XBee-PRO® 868 Development Kit
Getting Started Guide

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Using this Guide

Conventions used in this Guide

This icon indicates a hint, or concept that is learned.

This icon indicates that a goal of the kit has been completed.

This icon indicates a warning of the potential for confusion or danger.

Contact Information

For more information about your Digi products, or for customer service and technical support, contact Digi International.

To Contact Digi International	Use
Mail	Digi International World Headquarters 11001 Bren Road East Minnetonka, MN 55343
Phone 8:00 AM - 5:00 PM (U.S. Mountain Time)	1-866-765-9885 toll-free USA and Canada 1-801-765-9885 Worldwide
Online Support	*http://www.digi.com/support/eservice/login.jsp*
Email	support.wizards@digi.com

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Introduction

Thank you for purchasing an XBee-PRO® 868 Development Kit. This kit is designed to make it easy to set up an XBee network, send data from one XBee to another, and adjust the XBee settings. Before you start working with the kit, let's cover some basics.

Goals of the Kit

As you go through the steps in this kit, you will:

1. Set up your XBee-PRO 868 Development Kit.
2. Download and install X-CTU configuration software.
3. Perform a range test.
4. Establish a network.
5. Configure the radios.

Requirements of the Kit

System Requirements

To install the software mentioned in this guide, you will need a PC running Microsoft Windows 2000, XP, Vista or Windows 7.

Additional Documentation

For more information about the software, API operations, AT command modes, or the form factor please refer to the *XBee-PRO 868 Product Manual* available on the Digi Support website.

For more information on configuring and using the X-CTU utility, please refer to the *X-CTU Configuration & Test Utility Software User's Guide*.

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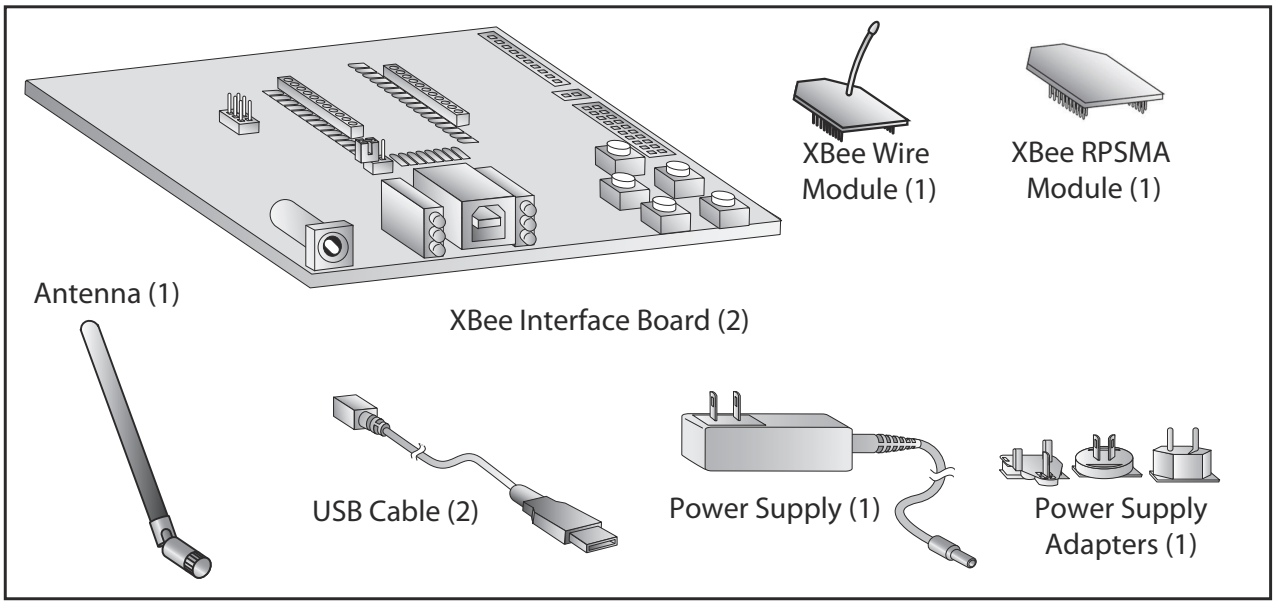
Part 1: Set up your XBee-PRO 868 Development Kit

Identify Kit Components

Carefully unpack and verify the contents of your kit. Your kit should include the following:



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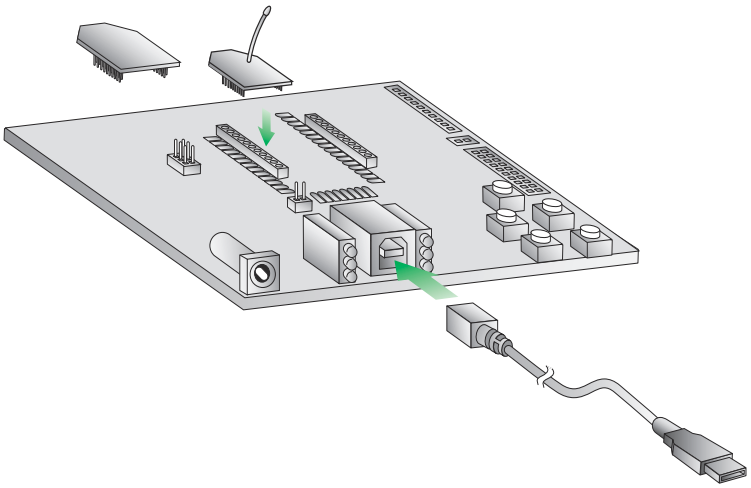
Assemble your Development Kit

To assemble your Development Kit, perform the following steps:

1. Install the modules on the XBee Interface Boards (XBIB) by lining the pins up with the headers and pressing the module into place.
2. Attach the dipole antennas to the modules.
3. Connect the first XBIB to your computer using a USB cable. This first device will be designated as your base radio.
4. Connect the remaining modules and interface boards, and set them aside for now.

You are now ready to run the X-CTU software and to begin configuring your XBee network.



You have just completed Goal #1 - setting up your XBee-PRO 868 Development Kit.

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Part 2: Download and Install X-CTU Software

For proper kit configuration and operation X-CTU software (version 5.15 or later) must be downloaded and installed. A copy of X-CTU software and USB drivers will need to be installed on each computer used in conjunction with this guide.

Installing USB Drivers

The XBee USB interface board is a "plug-and-play" device that should be detected by the PC automatically. If you are using Windows 7 or Vista, the USB drivers should automatically install and a notification will appear in the lower right portion of your screen indicating success or failure.

If the USB drivers fail to install, please follow the USB driver installation instructions found here: *http://www.digi.com/support/kbase/kbaseresultdetl.jsp?id=3214.*

If you are using Windows 2000 or XP, download and install the driver as per the following directions.

To install the USB driver:

1. Download the driver setup file at: *http://ftp1.digi.com/support/driver/FTDI_Windows_Driver_Setup.exe.*
2. Double-click on the setup file. A window will pop up during installation and automatically close when the process is complete.

Installing X-CTU Software

1. Download X-CTU at *www.digi.com/xctu.*
2. Browse to the folder to which you saved the above install file.
3. Double-click on the installer file and follow the X-CTU Setup Wizard.
4. When asked if you would like to check Digi's web site for firmware updates, click **Yes**.
5. After the firmware updates are complete, click **Close**. Updates may take a few minutes, please be patient.
6. Start X-CTU by double-clicking on the X-CTU icon on your desktop, or by selecting **Start > Programs > Digi > X-CTU**.

The X-CTU software is now ready to be used.

You have just completed Goal #2 - downloading and installing the X-CTU configuration software.

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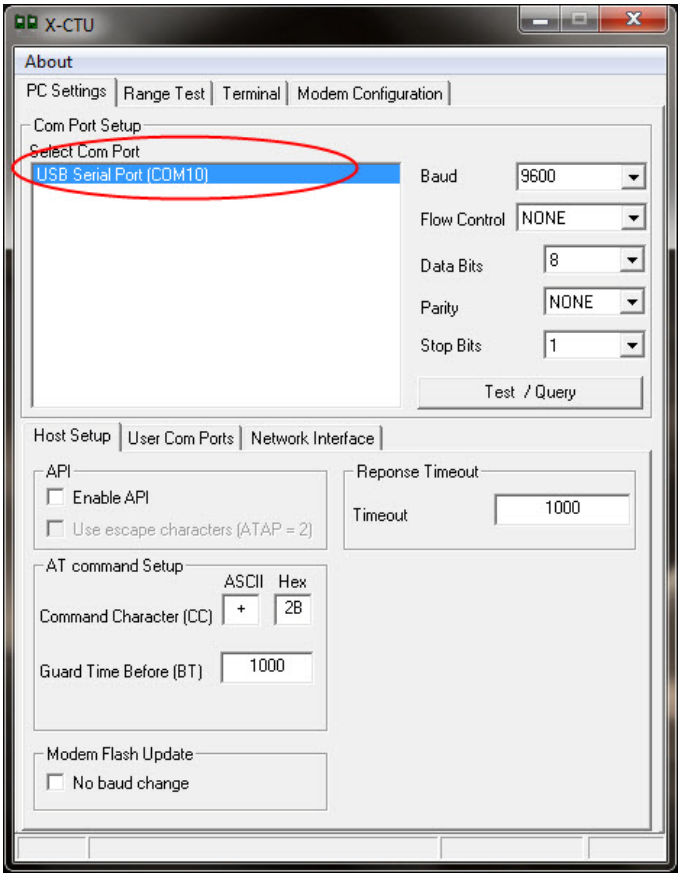
Part 3: Test Communications Link and Establish a Network

Perform a Range Test

Before running a range test, you will need to establish a connection with the X-CTU software:

1. Double-click the X-CTU shortcut on your desktop.
2. Under the PC Settings tab, select the serial COM port associated with the development boards you have just attached to your computer.



3. Verify that the baud rate and data settings match the internal settings of the devices:
   - Baud Rate: 9600
   - Flow Control: NONE
   - Data Bits: 8
   - Parity: NONE
   - Stop Bits: 1
4. On the **Modem Configuration** tab, click **Read**.

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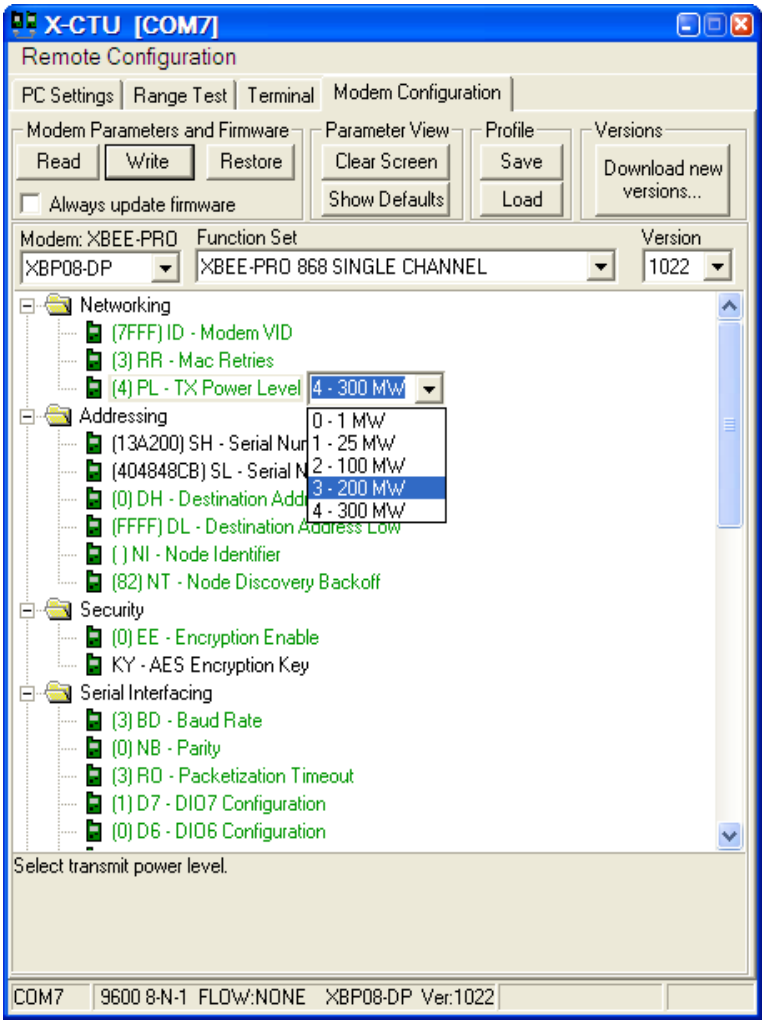
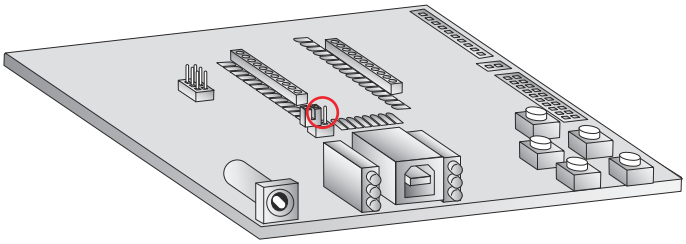
5. Select the PL parameter and choose the appropriate power level from the drop-down menu Please follow these guidelines:
   - PL = 1 (25 mW) or lower is required in Italy.
   - PL = 3 (200 mW) or lower is required when using the enclosed USB interface board from Digi, due to current draw limitations of <400 mA.
6. Click **Write** to save to non-volatile memory.
7. Remove the modules from each interface board and swap interface boards. Repeat steps 4-6 to configure the second RF module with the correct PL setting.



8. Click the **Test/Query** button to verify communication with the radio. A pop-up will be displayed showing status and some basic information.
9. Apply power to the second radio using a power supply in a fixed location. This will be designated as your remote radio.

   Note: You will need to have a jumper at P8 on the loopback header on the XBIB for the remote radio.

Ensure that the P8 jumper is not bridging the two pins together on the base radio. This could cause X-CTU to stall if the jumper is populated and requests are sent to the radio.



10. Select the **Range Test** tab.
11. (Optional) Check the **"RSSI" check box** to enable Received Signal Strength Indicator.

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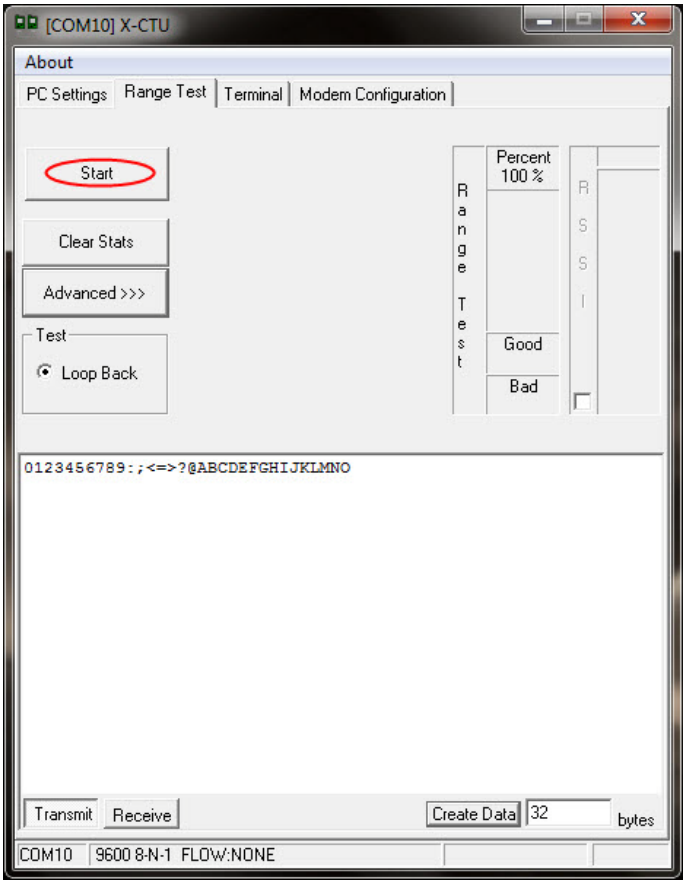
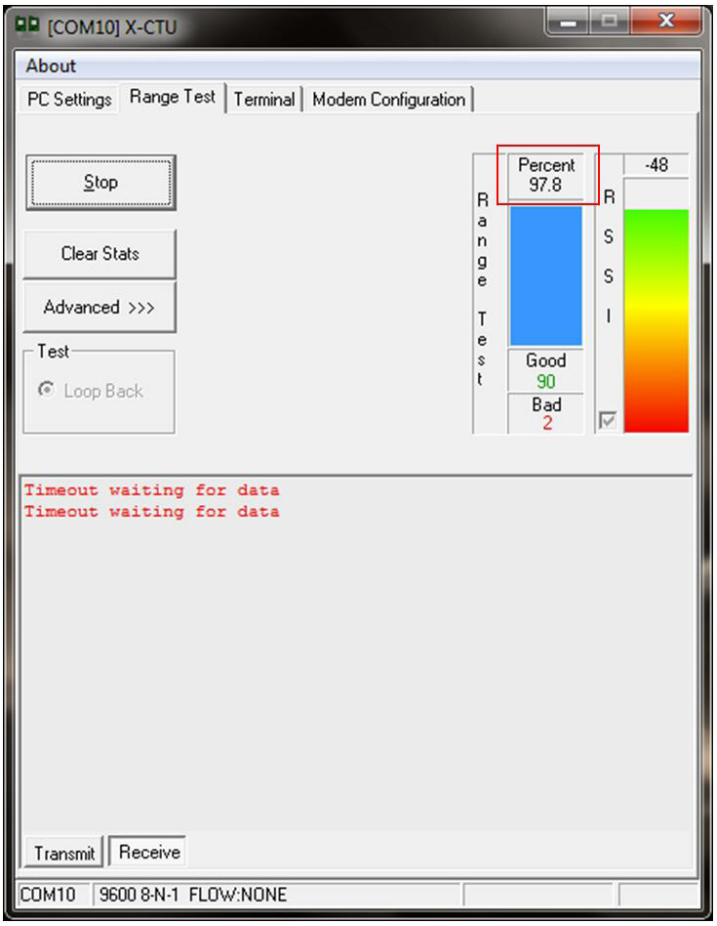
12. Click **Start** to begin the range test.



13. Monitor the link quality by reading the Percent section on the Range Test tab. This section displays the running percentage of good packets sent to the receiving radio and looped back to the base.



As your distance increases beyond the maximum range of the radios, you will start seeing greater packet loss.

14. Click **Stop** to end the range test.

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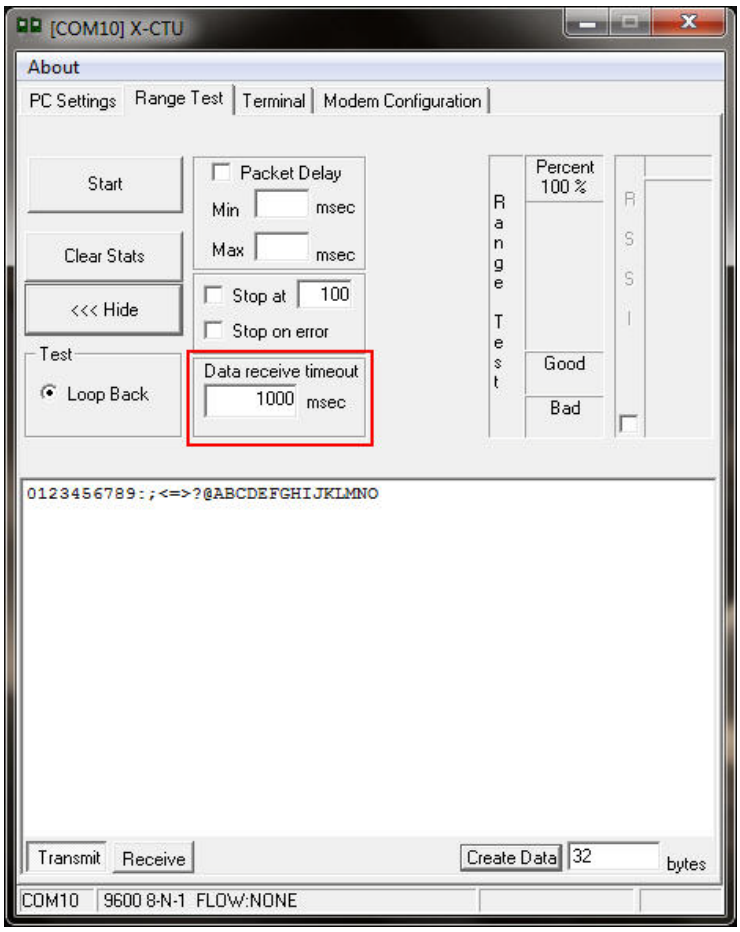
The **Advanced** tab allows you the ability to increase the data receive time out. which defaults at one second. Because of regulatory requirments, you will need to increase the time out to ten seconds (10,000ms).



You have just completed Goal #3 - performing a range test.

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