QUICK START GUIDE
MODEL 210C/M

Before You Begin

- The ESTeem Model 210C and 210M wireless Ethernet radio modems are compatible with many different applications. The most common application is to bridge two or more Ethernet devices in a wireless network. This guide will demonstrate the basic configuration and testing of a pair of 210C's or 210M's. For more detailed information, please see the ESTeem Model 210C/M User's Manual.

- This guide assumes you have a working knowledge of Ethernet networking, TCP/IP protocol and how to identify and set the TCP/IP address on your computer.

- The 210 can be configured using any current web browser software such as Internet Explorer, Firefox (Mozilla) or Google Chrome.

- The following procedure will provide an initial communication link between two or more Model 210's for testing purposes. All the example commands listed in this guide can be adjusted to fit your communication network. Please consult the ESTeem Model 210 User's Manual for more details.

Unpack Contents

Each node in your ESTeem Model 210's network may have different hardware components based upon the final installation location (i.e. Outdoor, Indoor, Point-to-point or Muti-Point). Antenna types, cable lengths, power supplies may be different, but the following items will be required for basic setup:

Model 210C

AA109 Resource Disk

*Test Antenna
(AA20C.1 Displayed)

*Coax Cable

Power Supply
(AA178 Displayed)

Ethernet Cable

*The ESTeem 210C and 210M wireless modems require an antenna connection before testing. If you are using building mount antennas for testing, you will need to physically separate the antennas or use attenuation.

Note: Your accessory model numbers may vary from the above, but you will need to locate each of above items to continue configuration.
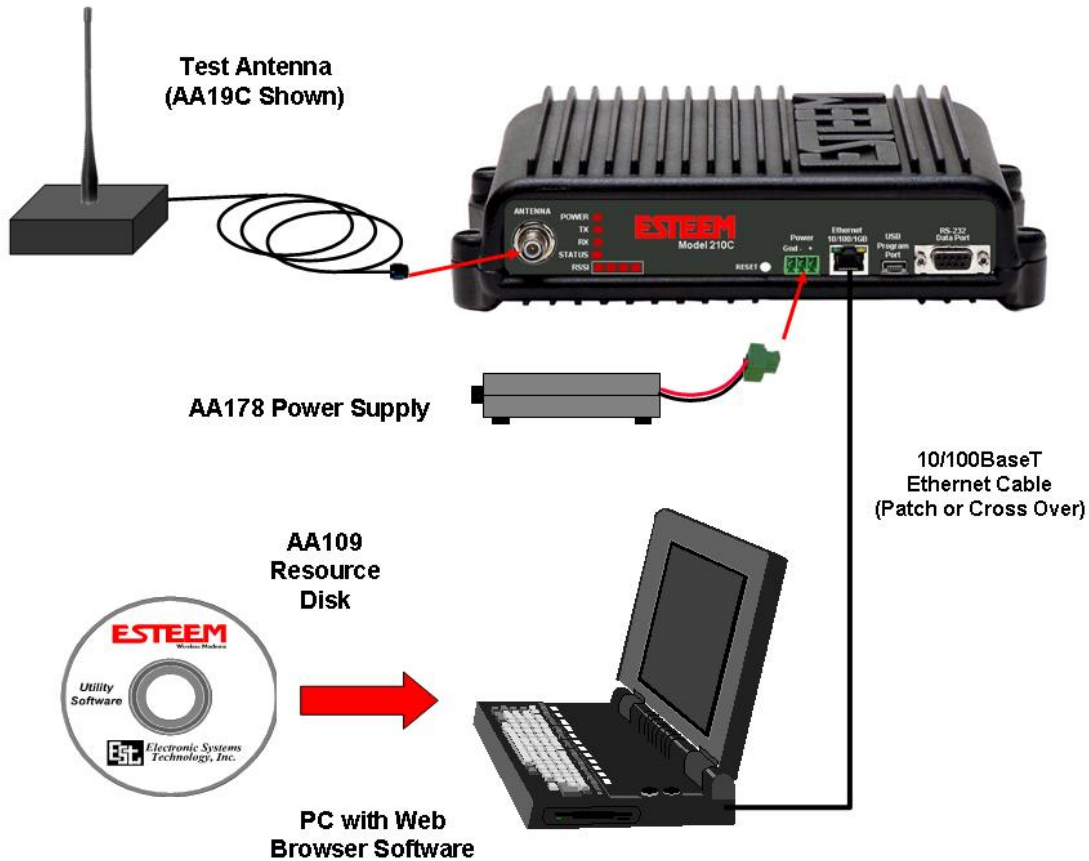
Front Panel Overview

10.8 to 16 VDC Power
Input Connector

Ethernet
Device Port

USB Radio
Configuration Port

RS-232C
Device Port

Begin Programming

1. Assemble the ESTeem Model 210 using the following:

Power and Data Connection

Test Antenna
(AA19C Shown)

AA178 Power Supply

10/100BaseT
Ethernet Cable
(Patch or Cross Over)

AA109
Resource
Disk

PC with Web
Browser Software

2. The Model 210 will link to other Model 210's on the network via the WLAN Media Access Control (MAC) address found on the bottom of the case. This MAC address is six hexadecimal digits separated by colons and is configured at the factory. Every MAC address in the world is unique and can not be changed. Complete the following chart to aid in your configuration:

Name	Serial Number	IP Address	Ethernet MAC	WLAN MAC
Example Modem 1	E-14001	172.16.8.101	00:04:3f:00:01:01	00:04:3f:00:01:02

3. Configuration of the Model 210 is completed through the product's internal web server. To access this configuration page, you will need to enter the 210's IP address in your web browser. The IP address set at the factory is Class B (i.e. 172.16.x.x) address and is printed on the Quality Assurance sheet sent with each 210. If the factory default address matches your network configuration, please proceed to **Using Setup,** otherwise continue to step 4.

4. **Install the ESTeem Model 210 Discovery Utility**. The ESTeem Model 210 Discovery Utility will allow you to configure the IP address to match your network. Install the 210 Discovery Utility on your computer by inserting the Resource Disk in your CD drive.
Note: The ESTeem Resource Disk is stand-alone copy of the ESTeem Web site (Figure 1). Navigation of the Resource Disk is as simple as using your web browser. All technical documentation, User's Manuals and the ESTeem Utility Program is available on the disk.

Place the ESTeem Utility CD in your CD-ROM drive. The CD will auto load the ESTeem main page
Note: If the page does not auto load, open your web browser and set your address line to D:\index.html (Where D: is the drive letter for your CD-ROM drive).

From the Support Menu select ESTeem Utilities and click on Download ESTeem Model 210 Discovery Utility.

Figure 1 –ESTeem Resource Disk Main Page

Note: This program is saved in a compressed file format. Microsoft Windows XP® or newer operating systems will open the file directly, but other operating systems will require a common compression program such as WinZip available for download at http://www.winzip.com

210 Discovery Utility

The Model 210 Discovery Utility will display all ESTeem 210C and 210M wireless modems connected to the computer's Ethernet connection regardless of their current IP address. This utility will allow modification of the modem's IP address to the network of the computer for further configuration through a Web browser. ESTeem Models 210C and 210M supported.

Note: The Model 210 Discovery Utility requires a Java Runtime that must be installed to use the utility. Java is available for free download at the following URL: http://www.java.com

- 210 Discovery Utility

Extract the Discovery.exe file listed in the window to your computer and double click on the icon to run the program. The 210 Discovery Utility uses a Java Runtime and will

Figure 2- ESTeem Utility Download

need to be installed on your computer before running the Utility. Please follow the link on the web site or Resource CD for installation.

5. **Set IP Address on the Model 210**. Connect the Model 210 to your computer either directly to the Ethernet card or through an Ethernet Switch using a CAT-5e Ethernet cable. The Ethernet port on the 210 supports Auto-Negotiation so either a patch cable or crossover cable will work. Open the ESTeem Discovery Program and press the Discover EST Modems button. The Model 210 will be displayed in the program by the Ethernet MAC address and Current IP Address (Figure 3).
   Note: The SSID and Mode of Operation will be adjusted later in the configuration.

MAC Address	IP Address	Netmask	Gateway	SSID	MODE	ID	VERSION	MODEL
00:04:3F:00:7D:0A	172.16.8.126	255.255.0.0	172.16.1.1	0	AP Bridge		2013060512...	210C1
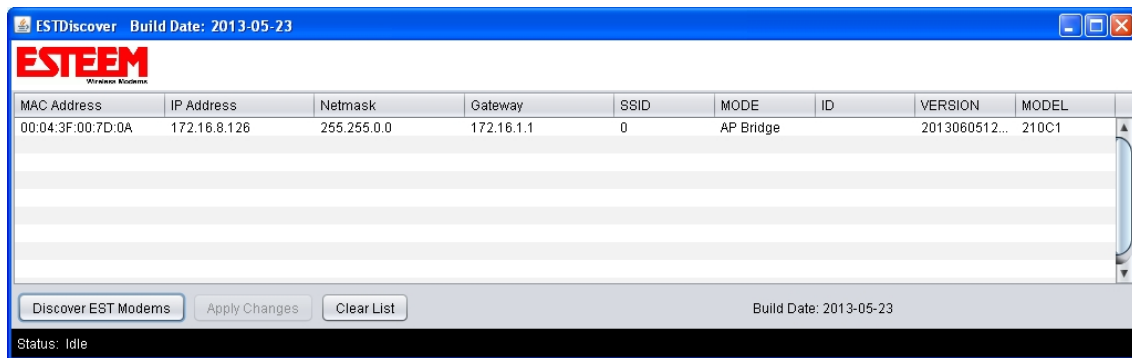
Figure 3 – Discovery Program Main Page

Double-click on the configuration parameter you wish to change (Figure 4) and enter an IP address and Subnet Mask for the 210 that matches your network subnet (Modified fields will show in yellow). Press the Apply Changes button to save this to the ESTeem. The 210 will disappear from the list and will reboot. Proceed to ESTeem Setup to continue configuration.
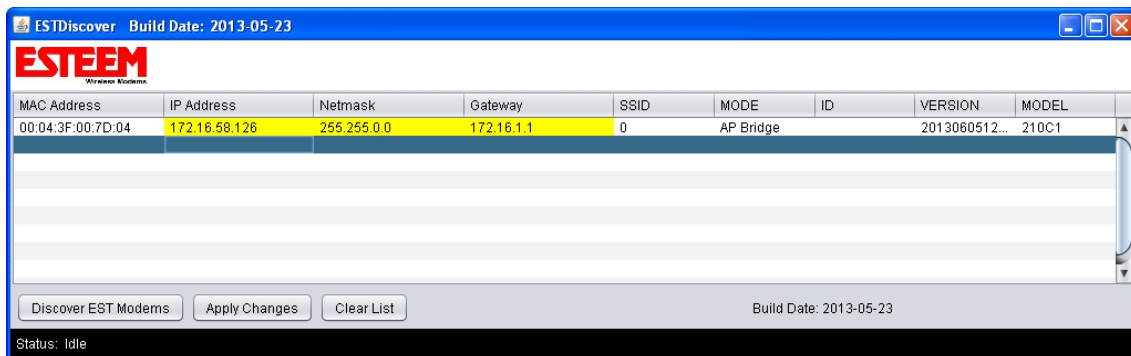

MAC Address	IP Address	Netmask	Gateway	SSID	MODE	ID	VERSION	MODEL
00:04:3F:00:7D:04	172.16.58.126	255.255.0.0	172.16.1.1	0	AP Bridge		2013060512...	210C1

**Figure 4 – Change IP Address Window**

Setup Programming

You should now be ready to configure the Model 210 through your web browser. Open the web browser program and enter the IP address of the ESTeem in the address line and press enter.

1. When prompted, enter **admin** for both the username and password and press the <u>OK</u> button.
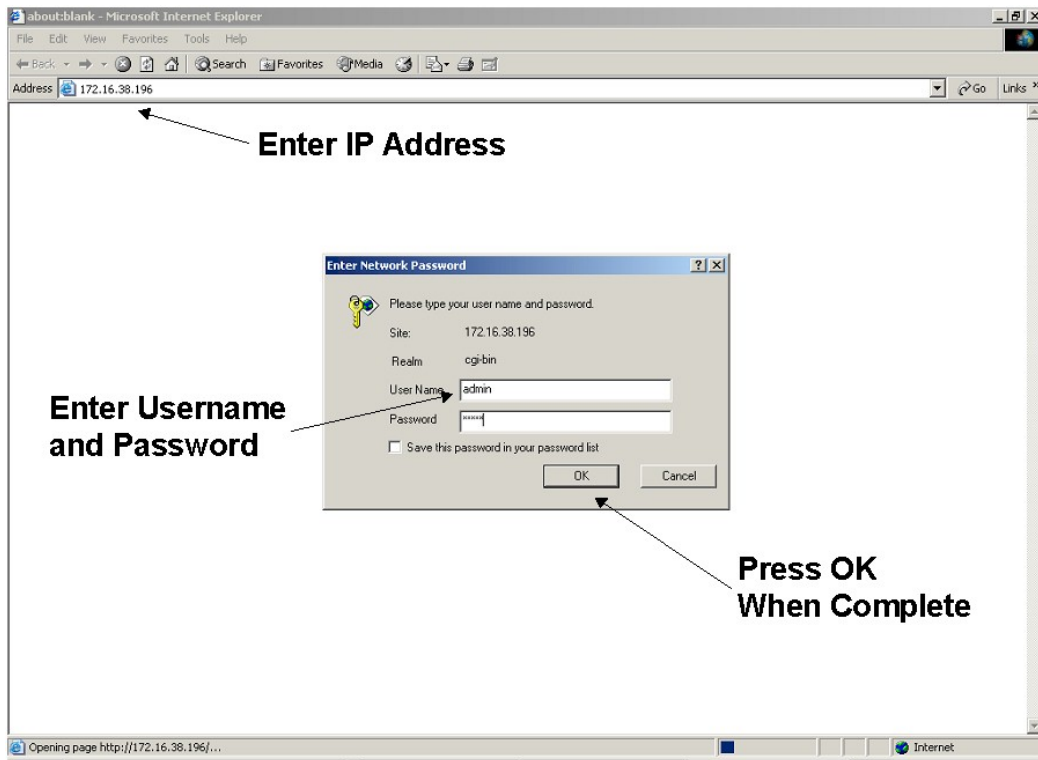
Step 1 – Sign-In Screen

2. Select <u>Setup</u> on the top menu.

3. Press the drop-down menu and select <u>AP Bridge</u> and press the *Next* button.
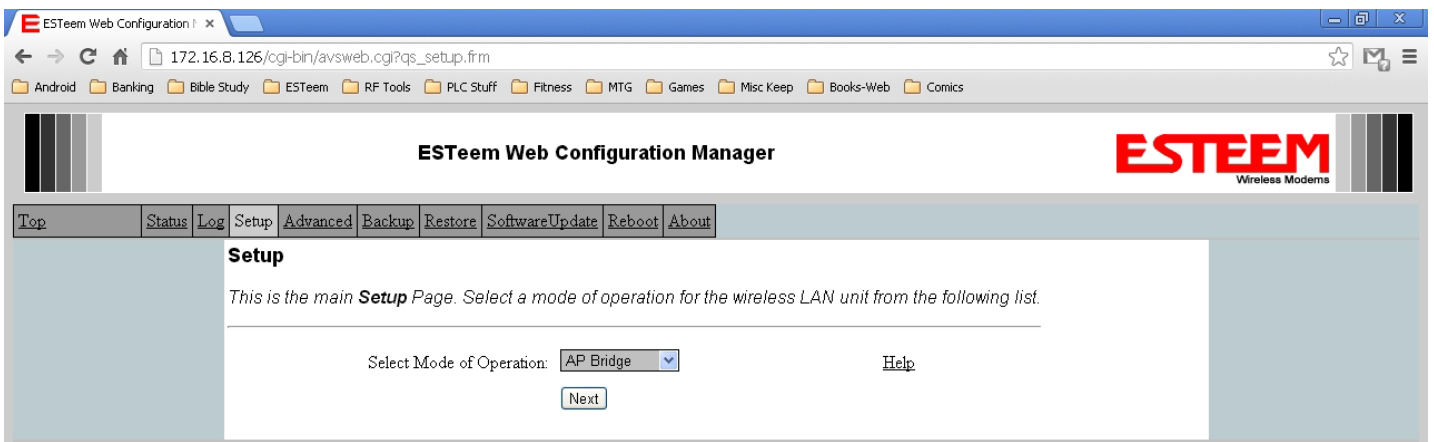
Step 3 – Select AP Bridge

4. Set the DHCP services to OFF and press the *Next* button.

ESTeem Web Configuration Manager

Top | Status | Log | Setup | Advanced | Backup | Restore | SoftwareUpdate | Reboot | About

Setup

Select whether you wish to use DHCP client services or whether you wish configure a DHCP server. Selecting "None" will take you through a manual setup of IP addresses as opposed to using DHCP services.

Selected mode of operation: AP Bridge

DHCP services on the **bridge** interface: ● None   Help
                                            ○ Client
                                            ○ Server

[Previous] [Next]

Step 4 – Turn DHCP Off

5. Verify the IP address and netmask for the 210 (listed as **bridge** device) are correct press the *Next* button.

ESTeem Web Configuration ×

172.16.8.126/cgi-bin/avsweb.cgi?qs_ap_bridge_1.frm

Android Banking Bible Study ESTeem RF Tools PLC Stuff Fitness MTG Games Misc Keep Books-Web Comics

ESTeem Web Configuration Manager

Top | Status | Log | Setup | Advanced | Backup | Restore | SoftwareUpdate | Reboot | About

Setup

*Enter values for the following fields for manual IP setup of the **bridge** device.*

Mode of operation: AP Bridge

DHCP Services: Off

Enter IP address for **bridge** device: [172.16.8.126]   Help

Enter netmask for **bridge** device: [255.255.0.0]   Help

[Previous] [Next]

Step 5 – Verify IP Address

6. Enter in the Gateway address in the default route IP address block and any DNS information for the server. If this is not know or on a network without a Gateway, leave these items at factory default.

Step 6 – Enter Gateway Address

7. All 210 modems in the network must have the same Service Set Identification (SSID). The SSID is a number from 0 to 255 and the default SSID is 0 and we will use this for demonstration. Enter the SSID as listed above and turn off the wireless security features by selecting the NONE radial. Press the *Next* button to continue.

Step 7 – Enter SSID

8. The mobile client access control list will be displayed. Leave configuration at default and press the *Next* button to continue.

Step 8 – Access Control List Screen

9. All Model 210s on the same network must use the same RF Bandwidth. Most licensed frequency channel use 12.5 KHz bandwidth. Leave the 210 at a default value of 12.500 KHz and press the *Next* button.

Step 9 – RF Bandwidth

10. All Model 210s on the same network must use the same Datarate. It is best to start with the default 64.800 Kbps datarate and press the *Next* button.


Step 10 – RF Data Rate

11. Enter the operating frequency for the 210 either divisible by 6.25 KHz or 12.5 KHz. All Model 210 wireless modems must be on the same operating frequency. Press the *Next* button to continue.
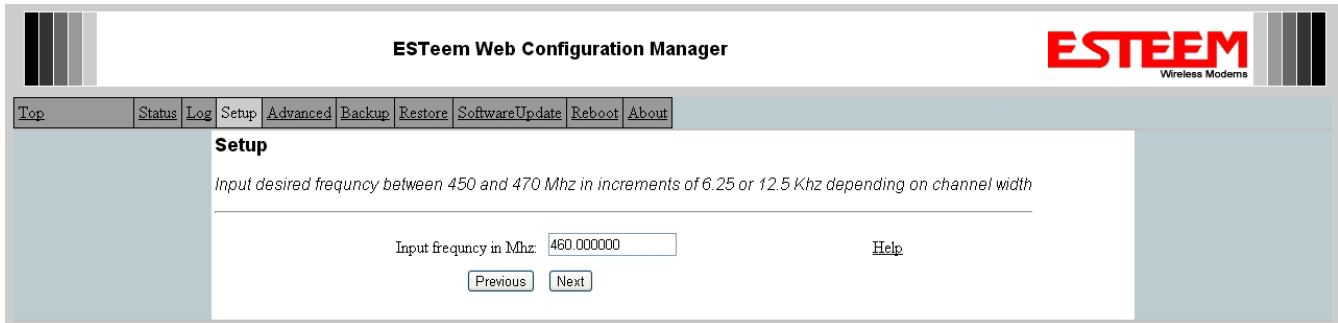
Step 11 – Set RF Frequency

12. Configure the repeater peer list by selecting Enable the repeater capability radial to YES (Below). Press the *Add* button to the right of the repeater peer table.
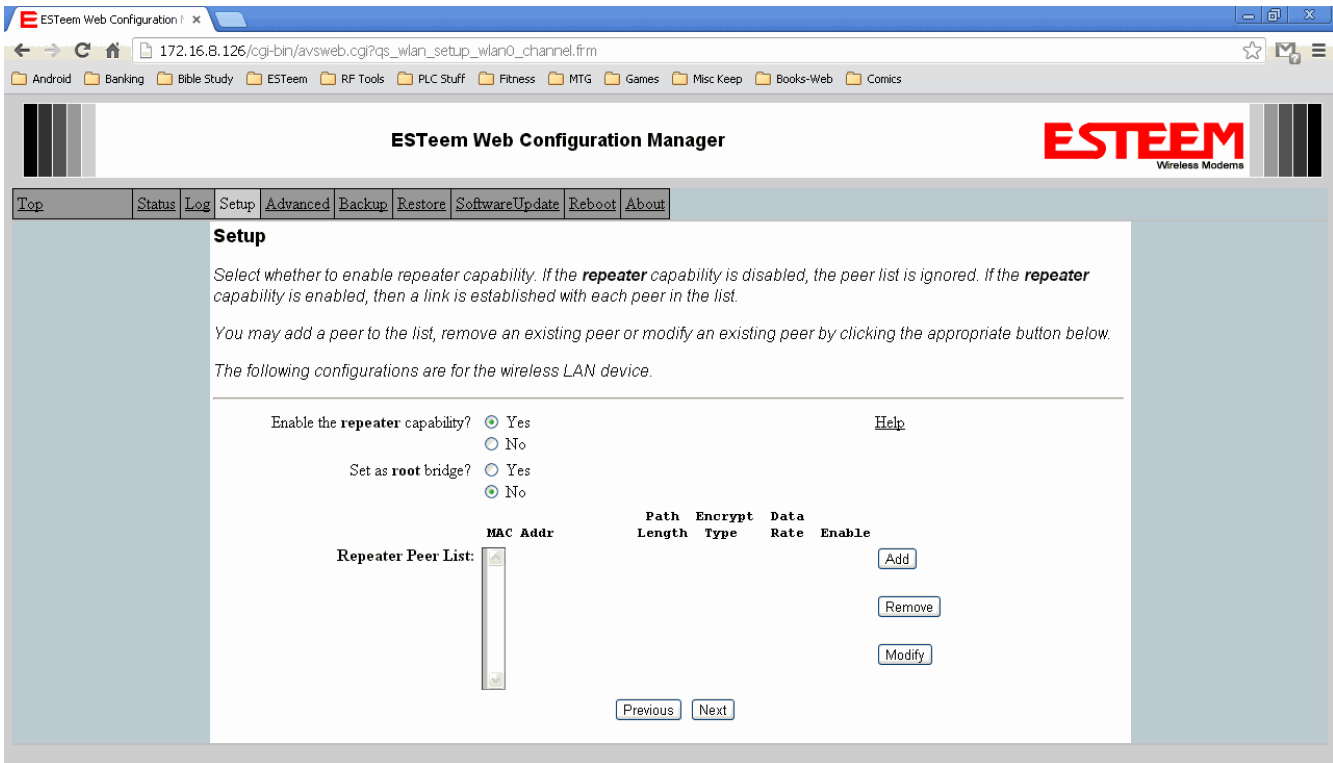
Step 12 – Repeater Peer

13. Using the chart created in the **Begin Programming** section of this guide, enter the Wireless MAC (WLAN MAC) address of the opposite 210 (the 210 this unit you are programming will communicate with) in the Peer 1 – MAC Address field (right). Leave the Priority and Cost settings at the default values and change the Enable Link radial to Enable and press the *Create Repeater Peer* button. Press the *Next* button.

Example Addresses				
Name	**Serial Number**	**IP Address**	**Ethernet MAC**	**WLAN MAC**
210 We Are Programming	E-14096	172.16.48.189	00:04:3f:00:01:01	00:04:3f:00:01:02
Opposite 210 We Will Create Wireless Link	E-14034	172.16.38.114	00:04:3F:00:0B:00	00:04:3F:00:11:02

Step 13 – Configure Peer Table

14. The serial port configuration screen will be displayed. Leave all configuration at default and press the *Next* button to continue.

15. Press the *Commit Changes* button and the modem will save all the changes made and reboot. The reboot time is approximately 1 minute to be ready for operation.

16. Complete all steps in this **Setup Programming** section for the other Model 210's you will be testing before moving on the Testing Communication section.

Testing Communication Link

After you have configured at least two of the Model 210 wireless Ethernet modems for operation, you can verify communication with each the following steps:

Status Light – The quickest source of link status is to view the Status Light on the face of the 210. If the Status light is solid, the Model 210 has a connection to another Model 210 listed in the Peer Table.

Status Screen/Peer Table – To view further information on the status of the communication link (such as connection speed, signal strength and last update time) you can open the Status Screen from the Web Interface. After press the Status tab at the top of the screen the Status: Summary will be displayed showing the status of all ports and memory in the 210. Under the Wireless Status heading, click on the View Peer Table. The Peer Table will list all wireless activity seen by the 210 and how it is classified.

Find the opposite 210 in the Repeater Peers list and information such as signal strength (in dBm) and time/speed of last data packet will be displayed.

Repeater Peer Table

Ping Testing – The easiest method for testing the efficiency of data flow between the ESTeems is to conduct a Ping test to the opposite modem's IP address. This will test all links in the Ethernet Bridge.

```
Command Prompt                                                    _ □ ×

C:\>ping 172.16.38.196 -t

Pinging 172.16.38.196 with 32 bytes of data:

Reply from 172.16.38.196: bytes=32 time<10ms TTL=64
Reply from 172.16.38.196: bytes=32 time<10ms TTL=64
Reply from 172.16.38.196: bytes=32 time<10ms TTL=64
Reply from 172.16.38.196: bytes=32 time<10ms TTL=64
Reply from 172.16.38.196: bytes=32 time<10ms TTL=64
Reply from 172.16.38.196: bytes=32 time<10ms TTL=64
Reply from 172.16.38.196: bytes=32 time<10ms TTL=64
Reply from 172.16.38.196: bytes=32 time<10ms TTL=64
Reply from 172.16.38.196: bytes=32 time<10ms TTL=64
Reply from 172.16.38.196: bytes=32 time<10ms TTL=64
Reply from 172.16.38.196: bytes=32 time<10ms TTL=64
Reply from 172.16.38.196: bytes=32 time<10ms TTL=64
Reply from 172.16.38.196: bytes=32 time<10ms TTL=64

Ping statistics for 172.16.38.196:
    Packets: Sent = 13, Received = 13, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum =  0ms, Average =  0ms
Control-C
^C
C:\>_
```