

DNT90DK-ADK

Quick Start Guide



Items Supplied in the Kit:

- DNT90DK - two DNT90P radios installed in DNT90 interface boards, labeled Base and Remote
- DNT90DK - two 2 dBi dipole antennas with two MMCX-to-RSMA adapter cables
- DNT90ADK - two DNT90PA radios installed in DNT90 interface boards, labeled Base and Remote
- All Kits - two wall-plug suppliers, 9 VDC, 120/240 VAC, plus two 9 V batteries (not shown above)
- All Kits - two RJ-45/DB-9F cable assemblies and two A/B USB cables
- All Kits - one DNT90DK/DNT90ADK documentation and software CD

Additional Items Needed:

- One PC with Microsoft Windows XP or Vista Operating System. The PC must be equipped with a USB port or a serial port capable of operation at 9.6 kb/s.

Developer's Kit Default Operating Configuration:

The default operating configuration of the DNT90DK developer's kit is point-to-point with transparent serial data at 9600 bps, 8N1. One DNT90P is preconfigured as a base and the other as a remote. Labels on the bottom of the interface boards specify Base or Remote. The defaults can be overridden to test other operating configurations using the DNT90 Demo utility discussed below.

Developer's Kit Assembly:

1. Figure 1 shows a DNT90P radio installed on an interface board, an MMCX-to-RSMA antenna adaptor cable, and a 2 dBi dipole antenna. Observe ESD precautions when handling the kit circuit boards.
2. As shown in Figure 2, confirm each DNT90P is correctly plugged into an interface board, with the radio oriented so that its U.FL connector is next to the U.FL connector on the interface board. Check each radio's alignment in the socket on the interface board. No pins should be hanging out over the ends of the connector.

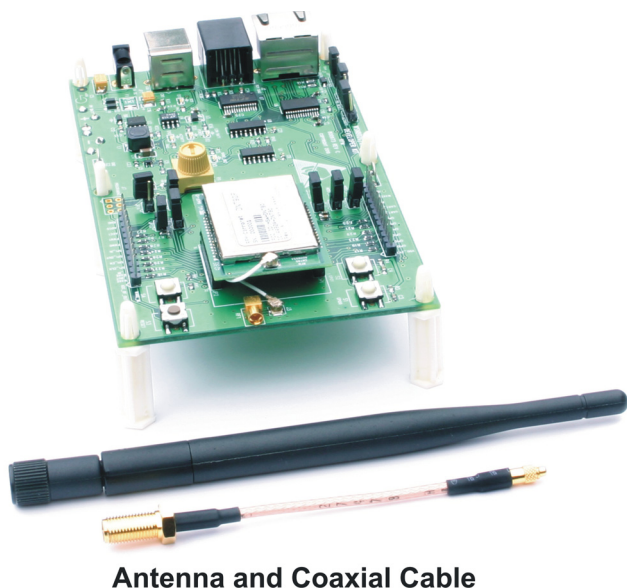


Figure 1

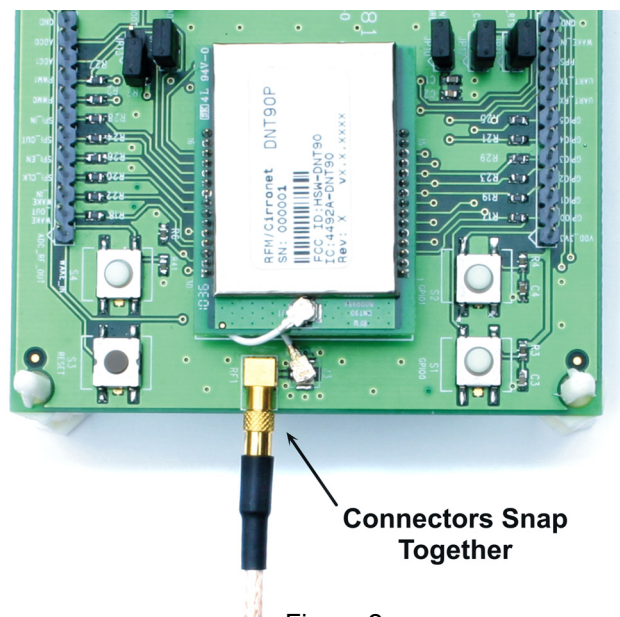


Figure 2

3. Next, screw each dipole antenna into an adaptor cable and “snap” the other end of the adaptor cable into the MMCX RF connector on the development board as shown in Figure 2. Note that no external antenna is required when using the DNT90PA radios supplied in the DNT90ADK kits.
4. Confirm there is a jumper on JP10, as shown in Figure 3. The interface boards can now be powered by the 9 V wall-plug power supplies (the interface boards can also be run for a short time from the 9 V batteries for range testing, etc.).

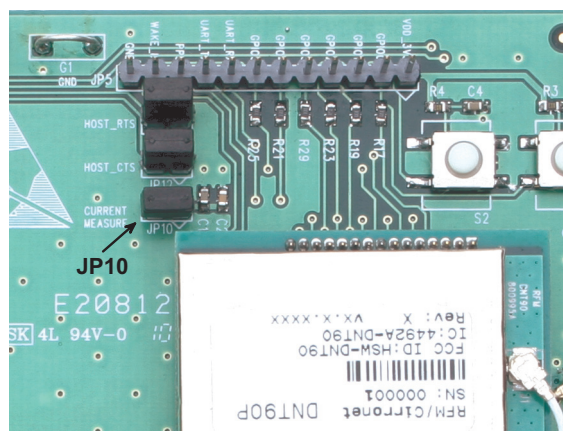


Figure 3

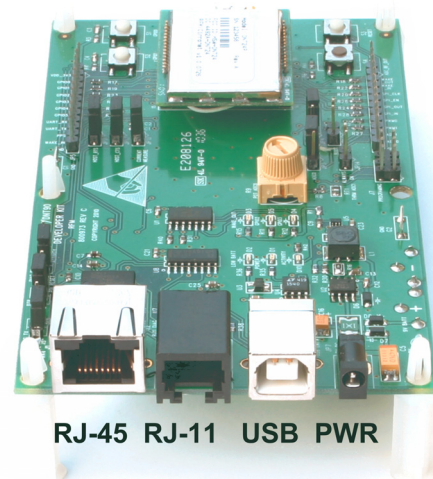


Figure 4

5. As shown in Figure 4, there are three serial connectors and a power connector on the end of each interface board. The RJ-45 connector provides an RS232 interface to the DNT90P's main serial port. The USB connector provides an optional interface to the radio's main serial port.
6. The DNT90 Demo utility program runs on the radio's main port. Many desktop PCs have a built-in serial port capable of operation at 9600 bps. The kit runs satisfactorily at the 9600 bps data rate, but not at its fastest throughput. Use the RJ-45/DB-9F cable assemblies for serial port operation. Connect the Base interface board to the PC. Labels on the bottom of the interface boards specify Base or Remote. Then power the Base with a supplied wall-plug power supply.

- a Optionally, the DNT90 Demo can be run from the USB port. Plugging in the USB cable automatically switches operation to the USB connector. The USB interface is based on an FT232RL serial-to-USB converter IC manufactured by FTDI. The FT232RL driver files are located in the i386 and AMD64 folders on the CD, and the latest version of the drivers can be downloaded from the FTDI website, www.ftdichip.com. The drivers create a virtual COM port on the PC. Power the Base using one of the supplied wall-plug power supplies. Next connect the Base to the PC with a USB cable. The PC will find the new USB hardware and open a driver installation dialog box. Enter the letter of the drive holding the kit CD and click *Continue*. The installation dialog will run *twice* to complete the driver installation.

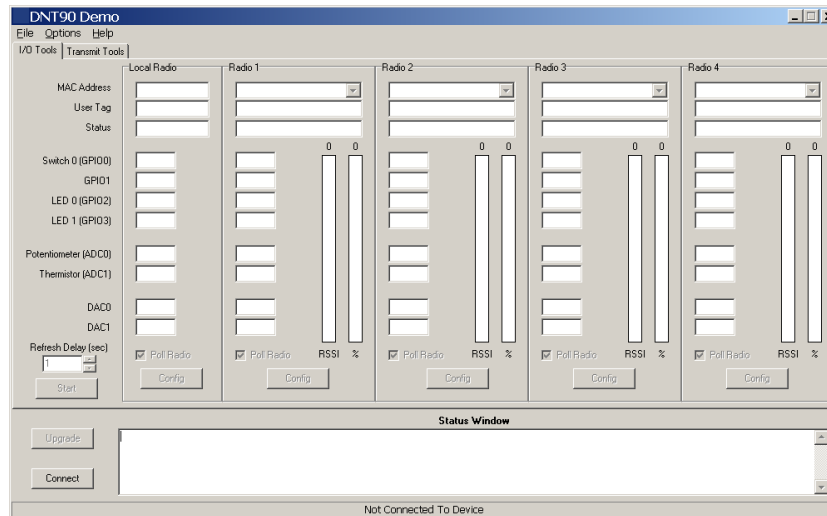


Figure 5

7. The DNT90 Demo utility program is located in the *PC Programs* folder on the kit CD. The DNT90 Demo requires no installation and can be simply copied to the PC and run. Start the Demo on the PC. The Demo program start-up window is shown in Figure 5.
8. Click on *Connect* to open the *Select Comm Port Settings* dialog box (Figure 6). If necessary, set the baud rate to 9600 bps. Set the *CommPort* to match the serial port connected to the Base, either the hardware port or the USB virtual serial port. Then click OK to activate the serial connection.

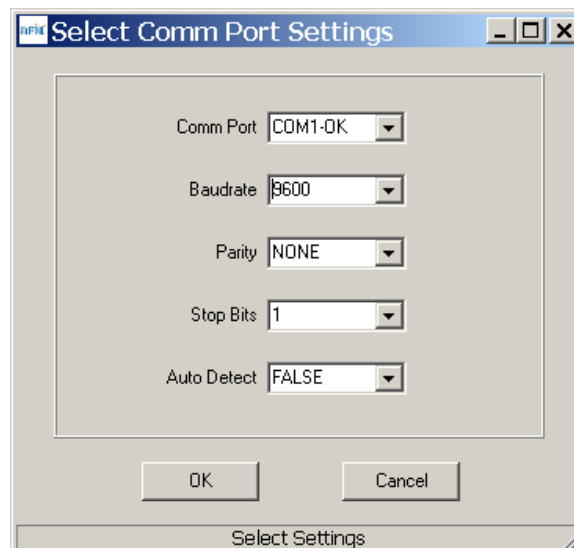


Figure 6

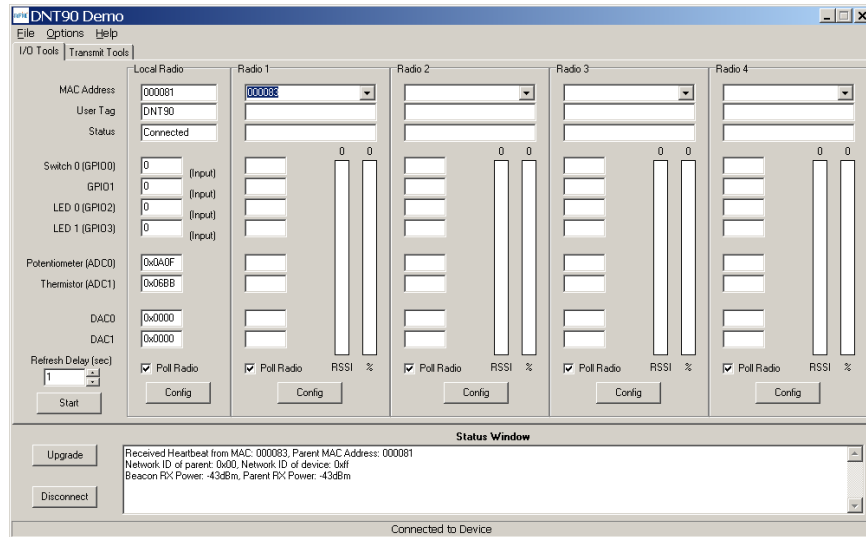


Figure 7

9. At this point the Demo will collect data from the Base, filling in the *Local Radio* column on the Demo window as shown in Figure 7. Next power up the Remote using a wall-plug power supply. The Remote will transmit a “heartbeat” message on power up as shown in the *Status Window*. Click on the drop-down box at the top of the *Radio 1* column and load the *MAC Address* for the Remote from the heartbeat message. Next press the *Start* button using the default 1 second *Refresh Delay*.

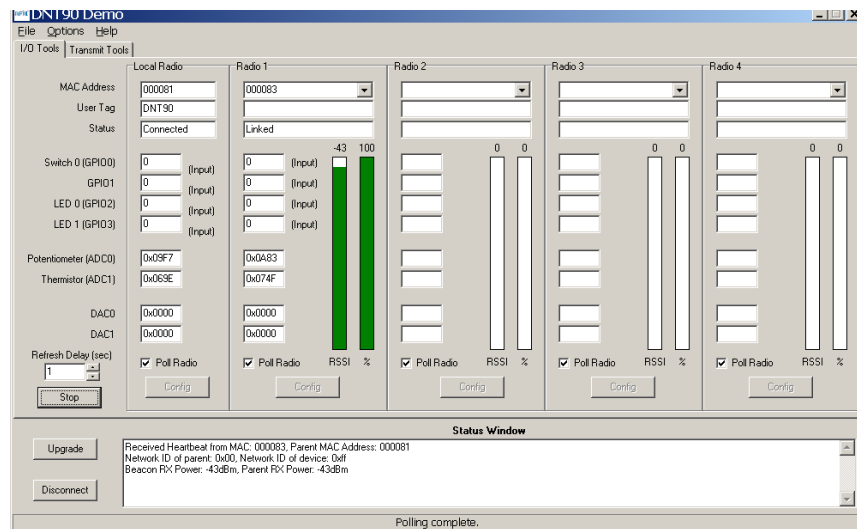


Figure 8

10. The Demo will display data on the Remote in the *Radio 1* column, including bar graphs of *RSSI* (signal strength) and *percent* packet success rate, as shown in Figure 8. Adjusting the yellow pot on the Remote can be observed in the Potentiometer (ADC1) data.
11. If any difficulty is encountered in setting up your Kit, contact Murata’s module technical support group. The phone number is +1.678.684.2000. Phone support is available from 8:30 AM to 5:30 PM US Eastern Time Zone, Monday through Friday. The E-mail address is tech_sup@murata.com.