# TDFM-9000 SERIES SOFTWARE UPGRADE PROCEDURE

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**INTRODUCTION:**

From time to time it may be necessary to update the operational software for the TDFM-9000 series of radios. This document describes the procedure to load new software into the TDFM-9000 series radios. There are several pieces of SW that need to be loaded when upgrading. All TDFM-9000 series are field upgradeable and only requires a PC, Programming cable and terminal software to load the FW.


**EQUIPMENT REQUIRED:**

1) PC with Windows XP or higher.
2) PC-9000 programming cable 127499
3) Terminal program such as Tera Term V 4.75 or higher.
4) 28 V power supply.


**SETTING UP THE USB TO SERIAL DRIVER ON THE PC:**

The TDFM-9000 series radios have a built in USB to serial adaptor. When the radio is connected to a PC in Bootload Mode, it will create a Virtual Serial Port. The Virtual serial port may require a driver to be installed in some Windows operating systems. The driver can be downloaded here:

http://www.ftdichip.com/Drivers/VCP.htm

Load the latest version for Windows: 2.12.00 WHQL Certified or newer.

Run the driver installer.

Determining the serial port:

1) Power up the radio and invoke the bootloader mode by holding the 7, 2, 3 & 0 keys and pushing the knob. Hold the keys until the Bootloader screen comes up on the display.
2) Connect the programming cable PC-9000 to the radio and a USB port on the computer.
3) The PC will detect new hardware and finish installing the USB to serial driver.
4) Navigate the PC to the Device manager. Open my computer in explorer. Then right click and select Properties.
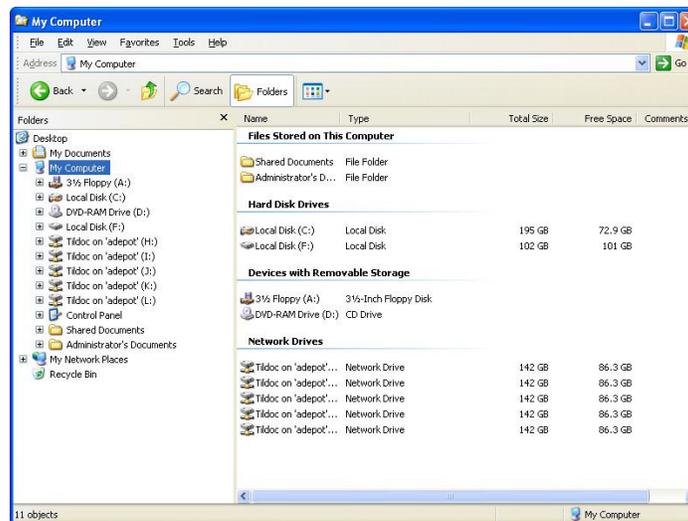


FIGURE 1: My Computer in Explorer

Click on the Hardware Tab:



Figure 2: System Properties Tile

Then select Device Manager, and click on the "Ports (COM & LPT)". There should be a USB to serial port listed. Mark it down, as it is needed for the next step.
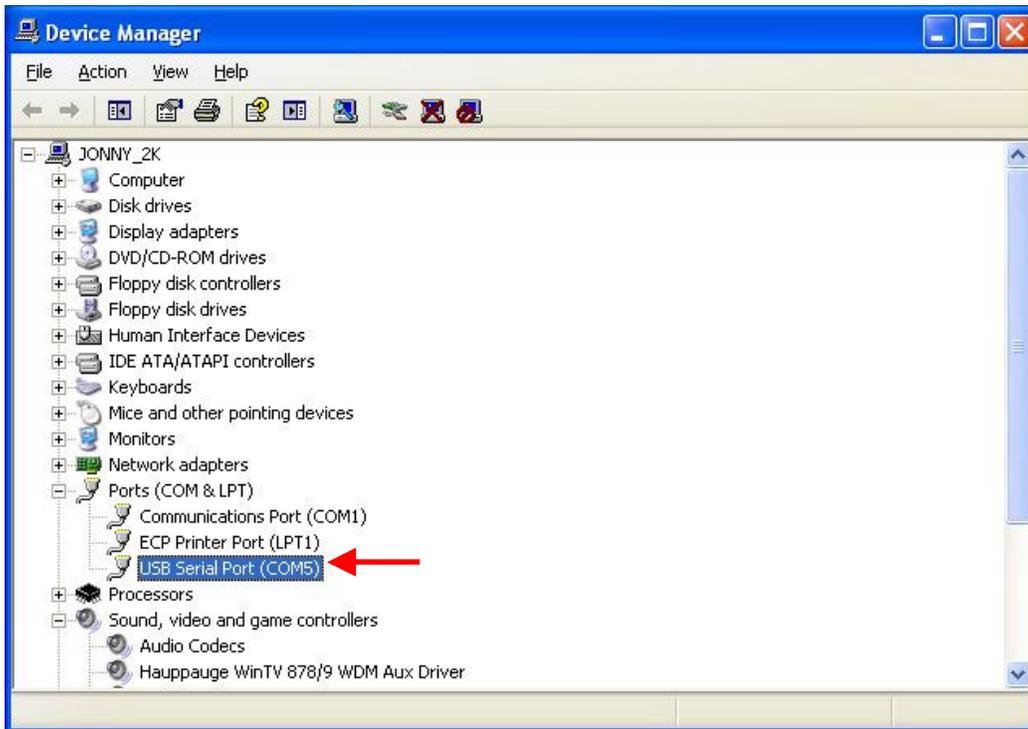


FIGURE 3: USB to Serial Port "COM 5" listed in device Manager

**INSTALLING TERA TERM:**

Bootloading the TDFM-9000 series radios requires a terminal program with Y modem.

You can download Tera Term V4.75 here:

http://en.sourceforge.jp/projects/ttssh2/downloads/56762/teraterm-4.75.exe/

Install the terminal program. The first time you run Tera Term a new connection box will pop up.
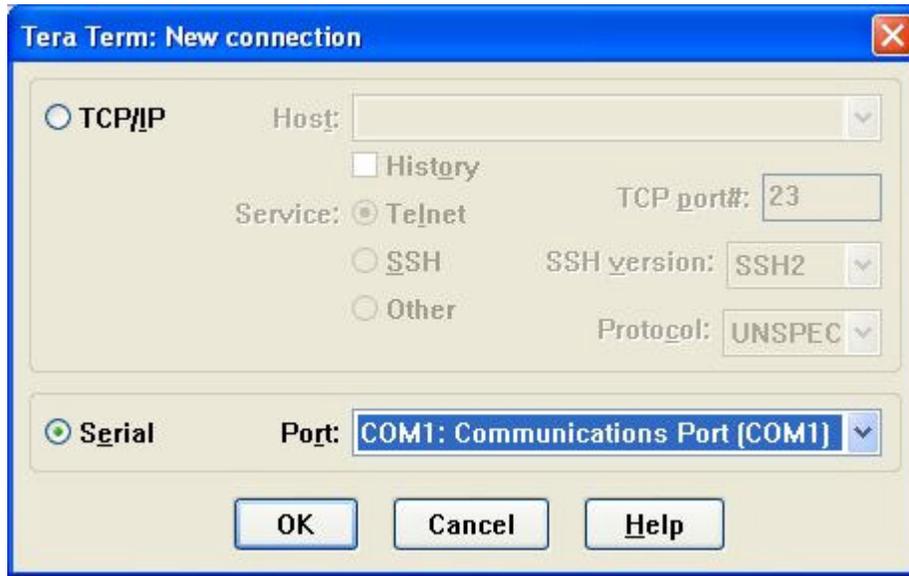


FIGURE 4: New Connection Window

Select "Serial" and in the pull down box, select the USB to Serial port as determined in the previous section. Click on OK. The Main window will be displayed.
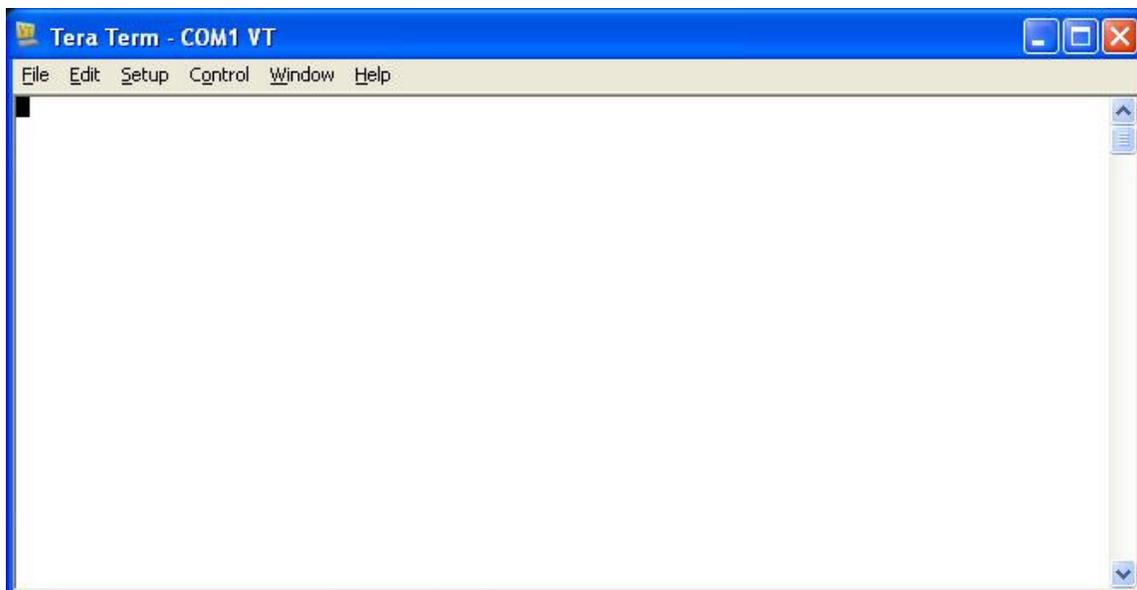


FIGURE 6: Main Tera Term Screen

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Select SETUP> SERIAL PORT from the top menus. Set the Baud Rate and other parameters as show below:
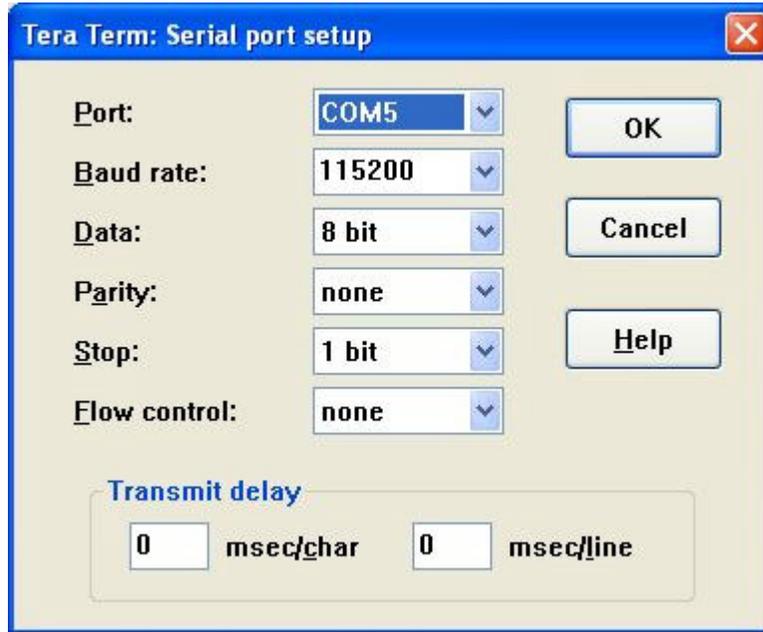


FIGURE 7: Port Setup

Click ok. Select SETUP>SAVE SETUP. Save the "TERATERM.INI" file. Then close Tera Term.

**PUTTING THE RADIO INTO BOOTLOAD MODE:**

To update the software in the TDFM-9000 series radios the unit must be put into Bootload mode.

To put the radio in to Bootload Mode, power up the radio by pressing the knob, and before the TIL Logo disappears, press and hold down the 7, 2, 3 & 0 keys together until the display shows the Bootloader screen. See below.
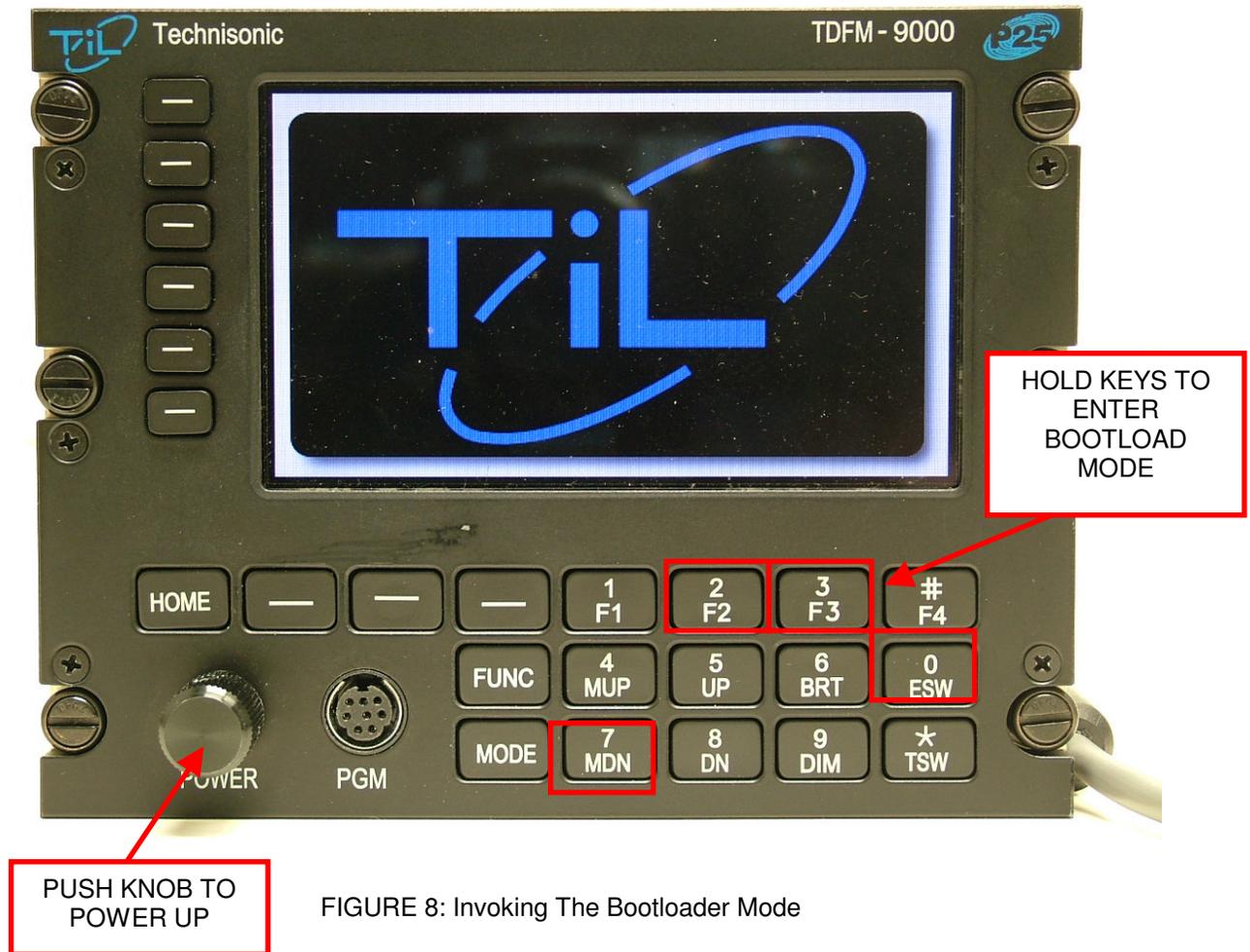


FIGURE 8: Invoking The Bootloader Mode

HOLD KEYS TO ENTER BOOTLOAD MODE

PUSH KNOB TO POWER UP

FIGURE 9: The Bootloader Screen

**CONNECTING THE RADIO TO THE PC:**

Connect the radio to the PC with the PC-9000 programming cable (P/N 127499).
Plug the - 8 pin mini din connector into the front of the TDFM-9000 and the other end into a USB port on the PC. Wait for the USB cable to enumerate. See Figure 10 below:
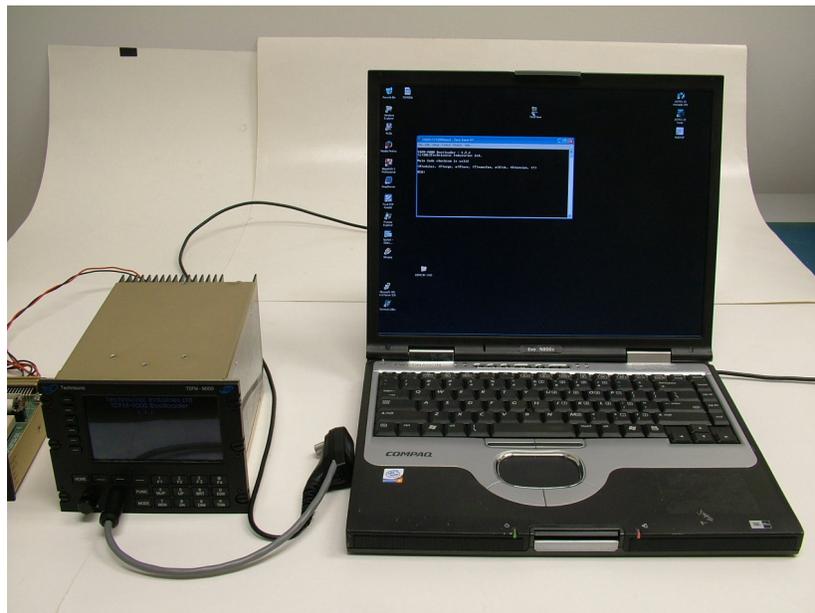


FIGURE 10: Typical Hook Up To PC

UPDATING THE SOFTWARE:

With the radio connected to the PC, start Tara Term. The terminal program should recognize the radio serial port.
Hit <ENTER> to confirm connection and to bring up the bootloading menu.
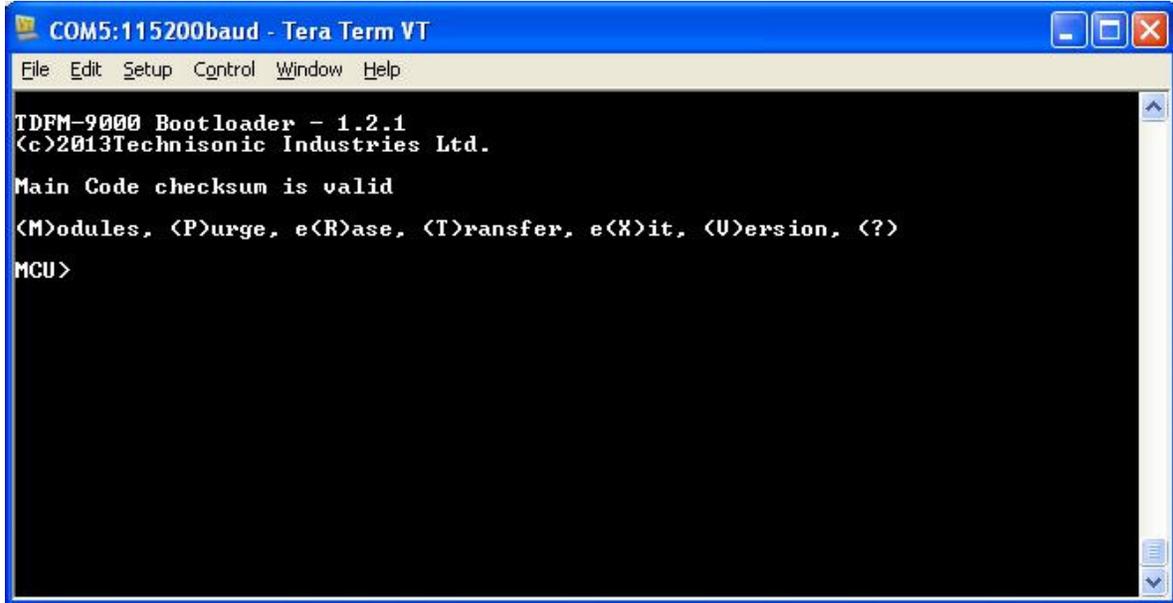


FIGURE 11: Bootloader Menu

Type "m" and <ENTER> to display the current software versions installed in the TDFM-9000.
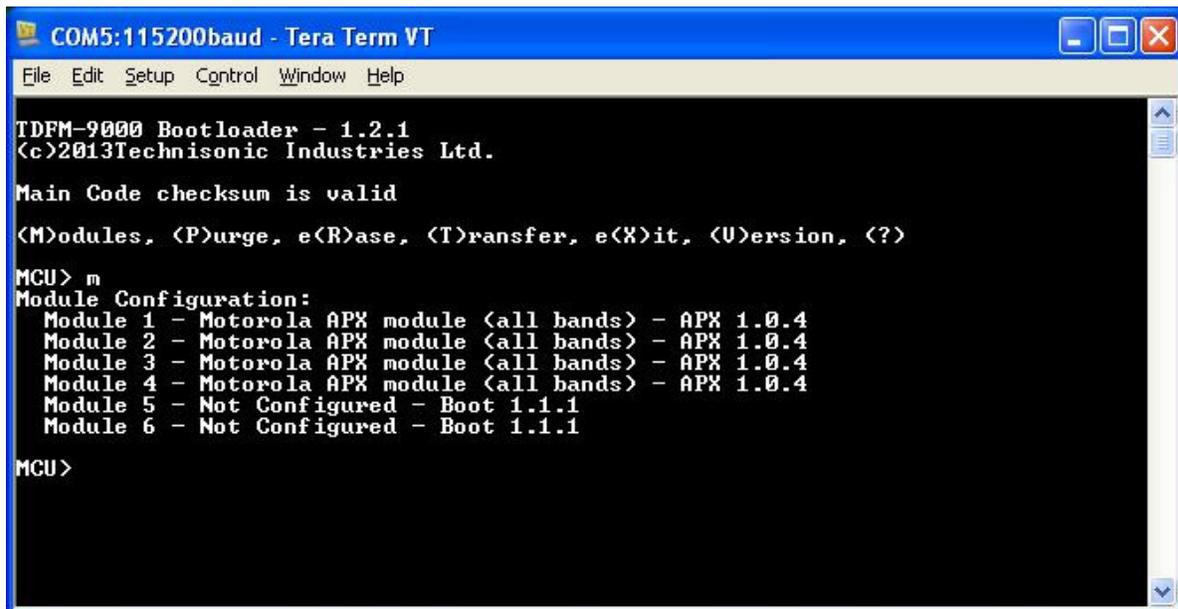


FIGURE 12: Interface Software Installed In The Radio

There may be several pieces of software that need to be uploaded to the radio depending on the module type. For TDFM-9000 radios only two pieces of SW need be loaded. The Main software and the APX Module interface software. The normal practice is to update all interface software then the main software.

To upload the interface software press "t" on the terminal then click on FILE>TRANSFER>Y MODEM>SEND.
Navigate to the interface software on the PC and select the file. Refer to Table 1 for the correct file name. On the Terminal window a transfer screen will come up with a progress bar. On the radio the display will show a progress bar on the bottom of the screen as the data is transferred. See Figures 13 and 14.

Repeat the procedure for loading the Main software and any other software that is required.

NOTE: FOR RADIOS UPGRADING TO V2.0.2 AND V2.0.3 SEE PROCEDURE BELOW
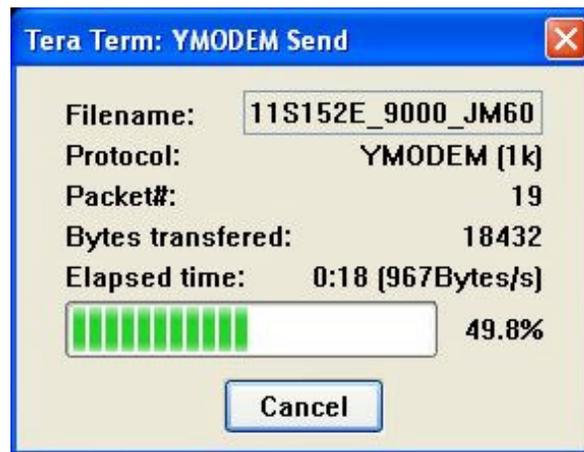


FIGURE 13: Y-Modem Transfer Screen



FIGURE 14: Radio Progress Screen

When the download is complete the radio shows "Done".



FIGURE 15: Download Complete

LOADING MAIN V2.02 and V2.03 SW

For radios upgrading to MAIN V2.0.2 and MAIN V2.0.3 SW, an extra step MUST be performed prior to loading the new software. Future software versions will not require this procedure unless upgrading directly from V2.0.1 or older.

The memory must be erased before loading the new Main code. This will reset all configuration settings to factory defaults. If the configuration settings are to be preserved, then the information must be written down prior to erasure and manually re-entered after upgrade. Refer to the relevant operating manual to access the configuration settings. Further upgrades from V 2.0.3 will carry forward and will not need to be reset.

Upgrade all required interface software for the unit before upgrading of the main code. Then erase the main memory. Press "p" on the terminal. The terminal will show "Purging…………………".

Load the new main code as described above using the Y modem.

RADIO VARIANT SOFTWARE

As mentioned above, the radio variant determines how many software files will need to be updated. Most of the time the Main SW and the P25 (APX) Module SW will be updated. In the case of the TDFM-9300 and 9200 radios there are additional software files that may need to loaded. The procedure is the same for all software files but all files will need to loaded individually.

Table 1 shows a cross reference of all the software files that would be used for the TDFM-9000 series radios. Not all files are used in all radios. All files have a file name convention of: (Software P/N.S19); Eg: 11S151E.S19 would be a file for the Main software.

| TDFM-9000 SERIES SOFTWARE TABLE | | | |
|---|---|---|---|
| SOFTWARE | TDFM-9000 | TDFM-9300 | TDFM-9200 |
| MAIN | 11S151 | 11S151 | 11S151 |
| APX INTERFACE | 11S152 | 11S152 | 11S152 |
| ANALOG INTERFACE | N/A | 13S172 | 13S172 |
| ANALOG VHF LO | N/A | 07S119 | 07S119 |
| ANALOG VHFAM | N/A | 11S148 | 11S148 |
| ANALOG UHF AM | N/A | 13S169 | 13S169 |

TABLE 1: TDFM-9000 Series Software Cross Reference

From Table 1 for TDFM-9000, only the Main and APX interface software need be loaded. For TDFM-9300, the Main, APX, Analog interface, and one of the Analog Module SW be loaded depending on which module is installed on Band 5. TDFM-9200 requires the same as the TDFM-9300, but with 2 of the analog modules software needs to loaded based on the configuration of the radio.

After all the software has been loaded in to the radio, the terminal program can be disconnected. From the menu select FILE>DISCONNECT. Then close Tera Term. Disconnect the programming cable from the radio and PC.

Reboot the radio and watch the startup screen to see if the software was updated. It will be displayed as it detects all the RF modules. See Figure 16.
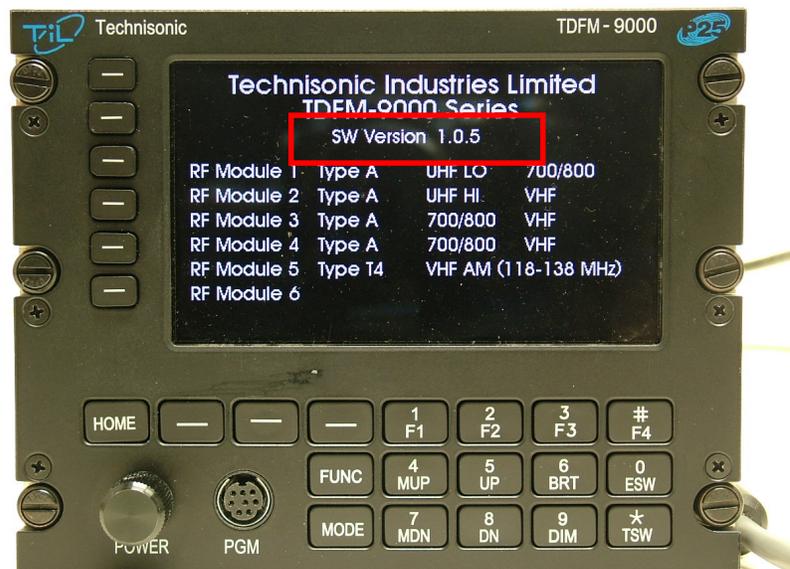


FIGURE 16: Start Up Screen
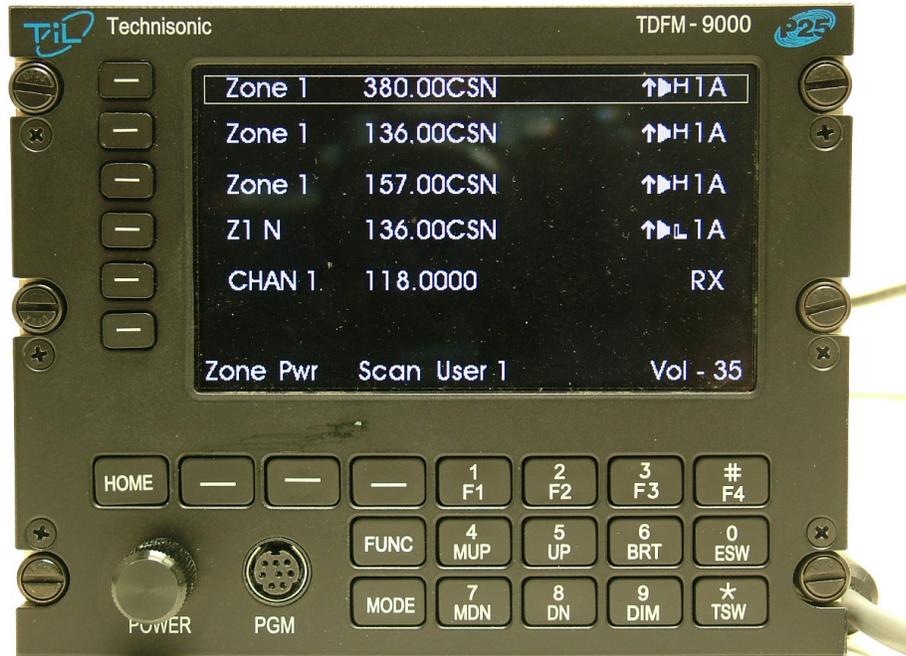
FIGURE 17: Radio Main Display

**FINAL CHECKS:**

It is highly recommended to go into the configuration menu and check all the settings.
It may be necessary to readjust settings that might have defaulted from the user preferences.

Verify that all bands transmit and receive on the correct frequencies.

Verify that all the controls are function correctly as per normal operation.

**Obtaining The Latest Software:**

Technisonic is always improving the products. Software may be revised from time to time. Contact Technisonic customer support to obtain the latest software for theTDFM-9000 series.

Please note that TDFM-9000 series units are airworthiness approved on a non-hazard, non-interference basis and that the firmware is E-level which does not have to be controlled. Hence it is not mandatory to install the latest version of firmware.