

# Quick Start Guide

## XBee™/XBee-PRO™ OEM Development Kit

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Create long range wireless links in minutes!

### Development Kit Contents

Item	Qty.	Description	Part Number
XBee-PRO Module	2	(1) OEM RF Module w/ U.FL antenna connector (1) OEM RF Module w/ attached wire antenna	XB24-...UI-... XB24-...WI-...
XBee Module	3	(1) OEM RF Module w/ U.FL antenna connector (1) OEM RF Module w/ attached wire antenna (1) OEM RF Module w/ chip antenna	XB24-...UI-... XB24-...WI-... XB24-...CI-...
RS-232 Interface Board	1	Board for interfacing between modules and RS-232 devices (Converts signal levels, displays diagnostic info, & more)	XBIB-R
USB Interface Board	1	Board for interfacing between modules & USB devices (Converts signal levels, displays diagnostic info, & more)	XBIB-U
RS-232 Cable (6', straight-through)	1	Cable for connecting RS-232 interface board with DTE devices (devices that have a male serial DB-9 port - such as most PCs)	JD2D3-CDS-6F
USB Cable (6')	1	Cable for connecting USB interface board to USB devices	JU1U2-CSB-6F
Serial Loopback Adapter	1	Adapter for configuring the module assembly (module + RS-232 interface board) to function as a repeater for range testing	JD2D3-CDL-A
NULL Modem Adapter (male-to-male)	1	Adapter for connecting the module assembly (module + RS-232 interface board) to other DCE (female DB-9) devices	JD2D2-CDN-A
NULL Modem Adapter (female-to-female)	1	Adapter for connecting serial devices. It allows users to bypass the radios to verify serial cabling is functioning properly.	JD3D3-CDN-A
9VDC Power Adapter	1	Adapter for powering the RS-232 interface board	JP5P2-9V11-6F
9V Battery Clip	1	Clip for remotely powering the RS-232 board w/ a 9V battery	JP2P3-C2C-4I
RPSMA Antenna	1	RPSMA half-wave dipole antenna (2.4 GHz, 2.1 dB)	A24-HASM-525
RF Cable Assembly	1	Adapter for connecting RPSMA antenna to U.FL connector	JF1R6-CR3-4I
CD	1	Documentation and Software	MD0010
Quick Start Guide	1	Step-by-step instruction on how to create wireless links & test range capabilities of the modules	MD0026

## Introduction

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This Quick Start Guide provides step-by-step instruction on how to setup a wireless link and test the modules' ability to transport data over varying ranges and conditions.

## Range Test Setup

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### Requirements for Range Test

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- Two Modules (any combination of XBee & XBee-PRO OEM RF Modules)
- One XBIB-U USB Interface Board (for interfacing between base module & host PC)
- One XBIB-R RS-232 Interface Board (for looping data back to the host from remote module)
- One PC (Windows 98 SE, 2000 or XP) with an available USB port. To complete the range test, X-CTU Software & USB drivers must be installed to the PC [refer to instructions below].

NOTE: Drivers for LINUX and Mac OS X are provided on the CD, but X-CTU Software is only supported by Windows operating systems.

- Accessories (USB Cable, serial loopback adapter, power supply)

### Install X-CTU Software

Double-click "setup\_X-CTU.exe" file and follow prompts of the installation screens. This file is located on the MaxStream CD and under the 'Software' section of the following web page: [www.maxstream.net/helpdesk/download.php](http://www.maxstream.net/helpdesk/download.php)

The X-CTU Software interface is divided into the four following tabs:

- PC Settings - Setup PC serial com ports to interface with the module
- Range Test - Test range of wireless links under varying conditions
- Terminal - Read/Set module parameters and monitor data communications
- Modem Configuration - Read/Set module parameters

### Install USB Drivers (Hardware USB Bus & Virtual Com Port drivers)

The following steps were recorded while using the Windows XP operating system.

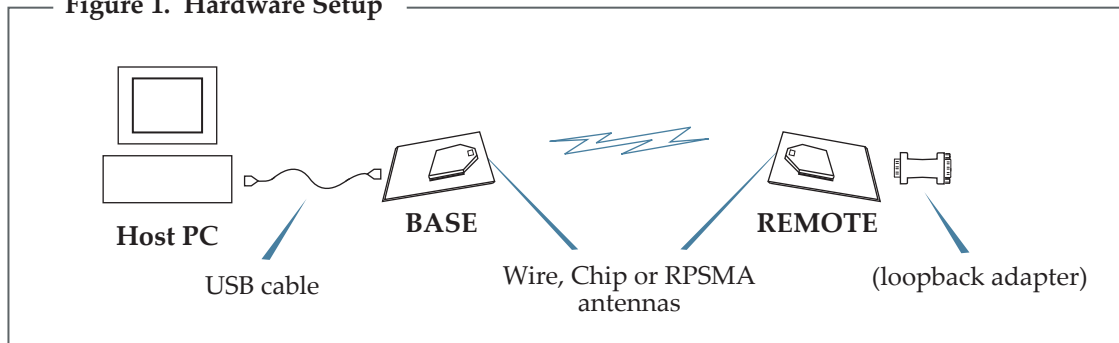
1. Connect the XBIB-U USB interface board to a PC using a USB cable.
  - ▶ After the board is detected by the PC, a "Found New Hardware Wizard" dialog box should appear.
2. Verify the MaxStream CD is inserted into the CD drive.
3. Select "Install from a specific list or location (Advanced)" option; then select the 'Next' button.
4. a. Select the 'Search for the best driver in these locations' option.  
b. Check 'Search removable media (CD-ROM...)' box; then select the 'Next' button.
  - ▶ "Windows Logo Testing" alert box appears.
5. Select the 'Continue Anyway' button.
6. Select the 'Finish' button.
7. Repeat steps 2 through 6 to install the next driver.
8. Reboot computer if prompted to do so.

## Range Test Setup (continued)

### Hardware Setup

1. Choose any two of the five XBee/XBee-PRO Modules and mount them to the USB and RS-232 interface boards.
  - ▶ The module mounted to the USB board will be referred to as the "BASE".  
The module mounted to the RS-232 board will be referred to as the "REMOTE".
2. [Only if using modules that have the U.FL antenna connector]  
Connect the RF Cable Assembly to the U.FL antenna connector and RPSMA half-wave dipole antenna.
3. After installing the X-CTU Software and USB drivers [opposite page], connect the BASE module assembly to the PC using a standard USB cable.
4. Attach the serial loopback adapter to the female DB-9 connector of the REMOTE module assembly.  
  
The serial loopback adapter configures the REMOTE to function as a repeater by looping data back into the module for retransmission [Figure 1].
5. Power the REMOTE through the RS-232 interface board's power connector using the power adapter included in the development kit.  
  
(The BASE is powered through its USB connection.)

Figure 1. Hardware Setup



### Addressing Information (Unicast Mode/Point-to-point by default)

By default, all modules are configured to operate in Unicast Mode with a source address (MY parameter = 0) and destination address (DH = 0 and DL = 0). Under this default configuration, the modules will communicate in Point-to-point/Unicast Mode and retries are enabled [refer to product manual for more information]. This configuration only supports point-to-point communications.

For one module to communicate to many modules, the modules must be configured to operate in Broadcast Mode. Broadcast Mode is enabled by setting the Destination Addresses as follows: DH = 0x00000000  
DL = 0x0000FFFF.

In Broadcast Mode, retries are disabled.

No configuration is necessary to run this range test. Proceed to the back page to complete range test.

## Range Test Completion

Use the "PC Settings" and "Range Test" tabs of the X-CTU Software to:

- Setup a PC Serial Com Port for communications with the BASE module assembly
- Determine the range capabilities of the XBee/XBee-PRO Modules

### Range Test

1. Launch the X-CTU Software: (*Start --> Programs --> MaxStream --> X-CTU*)
- ② Under the "PC Settings" tab [Figure 2], select the PC serial com port from the list that will be used to connect to the BASE module assembly.
3. Select the "Range Test" tab. [Figure 3]
- ④ (Optional) Check the "RSSI" checkbox to enable its display.
- ⑤ Click the 'Start' button to begin the range test.
6. Move the REMOTE (with loopback connector) away from the BASE to find the maximum range of the wireless link.

Figure 2. PC Settings tab

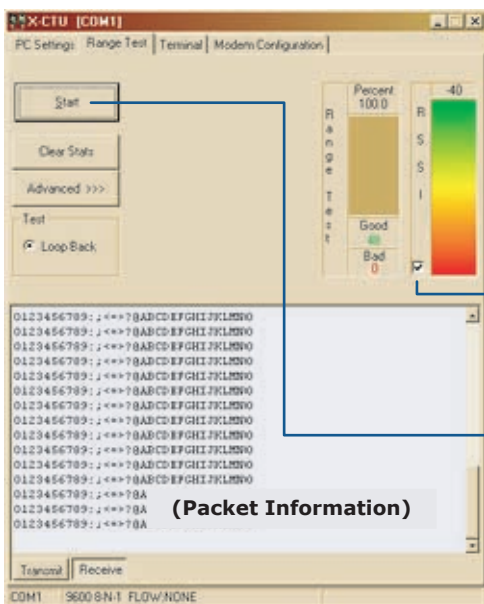
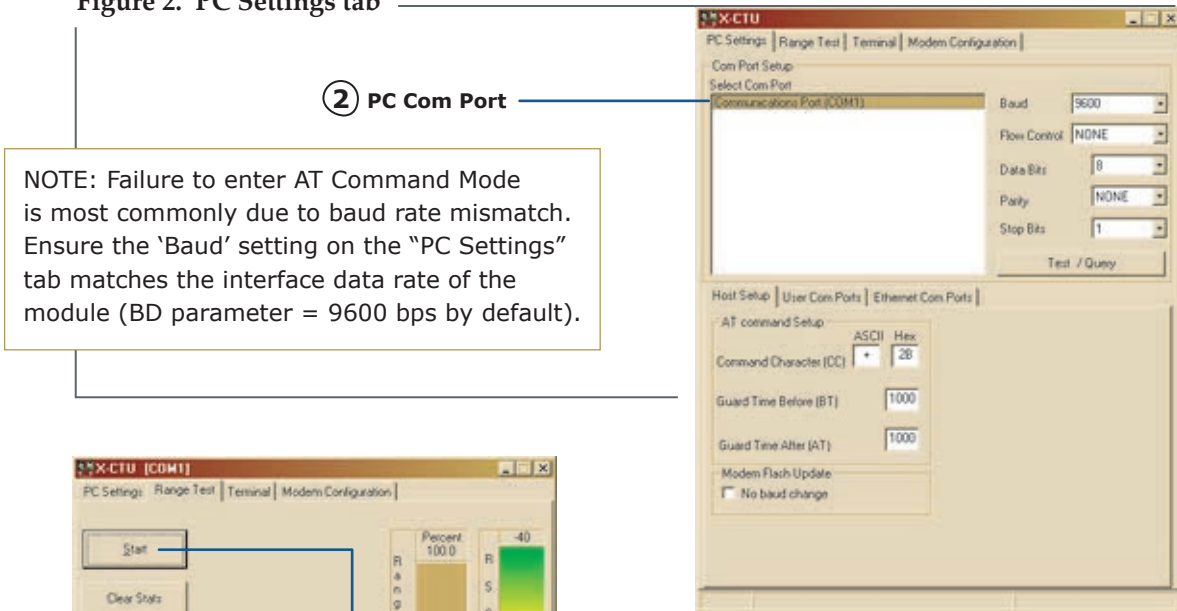


Figure 3. Range Test tab

④ **RSSI** checkbox  
RSSI stands for "Received Signal Strength Indicator"

⑤ **Start/(Stop) button**

**Contact MaxStream** (Office hours are 8am – 5pm U.S. Mountain standard time)

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