

ESTEEM

Wireless Modems

ESTeem Network Configuration Utility User's Guide



ELECTRONIC SYSTEMS TECHNOLOGY, INC.

Author: _____ **Date:** _____

Name: Eric P. Marske

Title: Product Support Manager

Approved by: _____ **Date:** _____

Name: D. Brent Strecker

Title: V.P. Engineering

Approved by: _____ **Date:** _____

Name: Tom L. Kirchner

Title: President

Electronic Systems Technology, Inc.

Building B1

415 N. Quay Street

Kennewick, WA 99336

Phone: 509-783-9092

Fax: 509-783-5472

E-mail: market@esteem.com

Web Site: www.esteem.com

Copyright© 2010 by Electronic Systems Technology, Inc.

All rights reserved. Printed in the United States of America. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of Electronic Systems Technology.

Overview

The ESTEem Network Configuration (ENC) Utility is a software program designed to greatly simplify the configuration of your ESTEem Model 195E wireless Ethernet network. The ENC Utility will allow graphical, point-and-click configuration of your network routing, and then configure each ESTEem wireless modem for the network as designed. The ENC Utility will eliminate the need to program or update each ESTEem wireless modem individually. The ENC Utility can send all wireless modem configuration changes simultaneously to a new or existing network.

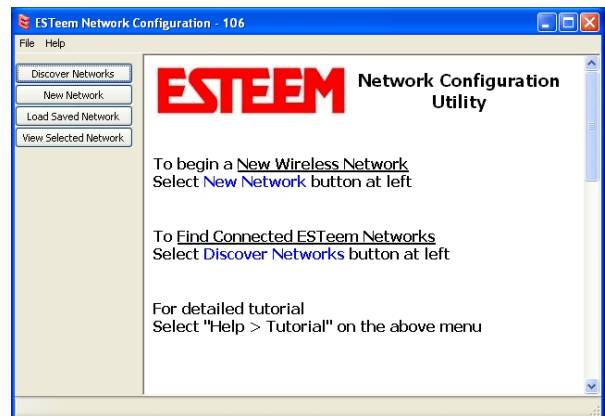


Figure 1: ENC Utility

Tutorial Contents

This tutorial will help new or existing ESTEem users understand the basics of programming a wireless network with the ENC Utility. This tutorial is divided into the following easily configured steps to provide a better understanding of the wireless configuration process:

Step 1 - Site Layout: An example site layout is provided to examine the individual wireless links.

Step 2 - ESTEem Hardware Layout: Hardware layout for programming the ESTEem network with the ENC Utility.

Step 3 - Installation: Steps to install the ENC Utility on the computer.

Step 4 - Opening ENC Utility Program: How to start the ENC Utility and review the Main Menu.

Step 5 - Create A New Wireless Network: How to create a new wireless network and add the ESTEem wireless modems.

Step 6 - Configure the Wireless Links: How to create each ESTEem modem's wireless link to the network in the same layout as our example.

Step 7 - Program the ESTEem Modems: How to use the ENC Utility to program the ESTEem wireless modems for the application.

Although the ENC Utility is simple to use, there are steps in this tutorial that require networking configuration on the computer. To successfully complete this tutorial you should be able to complete each of the following tasks:

- Identify and connect to the Ethernet port on your computer.
- Open the network configuration menu and set the Internet Protocol (IP) address, netmask and gateway on your computer.
- Have administrative rights to your computer to install a software program.
- Assign, or have assigned to you, a range of IP addresses for the ESTEem wireless Ethernet modems that match your Ethernet network.

If uncertain on how to complete any of the above procedures, please seek assistance from your network administrator or person responsible for Ethernet networking.

Throughout this tutorial "**Technical Tips**" have been added to help in the configuration of the wireless networks and answer some common questions about the ENC Utility.

Step 1 – Site Layout

All wireless applications start with a system requirement for communication. An example site (Figure 2) has a Main Office that needs to collect data from a remote Water Tank. The Water Tank will also serve as a radio repeater for a Remote Office and Pump Station. All four sites need to share Ethernet data and will be on a common Ethernet network when the configuration is complete.



Figure 2: Example Site Layout

Once the network communication routes have been determined, an IP address for each ESTeem modem in the network is required. These IP addresses may be assigned by the network administrator or may have to be assigned to match the other Ethernet hardware in the network. In our example, we will use the following IP addresses in Table 1:







Technical Tip: Always coordinate the IP addresses for the wireless network with **all** other Ethernet hardware to avoid an IP address conflict.

Location (Modem ID)	IP Address	IP Subnet	ESTeem Model Number	ESTeem Serial Number
Main Office	172.16.8.100	255.255.0.0	195Eg	E-18500
Water Tank	172.16.8.101	255.255.0.0	195Eg	E-18501
Pump Station	172.16.8.102	255.255.0.0	195Eg	E-18502
Remote Office	172.16.8.103	255.255.0.0	195Eg	E-18503

Table 1: Example Network Information

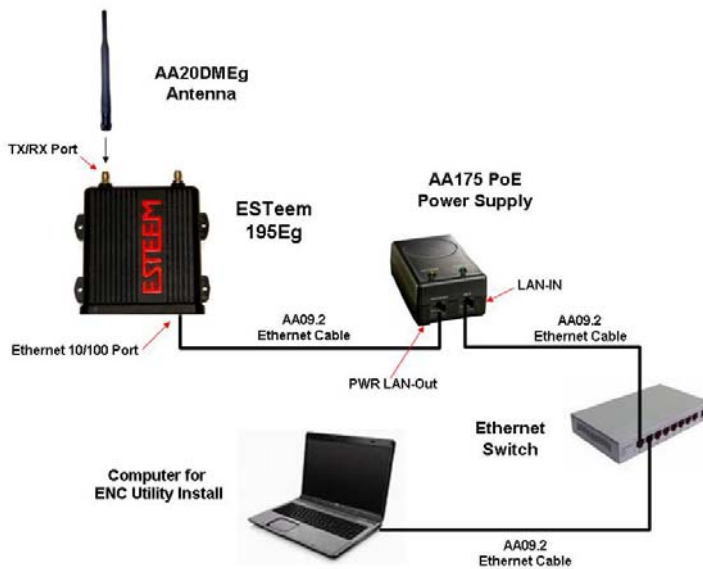
Step 2 – ESTEem Hardware Layout

To configure the ESTEem wireless modems for the example application (Figure 2), verify all the required ESTEem hardware shown in Table 2 is available. Figure 3 shows how to connect the hardware for a single ESTEem Model 195Eg modem.

(4) Model 195Eg		(1) AA109 Resource Disk	
(4 min.) Antennas (AA20DMEg Displayed)		Ethernet Patch Cables (9 required when using Ethernet Switch or 5 without Ethernet Switch) (AA09.2 Displayed)	
(4) Power Supply (AA175 Displayed)		Ethernet Switch (If Available)	

Note: Your application may have different ESTEem models with different accessory part numbers from those shown in the example, but the hardware connections will be the same on all ESTEem 195E models.

Table 2: ESTEem Hardware Required



Technical Tip: Never apply power to any wireless device without first connecting an antenna!

Figure 3: ESTEem Hardware Connections

Step 2 – ESTEem Hardware Layout (Cont.)

In the last step of this tutorial, the network configuration will be downloaded to all ESTEem modems. The quickest way to configure the ESTEem modems is to connect all four to an Ethernet switch (Figure 4). If you do not have an Ethernet switch available, you can configure each modem independently by connecting your Ethernet cable to each LAN-IN port on each AA175 PoE Power Supply individually (Figure 4) until all ESTEem's have been configured.

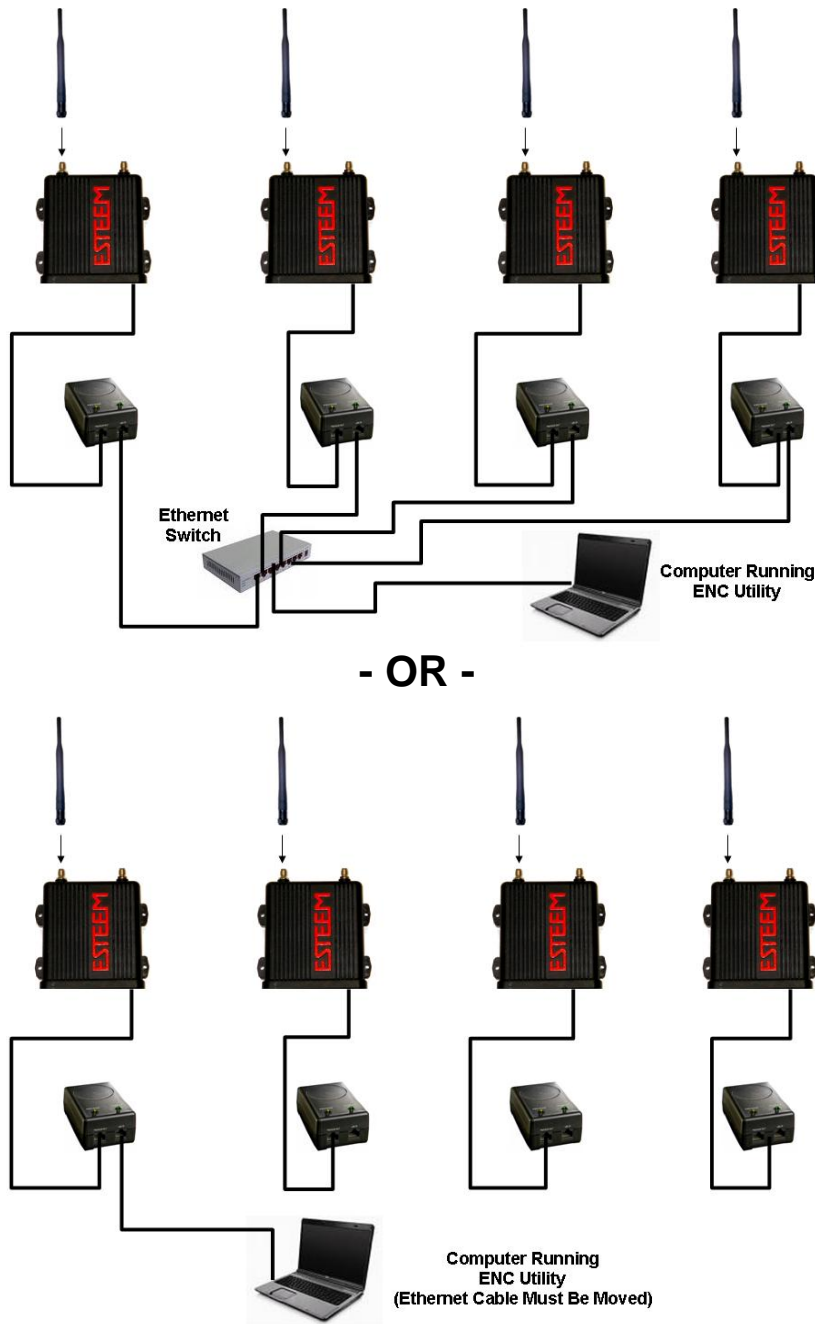


Figure 4: ESTEem Programming Configurations

Step 2 – ESTEem Hardware Layout (Cont.)

Set the computer to a fixed IP address to match the network listed in Table 1 above. For this example, the computer is configured for an IP address of 172.16.8.5 with a Net Mask of 255.255.0.0 (see Figure 5).

Technical Tip: If you disconnect your computer from a standard office Ethernet connection using DHCP, you will no longer have an IP address on your computer. You will need to set your IP address manually through the network card configuration utility. Setting the IP address on a computer is different for each operating system. If you need help in setting the IP address on the computer, please refer to your operating system's help menu for "Configure TCP/IP Settings".

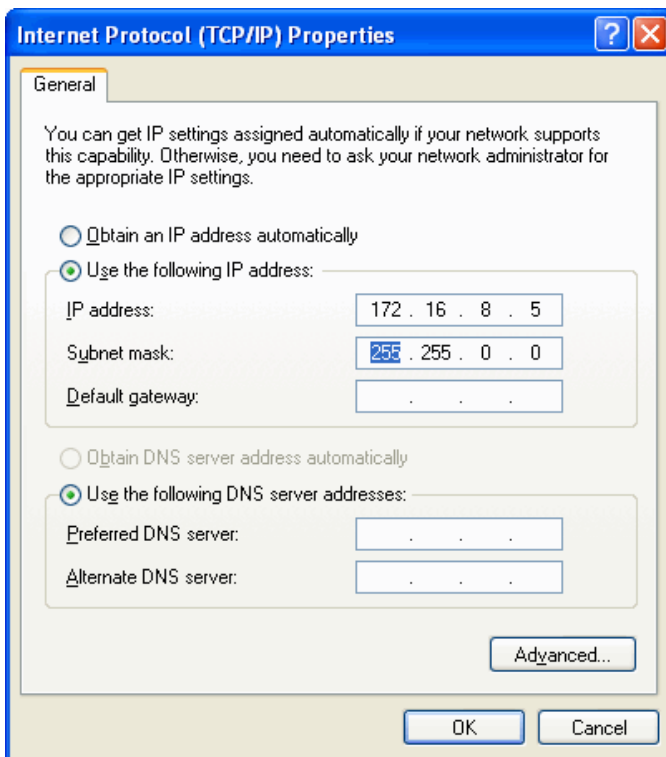


Figure 5: IP Address Configuration

Step 3 – Installation

The ENC Utility requires the ESTeem Model 195E series wireless modems to have the following firmware version to operate. If required, the latest ESTeem firmware version can be downloaded from our FTP site at <ftp://ftp.esteem.com>.

ESTeem Firmware Version
Model 195Eg – Version 1016 or greater
Model 195Ed – Version 1032 or greater
Model 195Ep – Version 1018 or greater
Model 195Es – Version 1019 or greater

Table 3: Firmware Requirements

The ENC Utility can be installed from either the live ESTeem Web Site (<http://www.esteem.com>) or the static ESTeem web site on the Resource CD (AA109). Once the ESTeem Home Page is displayed, select *Support* > *ESTeem Utilities* on the Menu (Figure 6) and then click the [ESTeem Network Configuration \(ENC\) Utility](#) hyperlink on the page (Figure 7).



Figure 6: ESTeem Home Page

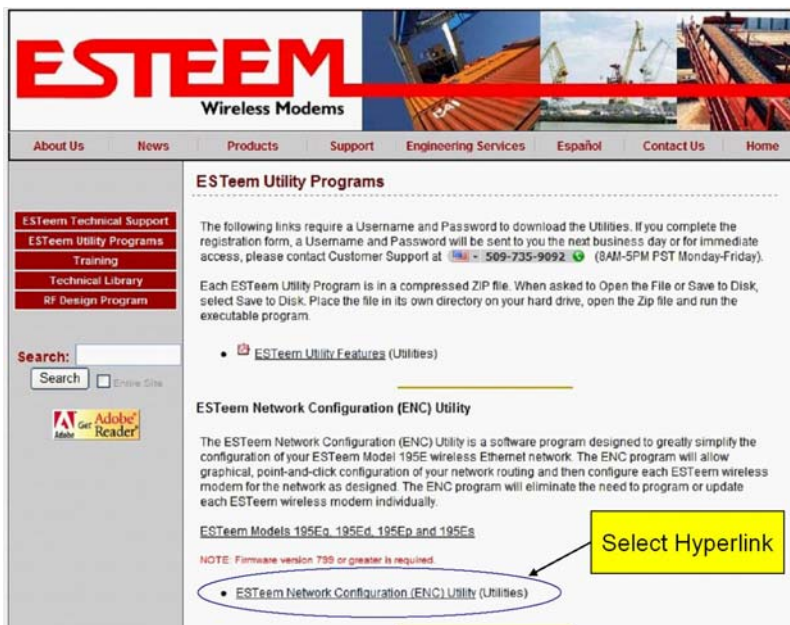


Figure 7: ENC Utility Install Hyperlink

Step 3 – Installation (Cont.)

The ENC Utility compressed file will download to the computer and be displayed in a window such as shown in Figure 8.

To begin the installation, double-click on the ENC Utility Setup (Encsetup-<version #>.exe) file in the open compressed file window (Figure 8). Allow the ENC Utility to install on your computer. The installation will continue for approximately **4 minutes** to install the program.

If you are asked to install the WinPcap program, please follow the on-screen instructions to install.

If you receive a message that WinPcap has already been installed on the computer (Figure 9), press the Cancel button to continue.

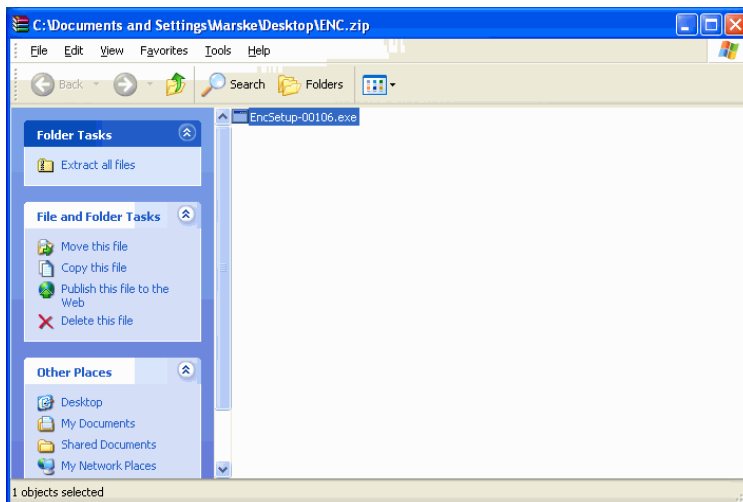


Figure 8: ENC Utility Installation File

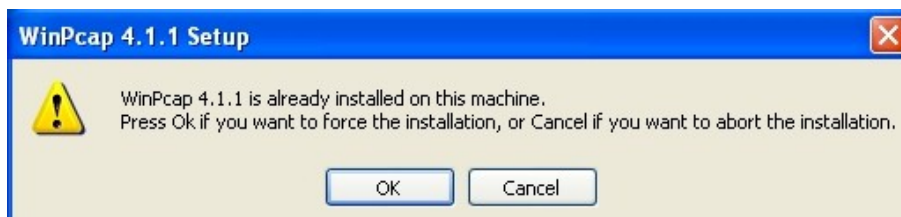


Figure 9: WinPcap Already Installed

Once the installation is complete, **do not** uncheck the box “Launch ESTeem Network Configuration” (Figure 10). Press the Finish button and the application will launch.

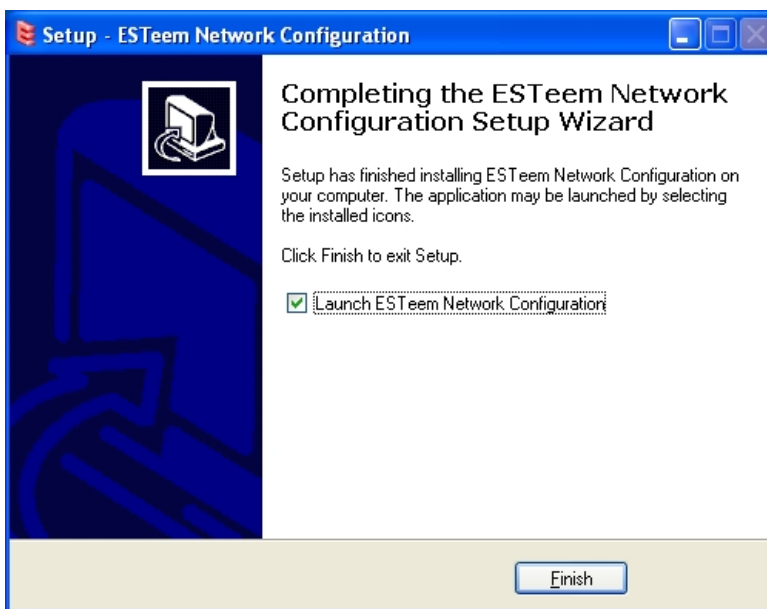


Figure 10: Installation Complete

Step 4 – Opening ENC Utility Program

If “Launch ESTEem Network Configuration” was selected at the completion of the installation, the Main ENC Utility page should be opened as seen in Figure 11. If the ENC Utility did not launch, double-click the ENC Utility shortcut on the Windows desktop.

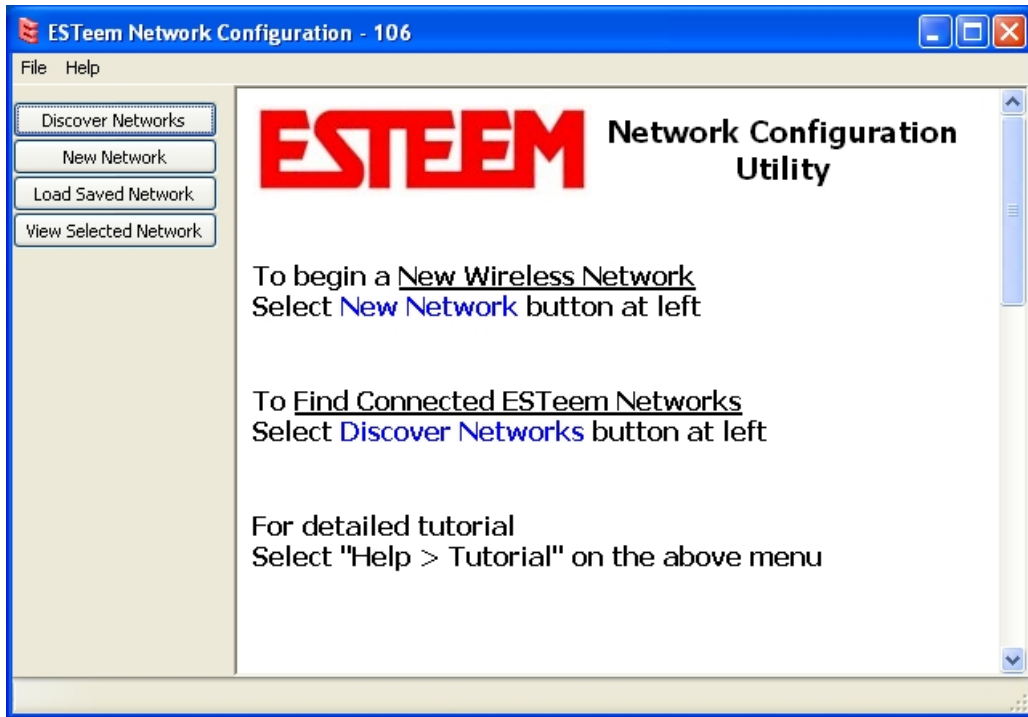


Figure 11: ENC Utility Main Menu

Step 5 – Create a New Wireless Network

From the ENC Utility Main Menu (Figure 11) press the New Network button in the left column. This will create a new wireless network layout for our example application. The ENC Utility will begin to ask specifics about the wireless network. The first question asked is which ESTeem model is being used in the application. Looking at Table 1, the ESTeem Model 195Eg will be used for this application. Select 195Eg and press the OK button (Figure 12).

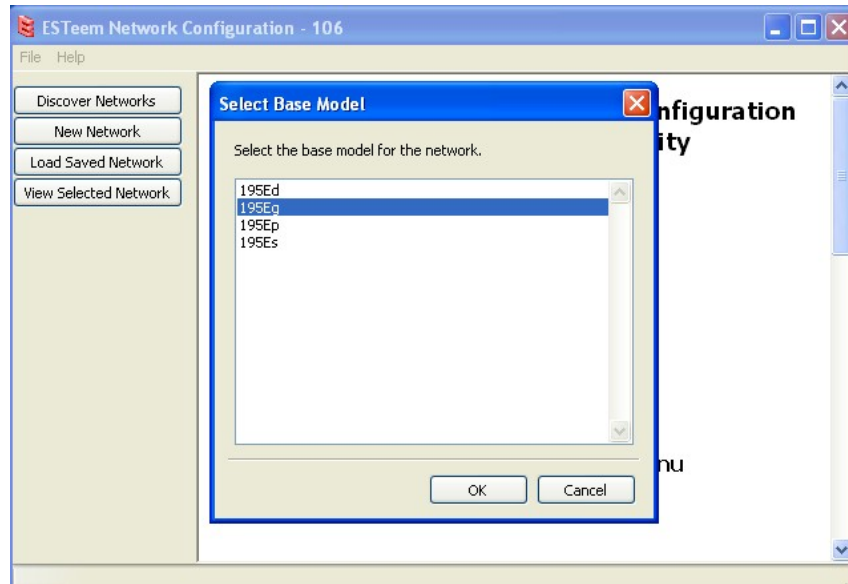


Figure 12: Model Select

The next question is what network name (SSID) will be used. For this example use "ESTeemTest". Type ESTeemTest in the box (Figure 13) and press the OK button.

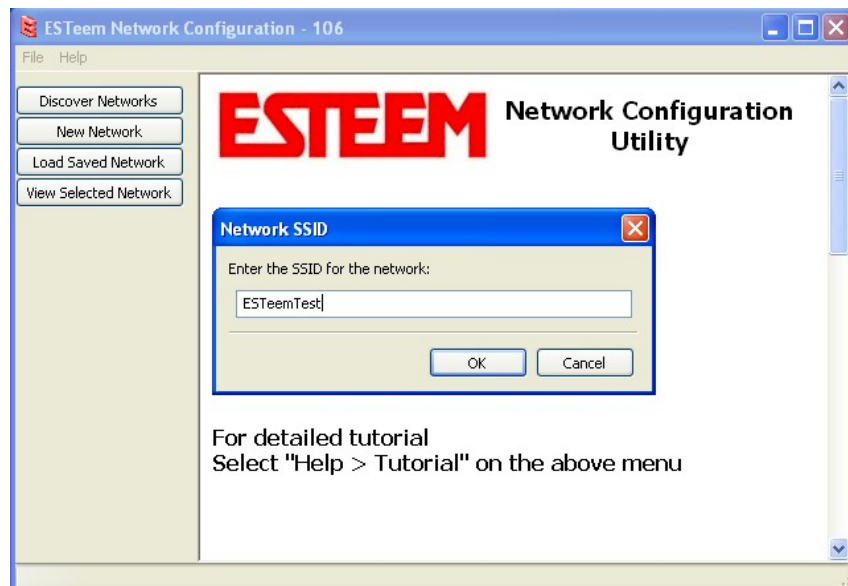
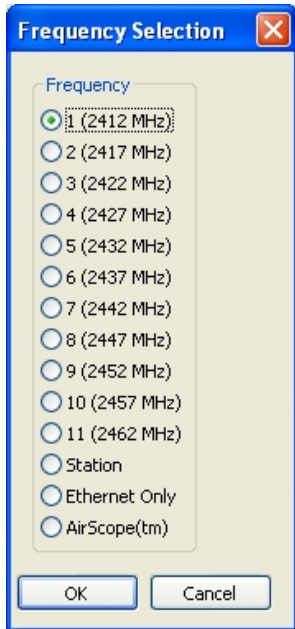


Figure 13: Enter SSID

Step 5 – Create A New Wireless Network (Cont.)



The next step is setting the frequency (Figure 14). The ESTeem 195Eg can be configured for one of 11 channels between 2412 MHz and 2462 MHz. For this example, use Channel 1 (2412 MHz). Verify the frequency is selected for Channel 1 and press the OK button.

Technical Tip: The frequency for your application may be different and will depend upon the ESTeem model number used. Please check if you are assigned a specific frequency for your application before beginning your final network configuration. If you do not have a frequency assigned, begin with one end of the frequency spectrum and test operation.

After selecting the frequency of operation, a new network will be displayed in the ENC Utility Main Menu (Figure 15). Note there are currently no (0) ESTeem modems in the network, but these will be added in Step 6. Highlight the new network and press the View Selected Network button to continue.

Figure 14: Frequency

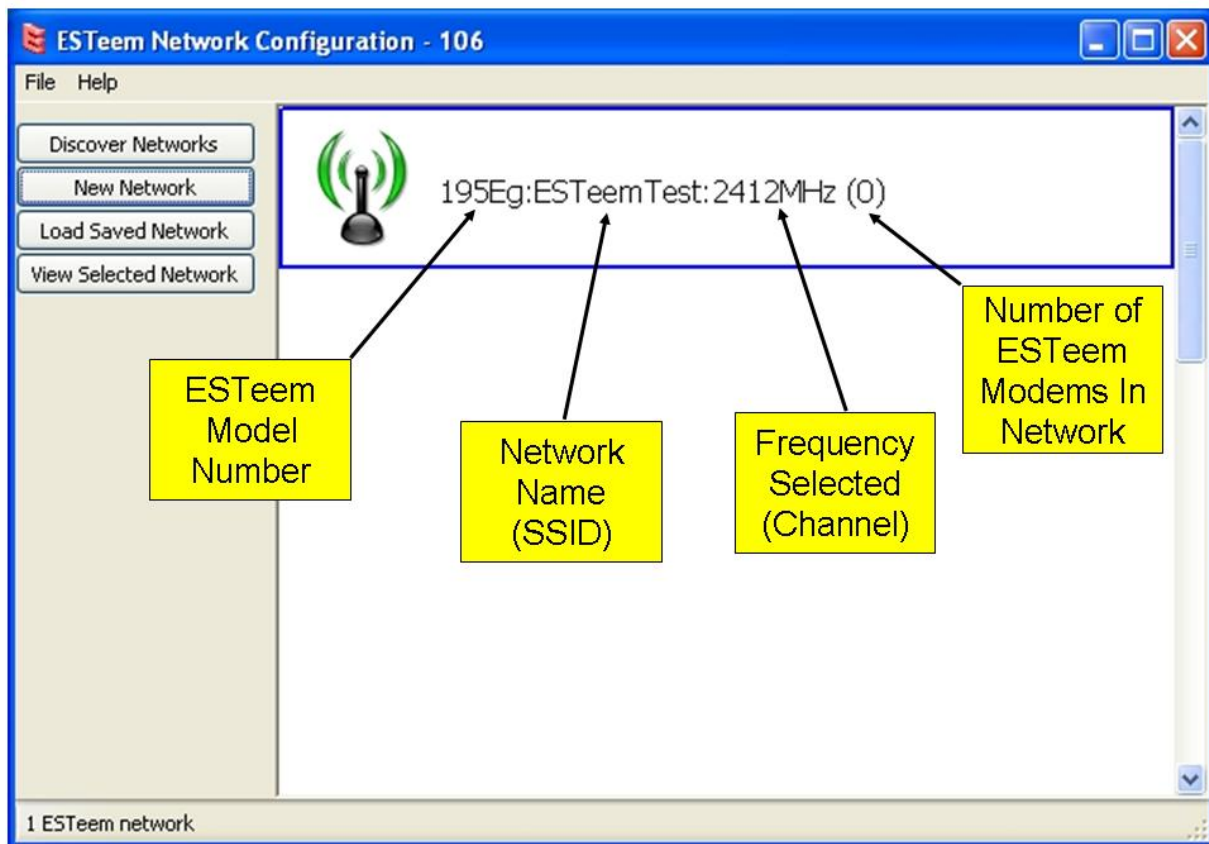


Figure 15: New Network Shown

Step 6 – Configure Wireless Links

These steps will add the ESTEem Model 195Eg wireless Ethernet modems to the network and create the links required for the example. As soon as the network configuration page is displayed, the ENC Utility will ask if you wish to change the default network password (Figure 16). The default network password is **networkadmin** and will be required to open a saved network in the future. For this example select N and use the default network password.



Figure 16: Network Password

Figure 17 shows a blank wireless network configuration page. This is the main working area for network layout. Note that all the information provided so far (such as model number, SSID, frequency, etc.) is displayed along the bottom edge of the page.

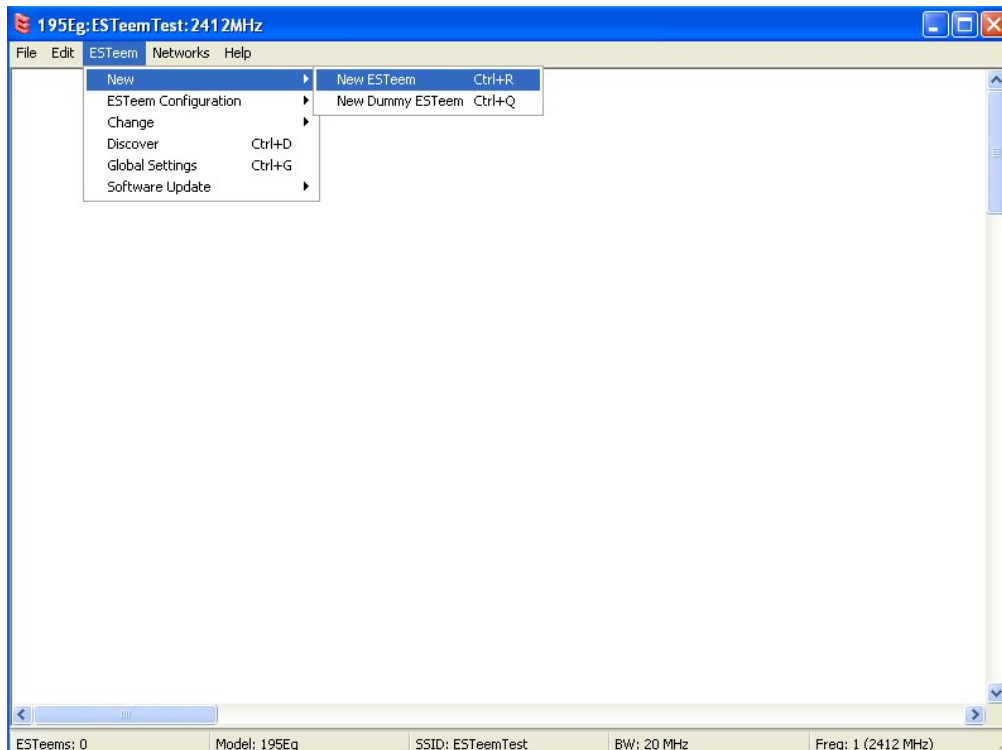
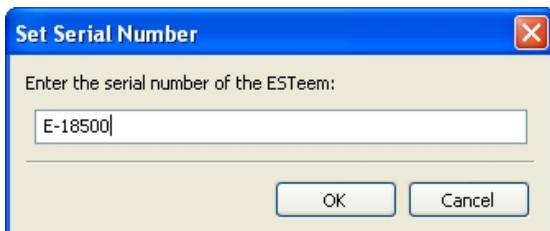


Figure 17: Blank Configuration Page

To add the first ESTEem Model 195Eg to the network, select *ESTEem* from the menu items to display the drop down menu, then select *New>New ESTEem* (Figure 15). The first ESTEem serial number in the network will be requested. Review Table 1 and note the first ESTEem 195Eg has a serial number E-18500. Enter this into the box and press the OK button

Technical Tip: The ENC Utility calculates the wireless link information based upon **exact** ESTEem serial numbers. The serial numbers listed in Table 1 are for this example only. Enter the correct ESTEem serial numbers for your application.



(Figure 18).

Figure 18: Enter the Serial Number

Step 6 – Configure Wireless Links (Cont.)

Notice that an ESTeem icon is now shown on the page with the last three digits of the Wireless LAN MAC (WLAN MAC) address. Rename this modem location to match the example site for the Main Office by pressing the right-mouse button on the icon and selecting *Change>Change Modem ID* (Figure 19). Enter in “Main Office” in the window and press the OK button.

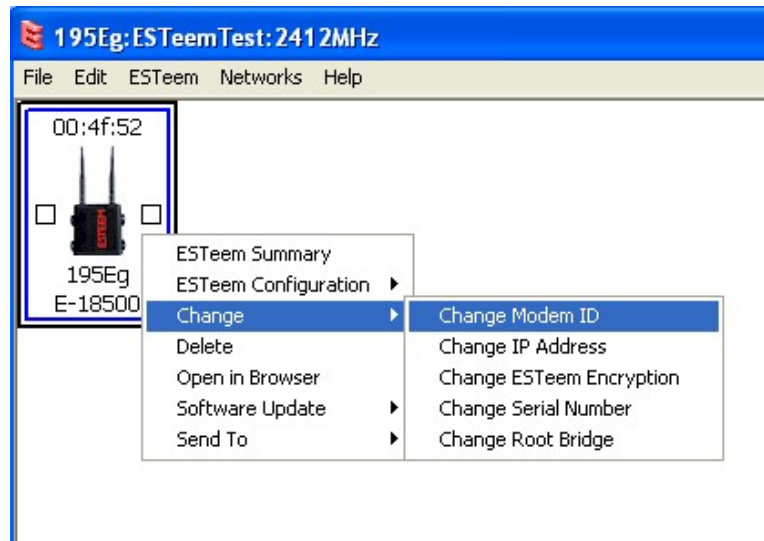


Figure 19: Change Modem ID

Verify the IP address of the modem by again pressing the right-mouse button on the ESTeem icon and selecting *Change>Change IP Address* (Figure 19). The IP configuration screen (Figure 20) will be displayed. Make any necessary changes to the IP address, net mask and default route information as listed in Table 1.

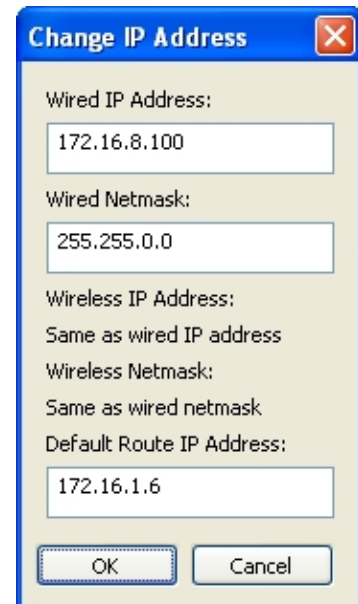


Figure 20: Set IP Address

Step 6 – Configure Wireless Links (Cont.)

Continue adding ESTeem Model 195Eg radio modems to the network using the same process above until all four ESTeem 195Eg's from our example site are listed (Figure 21).

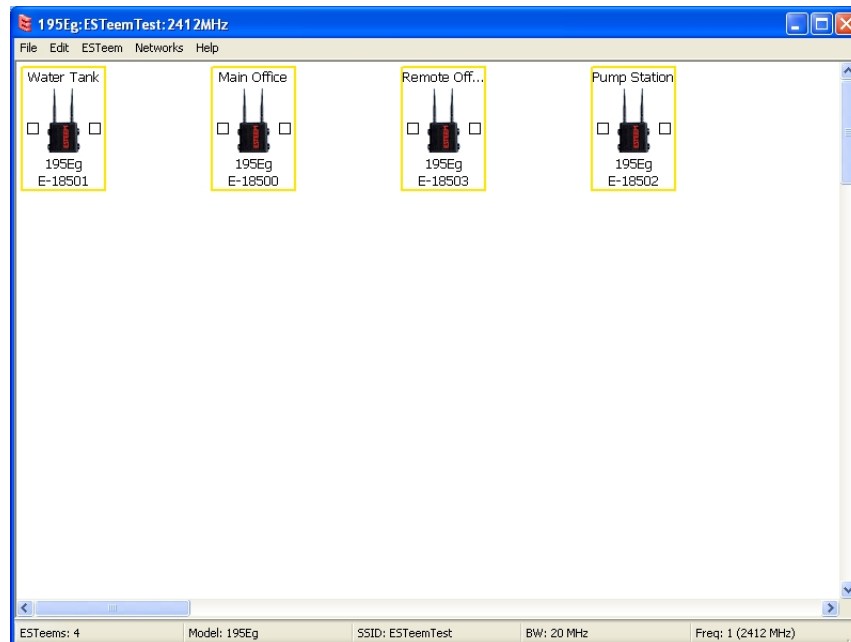


Figure 21: All Modems Added

Once all modem icons have been added, move them anywhere on the screen by clicking the left mouse button on the icon, holding down the mouse button and dragging the mouse to where the modem will be displayed. Figure 22 shows the ESTeem network in the same layout as our example site (Figure 2).

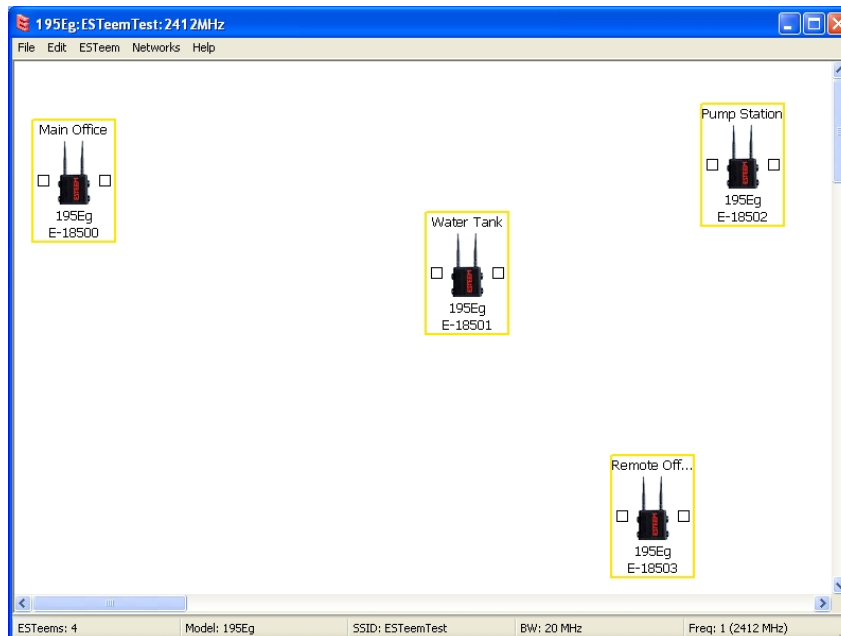


Figure 22: Site Layouts

Step 6 – Configure Wireless Links (Cont.)

To create a wireless link between the locations, simply click either of the link boxes (displayed as squares on either side of the icon) and drag a link to another ESTEem icon. Add the wireless links to the network as they are show in our example on Figure 1. The network configuration screen should look like the layout in Figure 23.

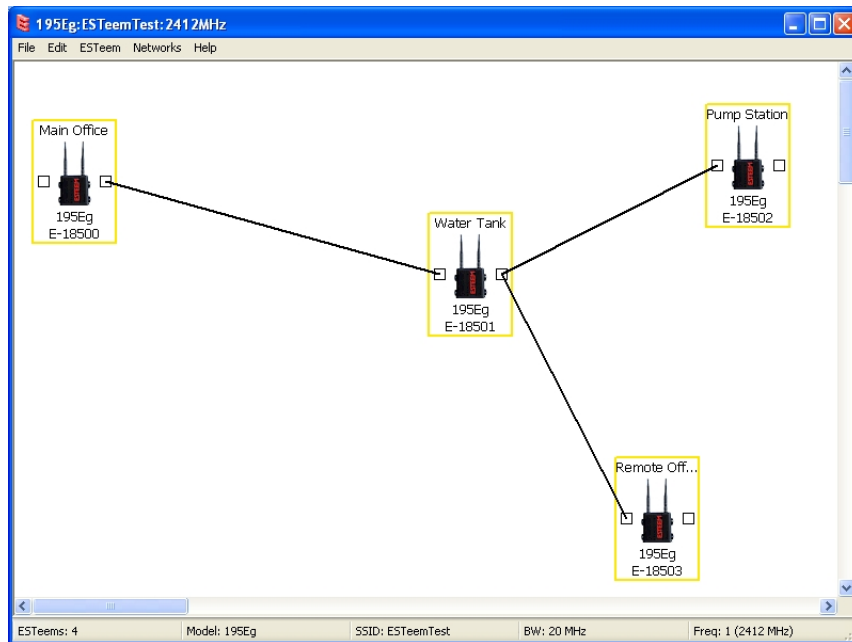


Figure 23: All Wireless Links Added

Step 7 – Program the ESTeem Modems

Now that a network configuration layout is complete, the next step is simply sending this configuration information to the wireless modems. If all ESTeem 195Eg's are connected through a switch (Figure 4), sending the configuration to all modems at the same time is done by selecting the *ESTeem* menu, then *ESTeem Configuration>Send Configuration to All ESTeems* (Figure 24). The time to update all modems in the network and the programming stage will be displayed.

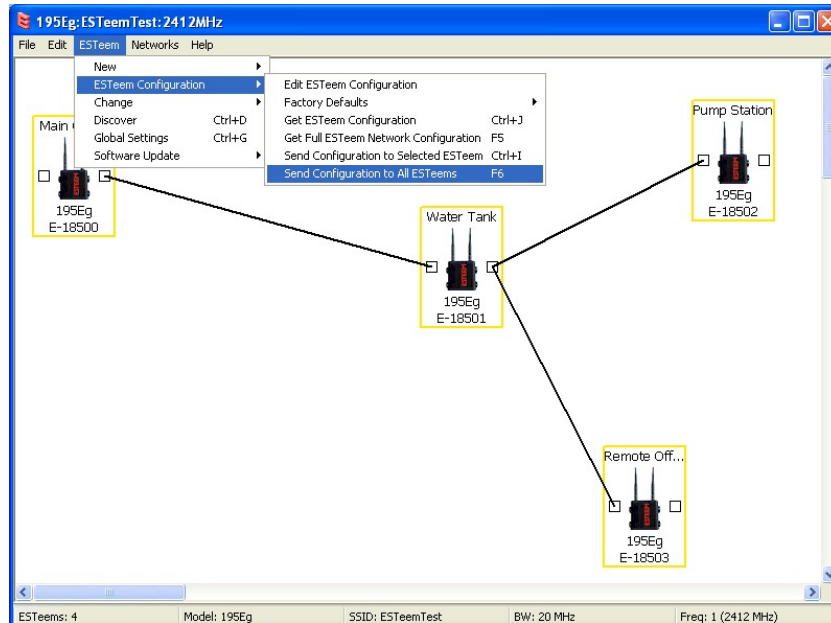


Figure 24: Send Configuration to All ESTeems

If an Ethernet switch is not available, each modem in the network can be configured individually by connecting an Ethernet cable between the computer and the ESTEem, selecting the correct ESTEem icon on the screen (look for the serial number under each icon), pressing the right-mouse button then selecting *ESTEem Configuration>Send Configuration to Selected ESTEem* (Figure 25).

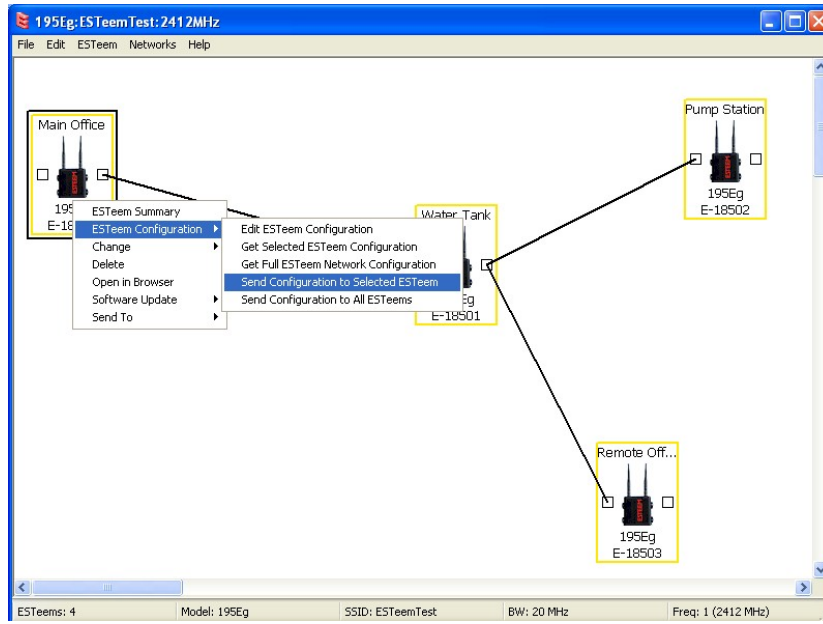


Figure 25: Send Configuration to Selected ESTEems

Step 7 – Program the ESTeem Modems (Cont.)

Once all sites have been updated, the box around each modem icon will turn **Green** signifying all updates have been validated (Figure 26). The ESTeem wireless modems have been programmed and are now ready for installation in the application.

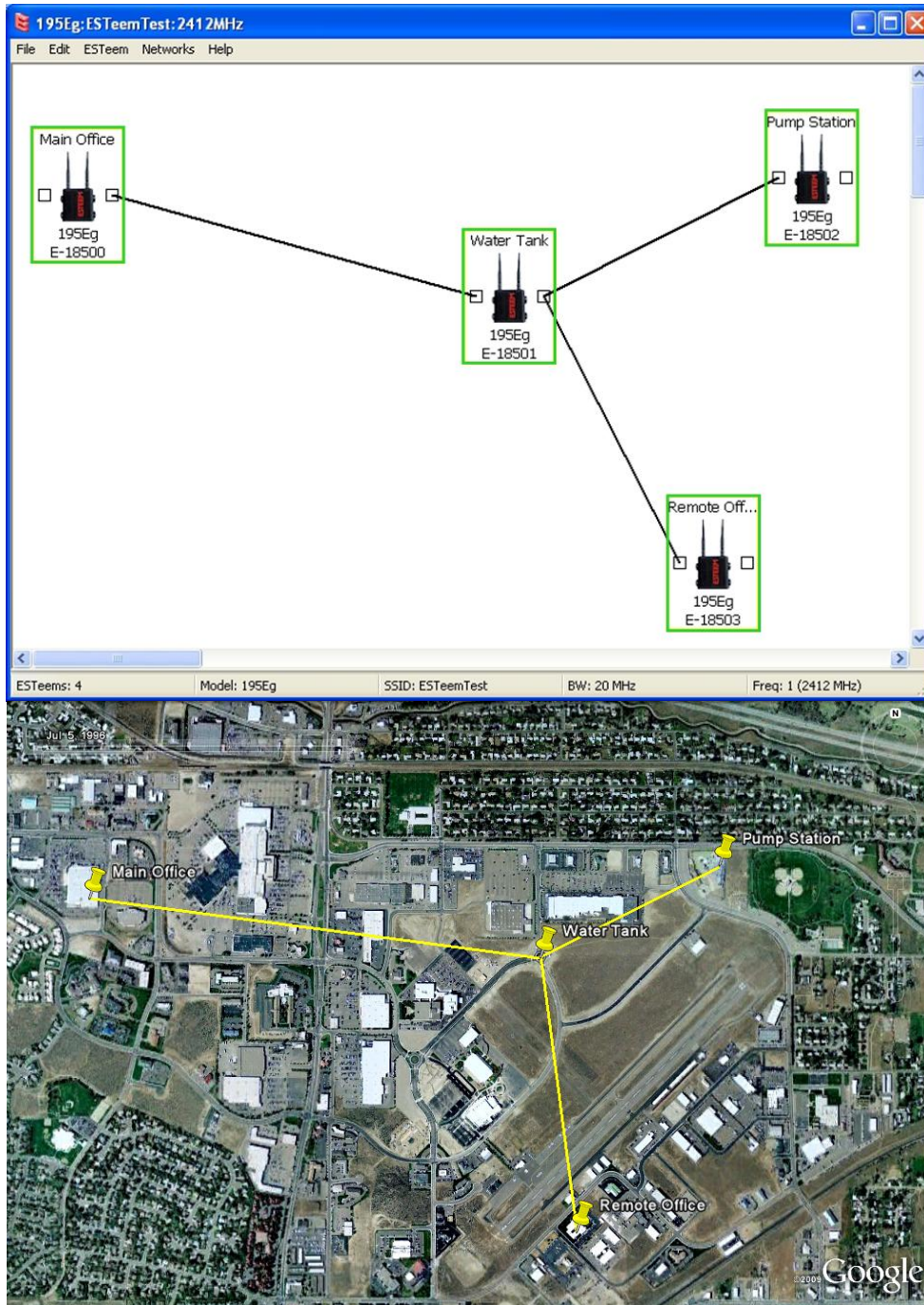


Figure 26: Completed Wireless Network Configuration