

How to set up the iPad for sharing data via Wifi with a navigation program running on a computer.

It is possible to set up the iPad with the iNavx application and a Windows computer in such a way that the NMEA 0183 data stream received by the PC navigation program via a COM port is also received by the iPad via Wifi.

In most cases this can be achieved without purchasing any extra equipment.

You may already have a Brookhouse NMEA 0183 multiplexer for combining data from a GPS, sailing instruments, AIS and other NMEA talkers to a single data stream to feed PC navigation programs such as Maxsea, Nobeltec, SOB, Maptech, WinGPS, Seaclear, Oziexplorer or one of the many others via a COM port or via USB.

The multiplexer is not a prerequisite, but in order to feed the iPad via Wifi, all data needs to be available in the computer as a single combined data-stream received via a COM port, or a virtual COM port if the data is received via USB or bluetooth.

The following instructions show how to share this data stream with an iPad via Wifi, thereby creating an extra navigation screen with features that come very close to a full-featured chart-plotter that can be used anywhere on the boat.

Prerequisites are:

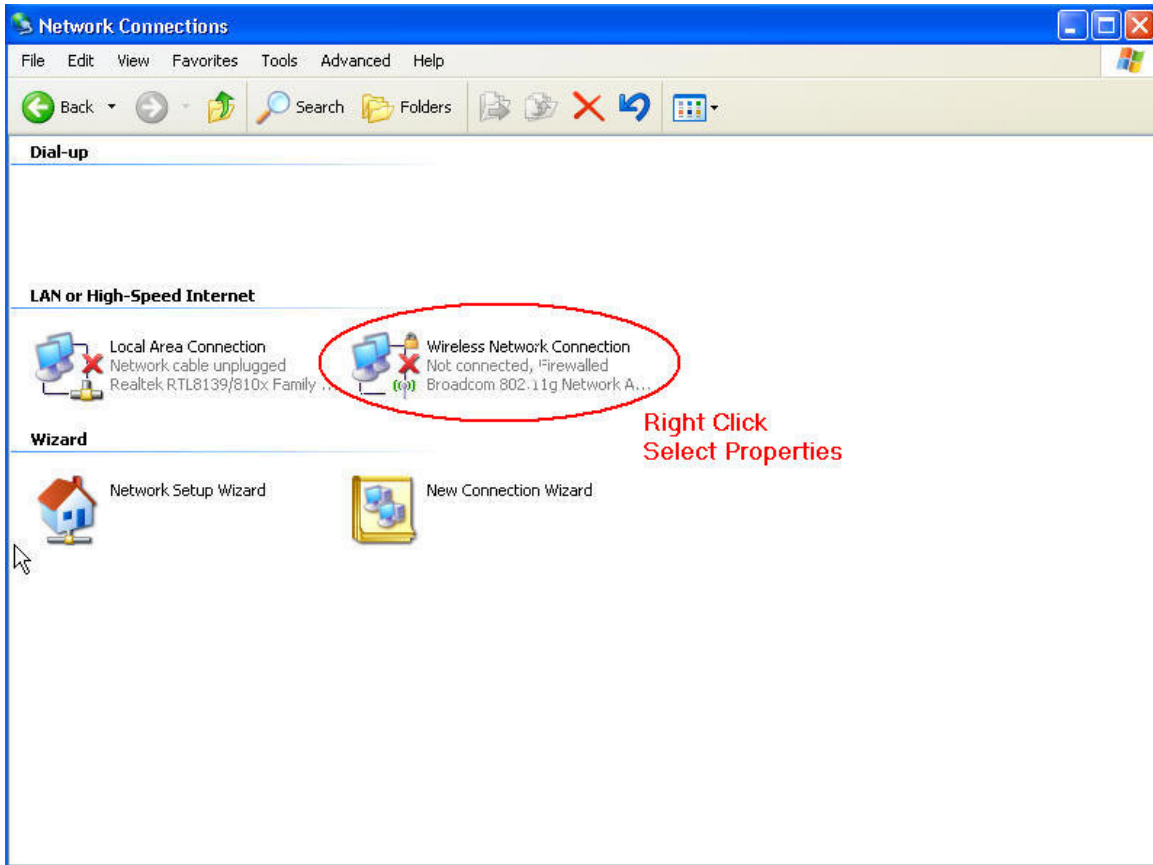
- The (Windows) computer has to support Wifi. Most laptops do. If not, a low-cost Wifi USB dongle can be purchased for around \$25.00.
- Program VSPE (Virtual Serial Ports Emulator). This free program (the 32-bit version) is kindly made available by Eterlogic and can be downloaded from their website www.eterlogic.com.
- An iPad. As external GPS data will be used, the iPad Wifi only model suffices.

The following assumptions are made:

- The Windows version is XP. The procedures for other Windows versions may vary.
- The wireless network card has already been installed and Windows is used for management of the wireless network. This is often referred to as WZC (Windows Zero Configuration)

Wireless networks settings on the PC

Go to Control Panel and double-click on Network Connections. The following window appears.

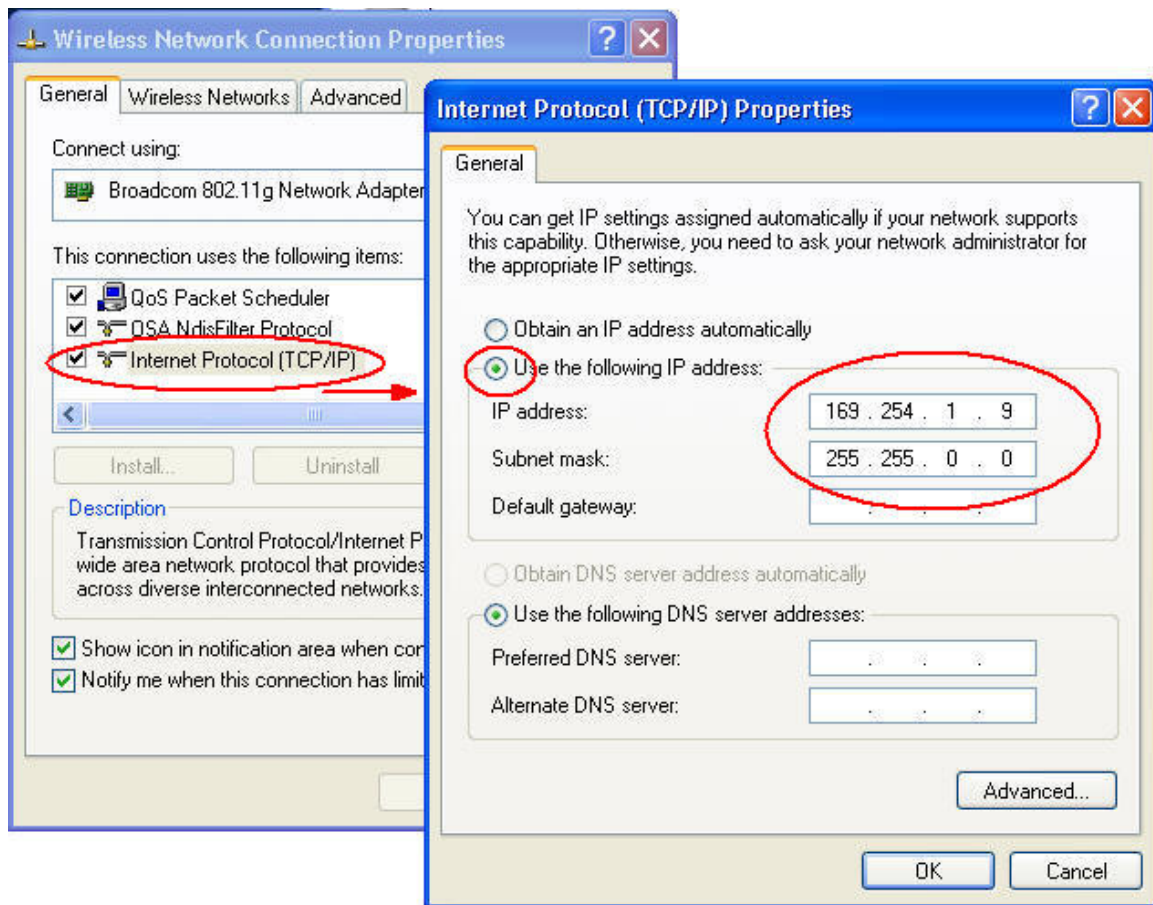


Right-click on **Wireless Networks** and click **Properties**.

The **Wireless Network Connection Properties** window appears.

Select the **General** tab.

Scroll to **Internet Protocol (TCP/IP)** and double-click this item. The **Internet Protocol (TCP/IP) Properties** window appears (see below).



Tick the fields and enter the values as indicated.

Click **OK**

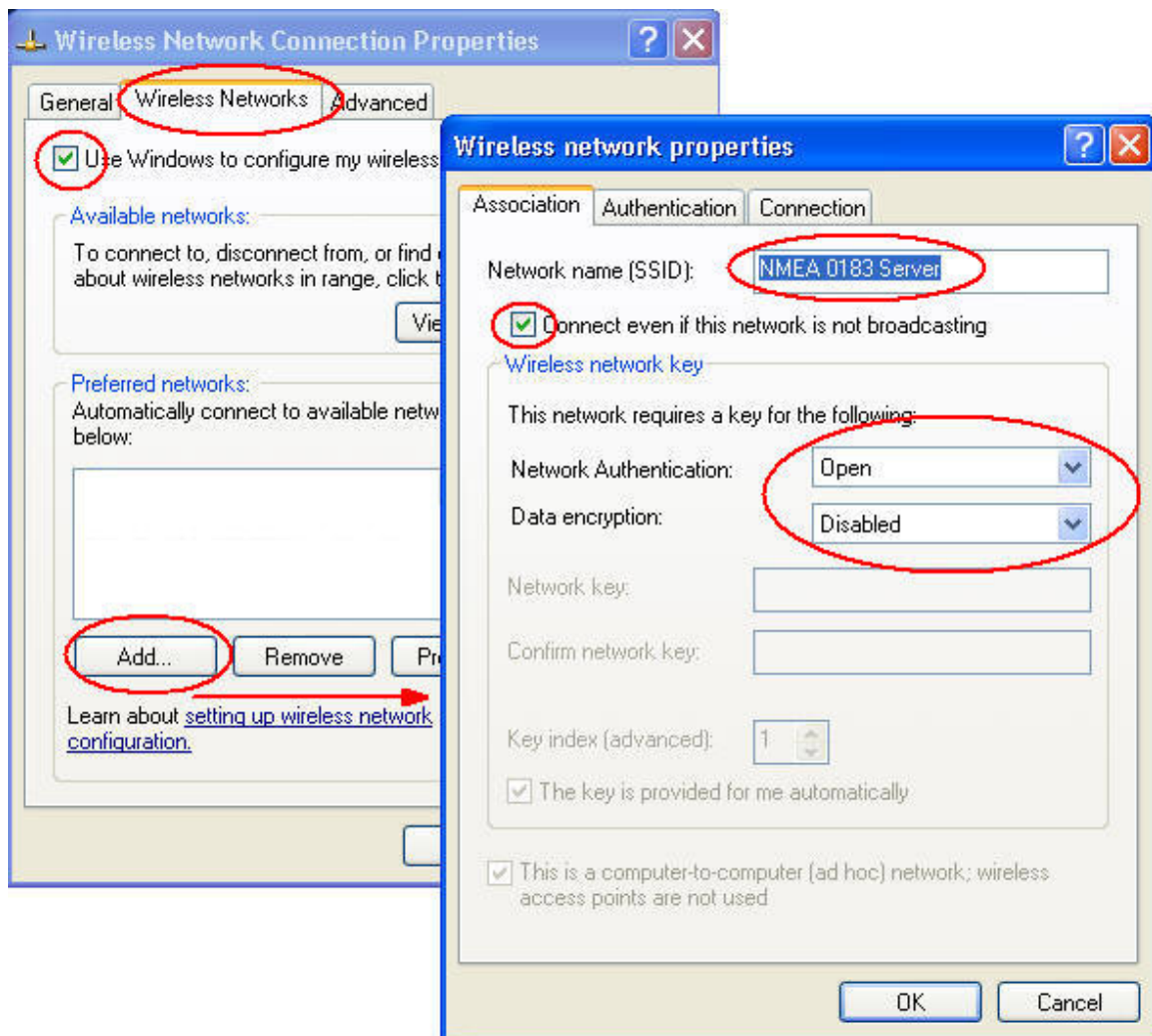
Back to the **Wireless Network Connection Properties** window

Select the **Wireless Networks** tab.

Tick **Use Windows to configure my wireless network**

Click **Add**

The **Wireless network properties** window appears (see below).



Select the **Association** tab.

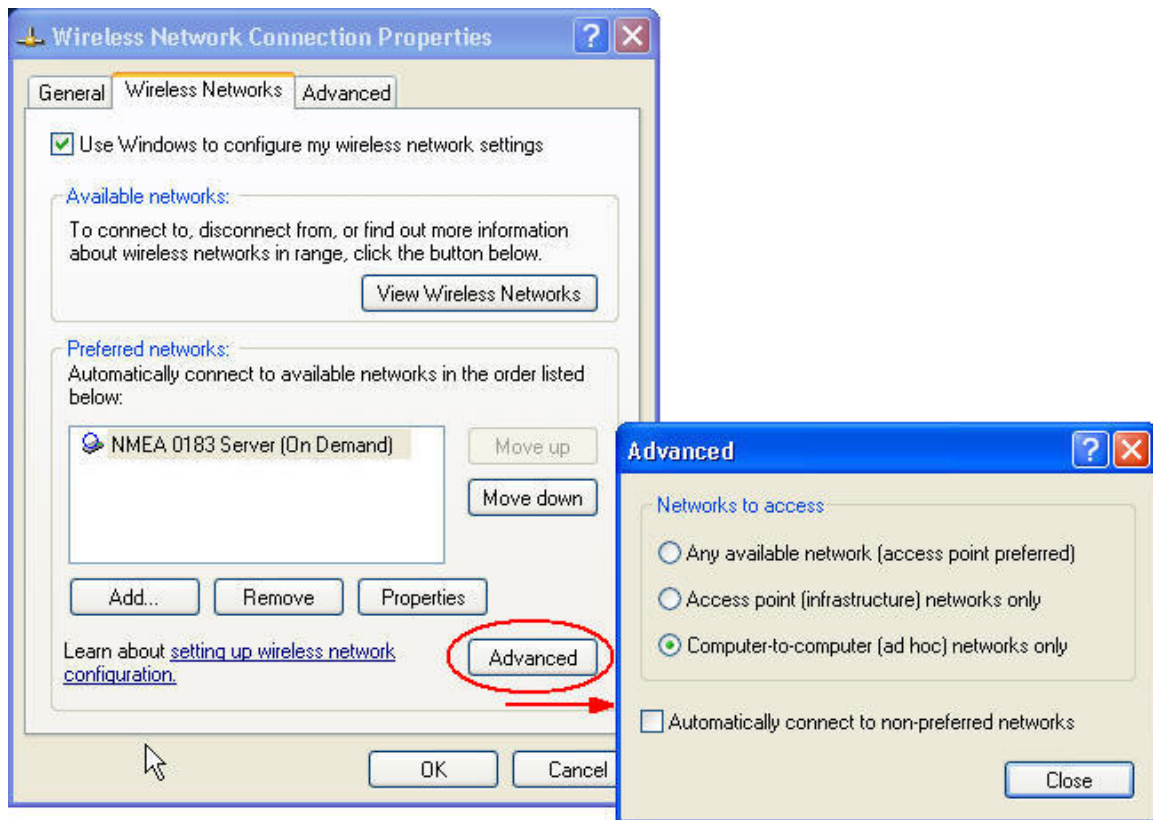
Choose a meaningful name for the **Network name (SSID)** and select other fields as indicated.

Optionally, select the **Connection** tab and tick **Connect when this network is in range**. This setting determines whether the network is automatically connected or on demand.

Click **OK**

The newly named SSID **NMEA 0183 Server** will appear under **Preferred Networks** (see below).

Highlight **NMEA 0183 Server** and click **Advanced** at the bottom of the window. The Advanced window appears (see below)

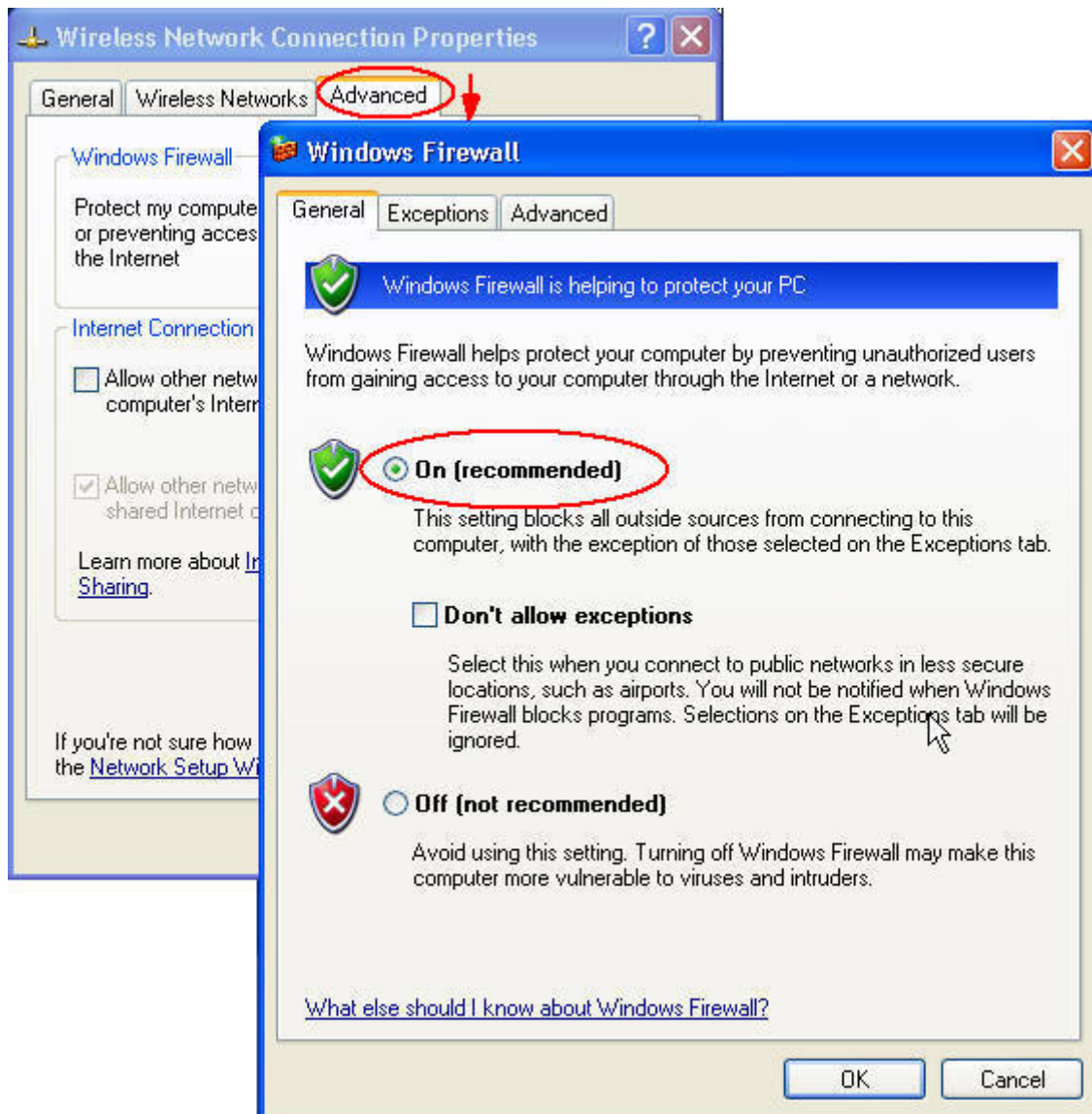


Tick **Computer-to-computer (ad hoc) networks only**.

Click **Close**

Back in the **Wireless Network Connection Properties** window,
Select the **Advanced** tab.

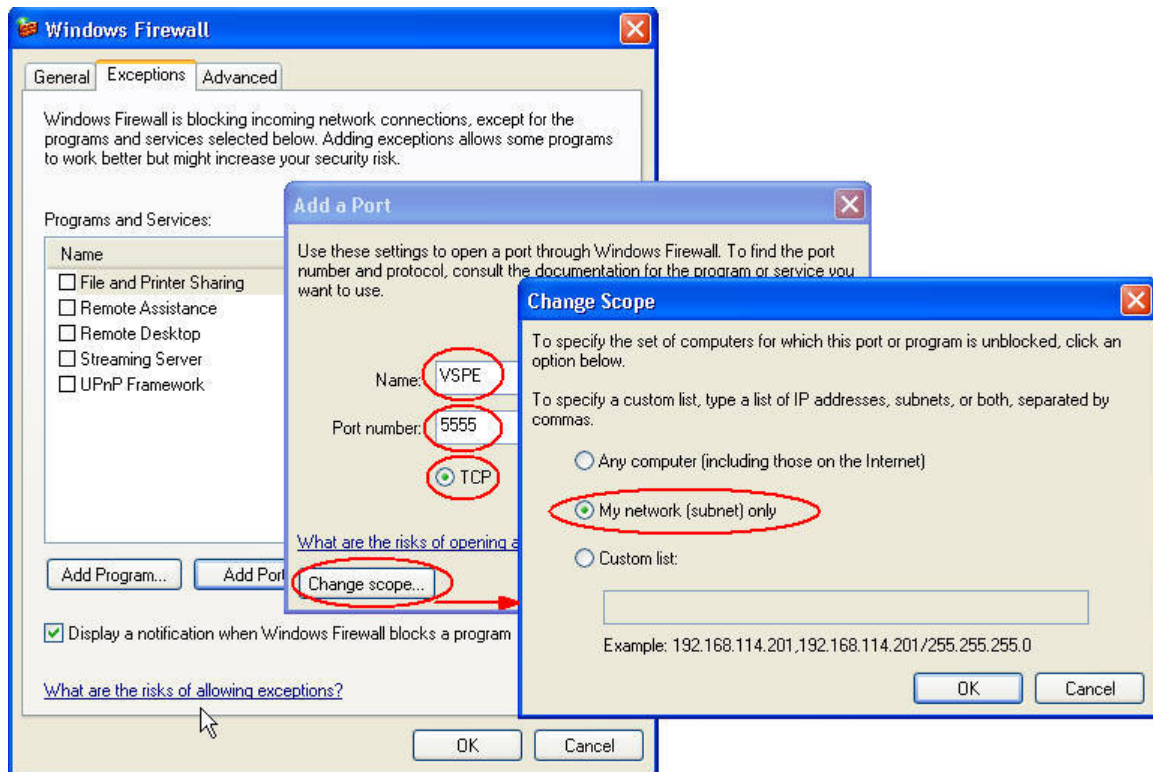
The **Windows Firewall** window appears (see below).



Under the General tab, tick **On (recommended)**

Select the **Exceptions** tab.

Click **Add Port** (see below)



In the **Add a Port** window, enter the fields as indicated.

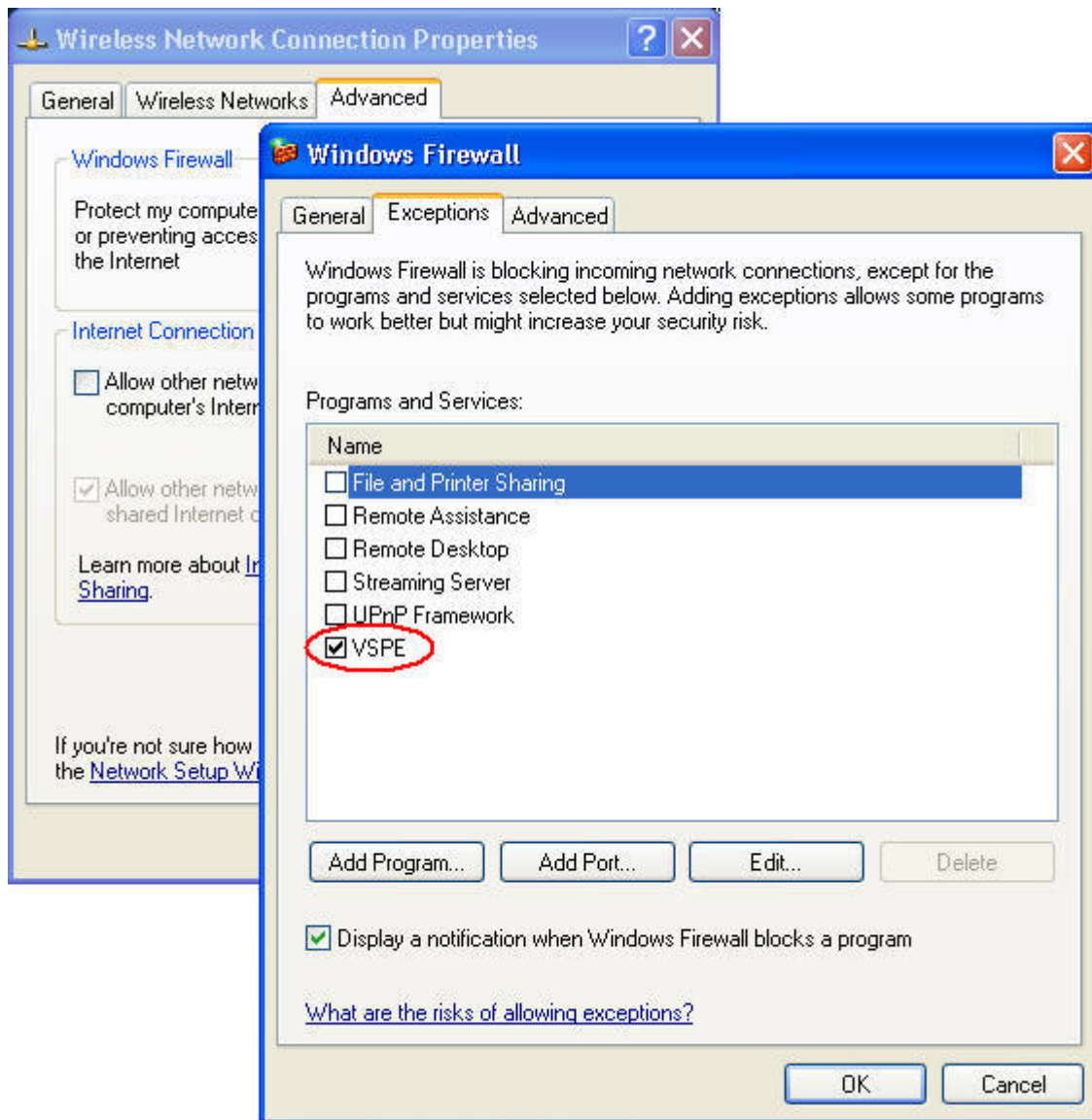
Click **Change Scope**

In the **Change Scope** window tick **My network (subnet) only**.

Click **OK** in the Change Scope window.

Click **OK** in the Add a Port window

VSPE now appears under **Programs and Services** (see below).

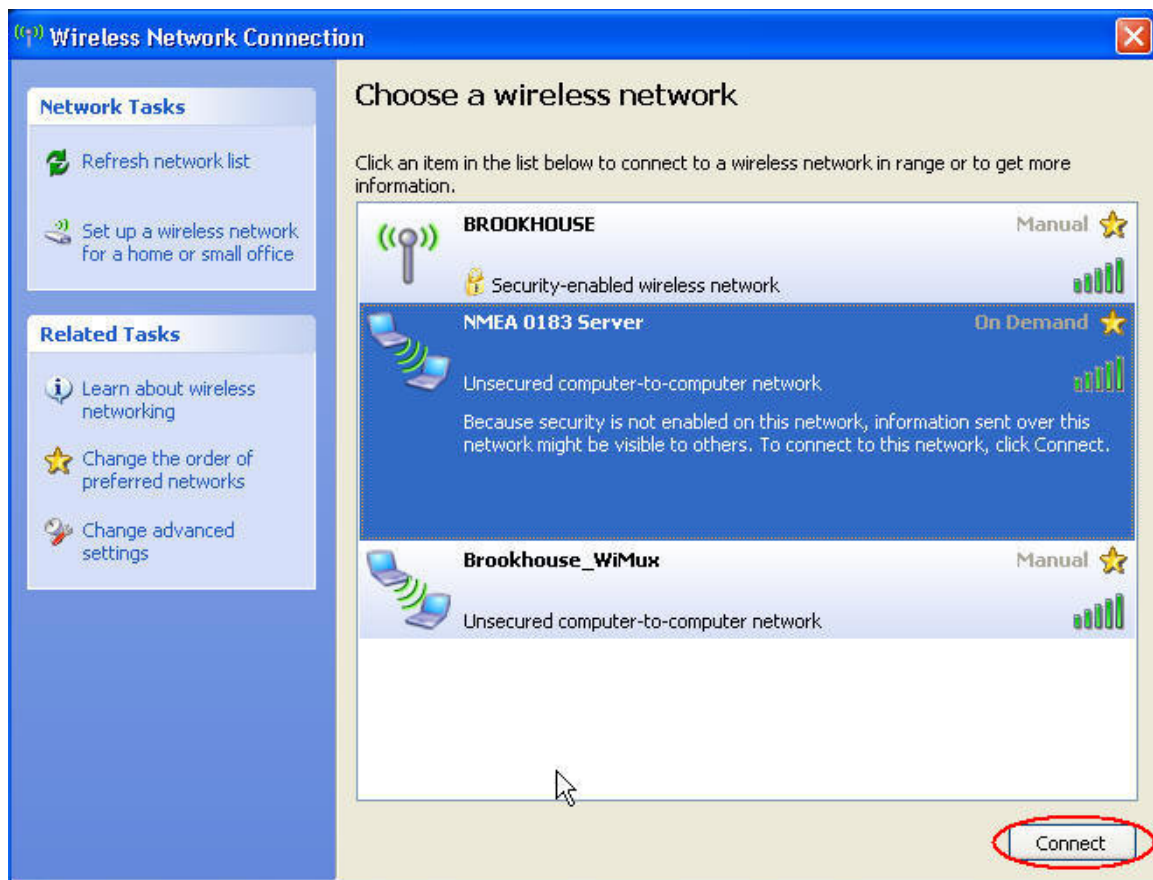


Click **OK** in the Windows Firewall window.

Click **OK** in the Wireless Network Connection Properties window.

Back in the **Network Connections** window, where we started, right-click on **Wireless Network Connection** again and now click **View Wireless Networks**.

Under the available networks (**Choose a wireless network**) the “network” **NMEA 0183 Server** has appeared. (see below).



Later on, we will highlight **NMEA 0183 Server** and click on **Connect**. This is not useful at this stage yet, as we first have to prepare the server program and the iPad.

Prepare the TCP/IP server software (VSPE)

First of all, we need to know which COM port (“real” serial COM port or virtual COM port) is being used for NMEA input in the navigation program.

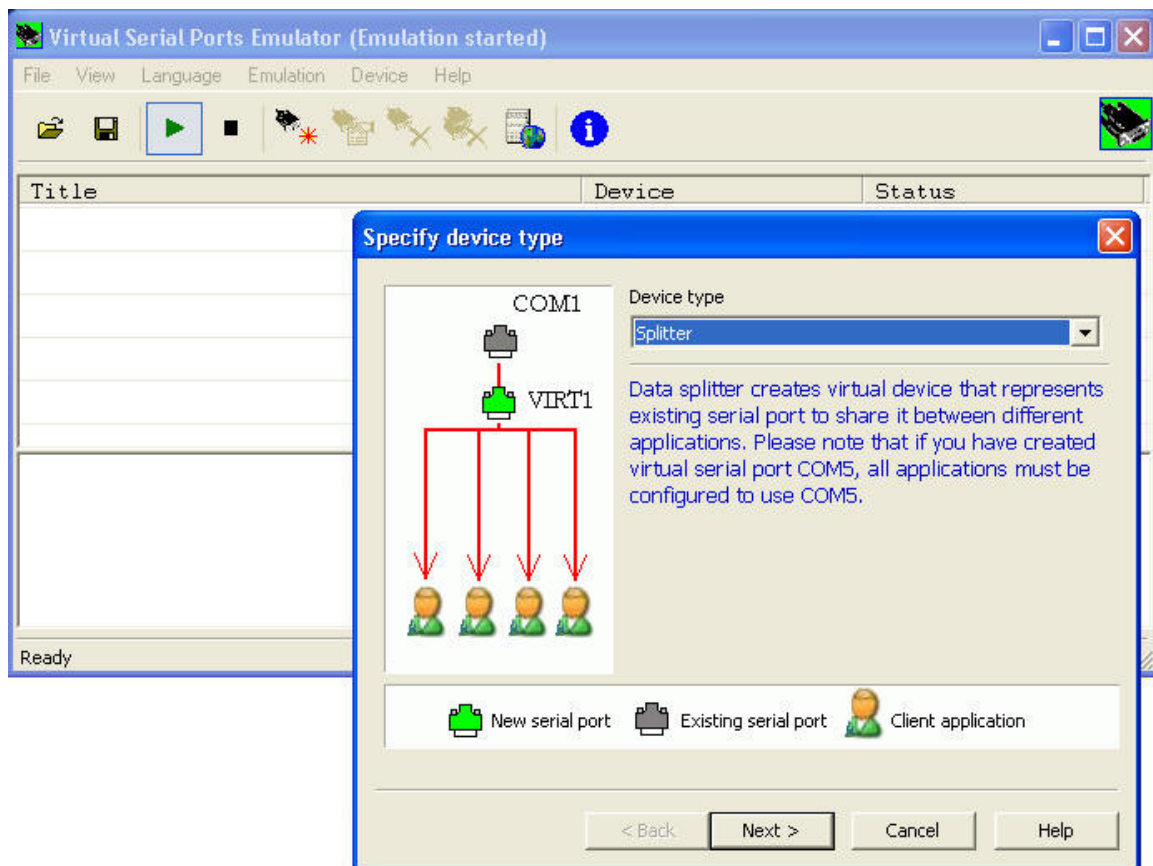
This COM-port number can be found in the navigation program’s setup or configuration section. If it is a virtual COM port for USB or bluetooth communication, make sure that the USB or bluetooth device is connected to the computer. You can also check under Control panel > System > Hardware > Device Manager > Ports (COM and LPT). Any currently defined ports are listed here.

In the following discussion, it is assumed that the COM port for NMEA 0183 input is COM4. If it is a different number, change all occurrences of COM4 accordingly.

It is also assumed, that COM5 is non-existing. If this is not the case, change all occurrences of COM5 to a non-existing COM port number.

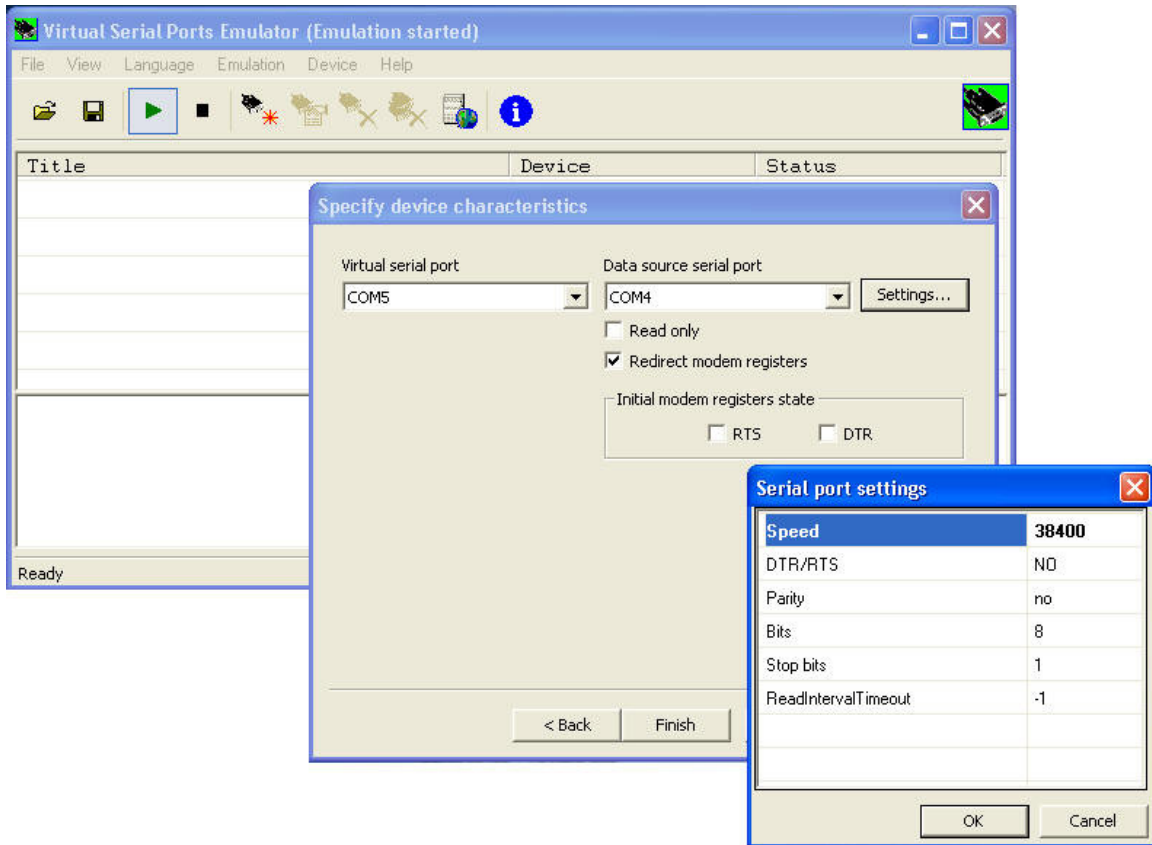
Program VSPE

Start the earlier downloaded and installed program VSPE and in the main window, click on **Device** in the menu bar at the top of the window. A window with the title **Specify Device Type** appears (see below).



In the drop-down menu Device type, select **Splitter**.

Click **Next**



In the drop-down menu **Virtual serial port** select COM5

In the drop-down menu **Data source serial port** select COM4

Tick/untick other options as indicated.

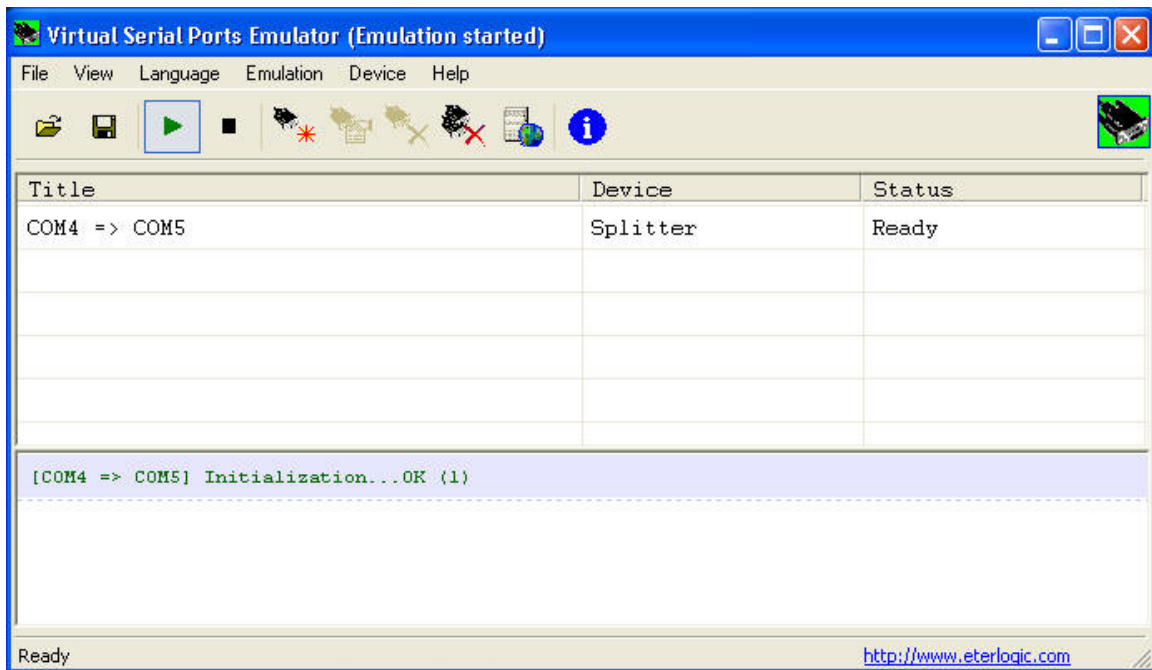
Click **Settings**

Select the port settings as indicated.

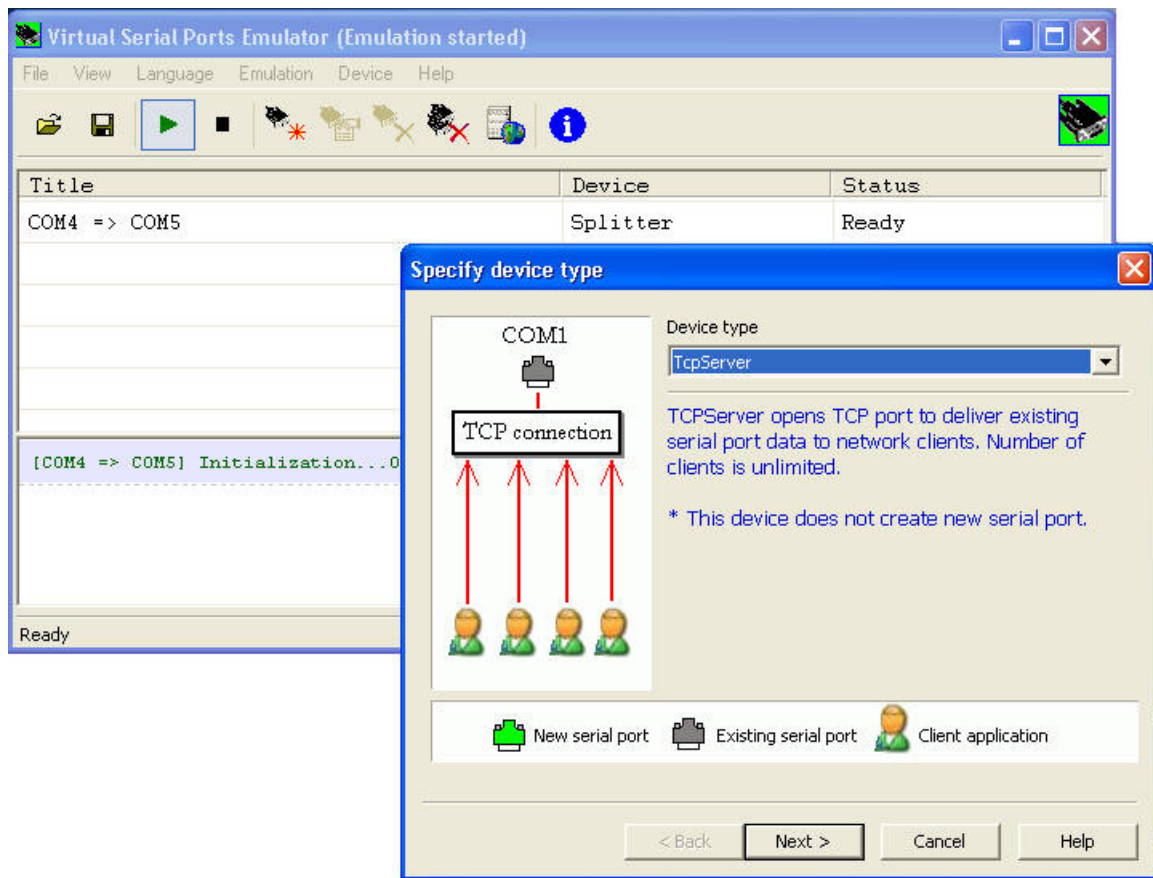
Click **OK**

Click **Finish**

The main VSPE window now looks as follows:



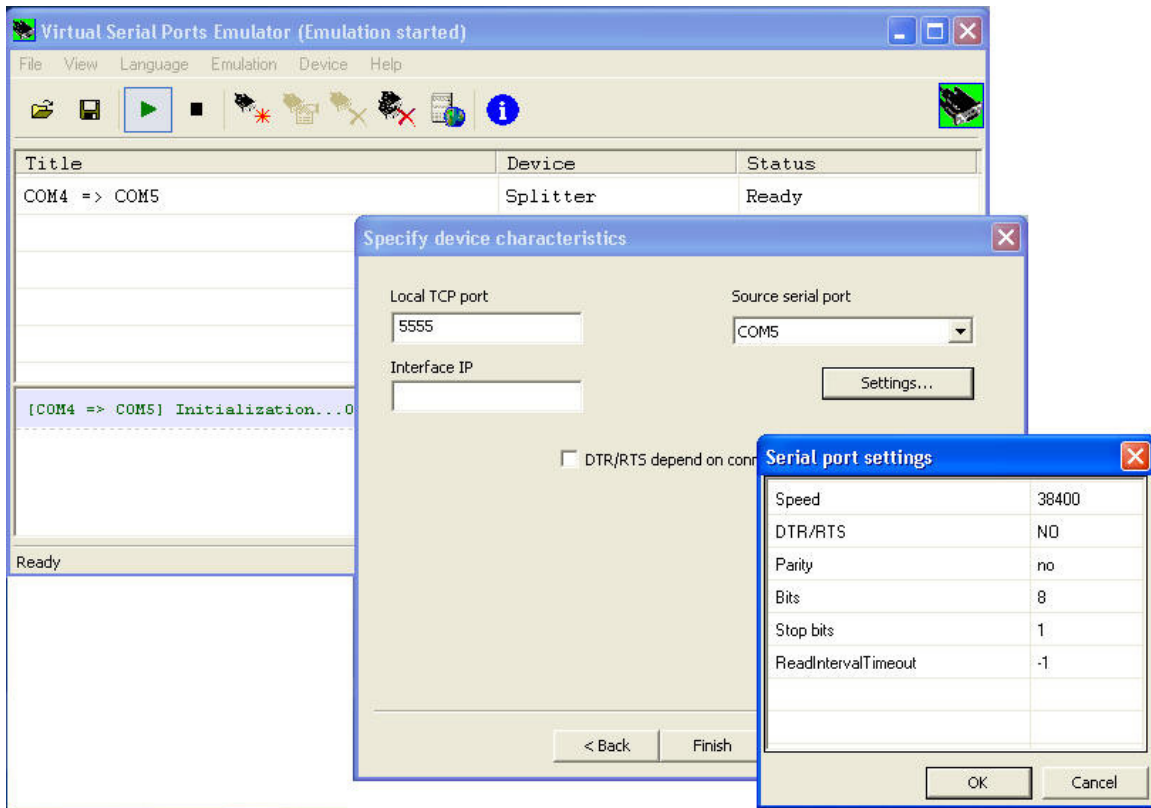
In the top menu bar click **Device** again.



In the **Specify device type** window, select **TcpServer** from the drop-down menu.

Click **Next**

The **Specify device characteristics** window appears (see below)



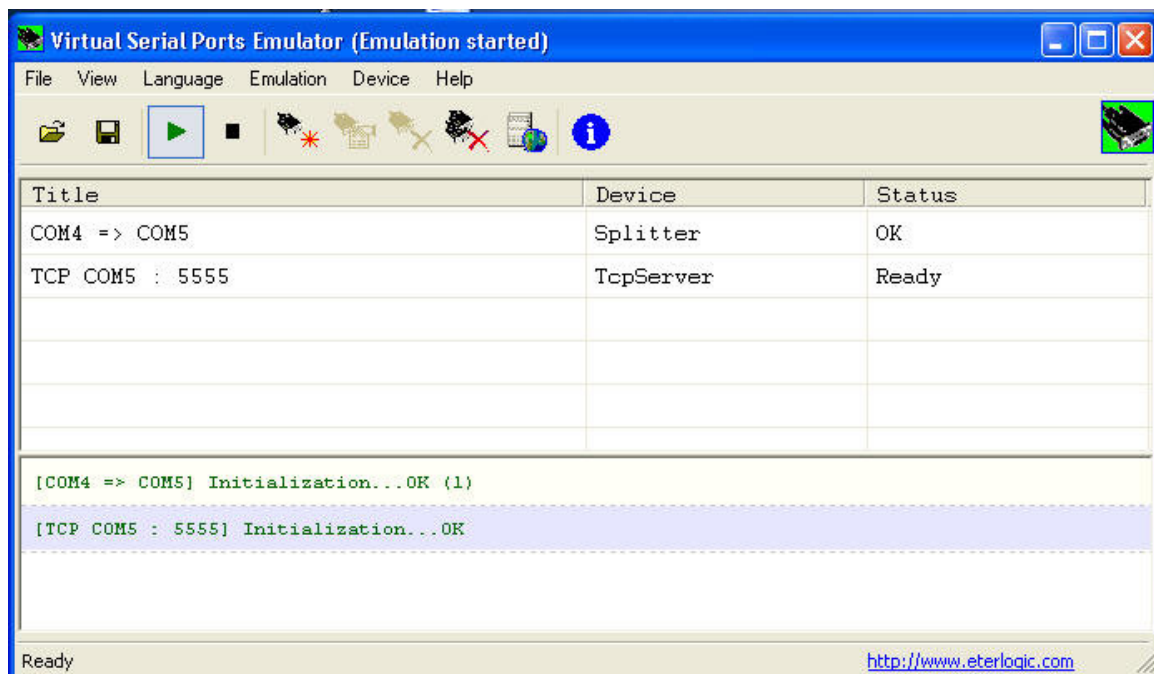
Enter the value **5555** in the field for the **Local TCP port** and select **COM5** from the drop down menu **Source serial port** (the virtual serial port from the earlier splitter definition above)

Click settings and select the **Serial port settings** as indicated.

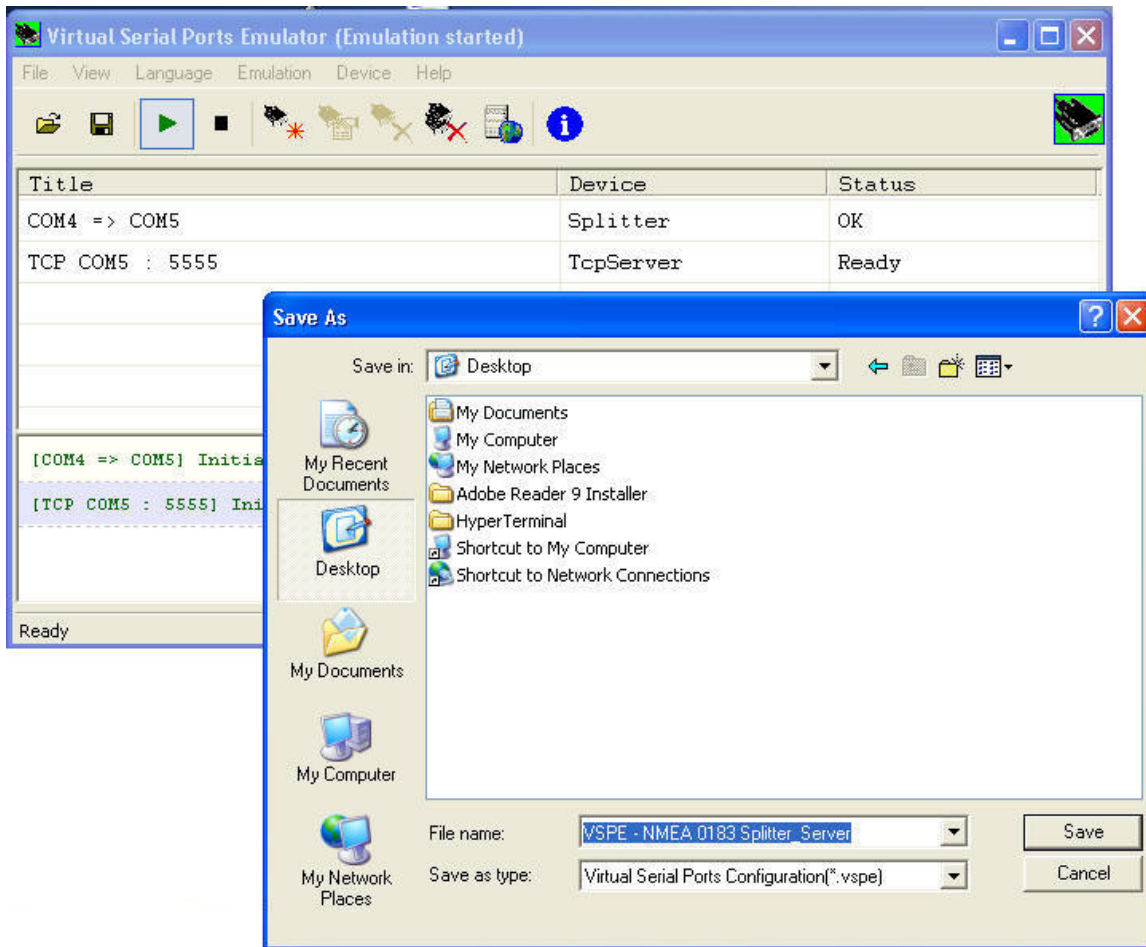
Click **OK**

Click **Finish**

The main window now looks like this:



To save this configuration, click on File and select **Save As**



Name this configuration **VSPE – NMEA 0183 Splitter Server** and save it to the Desktop as indicated in the Save As window above.

In the future, just clicking on the icon on the desktop will execute program VSPE and load the configuration defined above.

To start VSPE automatically with this configuration each time the computer starts up, place a short-cut in the Windows **Startup** folder (recommended).

Program VSPE can now be minimized and will continue running in the background.

Important:

The COM-port setting in the navigation program now has to be changed to COM5 because from now on it will receive the NMEA data from the VSPE splitter port.

The last step is the iPad configuration.

Setting up the iPad

Power-on the iPad and go to **Settings**

Tap Wi-Fi

Now go back to the computer to the **Network Connections** window.

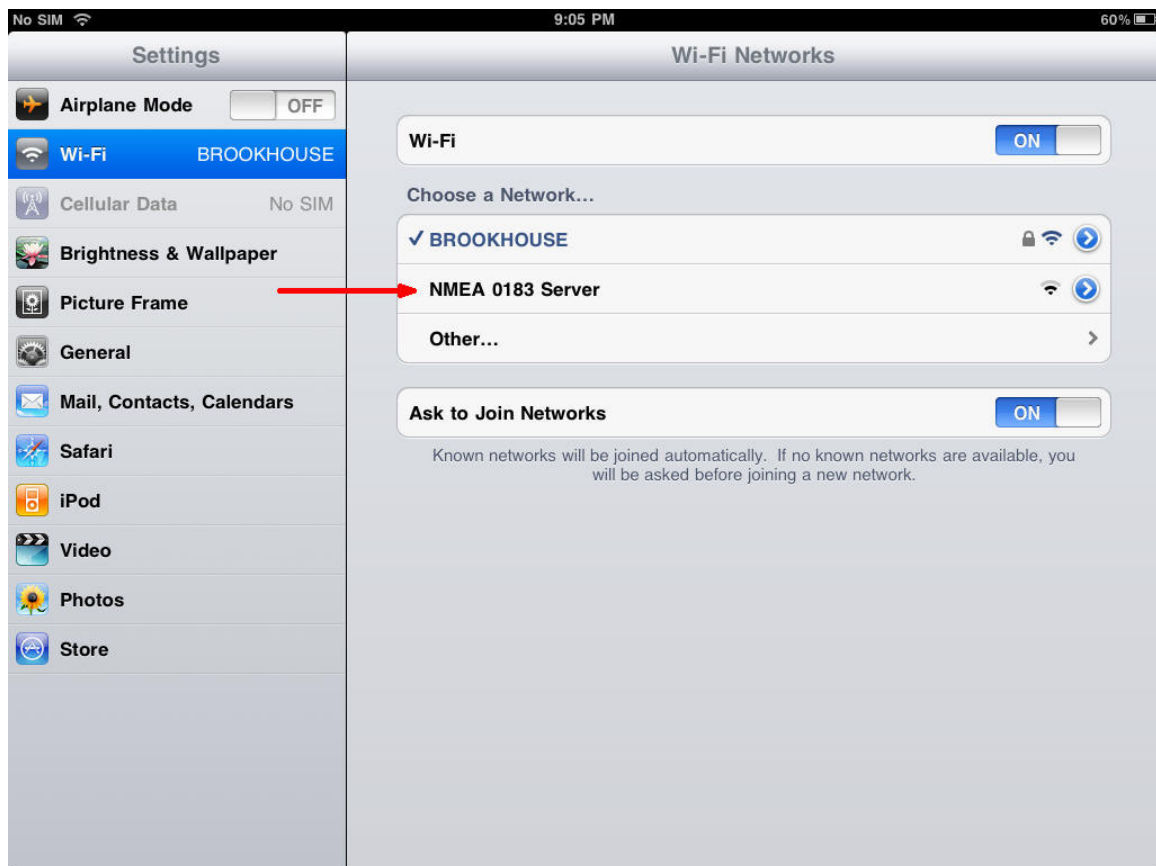
Right-click on **Wireless Connection**

Click **View Wireless Networks**

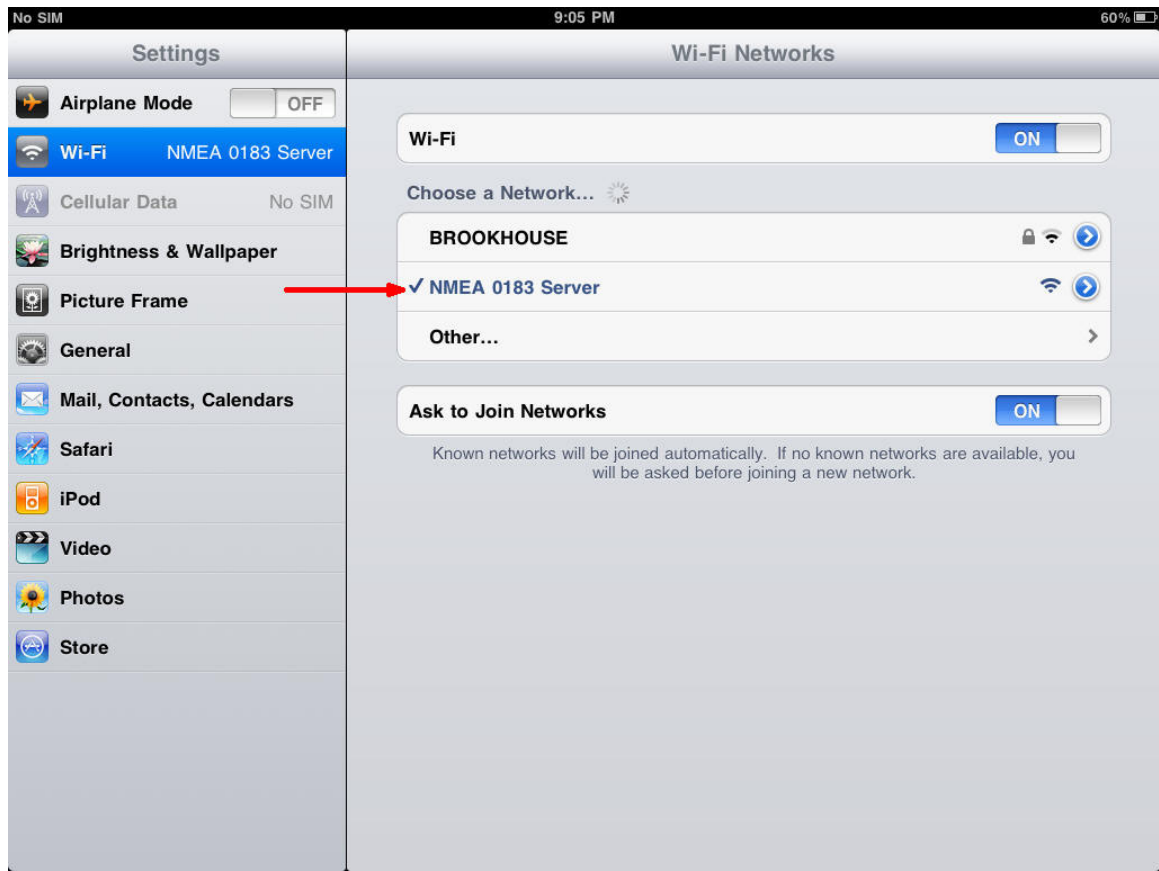
Click on **NMEA 0183 Server** and when highlighted click on **Connect** at the bottom of the window.

NMEA 0183 Server should now appear in the list under **Choose a Network**

The iPad may still be connected to another work, as in the screenshot.



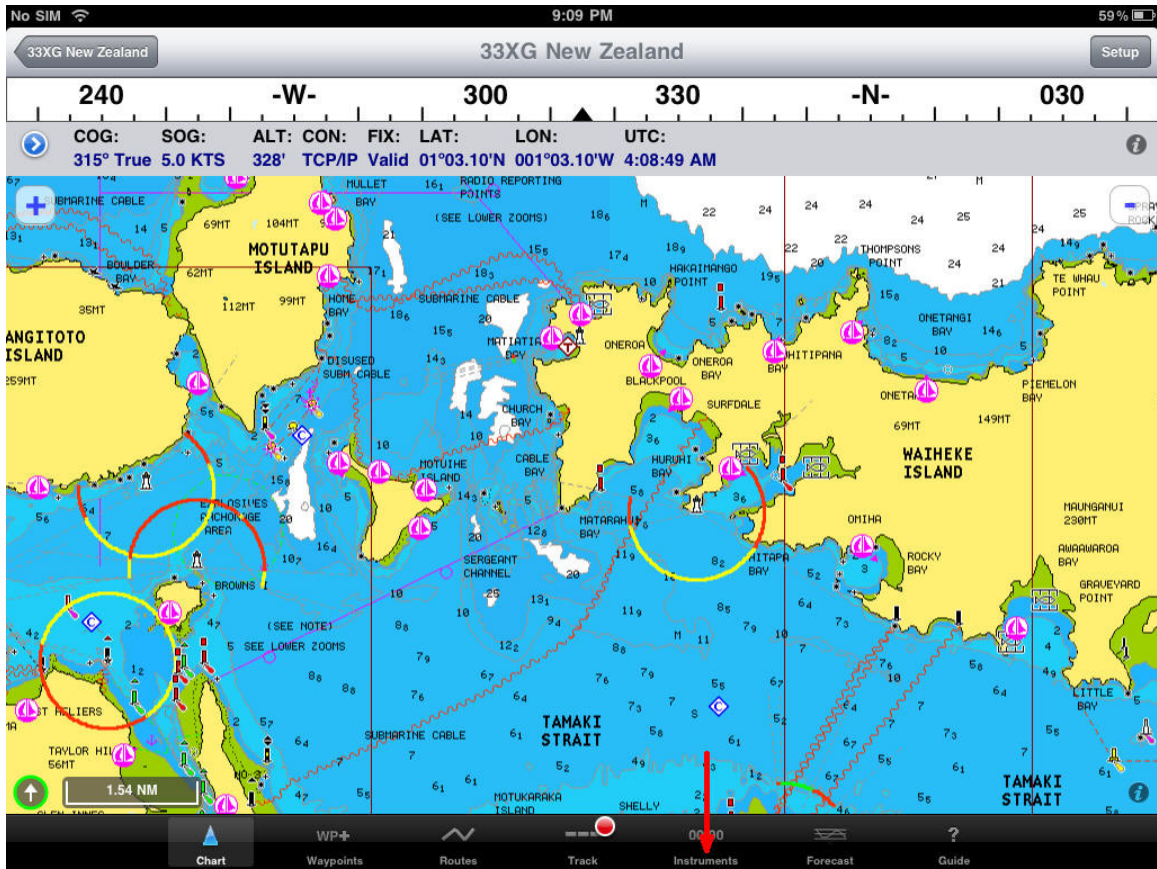
Tap on **NMEA 0183 Server** to connect.



At this point, the computer will also show status **Connected** for **NMEA 0183 Server**.

Now start application iNavx on the iPad.

It will load a chart automatically.



At the bottom of the screen, tap **Instruments**.

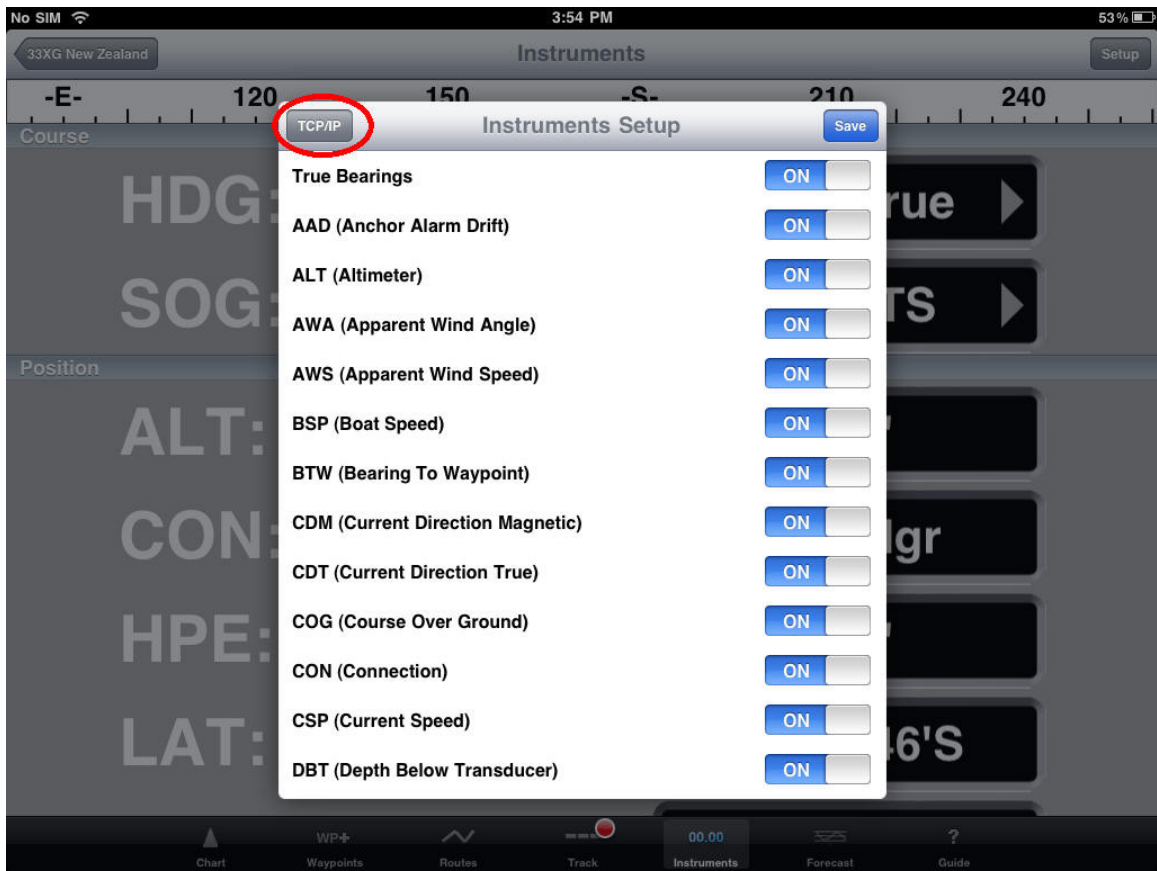
The instruments screen appears.



Tap on **Setup** in the top-right corner.

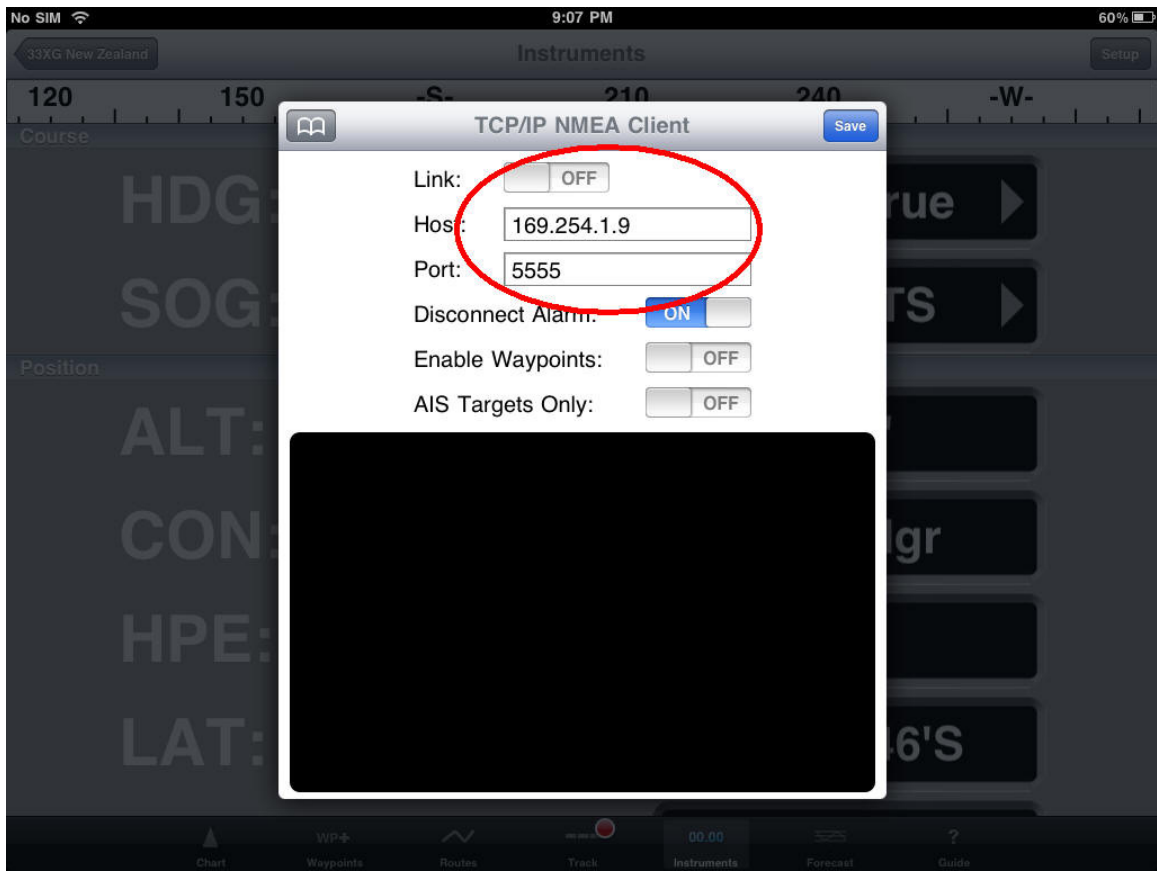
Ignore the displayed information, this screen shot was made with TCP/IP already connected.

The **Instruments setup** window appears



Tap on TCP/IP in the left top corner.

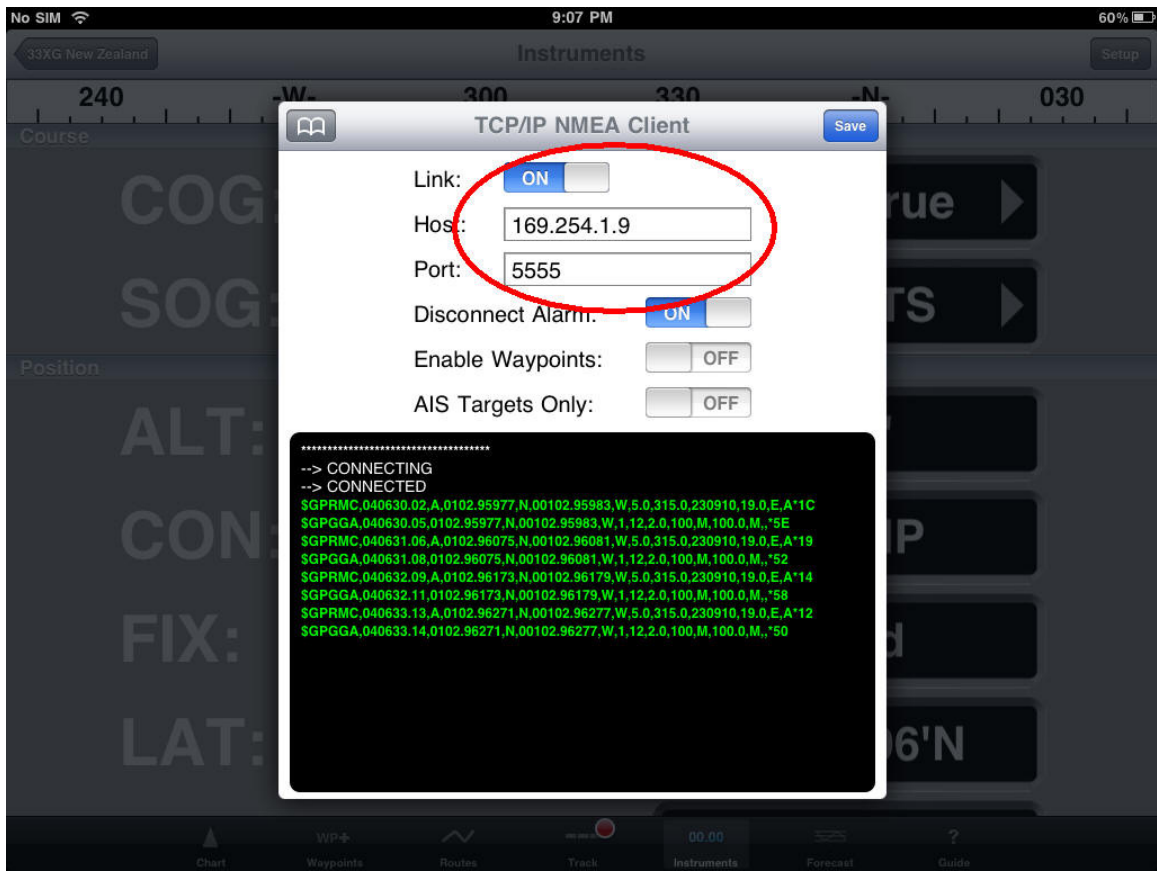
The TCP/IP NMEA client window appears



Enter the **IP address** and **Port number** for the host (server) as indicated.

Tap on **ON/OFF** toggle field.

iNavx should now connect to the server program and data will start streaming.



Data in this sample is just some GPS data. With GPS, instruments and AIS connected, the full NMEA data stream can be monitored here.

Your iPad chart plotter is now ready and you can go back to the Chart or one of the other iNavx displays by tapping on one of the options at the bottom of the screen.