XBee Radio -- quick set up.

http://www.moltosenso.com/client/fe/browser.php?pc=/client/fe/download.php

We will use *xBee's* as USB cable replacements.

- xBee's are small, serial radios that can be configured in pairs or small broadcast nets.

We will configure using a piece of software called IRON.

and a piece of hardware called an xBee explorer (in cabinet).

There are lots of ways to do this -- and lots of resources online.

The way that works for you is the right way

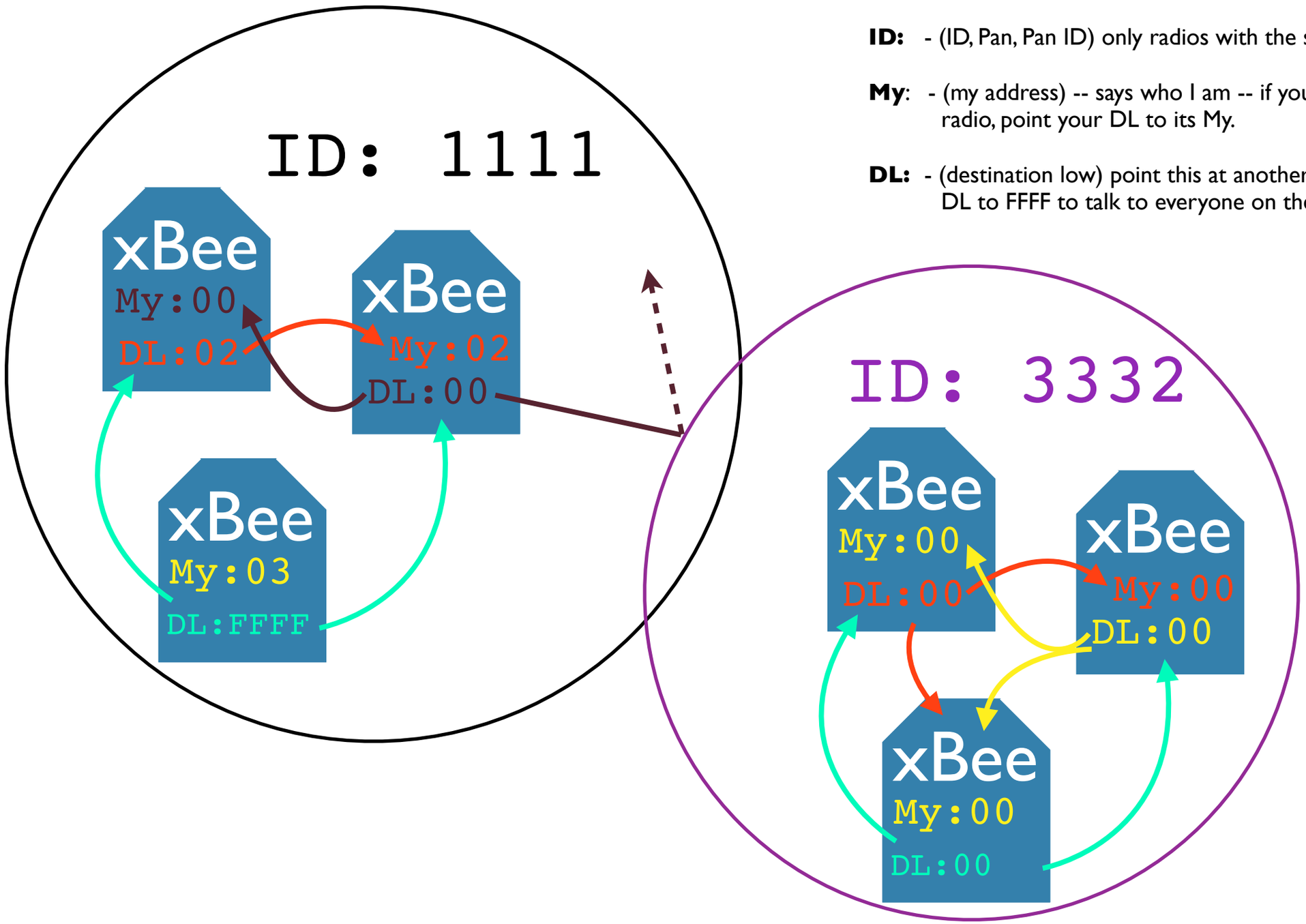
Other resources:

http://www.ladyada.net/make/xbee/ref.html

http://hex705.wordpress.com/2008/11/07/xbee-configuring-the-radios/

We need to configure 4 settings on the radios:

They are: BAUD, ID, MY and DL.



Baud: - Match the baud rate to your Arduino or Processing sketch.

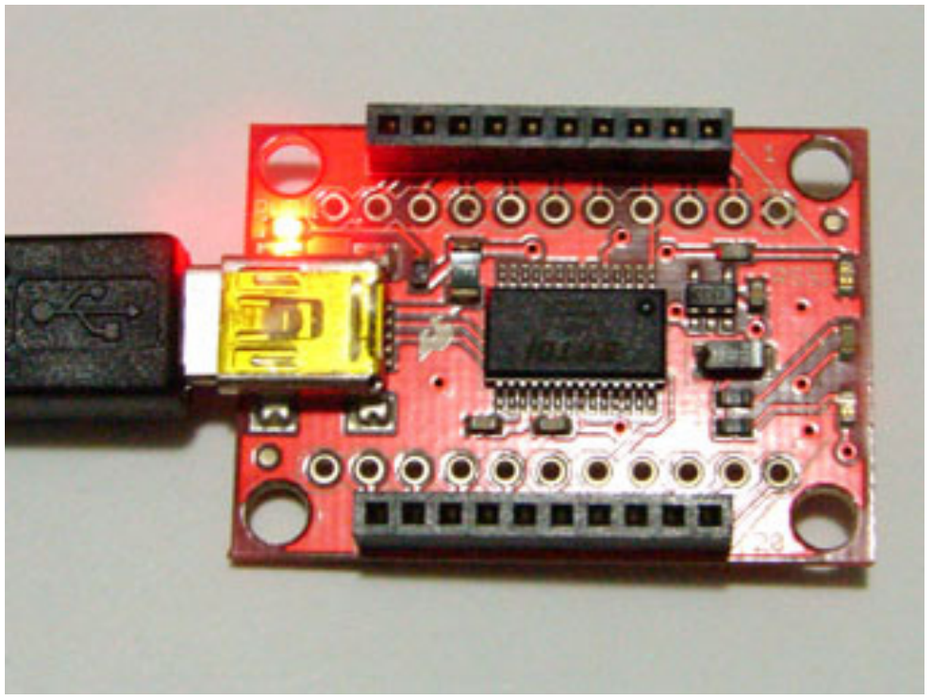
ID: - (ID, Pan, Pan ID) only radios with the same ID can talk to each other

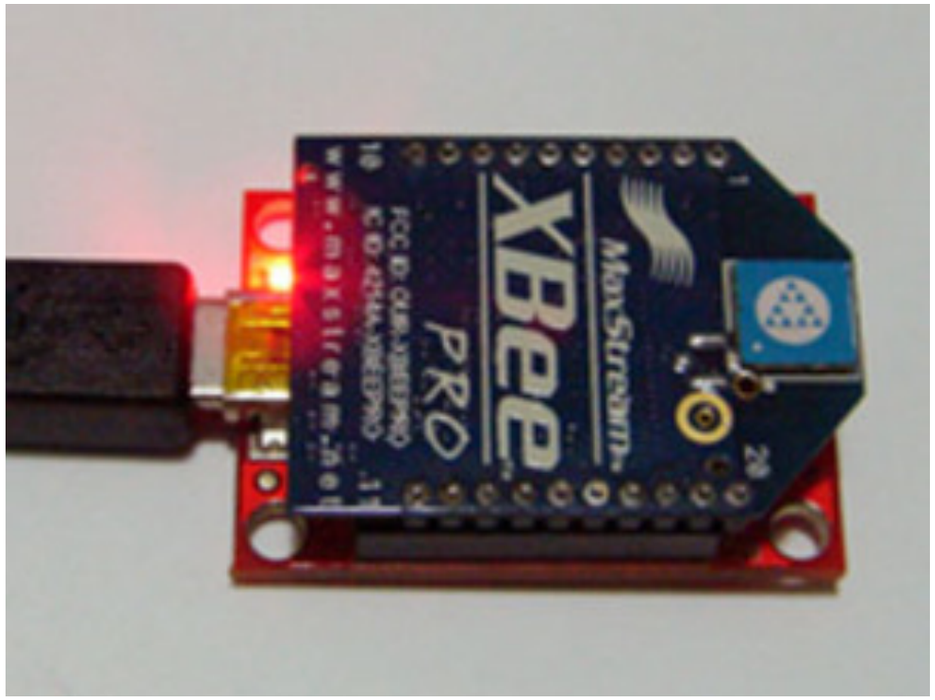
My: - (my address) -- says who I am -- if you want to talk to another radio, point your DL to its My.

DL: - (destination low) point this at another My to talk between them. Set DL to FFFF to talk to everyone on the same ID

Quick Configure

1) Place your first XBee into the explorer as shown below (watch the outline).





NOTE: xBees are 3.3V devices!
(explorer takes care of this)

Quick Configure

OPEN IRON - find your xBee

Click the following in order:

1) scan ports

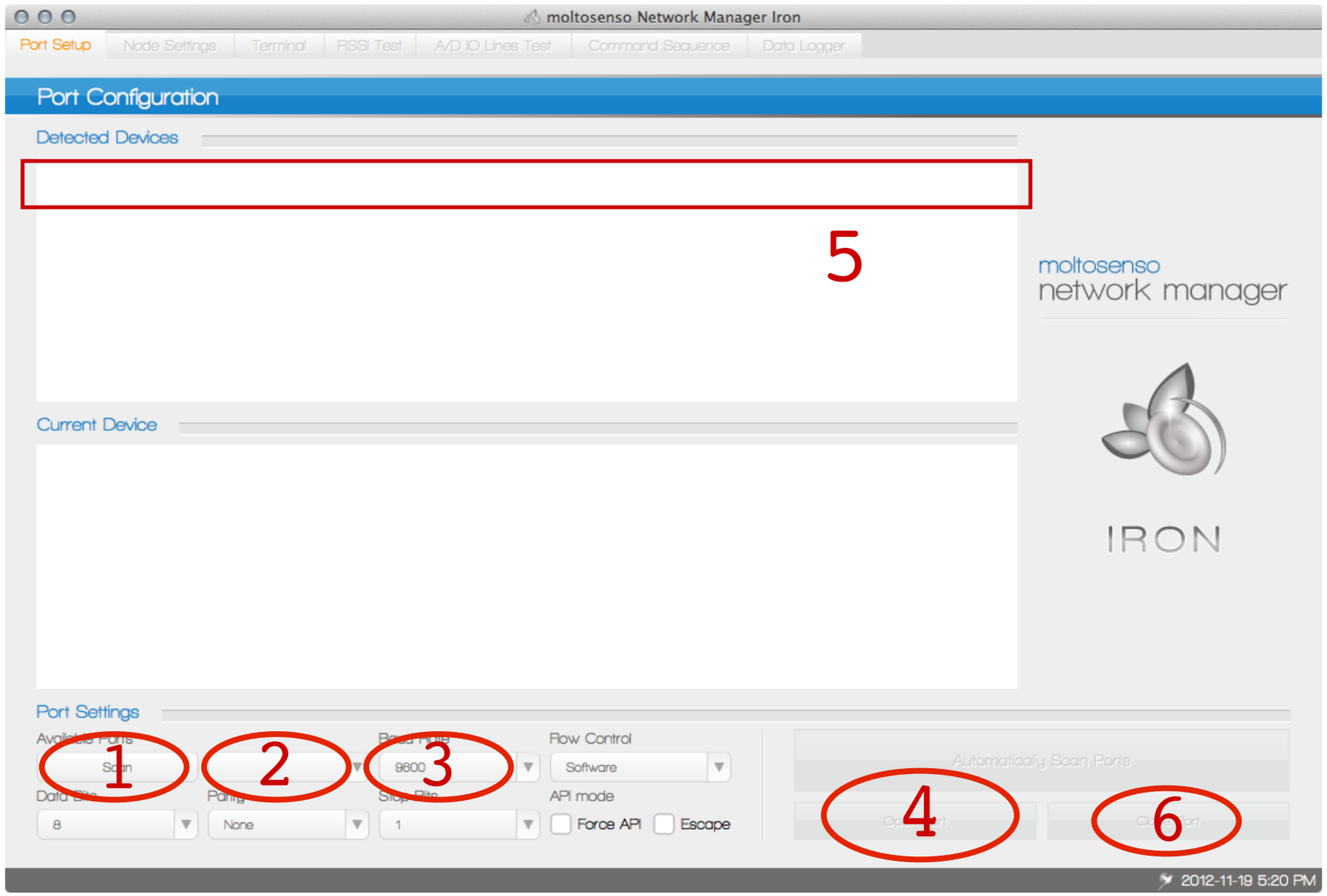
2) select port (something like: /dev/tty.usb-A34532)

3) select baud (this is the radio serial baud) (try 9600 first).

4) open port (click yes)

5) You should get a message in top area -- listing your radio.

6) If you don't get a message -- click close port
AND
go back to 3 and repeat with a different baud until you connect (sorry tedious but thats how this one works).

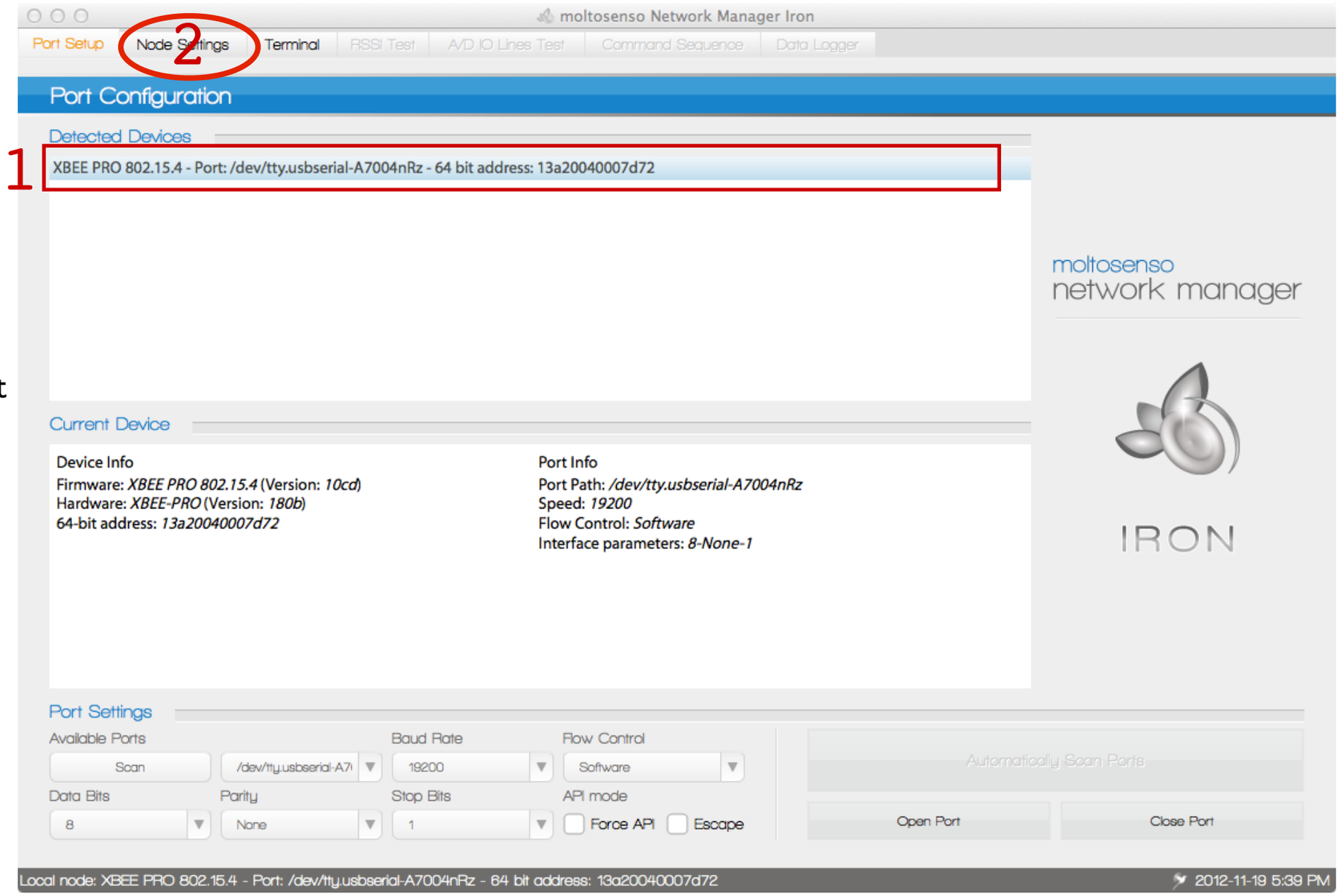


NOTE: xBees are 3.3V devices!

Now that you have found your xBEE

1) Click on the new message

2) Click on Node Settings tab at top.



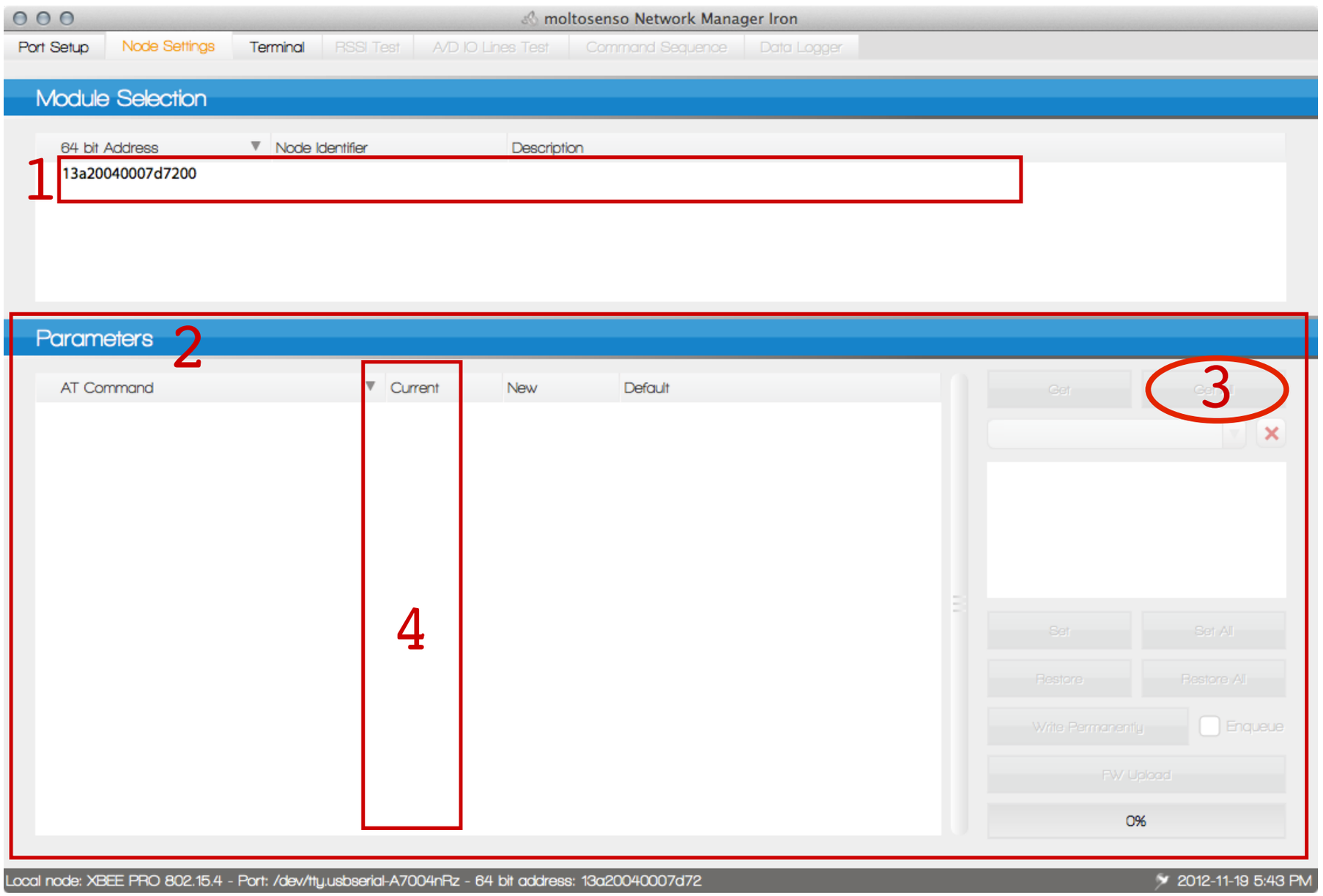
NOTE: xBees are 3.3V devices!

Now that you have found your xBEE

1) Click on the Serial Number and a whole LOT of info appears in the Parameters section (2)

3) click GET ALL to read the current radio settings.

The radio setting show up in the current column.



NOTE: xBees are 3.3V devices!

Now we can configure the radio (BD,ID,MY,DL)

1) We need to set the baud rate.

Under
[1] Serial Interfacing

find

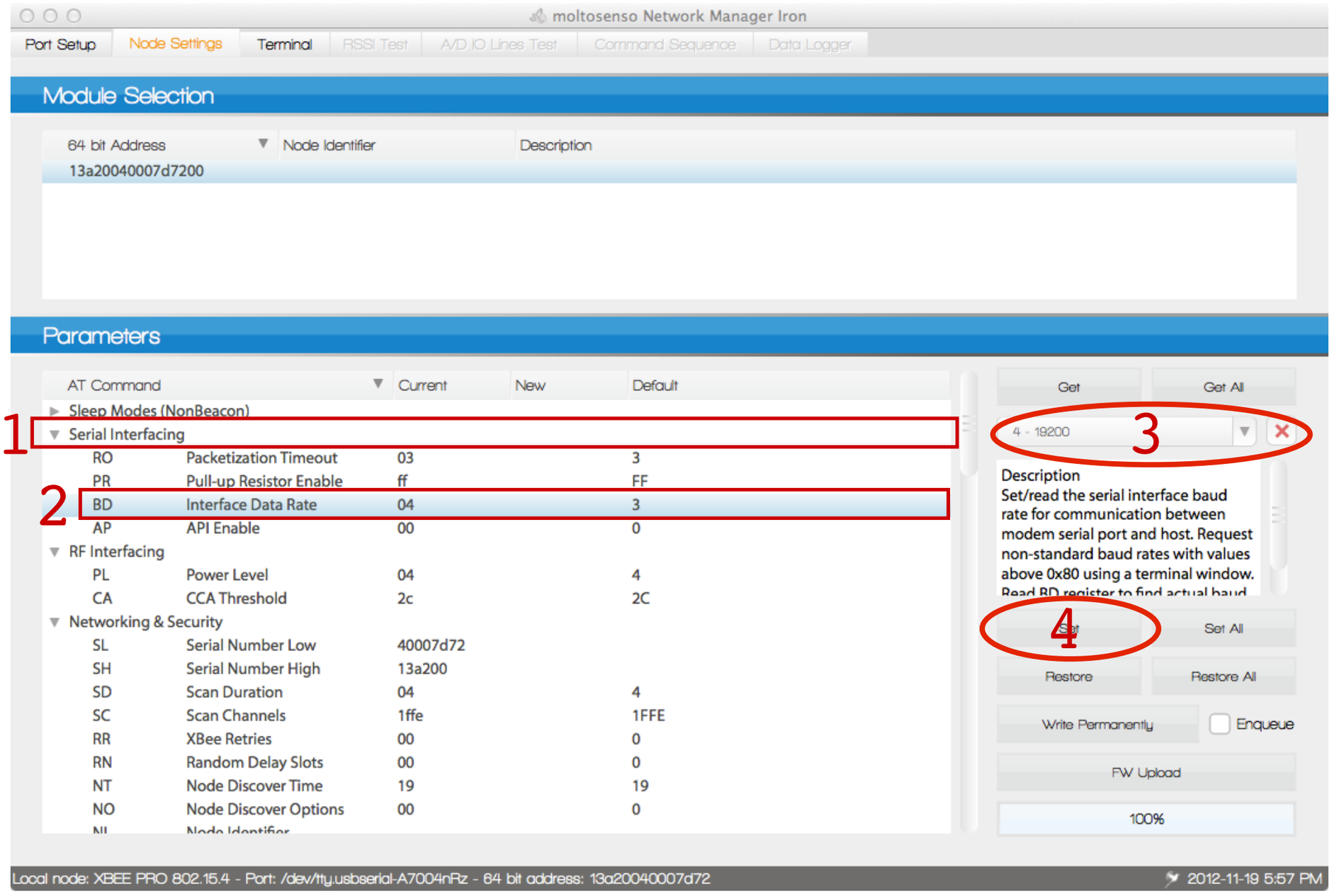
[2] BD (baud) -- they call it Interface Data Rate -- they mean BAUD.

Note the current value -- it will be a number from 0 to 7.

3) To change this go to the drop down on the right [3]. Select the baud you intend to use.

NOTE - once you write this setting permanently you need to go back to the first configure slide and close / open the port at the new baud rate.

4) Click Set



NOTE: xBees are 3.3V devices!

Repeat that pattern to set ID,MY,DL.

We need to set remaining parameters...

Under
[1] Networking and Security

find

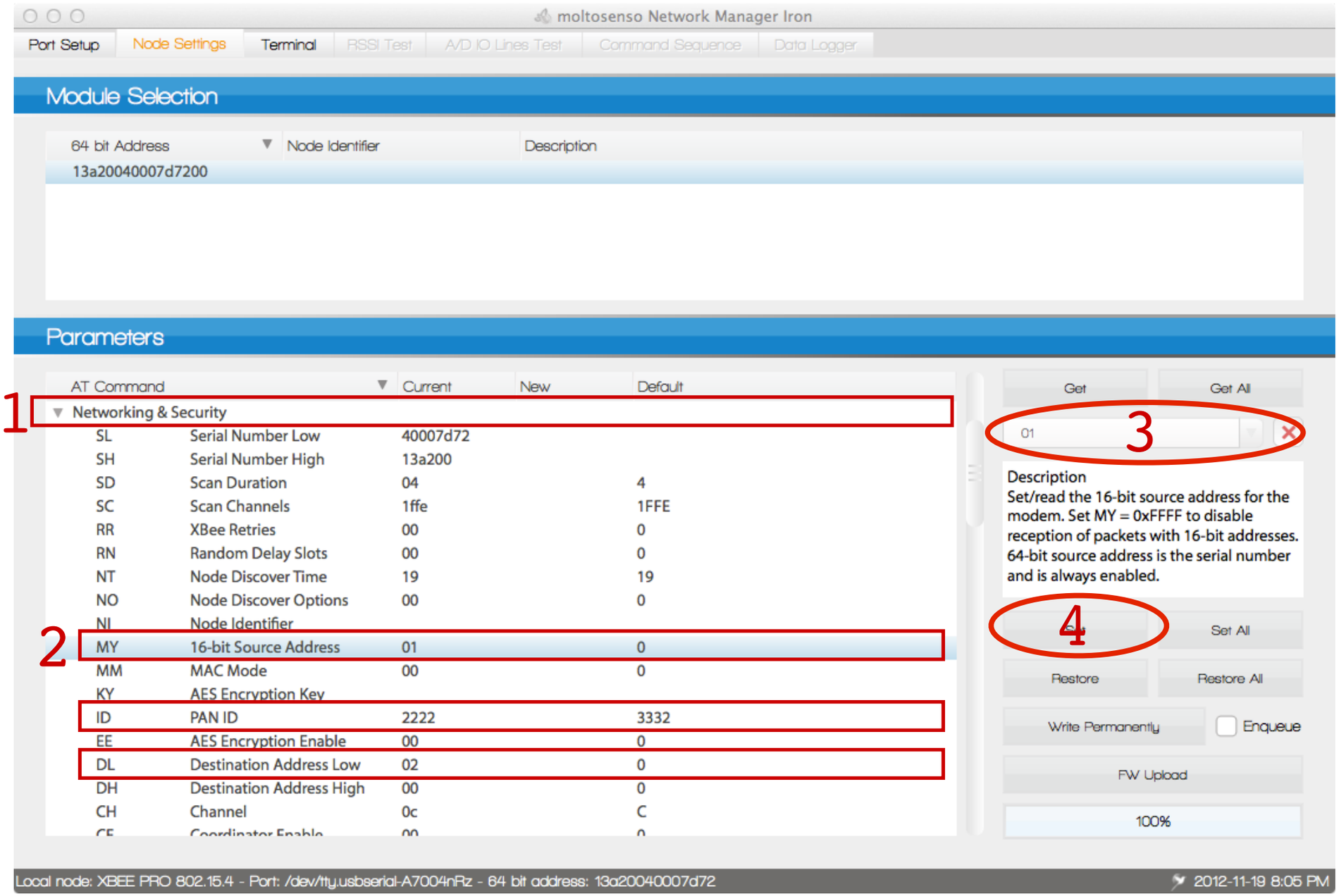
[2] MY, ID and or DL

You set these to an integer of your liking between the values of 0 and FFFF (that's hex).

To set them click the row and goto drop down [3] type your value.

4) Click Set

Go back to [1] and repeat for all parameters you need to change.



NOTE: xBees are 3.3V devices!

Repeat that pattern to set ID,MY,DL.

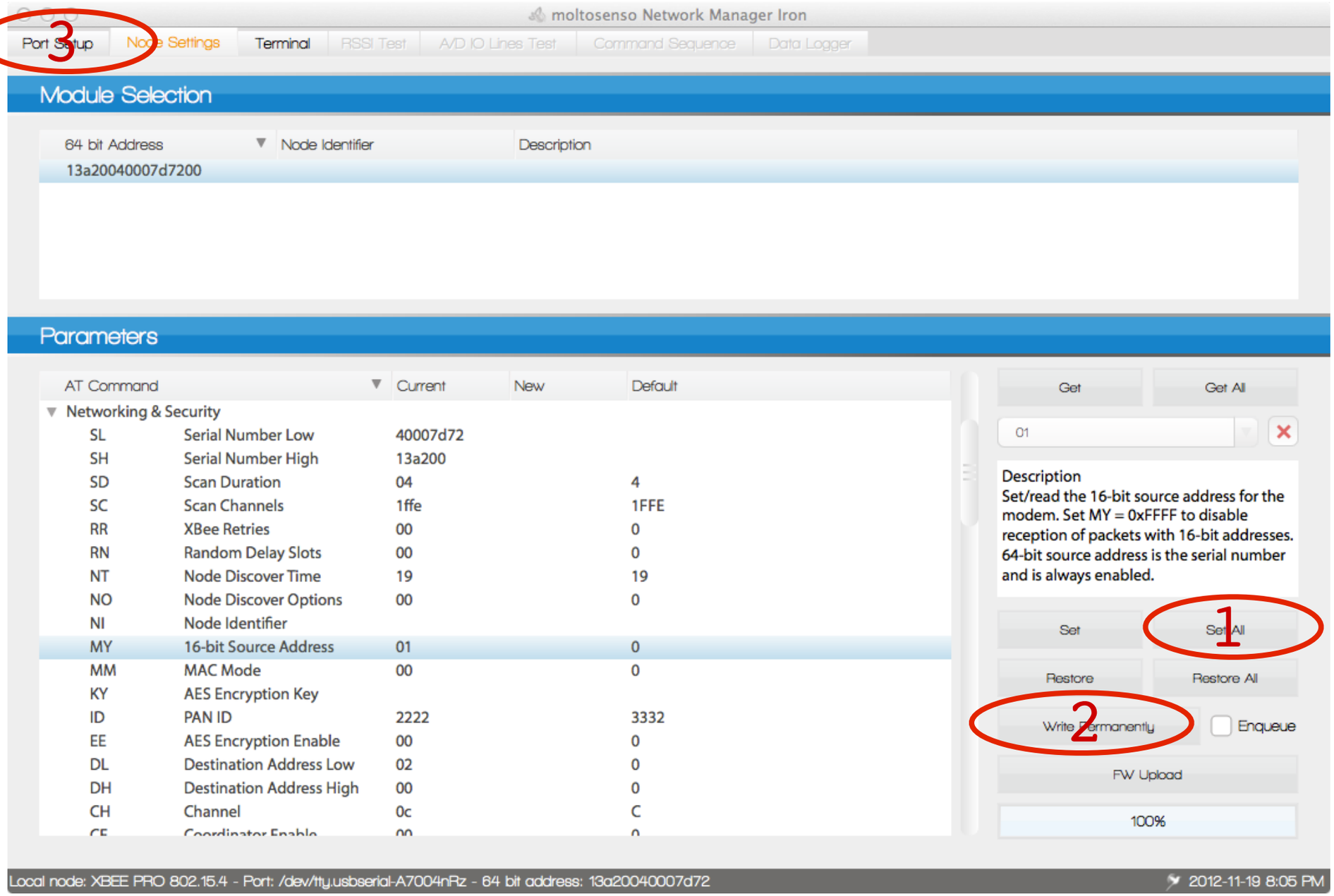
Last step -- we need to write these change to the xBee.

1) click set all (just incase you forgot one along the way.

2) click Write permanently

3) return to Port Setup tab and in the bottom right of it click close port.

NOTE - if you changed the BAUD and execute a *Write Permanently* you need to go back to the first configure slide and close / open the port at the new baud rate or this interface will not be able to connect to the radio.



NOTE: xBees are 3.3V devices!

NOW -- do it all again for the other radio -- make sure the ID and BD all match (its easier). Make sure the DLs point at the MYs.

Parameter	xB1	xB2
ID		
MY		
DL		
BD		

NOTE: xBees are 3.3V devices!

Remember there are lots of ways to do this -- and lots of resources online.

Now we need to set up the circuit to connect the radio to an arduino.

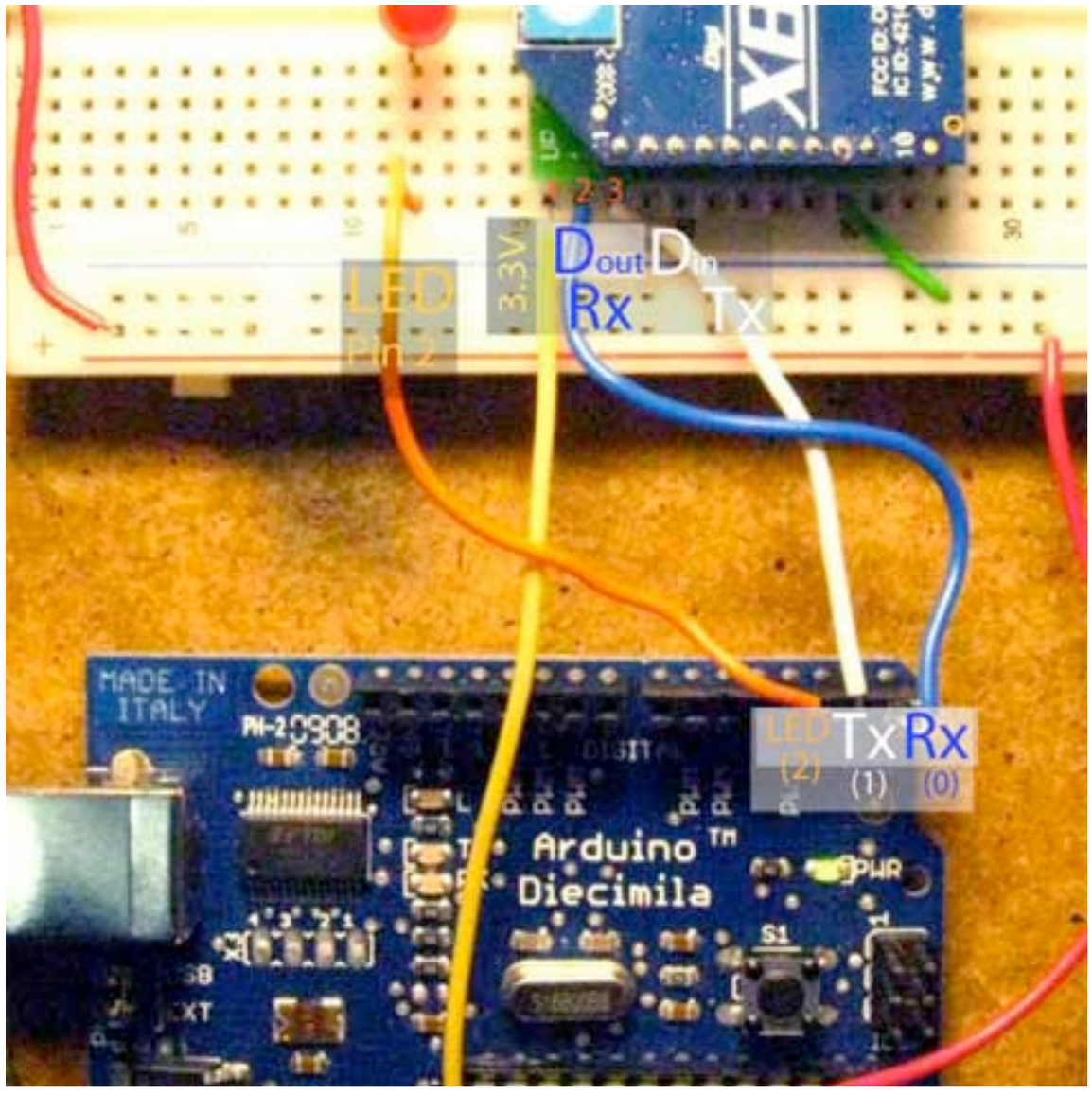
http://hex705.wordpress.com/category/xbee/

The way that works for you is the right way

NOTE: xBees are 3.3V devices!

Wiring Diagram

xBee pin 1, Vcc --> 3.3V (from Arduino) [YELLOW]
xBee pin 2, Dout --> Rx Arduino [Blue]
xBee pin 3, Din --> Tx Arduino [White]
xBee pin 10, GND --> GND Arduino [Green]



Remember -- connect GROUNDS!

The way that works for you is the right way.

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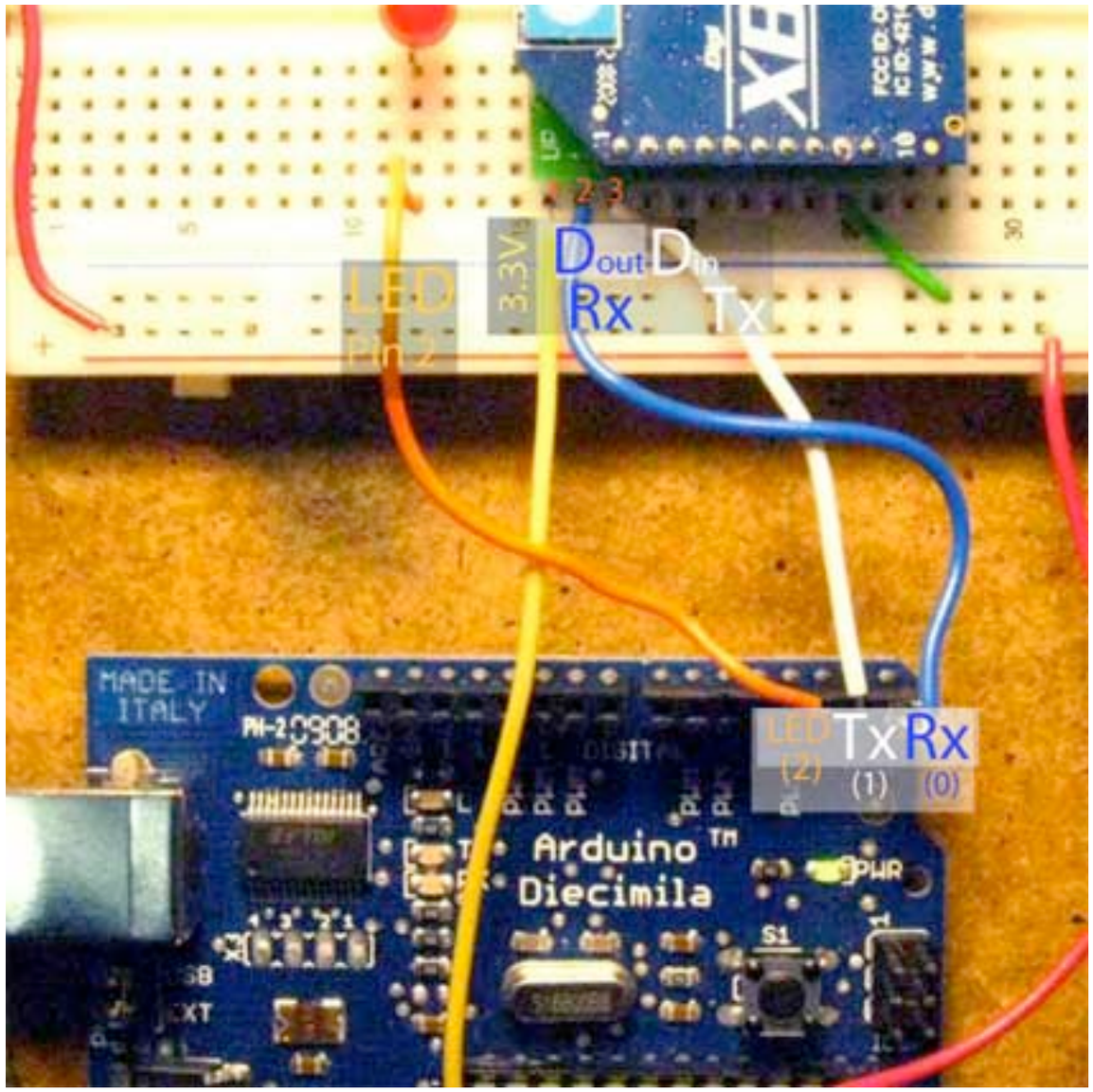
When you want to upload new Arduino code...

You need to disconnect Rx and TX to reprogram your arduino.

Then reconnect them once code is loaded.

Otherwise you will get programming errors / fail.

This is analogous to port conflict with Processing.



NOTE: xBees are 3.3V devices!

Now -- you have 2 radios and they are ready to replace your USB cable.