Figure 5.4.2

There are three serial connectors on the interface boards, as shown in Figure 5.4.3. The RJ-45 connector provides a high-speed RS232 interface to the DNT500P's main serial port. The USB connector provides an optional interface to the radio's main serial port. The RJ-11 connector provides a high-speed RS232 interface to the radio's diagnostic port. The DNT500 Wizard utility program runs on the radio's main port.
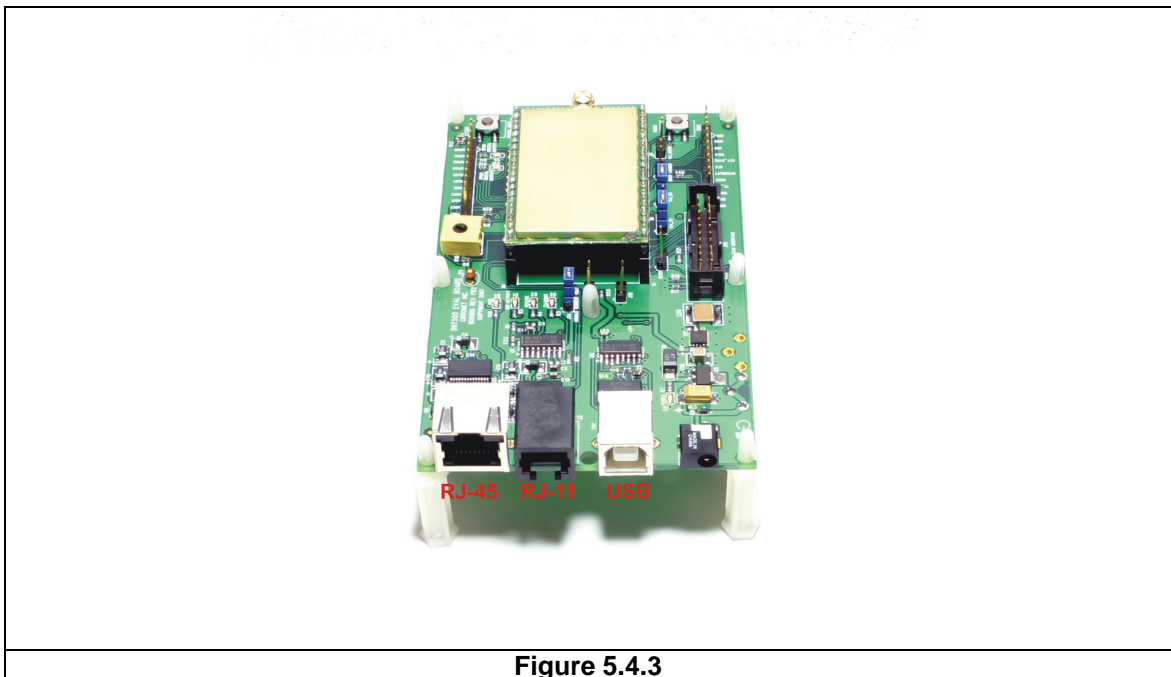

Figure 5.4.3

The preferred PC interface is a serial port card capable of operating up to 460.8 kb/s. Many desktop PCs have a built-in serial port capable of operation at 115.2 kb/s. The kit can be run satisfactorily at the 115.2 kb/s data rate, but not at its fastest throughput. Use the RJ-45 to DB-9F cable assemblies for serial port operation.

Optionally, the kit can be run from the USB port. Plugging in the USB cable automatically switches operation from the RJ-45 connector. The USB interface is based on an FT232RL serial-to-USB converter IC manufactured by FTDI. The driver files for the FT232RL are located in the *USB Driver* folder on the kit CD, and the latest version of the driver can downloaded from the FTDI website, www.ftdichip.com. The driver creates a virtual COM port on the PC. Power up an interface board with an installed DNT500P using one of the supplied wall plug power supplies. Next connect the interface board to the PC with a USB cable. The PC will find the new USB hardware and open up a driver installation dialog box. Click on the *Browse* button in the dialog box and point to the folder with the FT232R driver files. The driver installation dialog will run twice to complete the FT232R driver installation.

5.5 DNT500 Wizard Utility Program

The DNT500 Wizard utility program is located in the *PC Programs* folder on the kit CD. The Wizard requires no installation and can simply be copied to the PC and run. The Wizard start-up window is shown in Figure 5.5.1.
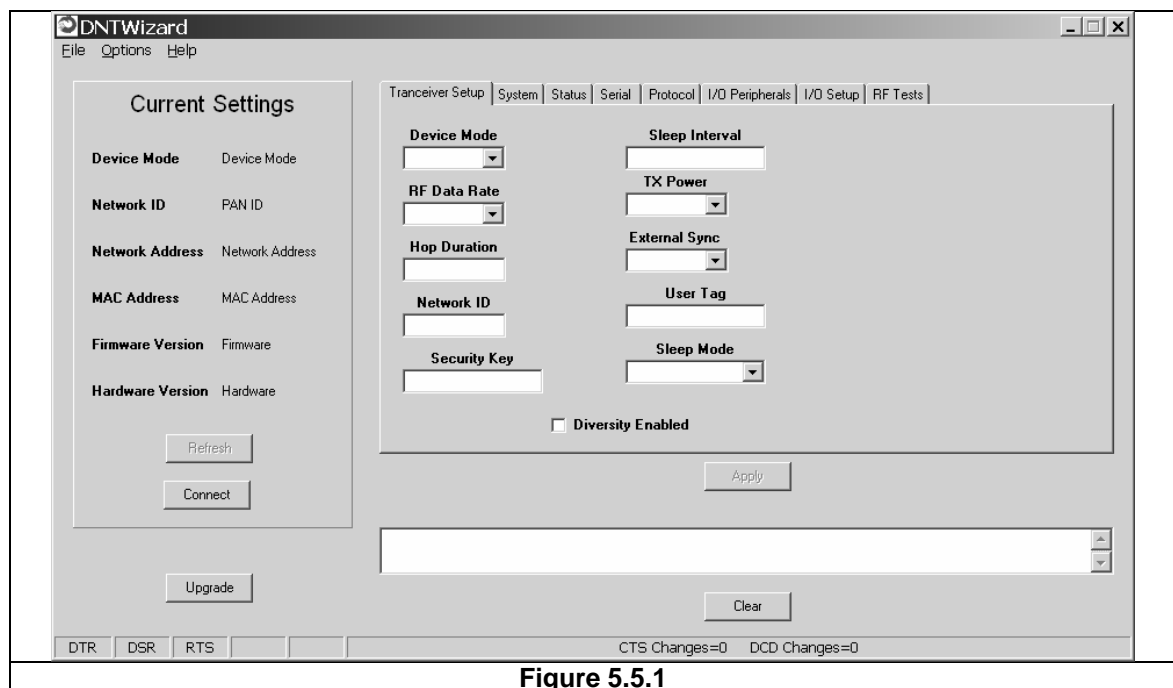

Figure 5.5.1

Press the *Connect* button to open the serial port dialog box, as shown in Figure 5.5.2. Set the data rate to 115.2 kb/s (DNT500 default), select the COM port connected to the DNT500 interface board and press *OK*.
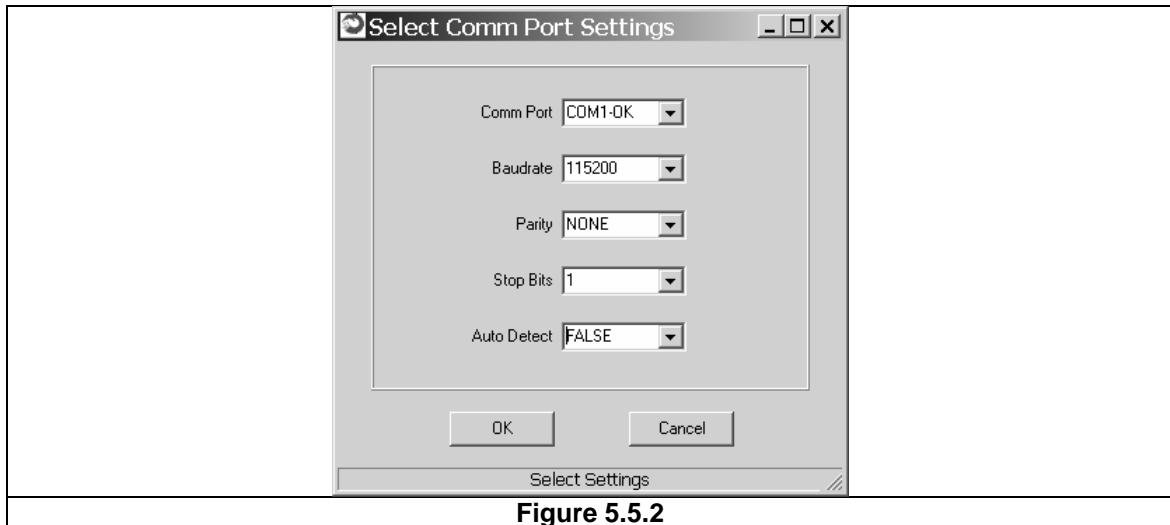
Figure 5.5.2

At this point the Wizard will collect configuration parameters from the DNT500. This data is organized under the first seven tabs, each corresponding to a Bank of register parameters as discussed in Section 4.2. The *Transceiver Setup* Tab as shown if Figure 5.5.3, and corresponds to Bank 0. The current values of each Bank 0 parameter are displayed and can be updated by selecting from the drop down menus or entering data from the keyboard, and then pressing the *Apply* button. Note that data is *displayed and entered into the Wizard in Big-Endian order*. The Wizard automatically reorders multi-byte data to and from Little-Endian order when building or interpreting protocol messages. In Figure 5.5.3 below, TX Power has been modified from its default value of 0 dBm to 18 dBm.
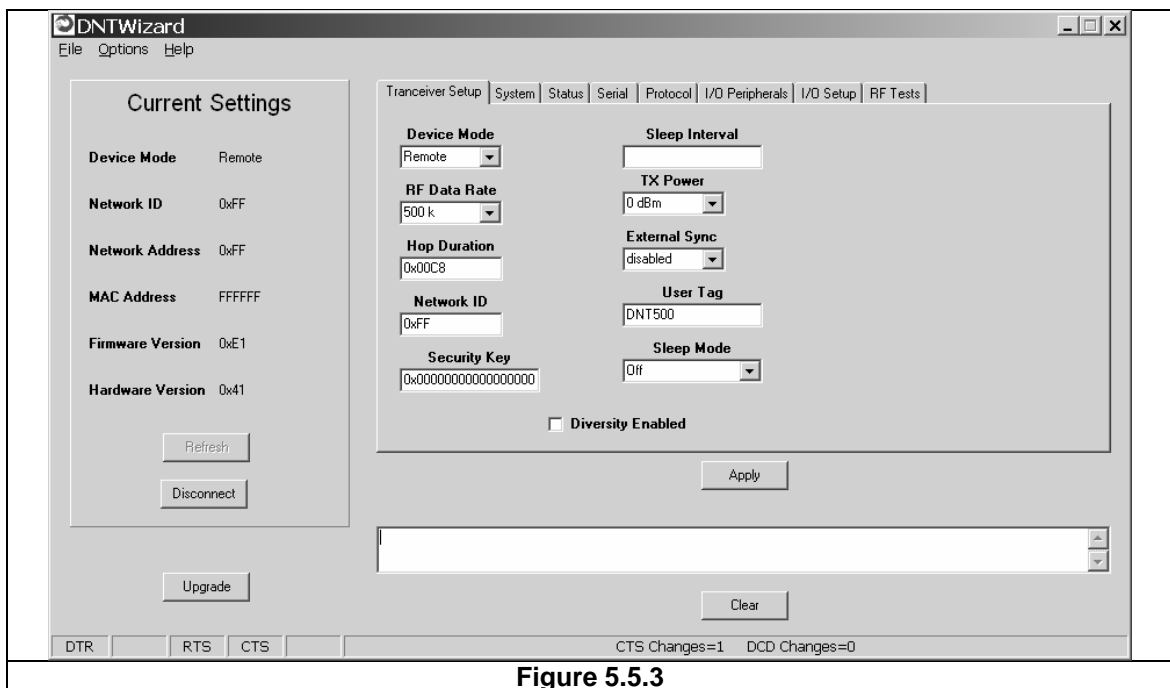

Figure 5.5.3

In addition to conventional mouse and keyboard inputs, the Wizard supports two special function keys, F1 and F2. F1 toggles the serial port DTR line off and on. Pressing F1 the

first time after the Wizard is started will place the DNT500 in power down mode. Pressing the F1 key again will reboot and restart the DNT500. The current status of the DTR line is seen in the lower left corner of the Wizard window. F2 toggles the RTS line. Pressing F2 the first time after the Wizard is started will halt the flow of data from the DNT500. Pressing the F2 key again will re-enable data flow. The current status of the RTS line is also seen in the lower left corner of the Wizard window.

Figure 5.5.4 shows the DNT500 Wizard *System* tab contents, corresponding to parameter Bank 1. The default parameters under this tab have been modified to change from CDMA to TDMA operation.
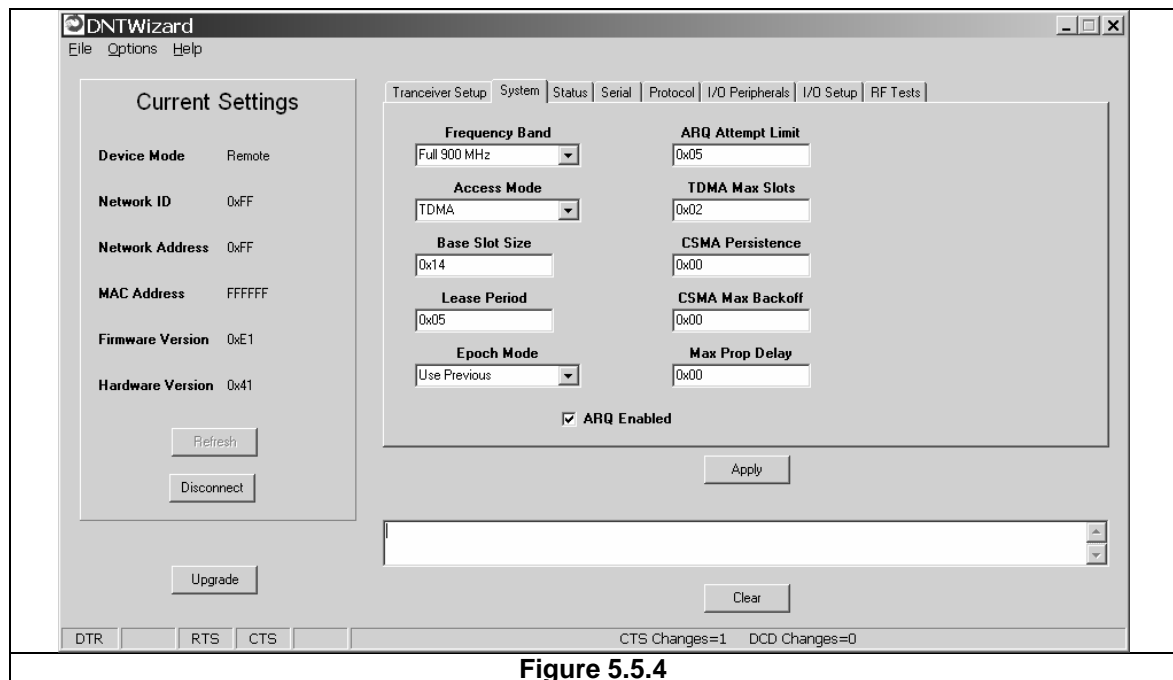

Figure 5.5.4

Figure 5.5.5 shows the DNT500 Wizard *Status* tab contents, corresponding to parameter Bank 2. Note the *Status* tab contains read-only parameters.
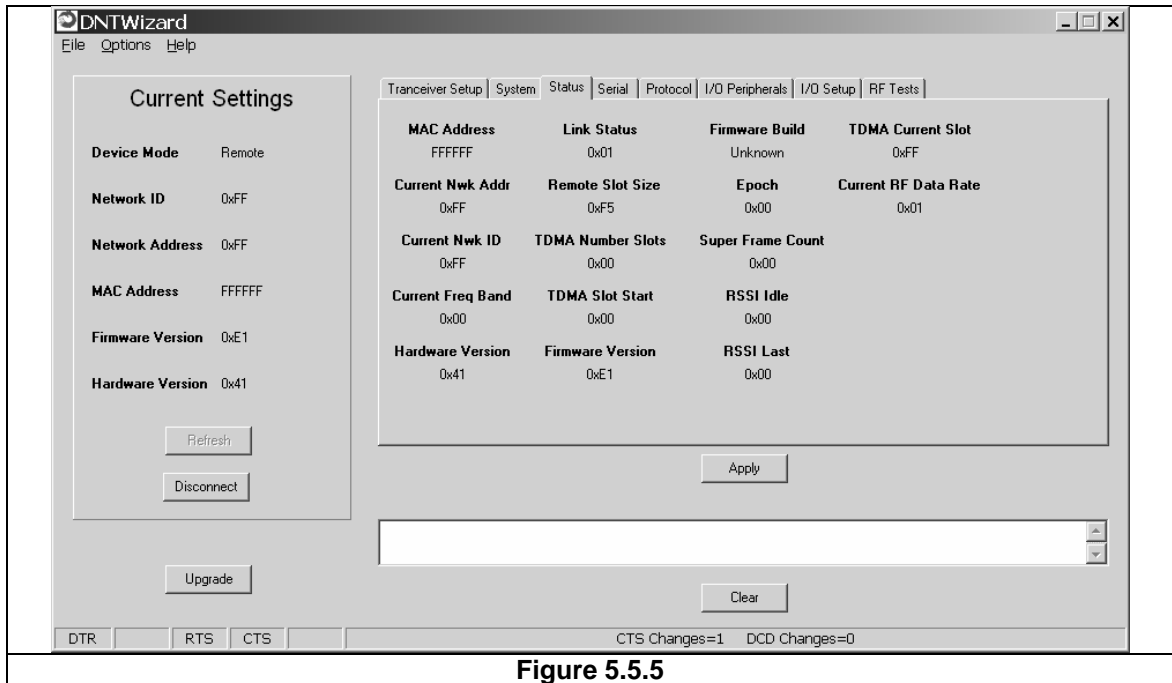

Figure 5.5.5

Figure 5.5.6 shows the DNT500 Wizard *Serial* tab contents corresponding to parameter Bank 3. The values shown below are the defaults for serial port operation.
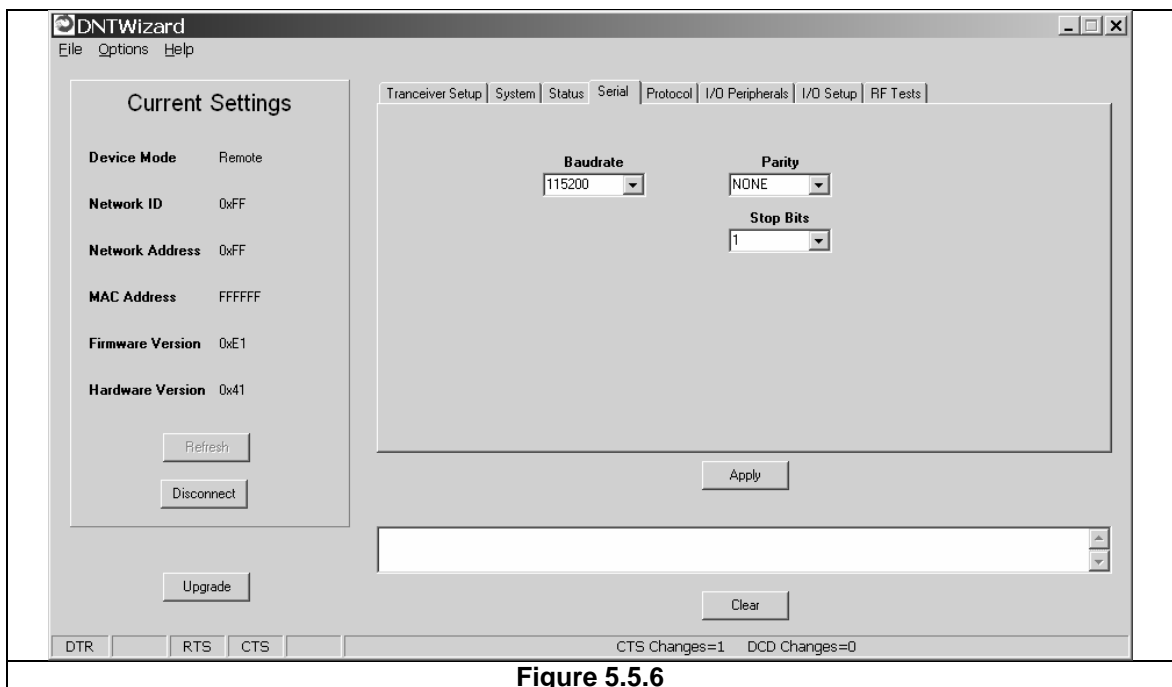

Figure 5.5.6

Figure 5.5.7 shows the DNT500 Wizard *Protocol* tab contents, corresponding to parameter Bank 4. Transparent data serial communication is currently chosen.
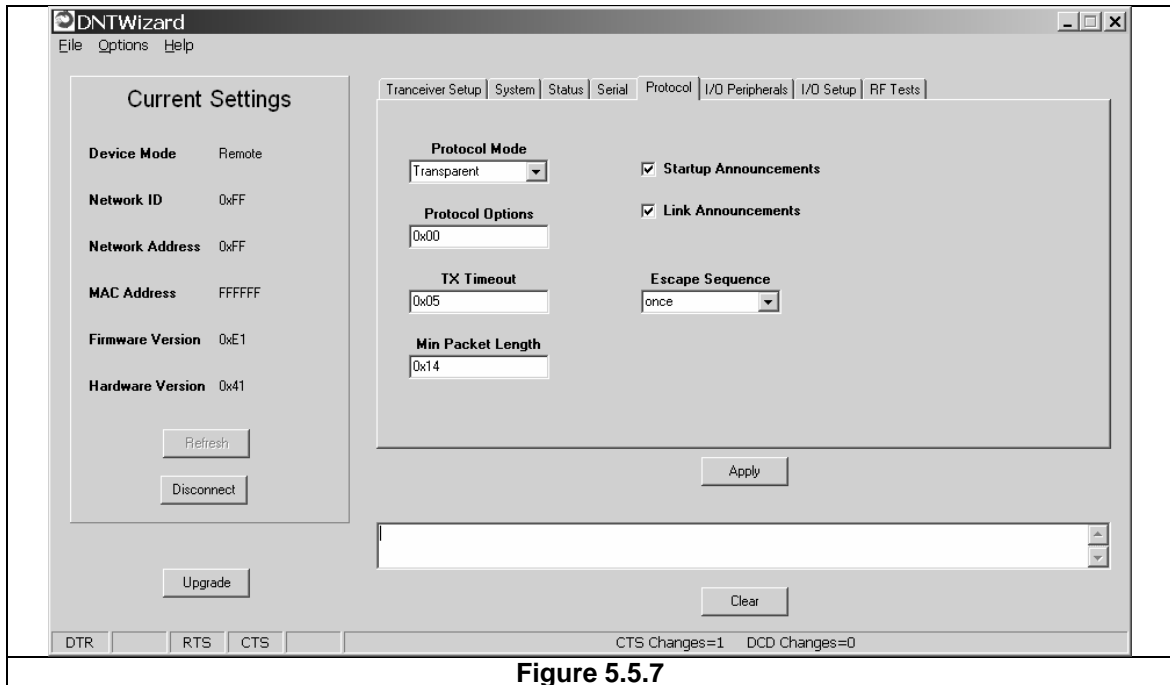

Figure 5.5.7

Figure 5.5.8 shows the DNT500 Wizard *I/O Peripherals* tab contents, corresponding to parameter Bank 5. GPIO ports 0 - 2 are logic high, GPIO port 3 is logic low. The 10-bit ADC inputs and PWM outputs are given in *Big-Endian* byte order.
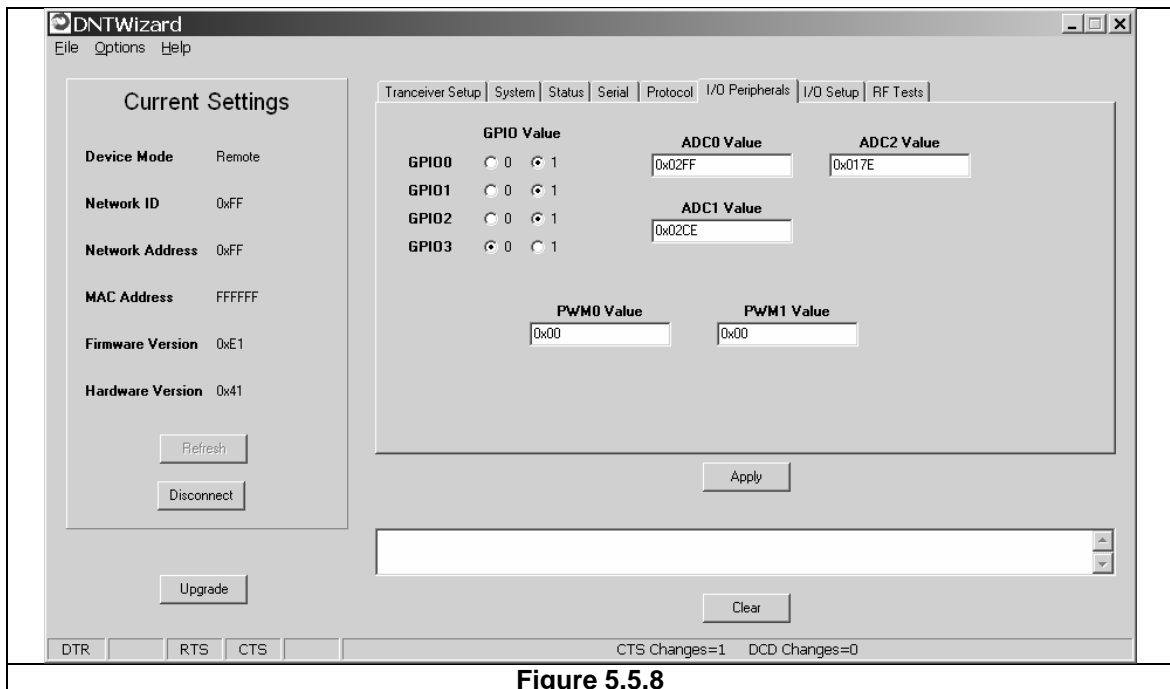

Figure 5.5.8

Figure 5.5.9 shows the DNT500 Wizard *I/O Setup* tab contents, corresponding to parameter Bank 6. This tab allows the direction of the GPIO ports to be set both for active and sleep mode. The power-up initial values of the GPIO outputs can also be specified, and whether an input can generate a wake-up interrupt. GPIO event messaging and/or periodic reporting and reporting interval can also be specified under this tab. The ADC sampling interval and the high and low thresholds for event reporting on each ADC channel can be set, along with the start-up output values for each PWM (DAC) channel.
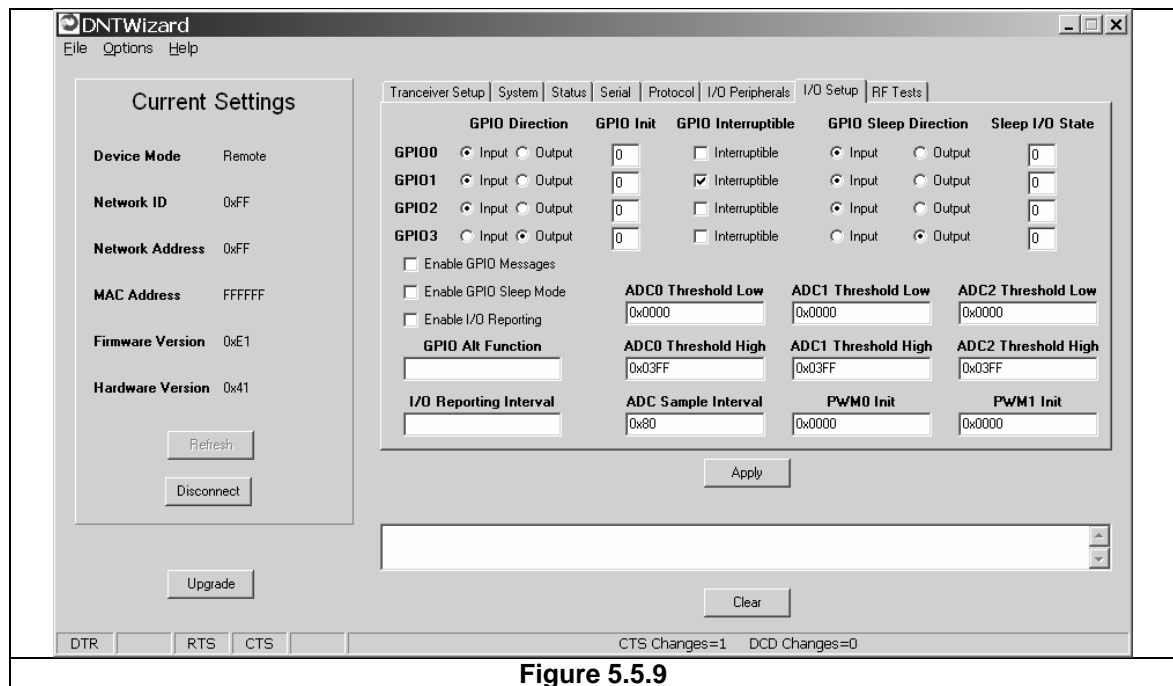

Figure 5.5.9

Figure 5.5.10 shows the DNT500 Wizard *RF Tests* tab contents. A message placed in the Transmit Window is sent to the specified MAC address each time the *Apply* button is pressed. Messages received are displayed in the lower text box. The receive message text box can be cleared with the *Clear* button. Note that a base station will accept a message from a remote with the MAC address 0x000000 regardless of the base station's actual MAC address.