**Firmware update procedure for GK-502**
06/04/2012

The following procedure describes how to update the GK-502 firmware via the host computer's USB port.

Firmware updates may be accomplished via the GK-502's communications (COM) port. This feature eliminates the need to return the GK-502 to the factory for firmware updates (bug fixes, new features etc.). The firmware update application (tinybldWIN.exe) is a third party application written by Claudiu Chiculita of the University of Galati, Romania

The following example describes the procedure for updating a GK-502.

Make sure that your GK-502 is <u>not</u> connected to the host computer's USB port at this time. Use an unzip program (e.g. WinZip) to unzip and install the following files:


1. Open GK-502.zip:
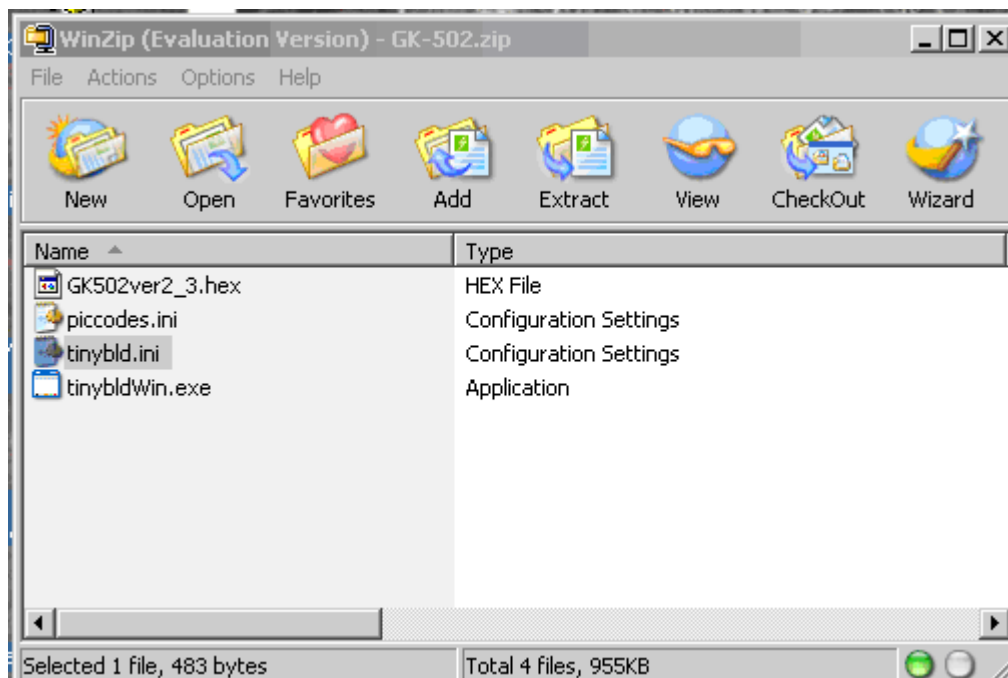
The GK-502.zip file contains the following files:

tinybldWin.exe: The application that installs the firmware
piccodes.ini: Configuration information used by tinybldWin.exe
tinybld.ini: Configuration information used by tinybldWin.exe
GK502ver2_3.hex: The GK-502 firmware that will be downloaded to the GK-502. In
                       this case, the firmware revision is 2.3.

**2. Extract these four files to a folder (e.g. C:\Temp) located on the host computer:**
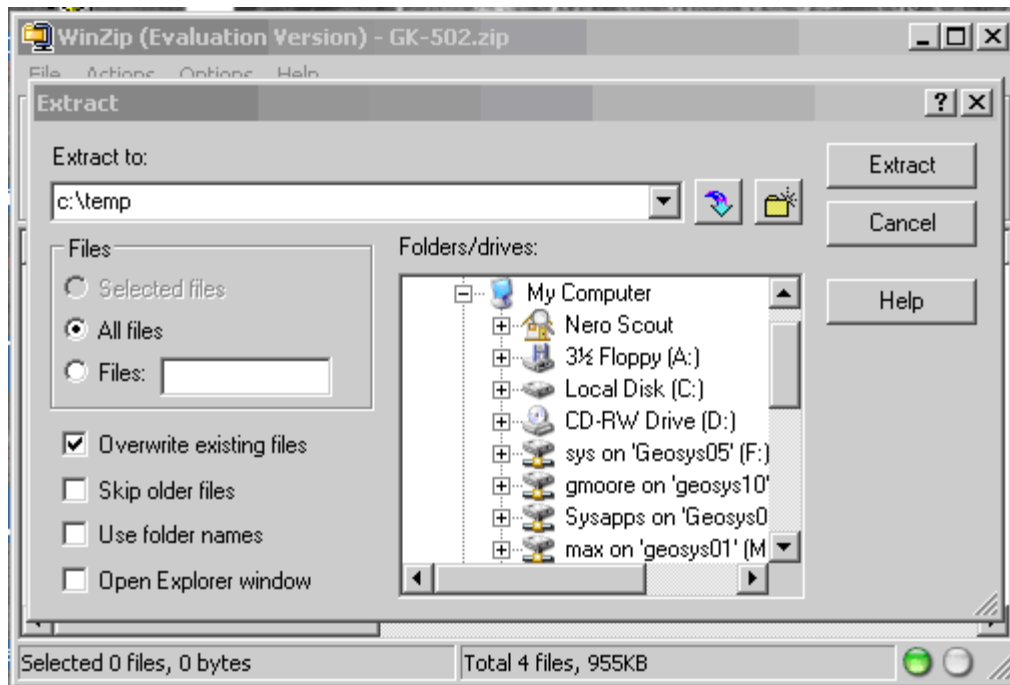
This example shows C:\temp as the target folder. All four files will be extracted to this folder.

3. Run tinybldWin.exe:
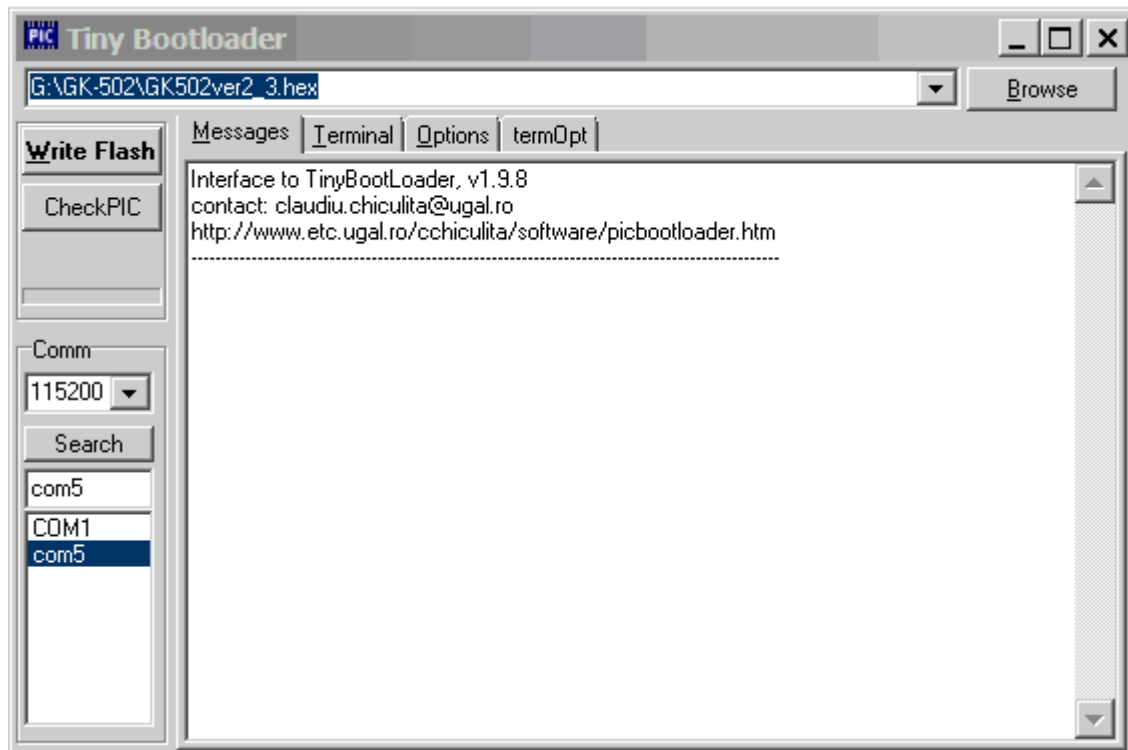
Once the four files are extracted to the target folder (C:\temp), double clicking on tinybldWin.exe starts the firmware update (bootloader) process. The program displays the **Messages** screen along with the COM port (COM5) selected and the default baud rate (115200) that will be used. Note that all available COM ports are displayed in the Comm list box. Select the applicable COM port for the GK-502.

4. Select the firmware file (.hex) that the GK-502 will be updated to:
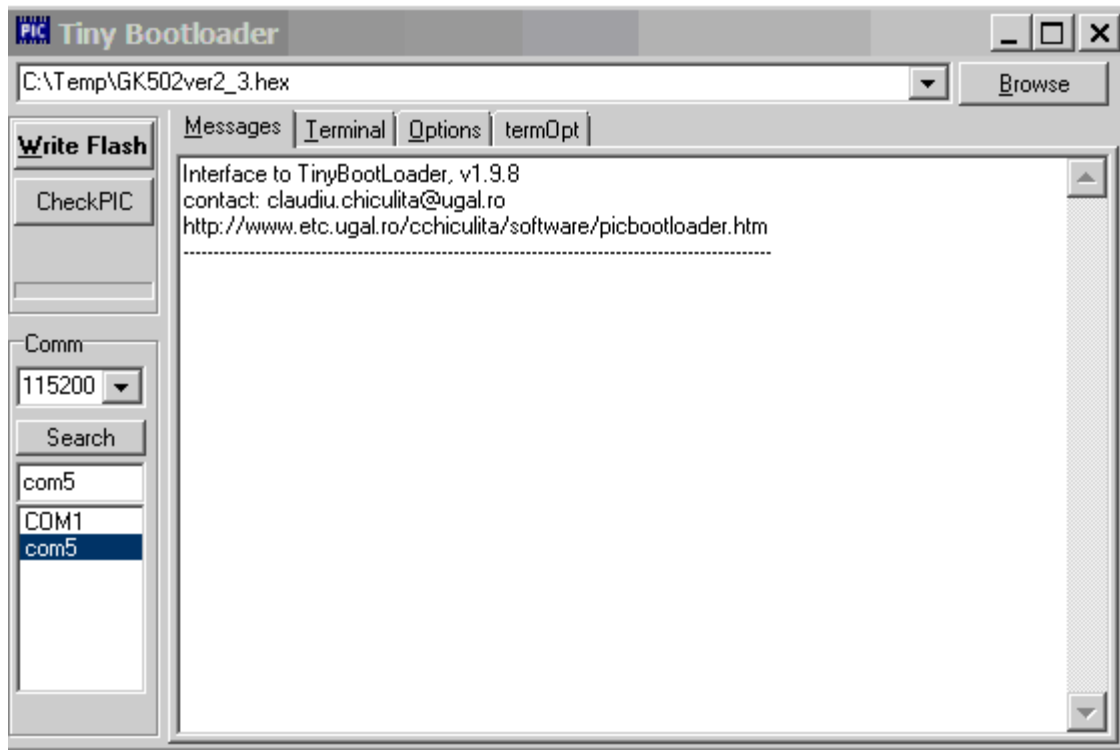
Clicking the "**Browse**" button displays the file open window. Click the .hex file that you wish to use – in this case GK502ver2_3.hex and then click "**Open**".

5. Prepare the GK-502 for firmware update:

NOTE: If unable to establish communications with the GK-502, <u>skip steps 5, 6 and 7</u> and instead go to <u>8a. Update Firmware (Alternate)</u>.
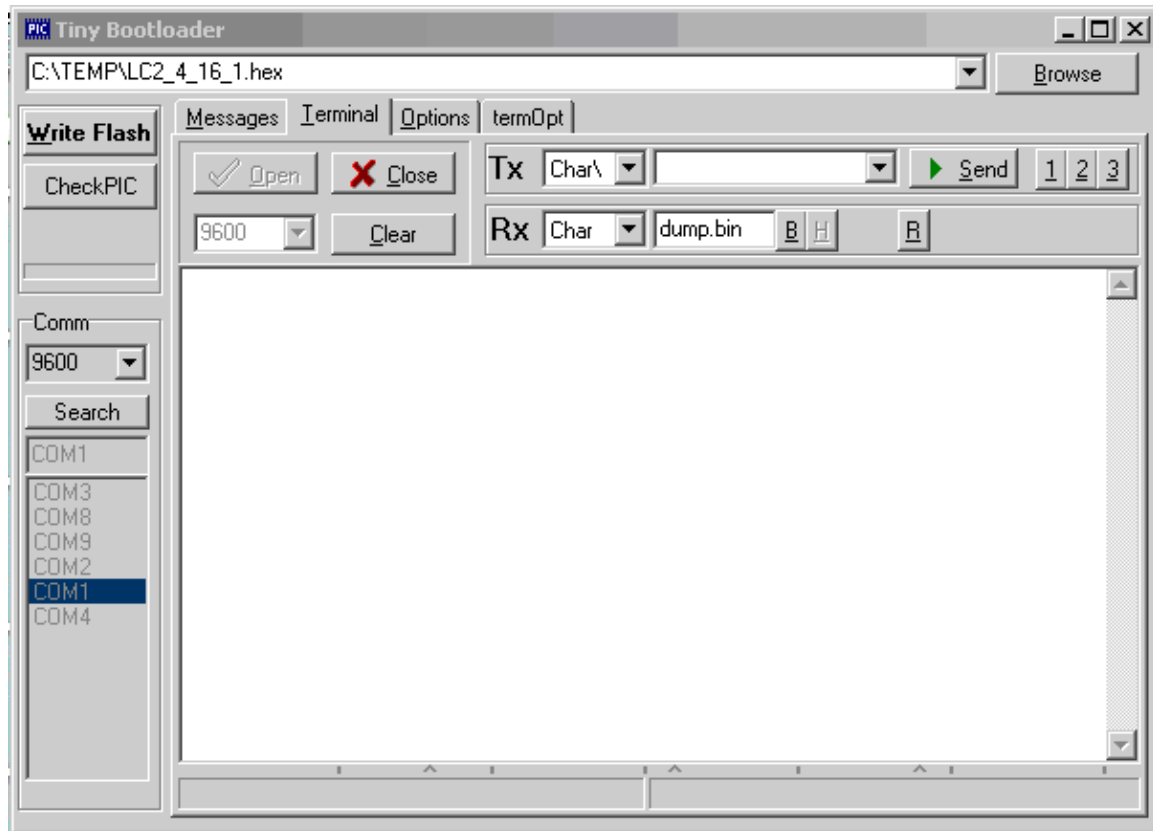
Clicking the "**Terminal**" tab displays the **Terminal** screen. This screen is used to communicate with the GK-502 and set it up for firmware update. Turn on the GK-502 and allow it to start taking readings. Connect one end of the COM port cable to the GK-502 and the other end to the computers USB port. Click "**Open**" to open the selected COM port and allow communications with the GK-502. Note that the selected .hex file is displayed in the address bar at the top of the **Terminal** screen.

6. Establish communications with the GK-502:

If not already set, select 115200 in the drop-down list for the baud rate (next to the **Clear** button). Then click in the large white area of the **Terminal** screen and press <**Enter**>. The GK-502 will respond by displaying current readings in real time.

The GK-502 is now in communications and ready to receive commands.

7. Enter the Update Firmware (UF) command:

```
PIC Tiny Bootloader                                          _ □ ×

C:\Temp\GK502ver2_3.hex                              ▼   Browse

Write Flash   │ Messages  Terminal │ Options │ termOpt │

              │  ✓ Open    ✗ Close   Tx  Type ▼  [        ▼]  ► Send  1 2 3
 CheckPIC     │
              │  115200 ▼   Clear    Rx  Char ▼  dump.bin  B H      R

              │ 2012,06,04,13,16,20,       -8,Dg,1                    ▲
              │ 2012,06,04,13,16,21,       -8,Dg,1
 Comm         │ 2012,06,04,13,16,22,       -8,Dg,1
              │ 2012,06,04,13,16,23,       -8,Dg,1
 115200 ▼     │ 2012,06,04,13,16,24,       -7,Dg,1
              │ 2012,06,04,13,16,25,       -8,Dg,1
 Search       │ 2012,06,04,13,16,26,       -8,Dg,1
              │ 2012,06,04,13,16,27,       -7,Dg,1
 com5         │ 2012,06,04,13,16,28,       -8,Dg,1
              │ 2012,06,04,13,16,29,       -7,Dg,1
 COM1         │
 com5         │ *
              │ *2012,06,04,13,16,30,      -7,Dg,1
              │ UF
              │ Update Firmware(Y/N)?Y
              │ Waiting for update...                                ▼

              │                                 > D <
```

Type "**UF**" and press <**Enter**> to start the firmware update process. Type "**Y**" <**Enter**>. The GK-502 now waits for the firmware (GK502ver2_3.hex) to be transmitted. Note: If no file is transmitted within 30 seconds, the GK-502 "times-out" and returns to taking readings. If this should happen, press <**Enter**> and repeat the Update Firmware command.

8. Update Firmware:

From the **Terminal** screen, after typing "**UF**", "**Y**" and <**Enter**>, click "**Close**" and then click "**Write Flash**":
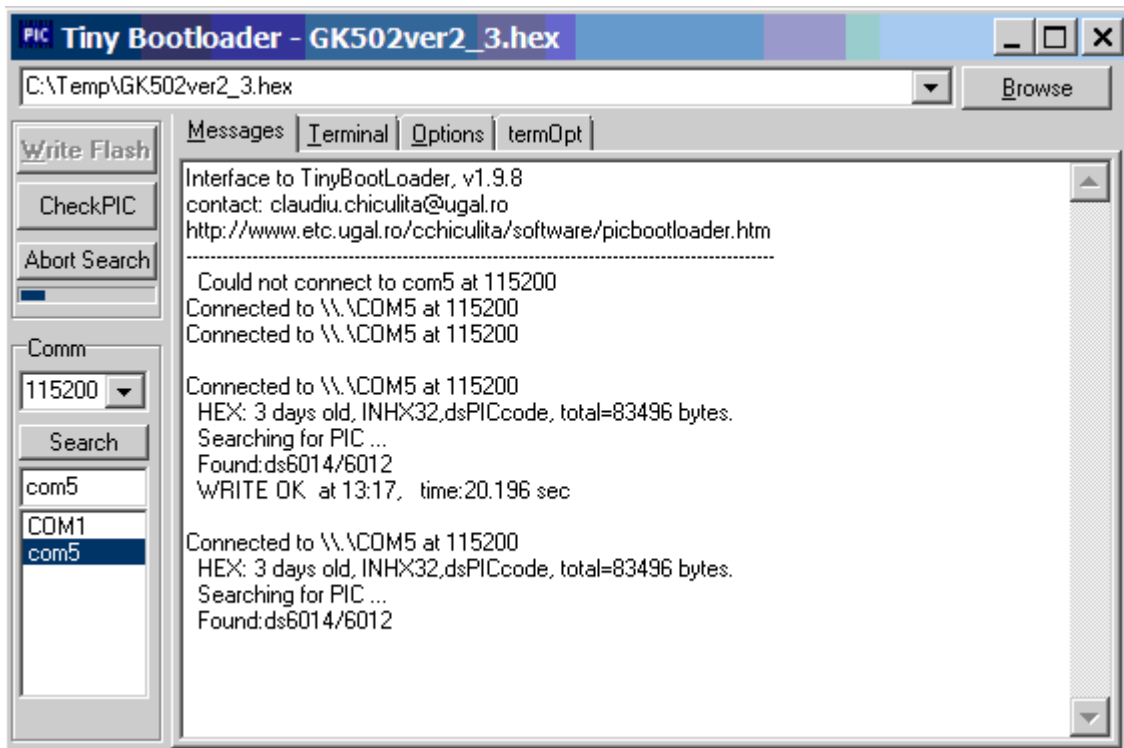
The **Message** screen again appears and displays "Searching for PIC…". Once the software detects the GK-502's microprocessor, the message "Found ds6014/6012" is displayed. At this point the progress bar located beneath the **Abort Search** button becomes active and the transmission of file GK502ver2_3.hex to the GK-502 begins.

8a. Update Firmware (Alternate):

In cases where the GK-502 has lost the ability to communicate with the host computer, firmware may be updated by allowing the GK-502 to "power-up" into the bootloader.

Prepare the **Messages** screen with the correct COM port and .hex file that you want to load to the GK-502. Connect the USB cable to the GK-502 COM port and the host computers' USB COM port.

Turn on the GK-502. Note that the top row of LCD segments are dimly lit.

Click "**Write Flash**":
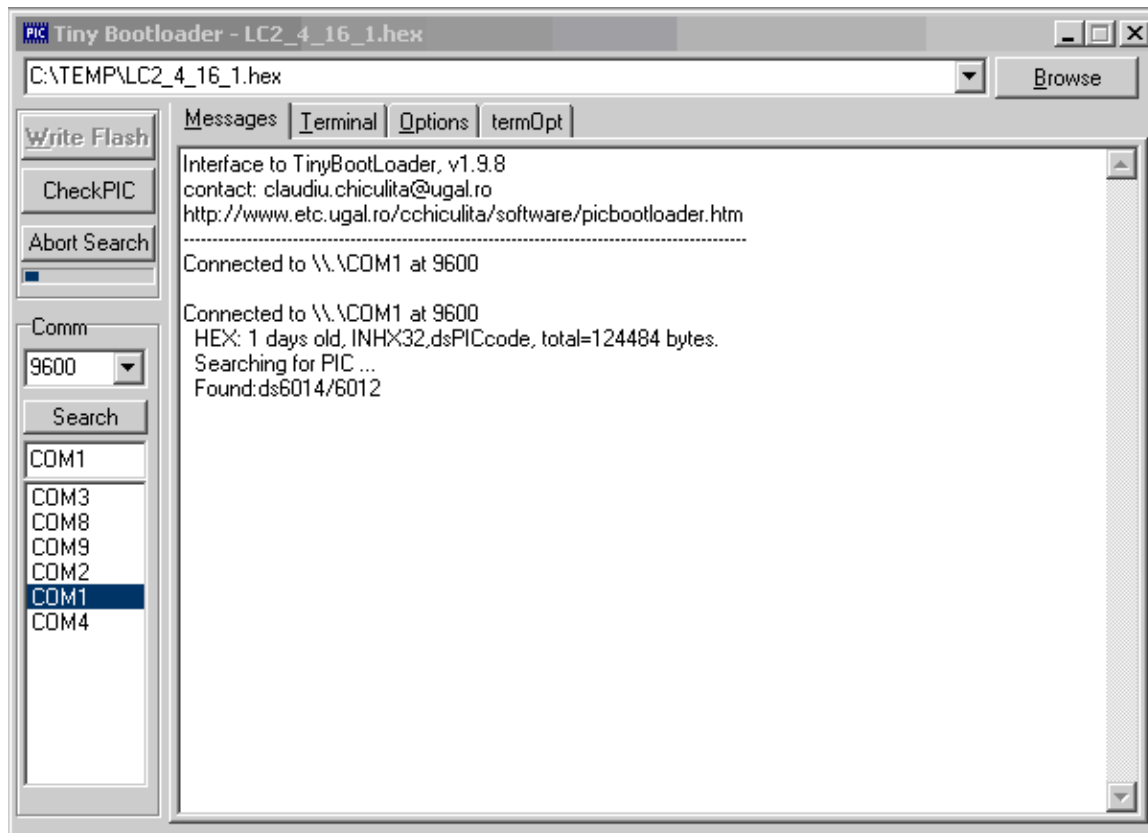
The **Message** screen again appears and displays "Searching for PIC…". Once the software detects the GK-502's microprocessor, the message "Found ds6014/6012" is displayed. At this point the progress bar located beneath the **Abort Search** button becomes active and the transmission of file GK502ver2_3.hex to the GK-502 begins.

9. Firmware Update Complete:
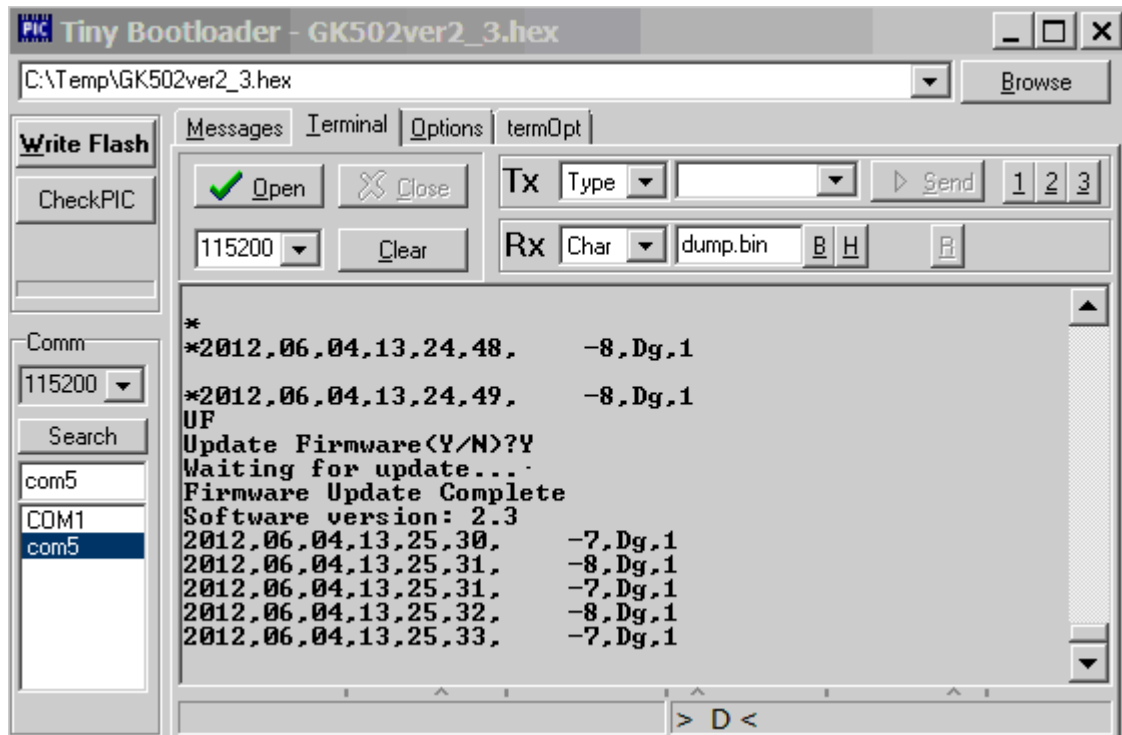
At the conclusion of the firmware update process, the **Terminal** screen reappears and the message "**Firmware Update Complete**" is displayed, along with the version of firmware that was loaded. At this point, the firmware update process is complete.