | Select this option if you want to:
Receive further information pertaining to a field area. |
| F10 - Back | Select this option if you want to:
Return to the Maintenance Window. |

TRACKING DATA

Ericsson GE Mobile Communications

(1) Tracking Data MPA EDACS RADIO PROGRAMMING Ver. L1-A

(2) Tracking Data

	Low	Medium	High
(3) Pwr-High	XX	XX	XX
(4) Pwr-Low	XX	XX	XX
(5) TX Mod	XX	XX	XX
(6) Sqlch Op	XX	XX	XX

Talkaround:

(7) Pwr-High	XX	XX	XX
(8) Pwr-Low	XX	XX	XX
(9) TX Mod	XX	XX	XX

(10)
Enter value 00 to FF. Press F9 for help.

F1 F2 F3 F4 F5 Prog F6 F7 F8 F9 Help F10 Back

Press F9 for field help, Shift F9 for window help

Figure 9 - Tracking Data Window
(Shown for 800 Model radio)

- | | |
|-------------------------|---|
| (1) Function | - indicates tracking data function |
| (2) Window Title | - tracking data window |
| (3) Pwr-High | - indicates power high settings |
| (4) Pwr-Low | - indicates power low settings |
| (5) Tx Mod | - indicates transmit modulation levels |
| (6) Sqlch Op | - indicates squelch open levels |
| (7) Talkaround Pwr-High | - talkaround power high settings
(800 only) |
| (8) Talkaround Pwr-Low | - talkaround power low settings
(800 only) |
| (9) Talkaround TX Mod | - talkaround transmit modulation levels
(800 only) |
| (10) Prompt Line | - current field instruction line |

Tracking Data Setup

Before any Tracking Data adjustments can be made, the following steps must be performed from the Maintenance Window:

1. Connect the radio to the PC using the PC interface.

2. Power the radio using the power cable and a 7.5V bench supply. (If a battery must be used, make certain it is fully charged).
3. With the radio on, press **F6 Track** to enter the tracking data mode.

NOTE

The radio must remain connected to the PC interface box while any Maintenance Utility function is in process, or the radio may be left inoperable.

Tracking Data Adjustments

When you set the frequency range in the frequency range window you are telling the radio to operate in a certain band split (e.g., 450 - 470). When you program the channel data into the radio you tell the radio a specific frequency to operate on (e.g., 455.0000). When the radio is actually operating on this frequency, the radio must be set to the desired operating levels. During radio calibration (see calibration window) you determine the levels for Power High, Power Low, Modulation, and Squelch for the three channels. Channels 1, 2, and 3 are the low, medium, and high frequencies, respectively, of the band split (For two band splits, the other three channels are for talk-around). This information is then stored in the radio for future reference.

Enter desired values for each field. You can move from one field to another by using the up-arrow, down-arrow, TAB, or Enter keys. Enter hexadecimal values to define low, medium and high frequency range settings for each of the Power Low (3), Power High (4), Tx Modulation (5), and Squelch Open (6) parameters.

Press **F5 Prog** to program tracking data to the radio.

Programming Tracking Data

Freq Set: XXXXXXXX (2)M-PA EDACS Reconfigure Conventional				
(3)	(4)	(10)	(11)	(12)
Chan: XXX	Min	Pwr Hgh: XXX		Max
(5)			
Name: XXXXXXXXXX	(13)	(14)	(15)	(15)
(6)	Min	Pwr Low: XXX		Max
Tx: XXX.XXXX			
(7)	(16)	(17)	(18)	
Rx: XXX.XXXX	Min	Mod: XXX	Max	
(8)			
Power: XXXX	(19)	(20)	(21)	(21)
(9)	Min	Sq Opn: XXX		Max
Test: No			
(22)			
+ increments, - decrements, or enter number				

Figure 10 - Programming Tracking Data Window

- | | |
|---------------------|------------------------------------|
| (1) Function | - indicates tracking data function |
| (2) Window | - programming tracking data window |
| (3) Message | - informational message |
| (4) Continue Prompt | - continue or abort option |

From the Programming Tracking Data Window, your options are:

- | | |
|-------------------|---|
| F1 - Yes | Select this option if you want to:
Save the data to the radio and proceed. |
| F2 - No | Select this option if you want to:
Proceed without saving the data to the radio. |
| F9 - Help | Select this option if you want to:
Receive further information pertaining to a field area. |
| F10 - Back | Select this option if you want to:
Return to the Tracking Data Window. |

ANSWERS TO SOME QUESTIONS

This section is devoted to explaining some of the error messages you might encounter and how to rectify the situation while performing maintenance utility functions.

C

Problem: "Cannot page down."

This is an indication that you can no longer page down through your display data on the window either because you have reached the physical end of your data or the window is not complete.

Solution: If you are at the end of your data, you can do nothing more than page up. Otherwise check to ensure that your current window is completely filled in.

Problem: "Cannot page up."

This is an indication that you are at the very beginning of a data display window.

Solution: Discontinue paging up.

R

Problem: "RX squelch open level is out of range 00 - 248."

An attempt was made to enter a receive squelch open level outside of the acceptable decimal value range.

Solution: Enter a receive squelch open level setting inside the range of 00 - 248.

Problem: "RX squelch open level is out of range 00 - F8."

An attempt was made to enter a receive squelch open level outside of the acceptable hexadecimal value range.

Solution: Enter a receive squelch open level setting inside the range of 00 - F8.

T

Problem: "TX high power level is out of range 00 - 255."

An attempt was made to enter a transmit high power level outside of the acceptable decimal value range.

Solution: Enter a transmit high power level setting inside the range of 00 - 255.

Problem: "TX high power level is out of range 00 - FF."

An attempt was made to enter a transmit high power level outside of the acceptable hexadecimal value range.

Solution: Enter a transmit high power level setting inside the range of 00 - FF.

Problem: "TX low power level is out of range 00 - 255."

An attempt was made to enter a transmit low power level outside of the acceptable decimal value range.

Solution: Enter a transmit low power level setting inside the range of 00 - 255.

Problem: "TX low power level is out of range 00 - FF."

An attempt was made to enter a transmit low power level outside of the acceptable hexadecimal value range.

Solution: Enter a transmit low power level setting inside the range of 00 - FF.

Problem: "TX modulation level is out of range 00 - 31."

An attempt was made to enter a transmit modulation level outside of the acceptable decimal value range.

Solution: Enter a transmit modulation level setting inside the range of 00 - 31.

Problem: "TX modulation level is out of range 00 - 1F."

An attempt was made to enter a transmit modulation level outside of the acceptable hexadecimal value range.

Solution: Enter a transmit modulation level setting inside the range of 00 - 1F.

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