Wi-Fi Terminus Quick-Start Guide

JANUS REMOTE COMMUNICATIONS

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Purpose of the Document

This document is not intended to be an exhaustive description of the Wi-Fi Terminus NT-220 SLT (Wi-Fi Terminus) features and configuration options. Instead this document presents the minimum steps to be taken in order to have the Wi-Fi Terminus unit operational in the minimum amount of time. It is recommended to consult the Wi-Fi Terminus datasheet for more in-depth features and configuration options.

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Prerequisites

The Wi-Fi Terminus unit comes with a predefined set of default parameters that the unit would normally look for upon power up. These parameters and required infrastructure, Wireless Access Point (AP), represent the minimum necessary in order to be able to further access and configure the unit for applications within a specific Wi-Fi environment.

Default Parameters

Topology:	Infrastructure Mode
Source IP:	192.168.1.3 (Default IP of each Wi-Fi Terminus unit)
Network SSID:	CW85_Setup
Channel:	6
Data Rate:	1 Mbps
Packet type:	UDP (type of packet used for relaying NMEA stream)
Dest. IP:	192.168.1.2 (IP where the NMEA data is being sent)
Dest. Port:	9999 (Destination port of the NMEA data being sent)

Introduction

The Wi-Fi Terminus NT-220 SLT (Wi-Fi Terminus) is a device that combines GPS technology, for position information (longitude and latitude) and UTC time, with Wi-Fi 802.11b/g for NMEA stream transport. The 802.11b/g supports WPA2 encryption and is fully configurable to a specific network.

In addition to these features, the Wi-Fi Terminus can be used for indoor positioning with the Ekahau Positioning Engine. The indoor environment represents a challenge for GPS based location devices due to inherent low signal strengths and which lead to poor quality or invalid location information. Wi-Fi Terminus represents a successful blend of the two positioning technologies:

- outdoor GPS based location and
- indoor, Wi-Fi based location

Used together, these two technologies offer 100% coverage in any environment.

Configuration the AP

In order to set up a communication link between the Wi-Fi Terminus and a PC, there is the need for a AP, since the Wi-Fi Terminus will automatically look for this to facilitate communications. In this example, a Linksys WAP54G was employed; however, any AP can be used as long as the following settings are observed:

SSID Broadcast:	CW85_Setup
Channel:	6 – 2.437 GHz
Security Mode:	Disabled
Configuration IP:	any IP in the range 192.168.1.(4 - 254)
	192.168.1.2 – PC will be configured with this IP
	192.168.1.3 – Wi-Fi Terminus's IP
Subnet mask:	255.255.255.0

(Note: The mini USB connector available on the Wi-Fi Terminus is used only for charging the Lithium battery only. It does not provide for a port to the Wi-Fi Terminus configuration)

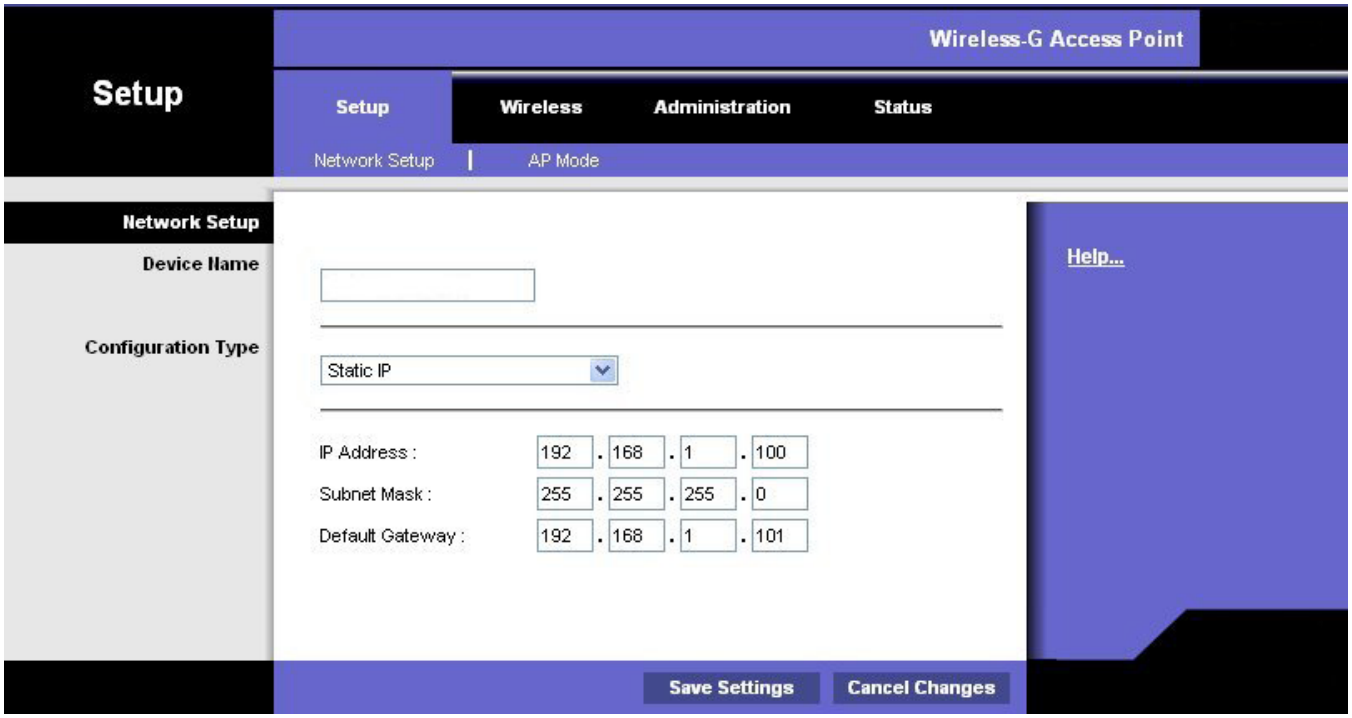

Figure 1: WAP - Network Setup

Configuration the AP continued

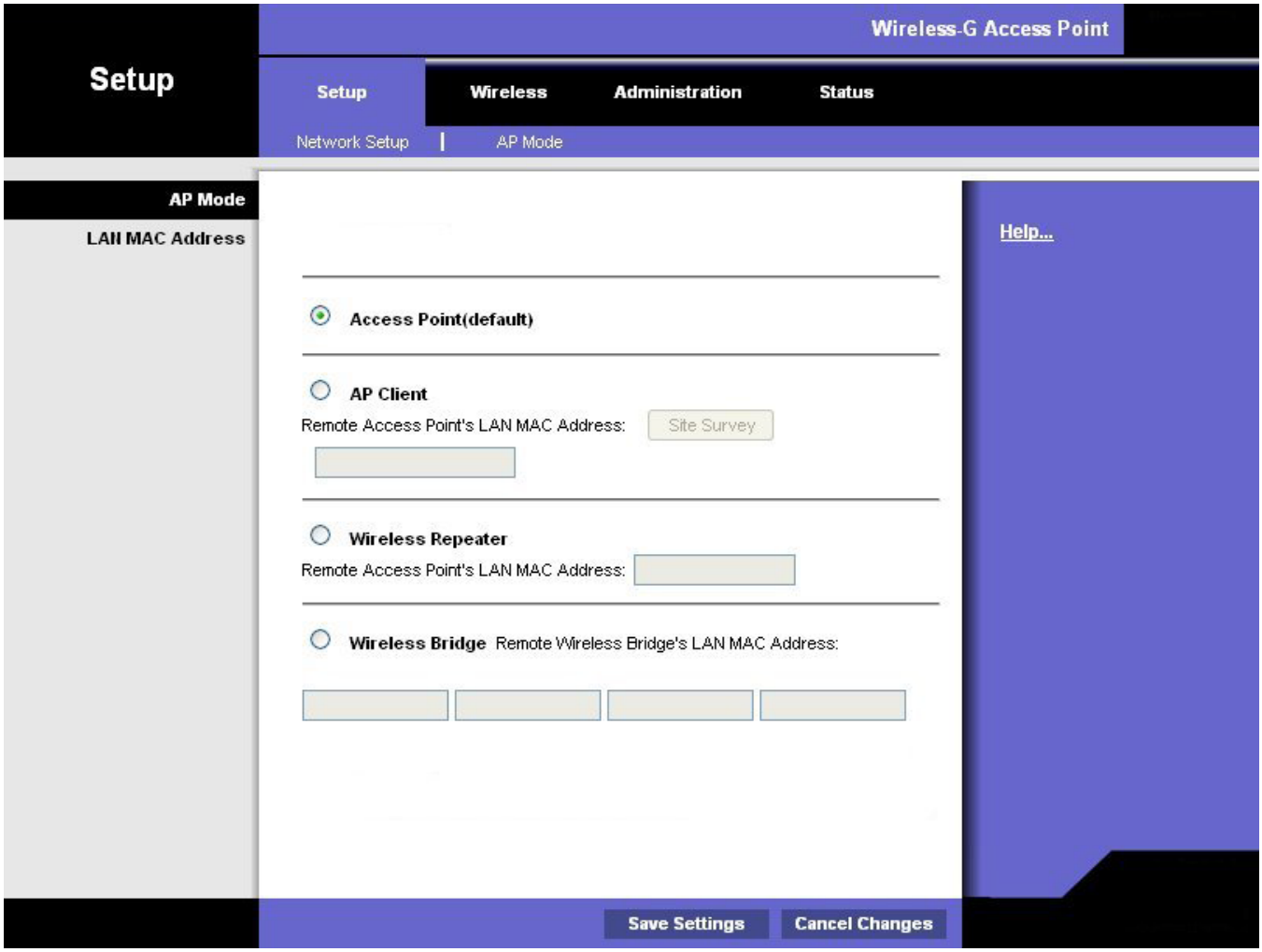

Figure 2: WAP - Acess Point Mode

Configuration the AP continued

Figure 3: WAP - Basic Wireless Settings

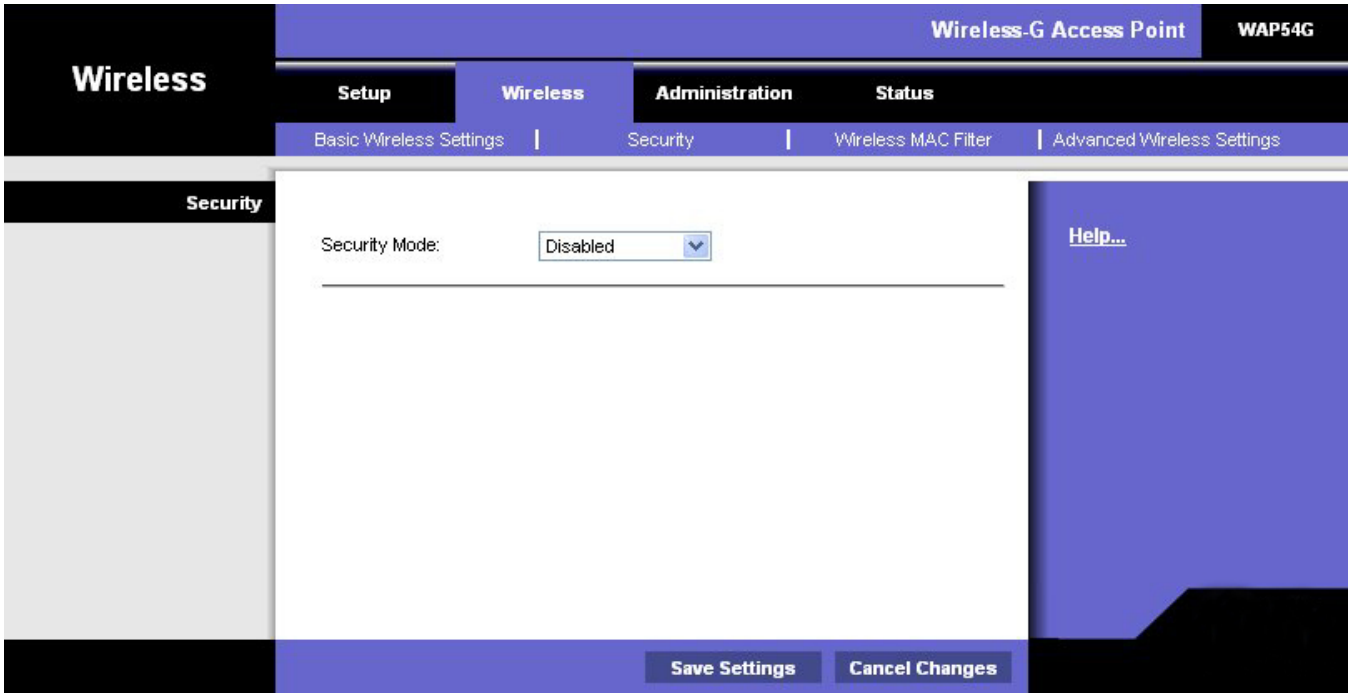

Figure 4: WAP - Security

Configuration the AP continued

Once the AP configurations have been performed, the Wi-Fi Terminus will connect to the access point when switched “On”. The Status LED will give network status and GPS status as indicated in Table 1.

Condition	Status LED
No network detected and no GPS fix	OFF
Network detected but no GPS fix	Blinks once every 2.5 seconds
No network detected but GPS fix	Blinks once every 5 seconds
Network detected and GPS fix	Blinks once every 0.5 seconds

Table 1 - Status LED

As soon as the Wi-Fi Terminus associates with the network it will try to resolve the destination IP. Once this has been accomplished, the Wi-Fi Terminus will begin sending UDP packets to the destination IP

Configuring the PC – Wired Connection

After setting up the AP, make sure the PC is properly configured. If the PC is connected to the access point via a wired Ethernet connection, open “Network Connections” from the “Control Panel”. Right click on “Local Area Connection” and select “Properties” from the popup menu. A window such as Figure 5 will open..

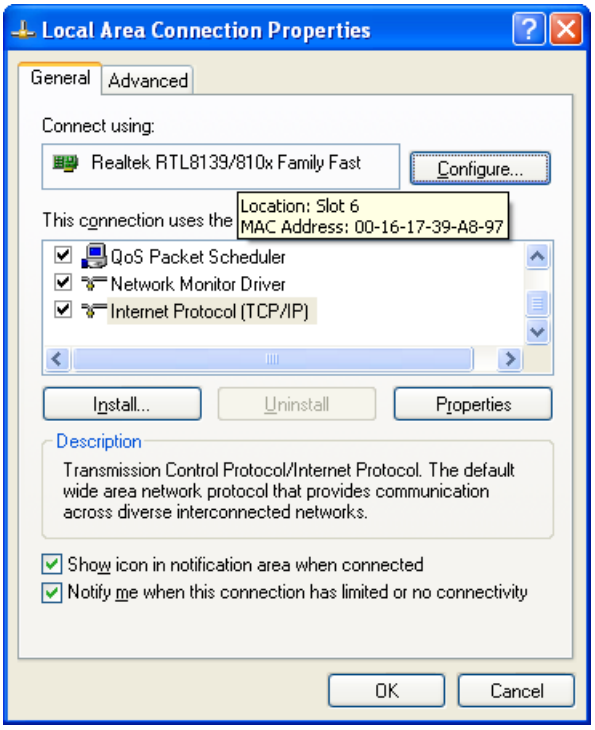

Figure 5: Local Connection Properties Window

Select the “Internet Protocol (TCP/IP)” from the option list. By clicking on “Properties” button a window, as in Figure 6, will be displayed. Check “Use the following IP address” and complete the details as in the figure.

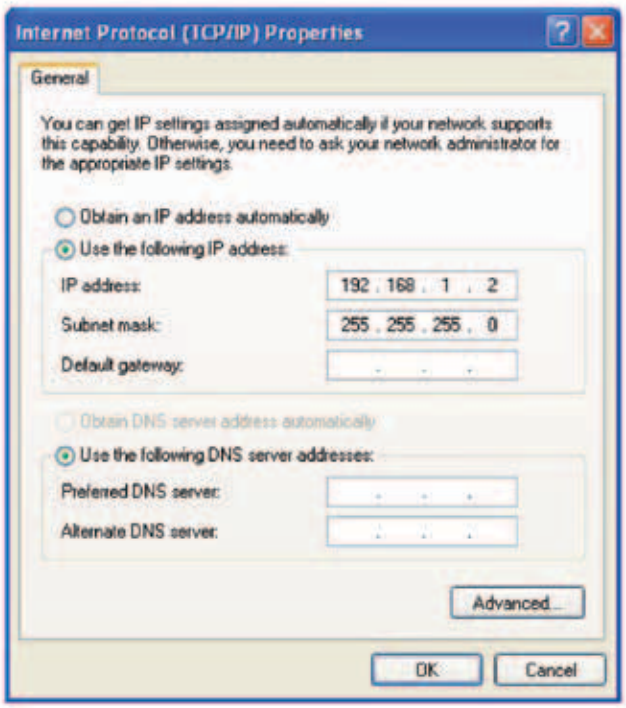

Figure 6: Setting IP

Pressing the “OK” button brings us back to the “Local Area Connection Properties”, “General” tab (see Figure 5) and by pressing the “OK” button the network connection settings are accepted and a network connection should be in place.

Configuring the PC – Wireless Connection

If the PC is using a wireless connection to the AP, make sure that the network interface card is in infrastructure mode and ready for connecting to the AP. Before beginning the process, make sure that your wireless card is correctly installed and turned on. Open “Network Connections” from the “Control Panel”. Right click on the Wireless Network Connection and from the popup menu select “Properties”. A window as in Figure 7 will open.

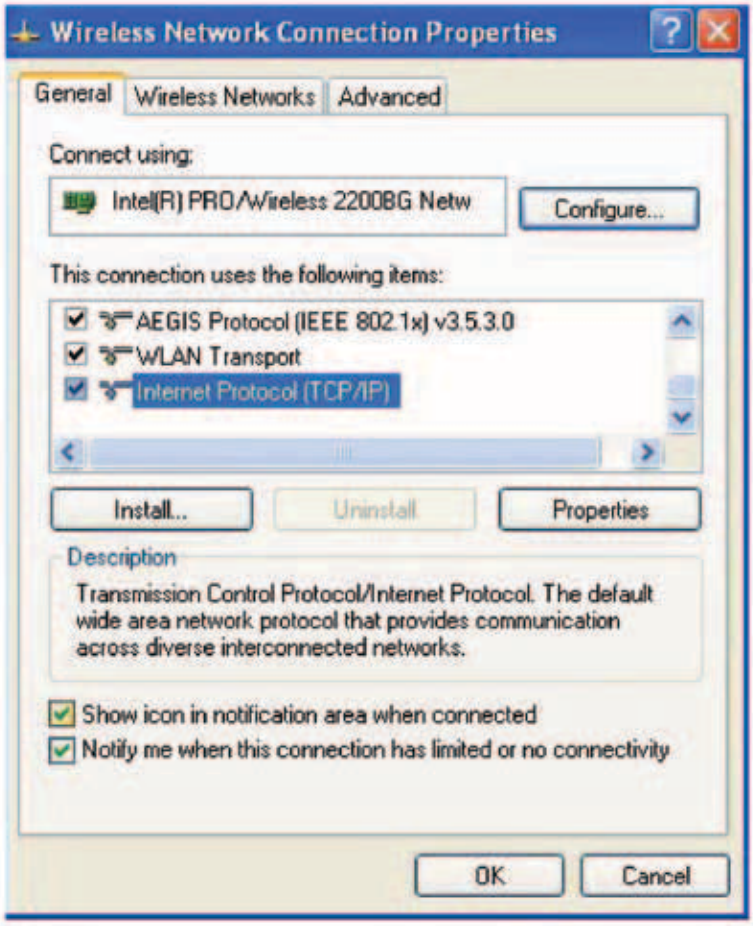

Figure 7: Wireless Network Connection Properties Window

From the tabs, select “Wireless Networks” (see Figure 8). Do not select an available network at this time if any are displayed in the “Available networks” listing. If your computer previously connected to a preferred access point, remove all preferred access points. This will ensure that a connection is made only to the network that you are trying to configure.

Figure 8: Wireless Network Tab

Next, click the “Advanced” button (positioned on the bottom right side of the window) and select “Access point (infrastructure) networks only” and clear the “Automatically connect to non-preferred networks” box if it is selected (see Figure 9).

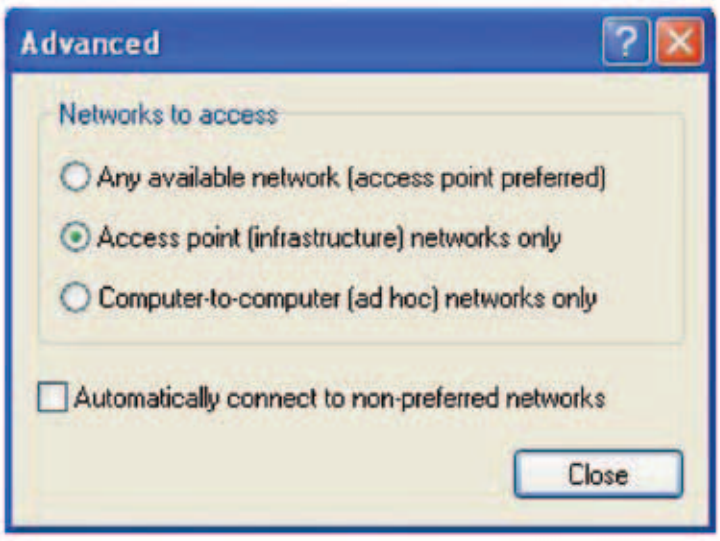

Figure 9: Advanced Network Options

Click on “General” tab and afterwards select the “Internet Protocol (TCP/IP)” from the option list (see Figure 7). By clicking on “Properties” button a window as in Figure 10 will be displayed. Check “Use the following IP address” and complete the details as in the figure.

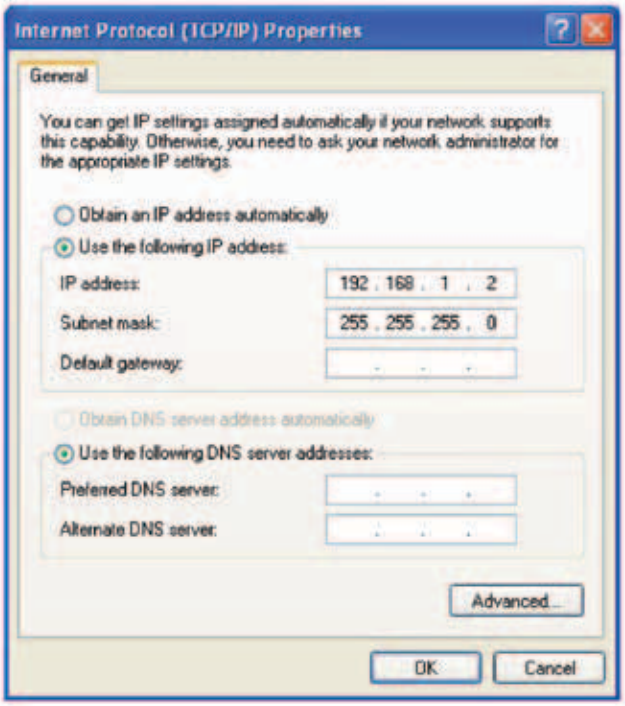

Figure 10: Setting IP

Pressing the “OK” button brings us back Wireless Network Connection Properties, General tab (see Figure 7) and by pressing the “OK” button the Wireless network connection settings are accepted and a network connection between the AP and the PC/notebook should be in place.

Configuring the PC – Wireless Connection continued

To check the connection, open “Network Connections” from the “Control Panel”. Left click on the wireless network connection and ensure that the “CW85_Setup” network is connected (see Figure 11).

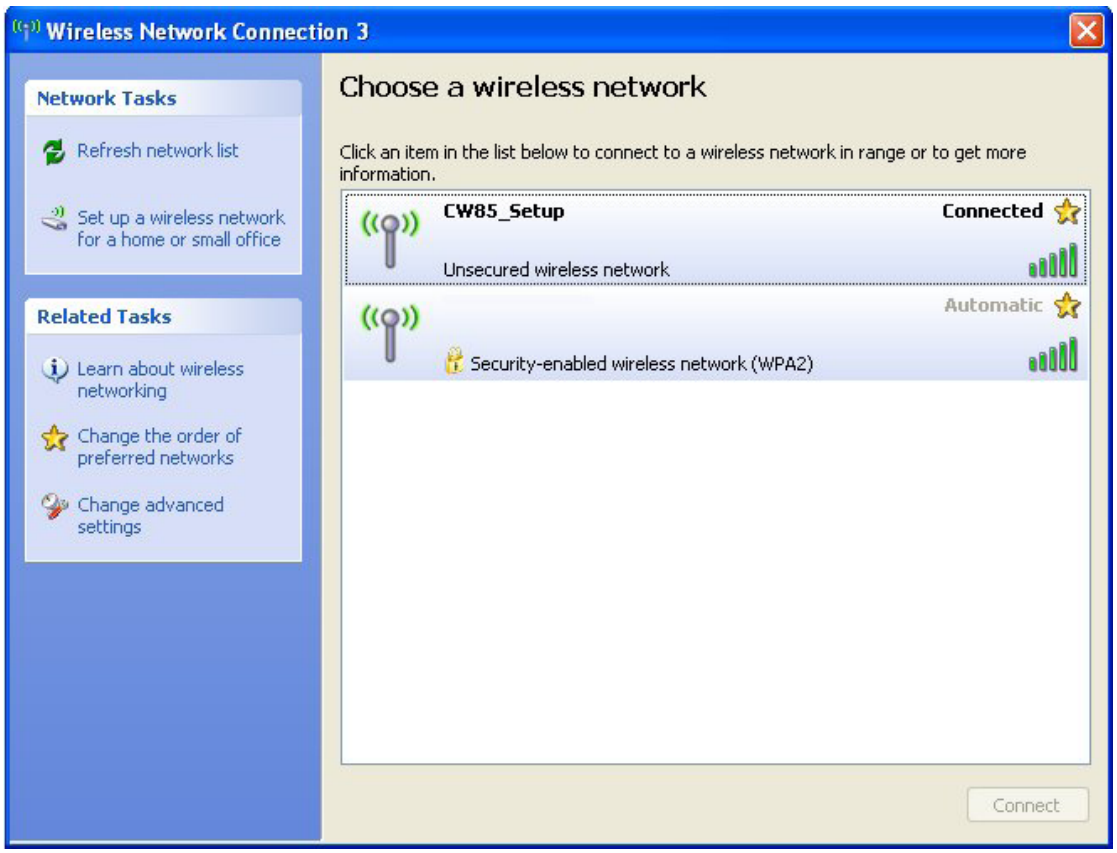

Figure 11: Wireless Network Connected

Monitoring the GPS Data

If you don't already have server software that is listening for the incoming data stream, or if you would like an easy-to-setup program for viewing the NMEA streams/debugging, we suggest using Netcat or any other program that listens on a specific port for traffic. Netcat can be used to display the ASCII GPS data being sent from the Wi-Fi Terminus. Once the unit has associated with the network and resolved 192.168.1.2, it will begin transmitting UDP packets to 192.168.1.2, port 9999.

The Wi-Fi Terminus GPS receiver communicates on port 9999. A simple Netcat command line to display the GPS data would look like:

nc –l –u –p 9999

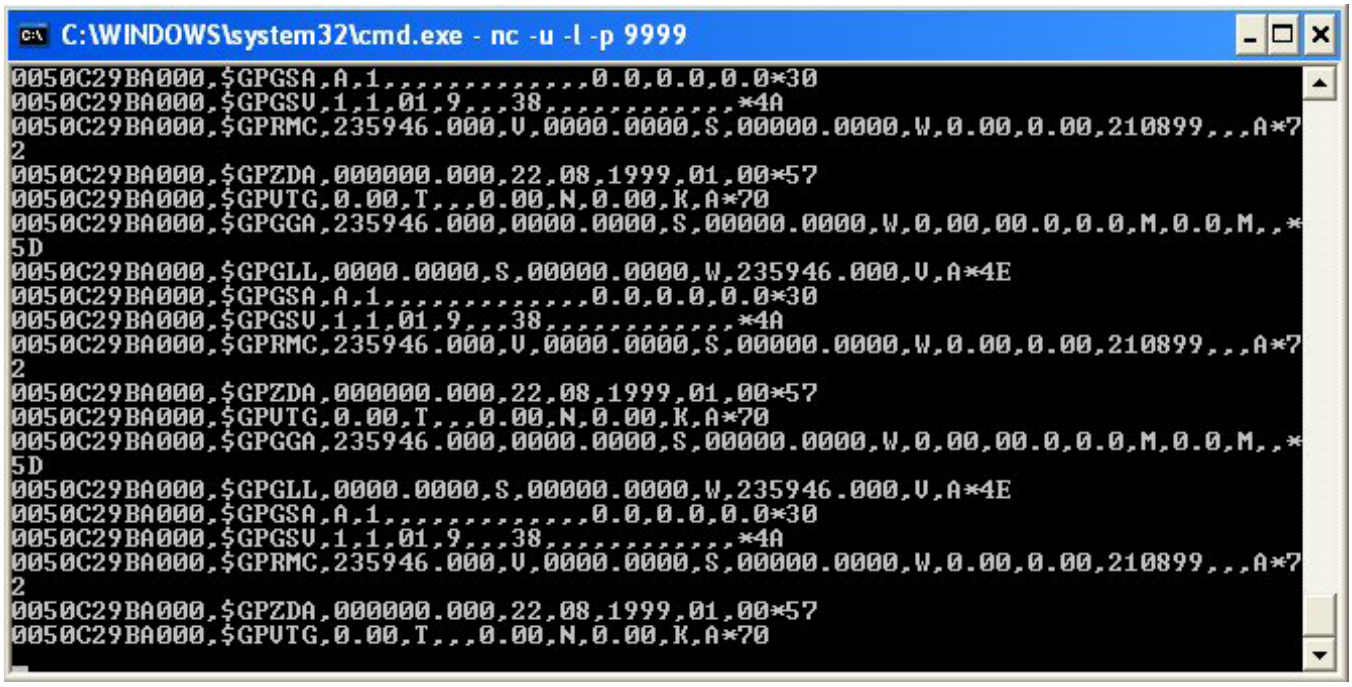

Figure 12: Example of the output that would be seen in the Netcat window

LT Version Operation and Setup

The LT products (NT-110LT and NT-220LT) differ from the ST versions in that they are normally in a low power standby mode. They activate at period intervals (NTCAPPPERIOD) to obtain a GPS fix, then send and/or log in the fix data. If a GPS fix cannot be obtained within a programmed time (NTGPSTIMEOUT), they will enter the standby mode.

The default settings for the LT products are as follows:

NTCAPPPERIOD – wake-up interval - 600 seconds

NTGPSTIMEOUT – time-out period (no GPS fix) - 590 seconds

Since the Wi-Fi Terminus can obtain a fix quite quickly, under good GPS signal conditions, it will be active for about one minute out of every ten. If no GPS signal is available, it will be on almost continuously, timing-out for ten seconds every ten minutes. In order to keep an LT unit with these settings active long enough to allow configuration, the GPS antenna can be shielded from receiving the GPS signals.

The default wake-up interval and time-out periods in the NT-220LT version are for set-up and testing purposes only. The NT-220LT unit is intended to operate using much longer wake-up intervals (hours or days) which allows for a long battery life. In addition, the configuration trap and link-up trap periods can be extended to maximize battery life.

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Revision	Revision Date	Notes
P00	08/03/10	Preliminary Release
P01	05/25/11	Updated Name Change

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