USER'S GUIDE

DDF7001 SOFTWARE USERS GUIDE

Revision A: June 29, 2015

Revision B: January 17, 2020

Revision C: May 4, 2020

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Chapter 1

INTRODUCTION

The MPT User Interface suite of software contains three software programs designed for the Doppler DDF7001 direction finder. MPT User Interface is the main program used to operate and configure the direction finder. Doppler DF Discover is used to discover the network parameters of a DDF7001 connected to a DHCP enabled network and MPT Flash is used to reprogram the direction finder firmware in the event that changes to the firmware are required in the future.

IN THIS CHAPTER

Typographical Conventions 1

TYPOGRAPHICAL CONVENTIONS

Before you start using this guide, it is important to understand the terms and typographical conventions used in the documentation.

For more information on specialized terms used in the documentation, see the Glossary at the end of this document.

The following kinds of formatting in the text identify special information.

FORMATTING CONVENTION	TYPE OF INFORMATION
Triangular Bullet(➢)	Step-by-step procedures. You can follow these instructions to complete a specific task.
Special Bold	Items you must select, such as menu options, command buttons, or items in a list.
Emphasis	Use to emphasize the importance of a point or for variable expressions such as parameters.
CAPITALS	Names of keys on the keyboard. for example, SHIFT, CTRL, or ALT.
KEY+KEY	Key combinations for which the user must press and hold down one key and then press another, for example, CTRL+P, or ALT+F4.

Chapter 2

INSTALLATION

To install the software insert the USB thumb drive into your computer and launch Doppler.exe Follow the instructions given by the installer program. Check www.dopsys.com/software/downloads.html for updates to the software.

Chapter 3

GETTING STARTED

Communication with the DDF7001 is accomplished via the Ethernet connection on the unit. There are two ways to connect to the DDF7001 Ethernet port: network and direct connection. Use the network connection if you have access to a local area network that supports DHCP. Use the direct connection for all other cases.

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NETWORK CONNECTION

Figure 1 illustrates the connection of the DDF7001 to a local area network that supports DHCP. Once the connections have been made, apply power to the unit. The first time the unit is powered on the network it can take up to 10 seconds it to acquire an IP address from the DHCP server.

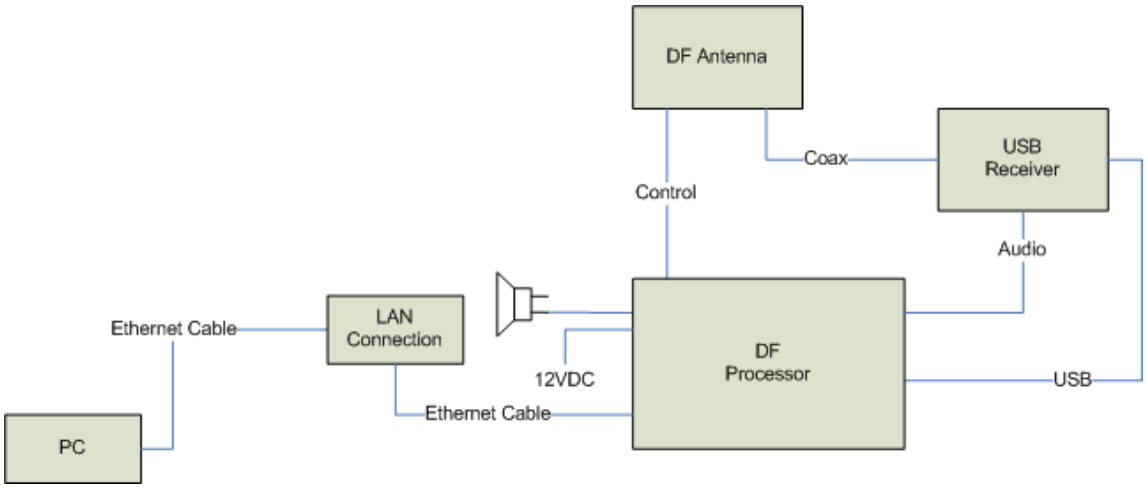


Figure 1: DDF7001 Direction Finder Connected to Local Area Network

You are now ready to use the DDF7001 User Interface.

DIRECT CONNECTION

Use the direct connection to set initially set up the DDF7001 for a network that does not support DHCP, or in cases where no network is available such as a mobile installation. To accomplish the direct connection use an Ethernet cross over cable to connect the direction finder to the computer's network interface connection as shown in Figure 2 below.

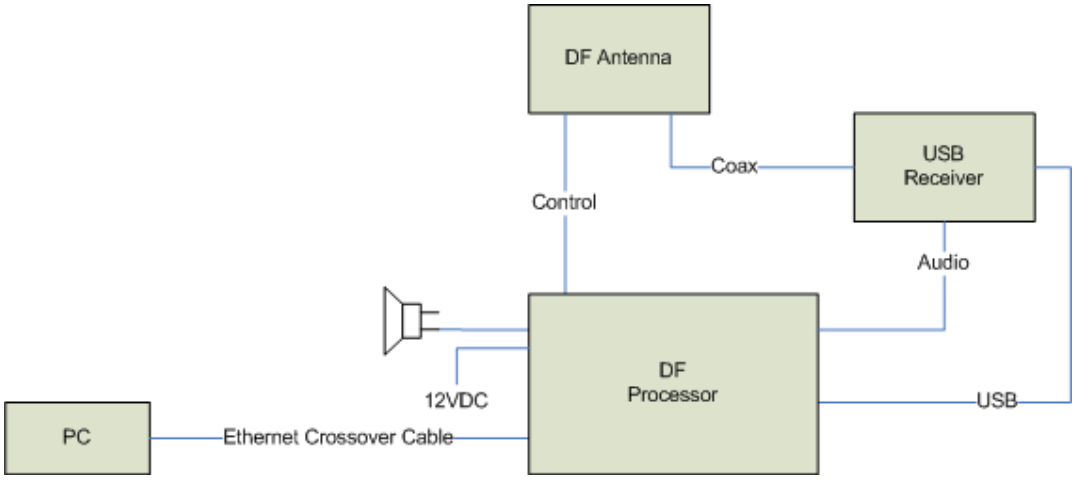
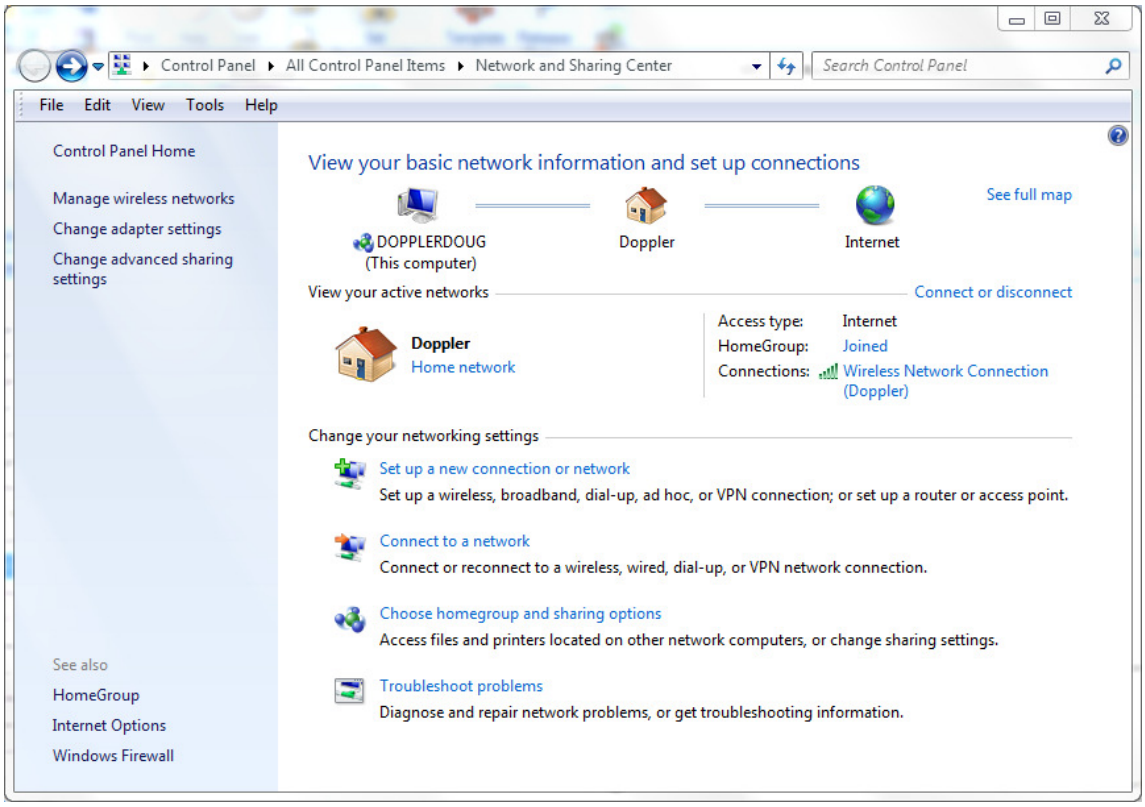


Figure 2: DDF7001 Directly Connected the Computer with crossover cable

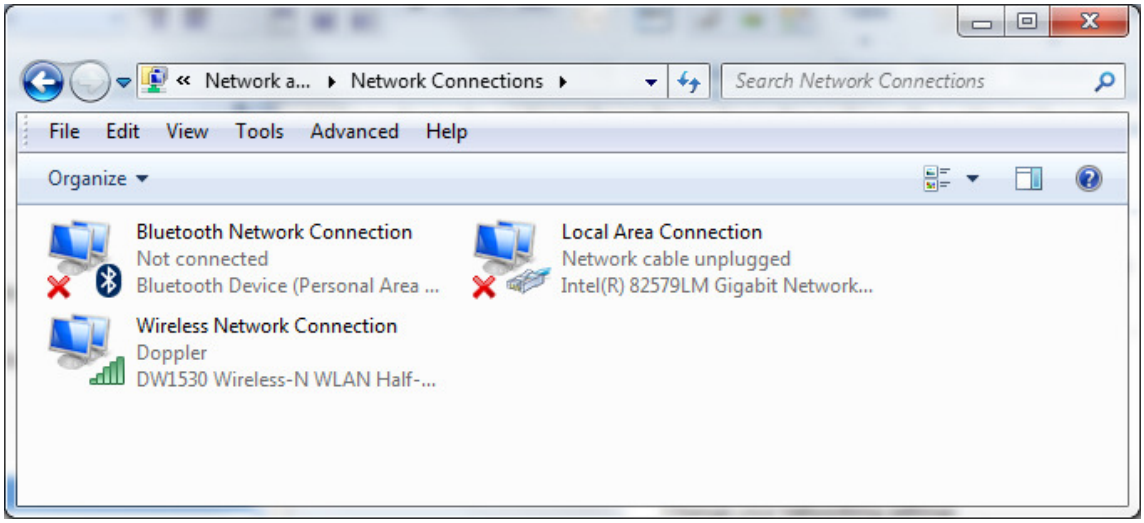
The default IP address of the DDF7001 is 10.0.0.100 so in order to connect to it you must configure you computer's network connection as shown in the following steps.

WINDOWS 7 AND WINDOWS 10

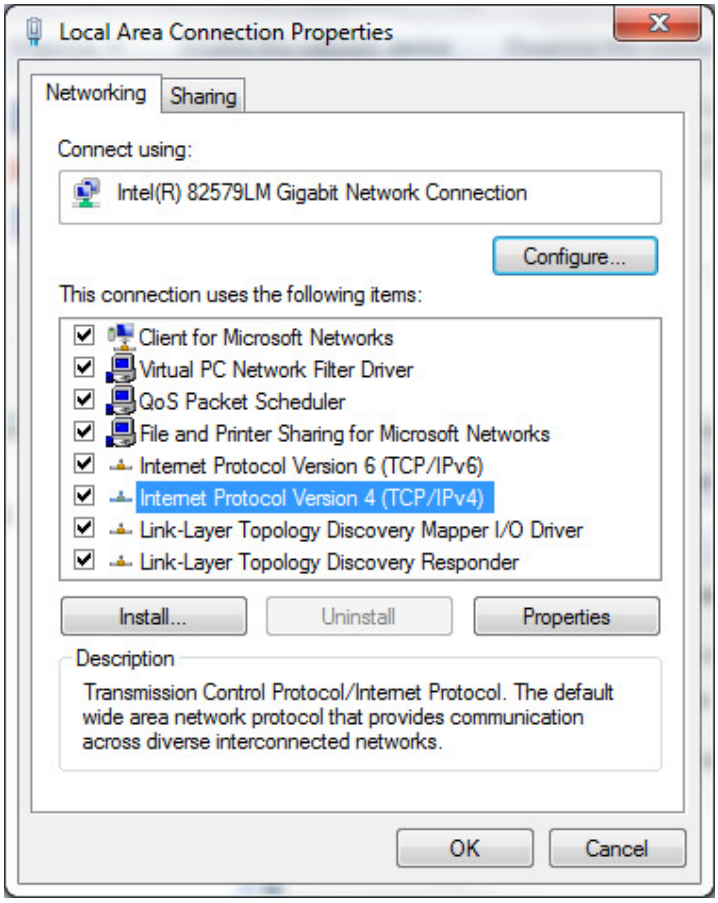
- ***Use the Control Panel to navigate to the*** *Network and Sharing Center*. ***It will look similar to the screen shot below.***



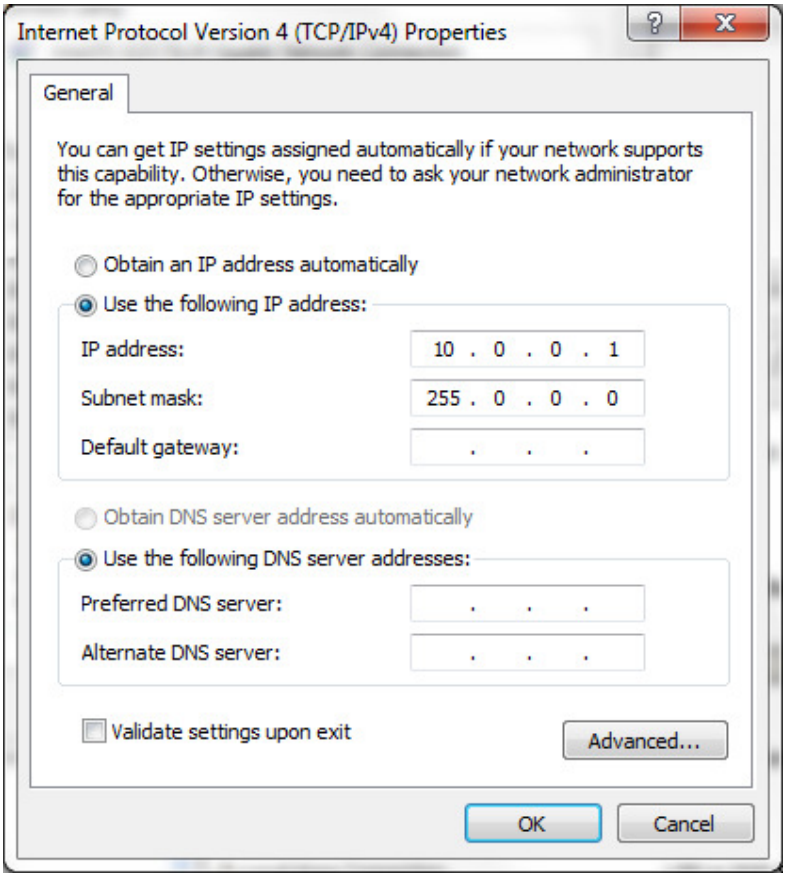
- ***Click on*** *Change adapter settings* ***to display a dialog similar to the one below.***



- ***Right click on the** Local Area Connection **icon and select** Properties **to display the dialog shown below***



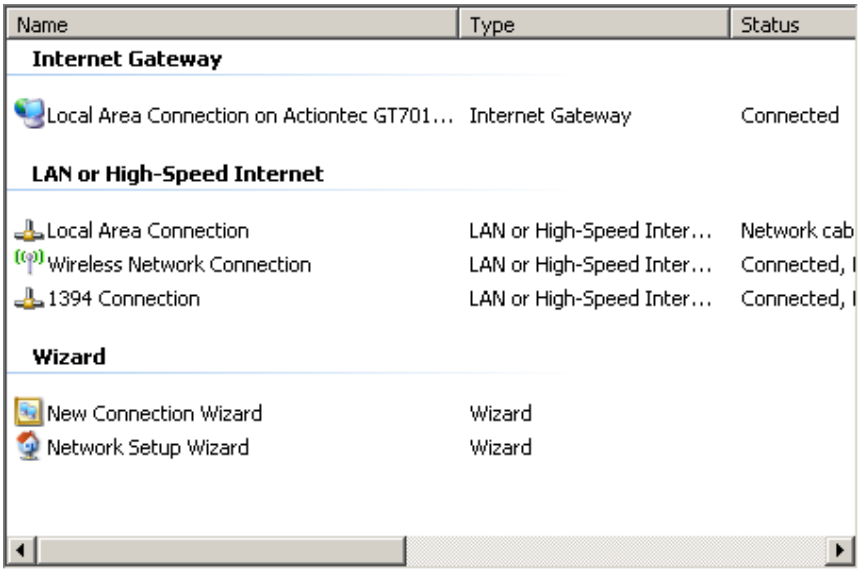
- ***Select** Internet Protocol Version 4 (TCP/IPv4) **and the click the** Properties **button.***



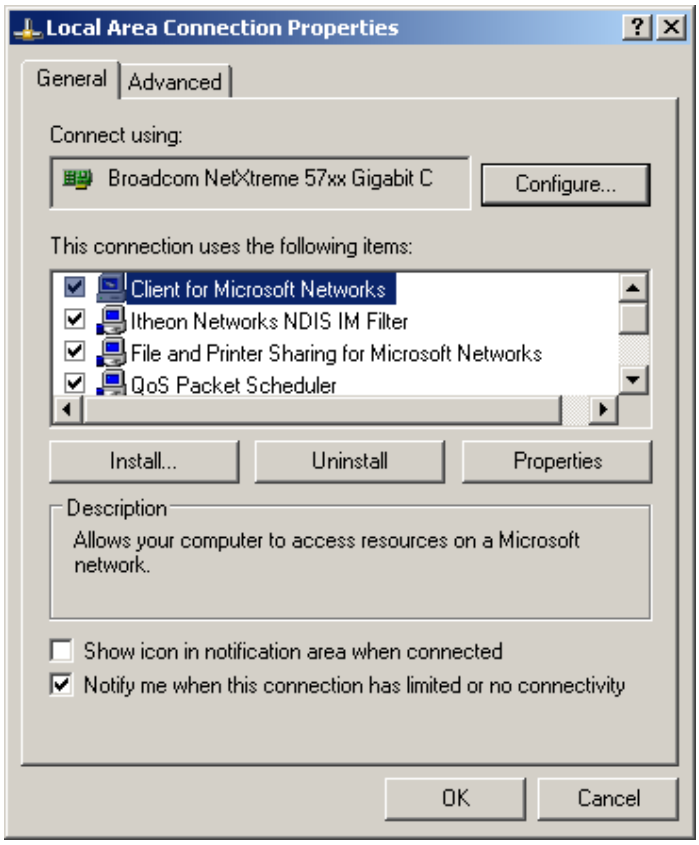
- ***As shown above select the** Use the following IP address **and type in an** IP address **of 10.0.0.1 and click OK.***
- ***Click on OK again.***
- ***Proceed to the firewall setup***

WINDOWS XP

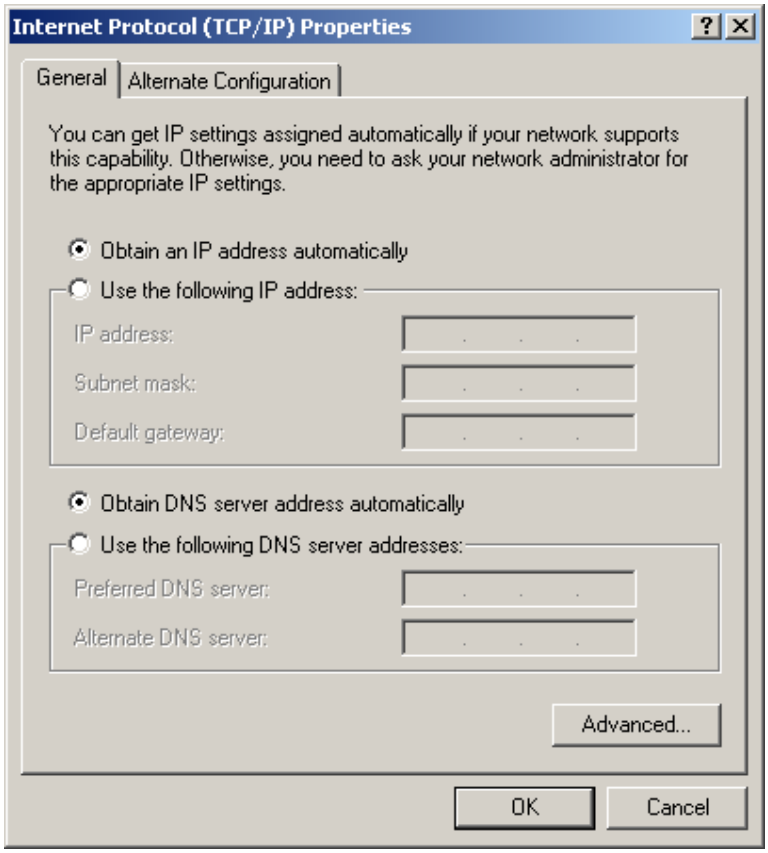
- *Use the Control Panel to navigate to the Network Connections Folder. It will look similar to the screen shot below*



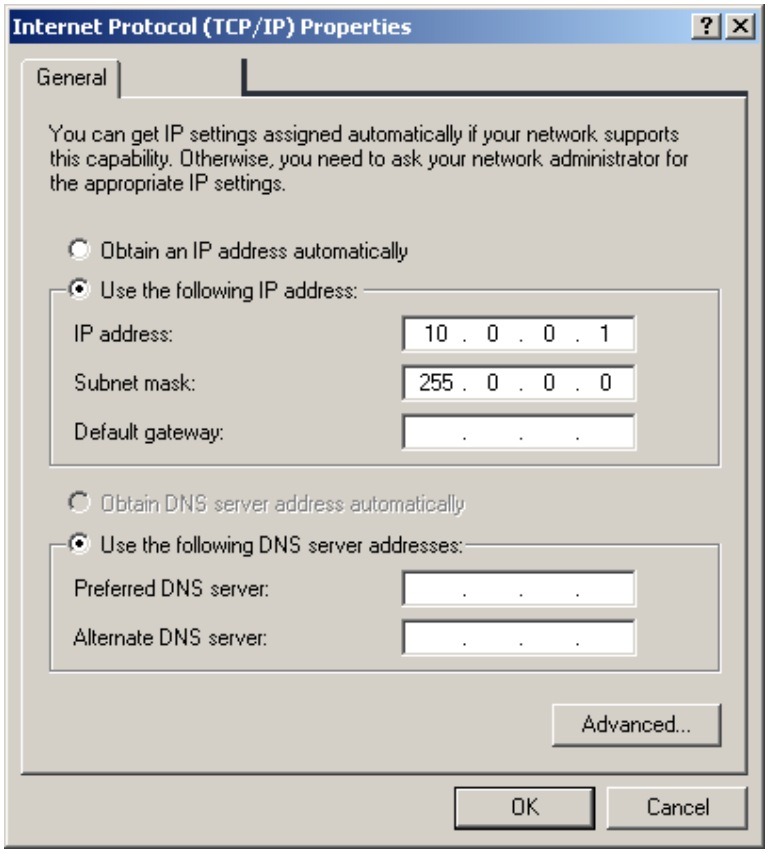
- *Right click on the Local Area Connection and select Properties to display the following dialog.*



- ***Scroll down the list, select** Internet Protocol (TCP/IP), **and press to Properties button to display the dialog box shown below. Typically the settings will appear as shown below***



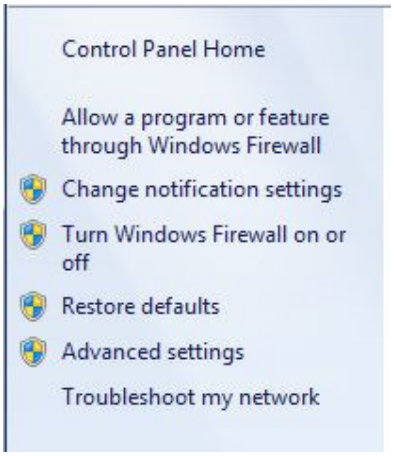
- ***Click on the** Use the following IP address **radio button and then enter 10.0.0.1 as the** IP address **and 255.0.0.0 as the** Subnet mask**.**



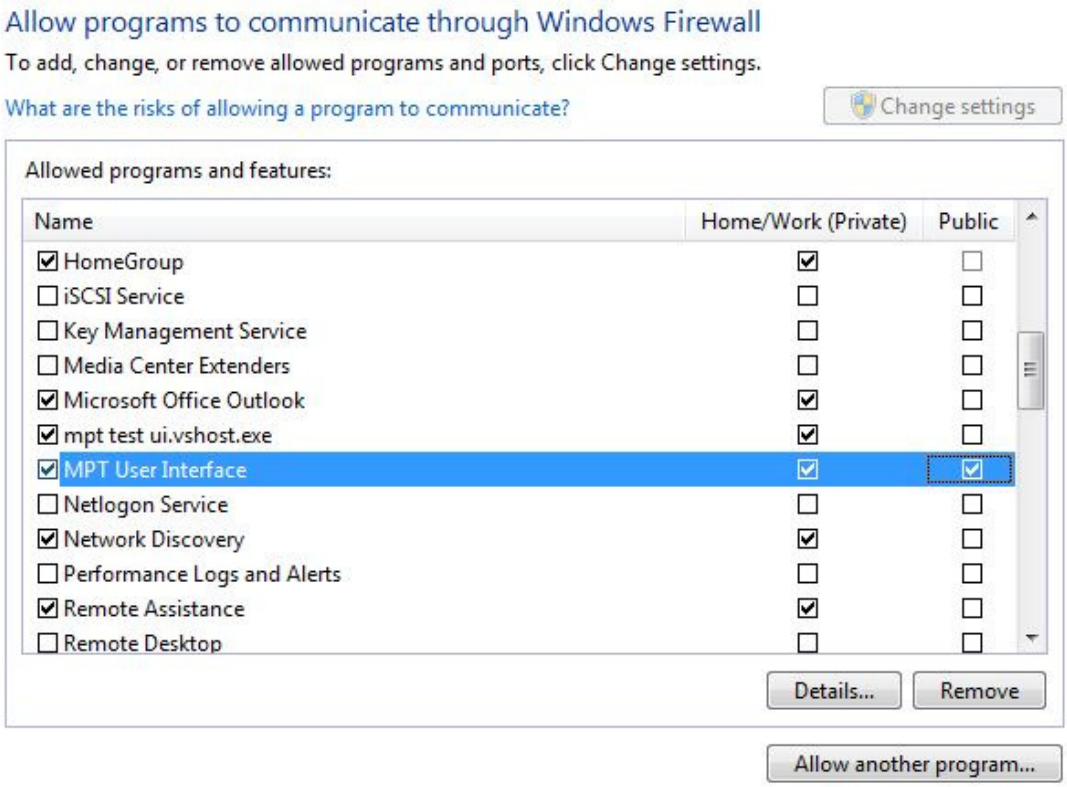
- *Press OK in both dialogs.*
- *Power the DDF7001 and wait 15 seconds.*
- *You are now ready to use the DDF7001 User Interface.*

WINDOWS 7 AND WINDOWS 10 FIREWALL

When using a network connection with Windows 7 it is necessary to configure the Windows Firewall to allow the MPT User Interface, Doppler DF Discover programs, and MPT Flash to find the DDF7001 on the network. For a direct connection the DDF7001 IP parameters are known in this situation it is not necessary for the computer to discover the parameters; however, in the case of the MPT user interface it saves the user from making the connection manually. To configure the firewall select **Windows Firewall** from the **Control Panel.** Click on **Allow a program or feature through Windows Firewall** as shown below.



The following dialog will appear.



Select DDF7001 User Interface and the click on Change Settings. Then click the Public check box. Repeat the process for Doppler DF Discover and MPT Flash. Click OK to close the dialog.

Chapter 4

DDF7001 USER INTERFACE

The DDF7001 User Interface software is used to configure and operate the Doppler DDF7001 direction finder. After performing the steps in the ***Getting Started*** chapter make sure the DDF7001 is powered and then launch the DDF7001 User Interface software.

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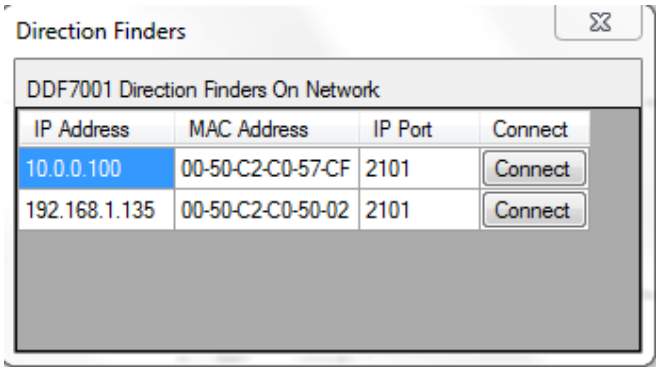
NMEA 40

CONNECTING TO THE DDF7001

If the DDF7001 is connected directly to the computer via a crossover cable or if the any number of DDF7001s are connected to a local area network (LAN) then the DDF7001 User Interface will initially display a dialog (as shown below) allowing the user to select the DDF7001 to connect to. Pressing the Connect button will initiate a connection with the selected DDF7001.



A successful connection will result in a window similar to the one below being displayed on the computer screen. A bearing may or may not be displayed depending on the receiver settings.

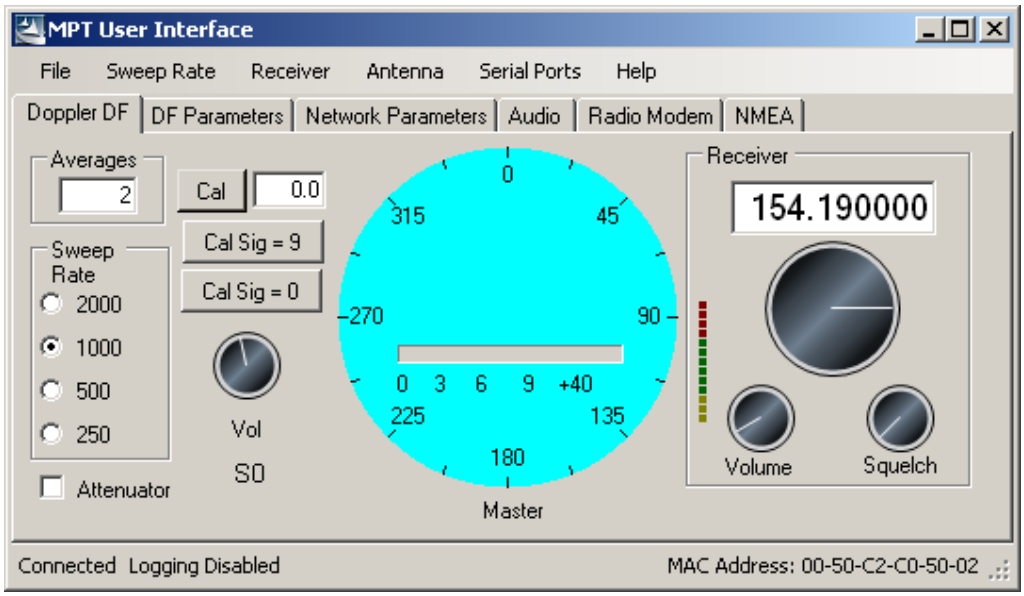


Figure 3: MPT Startup Screen

If the program is unsuccessful in making the connection or if for some reason the connection is lost you can manually connect by selecting **New Connection** from the **File** menu. The following dialog box will be displayed.

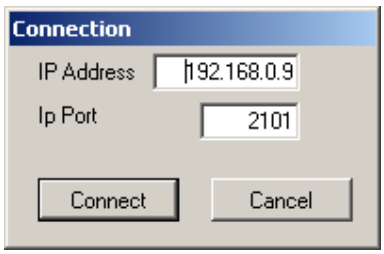


Figure 4: Direct Connection Dialog

If you are using a direct connection make sure the IP address is set to 10.0.0.100. If you are connected to a network enter the IP address and IP port that was obtained by ***Doppler DF Discover***. The program will then attempt to connect to the DDF7001 direction finder. If the connection fails make sure the IP parameters have been entered correctly and select Try Again.

MENUS

The DDF7001 User Interface menus are used to establish a new connection with the direction finder and to change the DDF7001 direction finder settings.

- **File**

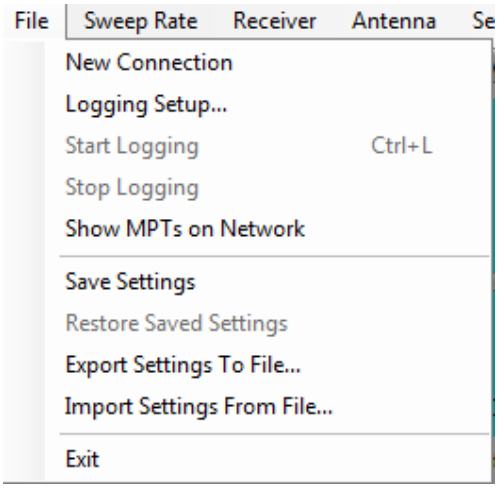


Figure 5: File Menu

If any changes are made to the IP Parameters then it will be necessary to reestablish a connection with the direction finder. To establish a new connection select **New Connection** from the **File** menu and enter the new parameters.

The DDF7001 User Interface contains a logging feature that allows the user to record bearing readings to a file. To enable logging select **Logging Setup** from the **File** menu. The following dialog will be displayed.

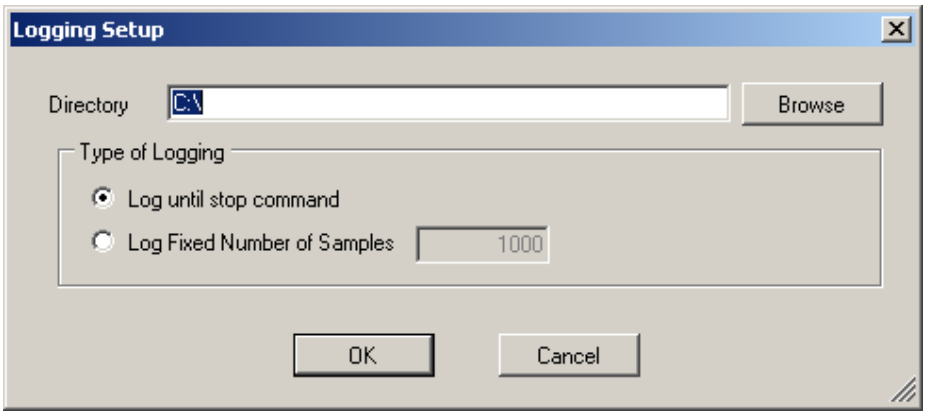


Figure 6: Logging Setup Dialog

Enter the required information and press OK. Then select **Start Logging** and the next series of bearing measurements will be logged.

Show MPTs on Network will show all the MPT direction finding presently connected to the LAN.

Save Settings will save the current settings.

Restore Settings will restore the settings to the last saved settings.

Export Settings to File will save the settings to a user named file so that it can be imported into another version of the user interface.

Import Settings from File allows a user to import settings from another version of the user interface

Sweep Rate

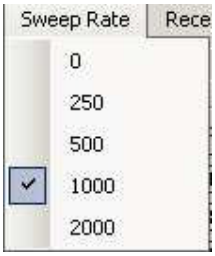


Figure 7: Sweep Rate Menu

The **Sweep Rate** menu can be used to change the sweep rate. Typically a 1000 Hz sweep rate will give best results when direction finding; however, in some cases a different sweep rate may work better.

Receiver

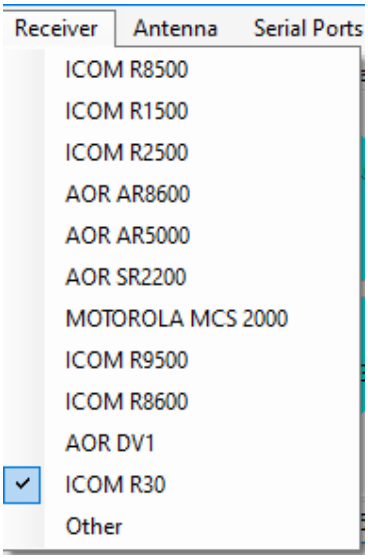


Figure 8: Receiver Menu

The **Receiver** menu is used to select the receiver being used. Any narrow band FM receiver can be used with the DDF7001; however, the DF has been factory calibrated for the receivers listed in the menu. In addition the ICOM R1500, R2500, R8600, R30 and AOR SR2200 and DV1 support a USB interface allowing the frequency, squelch, and volume to be set using the DDF7001 User interface software. If the ICOM R8500, ICOM R9500 AOR AR8600, or AOR AR5000 are used a USB-to-serial converter is required. The DDF7001 supports USB-to-serial converters based on the Prolific or FTDI chip sets.

The DDF7001 will work with other narrow band receivers not supported by the DDF7001 firmware. If you are using a receiver that is not supported use the **Receiver** menu to select the **Other** receiver.

- **Antenna**

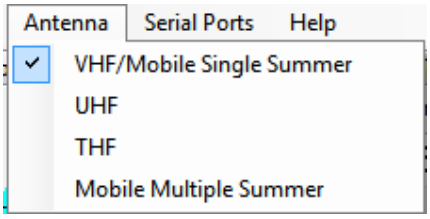


Figure 9: Antenna Menu

The DDF7001 supports three bands; VHF (125 - 250 MHz), UHF (250 - 500 MHz), and THF (500 - 1000 MHz). In a fixed site system monitoring all three bands requires three stacked antennas. In the case of a stacked array the Antenna menu can be used to switch antennas. When using a mobile system with a single summer the antenna must be set to **VHF/Mobile Single Summer** in order for the system to work. If daisy chained summers are used in a mobile installation select **Mobile Multiple Summer** from the antenna menu.

- **Serial Ports**

If a USB-to-serial converter is connected to the DDF7001 this menu allows the user to set the serial port parameters. The DDF7001 supports up to a four port USB-to-serial converter. Each port can be set up independently as shown in the menu below.

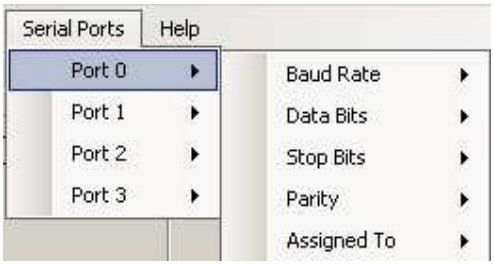


Figure 10: Serial Port Setup Menu

Additionally the serial port can be assigned to different devices depending on what is required.

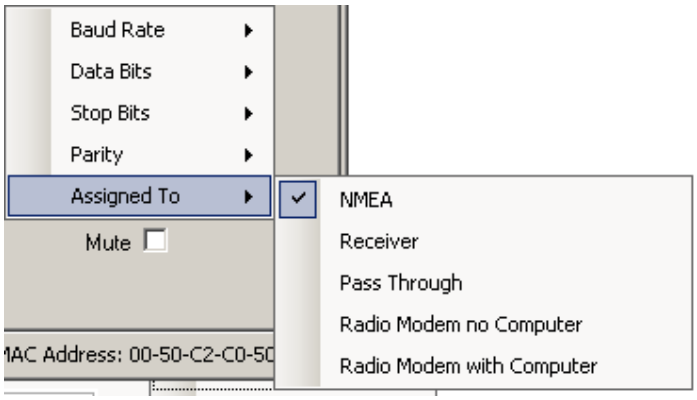


Figure 11: Assign the Serial Port to the Device using it

- **NMEA** is selected when the serial port is to be connected to a NMEA device such as a GPS receiver or compass

- **Receiver** is selected when the serial port is connected to a serial command based receiver

- **Pass Through** allows serial commands to pass through the DDF7001 and for data coming from the device to pass through the DDF7001. For details on how the data is sent and received see the Communications Interface section of the DDF7001 manual.

- Select **Radio Modem no Computer** when the DDF7001 is to be remotely monitored by a radio modem connection and the port selected is connected to the radio modem.

- **Radio Modem with Computer** is used when the DDF7001 is networked using a radio modem and a computer is being used at the site to display the network data.

DOPPLER DF

The Doppler DF tab provides the user with access to the most used direction finder settings and data. A screen shot of the user interface is shown below with the Doppler DF tab selected.

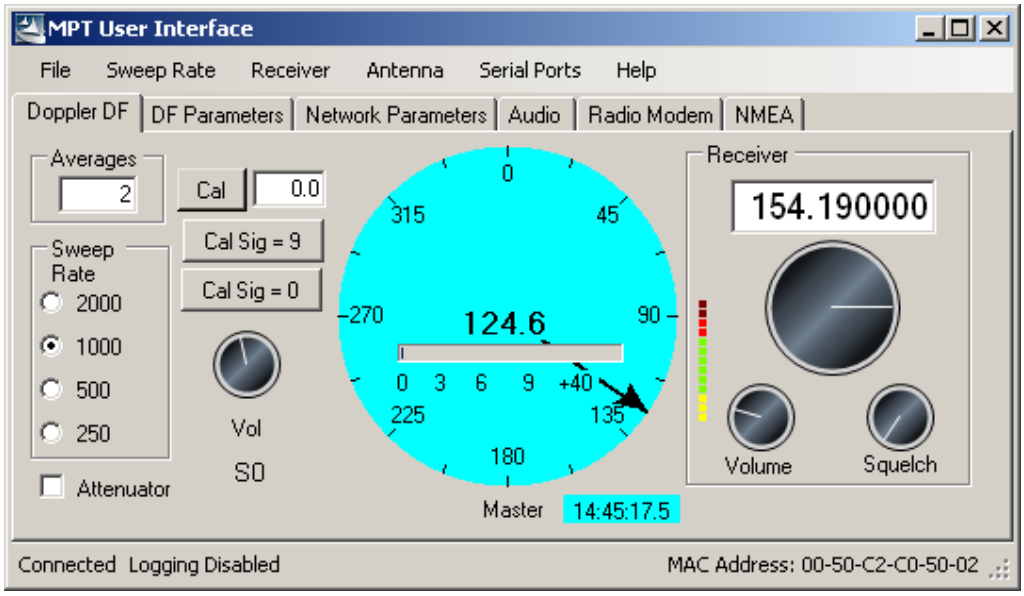


Figure 92: Main Screen

Averages

The averages setting is used to set the number of averages the direction finder will use to calculate the measured bearing. If it is set to 2 the last CW and CCW sweep are averaged. This is the recommended setting. If it is set to 1 you will see the results of the CW and CCW sweeps separately. In some cases this setting can be used to determine if the received signal is being corrupted by multi path. If multipath is present large variations of the bearing will occur between the CW and CCW readings. Large differences in CW and CCW readings can also indicate improper calibration. Higher averages (maximum 20) can be used to smooth out the bearing readings; however, the smooth readings come at the expense of slow variation, so a large number of averages is not recommended for signals that are moving or if multiple signals on the same frequency are being measured.

Sweep Rate

The **Sweep Rate** radio buttons can be used to change the sweep rate. Typically a 1000 Hz sweep rate will give best results when direction finding; however, in some cases a different sweep rate may work better.

Cal

The **Cal** button is used to calibrate the direction finder to a known signal. If you know the location of the signal relative to the direction finder antenna enter the angle into the text box, tune the receiver to the frequency of the signal, and then press the **Cal** button. In about 1 second the direction finder will perform the calibration and the measured bearing will point at the source of the calibration signal.

Note to Mobile Users: Doppler has built in calibration constants for the supported receivers. If the antennas are properly installed on the vehicle then there is no need to calibrate the direction finder. The factory default calibration constants will be superior to any field calibration. You can return the calibration constants to their factory defaults by selecting another receiver and then selecting your receiver.

Attenuator

The DDF7001 antenna electronics contain preamplifiers that are used to amplify small signals and provide good sensitivity during direction finding. If an extremely strong signal is received it could overload these preamps and corrupt the bearing measurement. Checking the **Attenuator** check box will disable the preamplifiers. Use this feature only with strong signals.

Volume

The receiver audio is fed into the direction finder, processed to measure the bearing angle, filtered to remove the tone produced by the pseudo Doppler rotation, and then output through the speaker output. The **Volume** knob controls the amplitude of the volume coming out of the speaker. Left click on the knob to decrease the volume, right click to increase the volume. When the knob is selected you can also use the up arrow key to increase the volume and the down arrow key to decrease the volume.

Receiver Settings

If any supported receiver is connected to the DDF7001 direction finder via the USB port, the DDF7001 user interface can be used to adjust the volume, the squelch, and the frequency of the receiver. With a signal tuned in adjust the receiver volume so the VU meter to the left of the volume knob consistently is in the green or slightly in the red range. If the VU meter shows a large number of red bars then decrease the volume. To set the squelch tune the receiver to a frequency without a signal and adjust the squelch so that the noise from the speaker is muted.

Frequency

The frequency can be set in two ways: by typing the frequency into the frequency display and pressing the Enter key or by rotating the frequency adjustment knob. The increment for the knob adjustment can be set by right clicking on the display and selecting the desired increment as shown below. If the knob is selected the up arrow and down arrow keys can be used to increment or decrement the frequency.

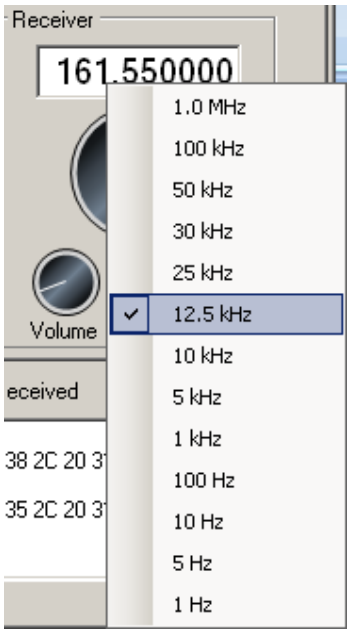


Figure 13: Right Click on Frequency Display to Set the Frequency Increment

Reading the Bearing

The bearing is displayed in the center of the compass rose and the compass rose display provides and bearing display. The S-meter reading is scaled from 0-255. The calibration is as shown in the table below.

Table 1: S Meter Scaling

Reading	S Meter Value
0	S0
48	S3
80	S5
112	S7
144	S9
176	S9 + 20
208	S9 + 40
240	S9 + 60

Bearing Line Display

The bearing display can display the bearing in degrees or a clock face. To change the display right click on the display and select the type of display you want.

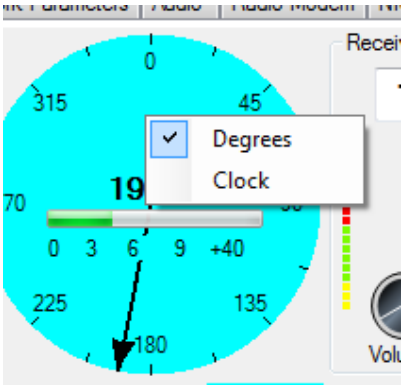


Figure 14: Line of Bearing Display

DF PARAMETERS

The DF parameters tab is used to access more advances settings of the direction finder.

- **Averages**

In the continuous mode the direction finder takes bearing readings at the Sample Time rate which is nominally 500 ms. The averages parameter sets the number of readings that will be included in a running average of the bearings. The default value is 2 which causes the CW and CCW bearings to be averaged.

- **Sample Time**

Typically the DDF7001 rotates the antenna 0.5 seconds CW followed by a 0.5 second CCW rotation. This sample time can be increased to as much as 1500 ms (1.5 second).

- **Threshold**

When the receiver breaks squelch, the direction finder begins processing the audio in an atteDDF7001 to process a bearing. If there is no signal and the squelch was broke on noise it may not be desirable for the direction finder to display a bearing. The threshold setting is used to set a correlation factor that effectively filters out noisy or nonexistent signals. Setting the value low will result in fewer "false alarms" but may result in missing bearings of noisy signals. Setting the value to a large value may result in a greater number of false alarms but increases the chance of obtaining a bearing on a weak signal. The range is 0 -9999. A setting of 0 will result in no bearings being taken. A setting of 9999 will result in bearings whenever the squelch threshold is exceeded. The default value is 2000.

- **Hold**

The hold time adjusts the time that the bearing will be held in the direction finder memory after the signal disappears. The direction finder will send a bearing of 360 degrees at the end of the timeout period.

- **Volume**

The volume control on the right adjusts the volume of the audio.

- **Bearing**

If the receiver is receiving a signal then the bearing will automatically update the bearing reading. If the receiver is not receiving a signal then the last bearing taken by the DDF7001 will be displayed.

- **Version**

Displays the current version numbers of the hardware and the firmware.

- **Cal Brg To**

The direction finder can be calibrated to a given bearing by tuning in a signal, entering the desired bearing and then pressing the **Cal Brg To** button.

- **Cal Sig = 0 and Cal Sig = 9**

When using a receiver with an analog RSSI output, the RSSI signal can be connected to the direction finder allowing it to read the RSSI value and output it with the bearing. Default calibration constants are provided for the ICOM R8500, the AOR AR8600, and the AOR AR5000. To calibrate another receiver connect the RSSI signal to the RSSI input and disconnect the receive antenna. Press the Cal Sig = 0 button. Next connect the antenna and tune in a signal that registers S9 on your receiver's S meter and then press Cal Sig = 9.

Note: The AOR SR2200, ICOM R1500 and ICOM R2500 do not have analog RSSI outputs so the RSSI readings will be obtained via the USB connection to the receiver.

- **Defaults**

Pressing the Defaults button will cause the direction finder to reset all its parameters except the IP parameters to their default values.

- **Reset**

Pressing the Reset button will cause the direction finder to reboot. When resetting, the TCP/IP connection with the DDF7001 User Interface will be dropped and a new connection will need to be established.

- **Attenuator**

The attenuator check box turns on and off the attenuator

- **Auto Output**

When the auto output is checked the direction finder outputs a bearing when it receives a signal. If the auto output is not checked then the user software must poll the DF to obtain the bearing.

- **Filter**

The DDF7001 uses the audio from the receiver to determine the bearing of the RF emitter. In doing so it superimposes a tone on the received signal at the sweep frequency. This tone is annoying for operators to listen to, so a notch filter is built into the DDF7001 to remove the tone from the audio. Unchecking the filter check box will remove the filter and allow the user to hear the tone.

- **AM Mode**

The AM mode is used with DF antennas that use the incoming amplitude of the signal to determine the bearing to the RF emitter. This is only used for our HF direction finder. When using the software with Doppler High Frequency DF (HFDF) this option must be checked.

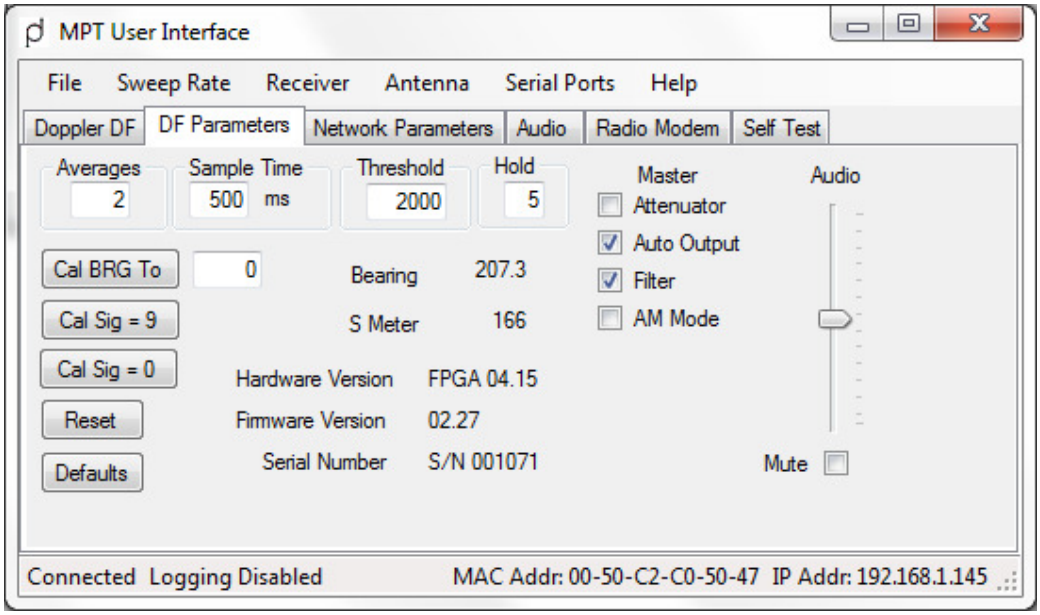


Figure 15: DF Parameters Page

NETWORK PARAMETERS

The DDF7001 allows the user to set the network parameters if it is going to be connected to a network that does not support DHCP or directly to the computer. To change these parameters select the Network Parameters tab to show the following dialog.

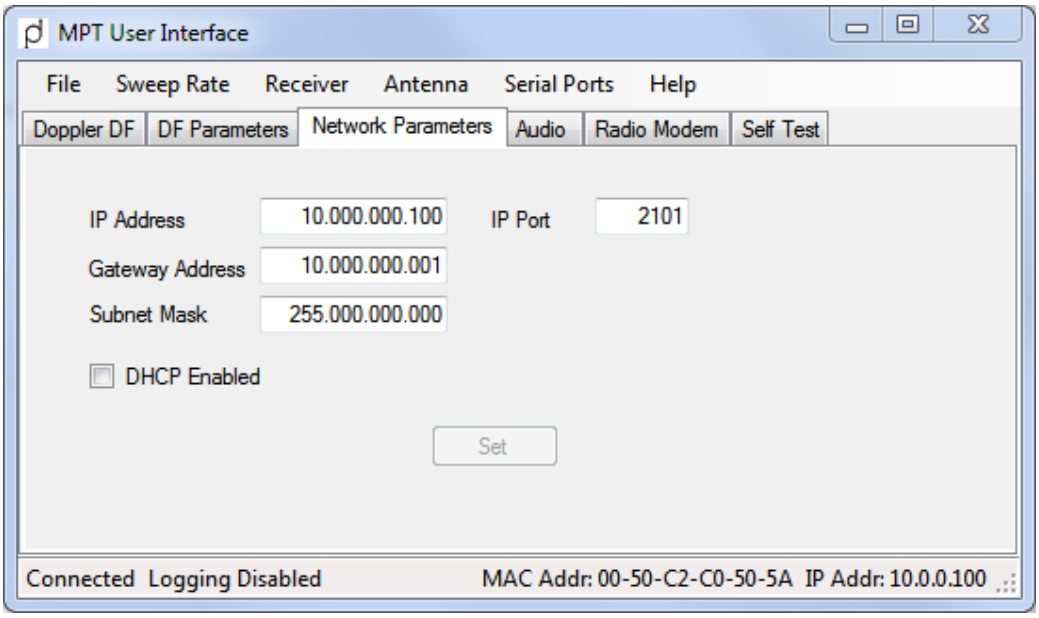


Figure 16: Network Parameters Page

If the DDF7001 will not be used on a network that supports DHCP, uncheck the **DHCP Enabled** check box. Then enter the **IP Address**, the **Gateway Address** and the **Subnet Mask** and click the **Set** button. If the IP port is changed it may be necessary to start a ***new connection.*** If the DHCP Enabled check box was unchecked and it is then checked it will be necessary to power down the unit, connect the unit to the DHCP enabled network, and then power the unit back up. The user interface will require a ***new connection*** after this is completed. See the ***Network Connection*** paragraph in Getting Started.

The IP port may need to be changed if the IP port interferes with another device on the network.

AUDIO

The DDF7001 digitizes the receiver audio and it can send this audio over a LAN IP connection or the crossover connection. The tab page for configuring the audio is shown below.

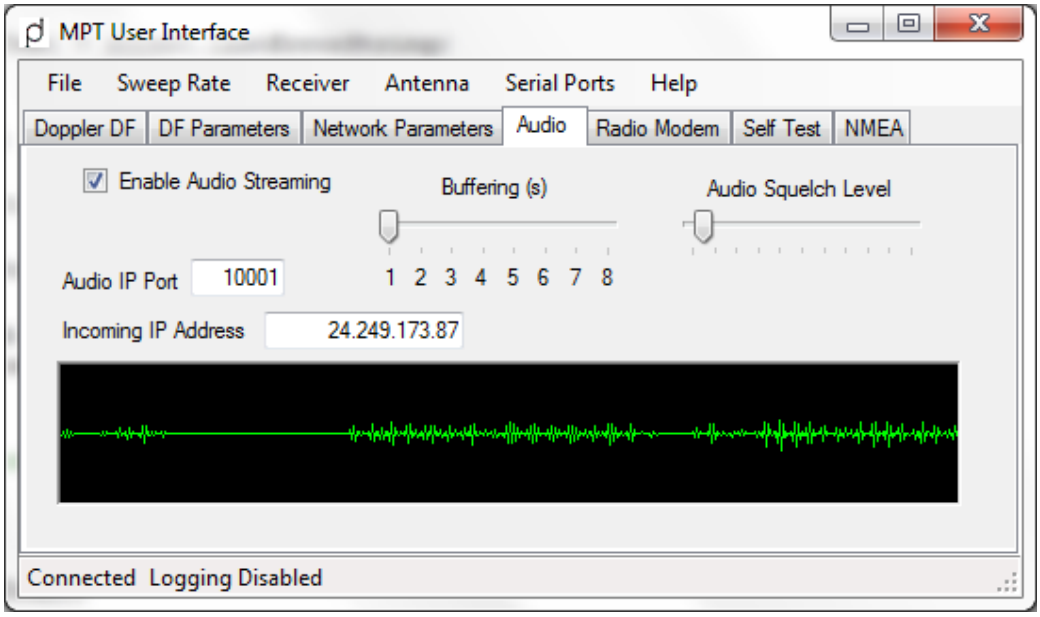


Figure 17: To Listen to Audio Enable Audio Streaming

- **Enable Audio**

To enable audio streaming check the Enable Audio Streaming check box

- **Buffering**

The PC buffers the audio prior to playing it. Typically 1 second of buffering is sufficient; however, if your network is slow or has significant delays then the audio may be choppy. If this occurs increase the buffering.

- **Audio Squelch Level**

The DDF7001 only streams audio when the audio level is above the squelch level. Typically any value of audio that breaks the receiver squelch will also break this squelch

- **Audio IP Port**

This number sets the IP port number that the audio will be streamed on.

- **Incoming IP Address**

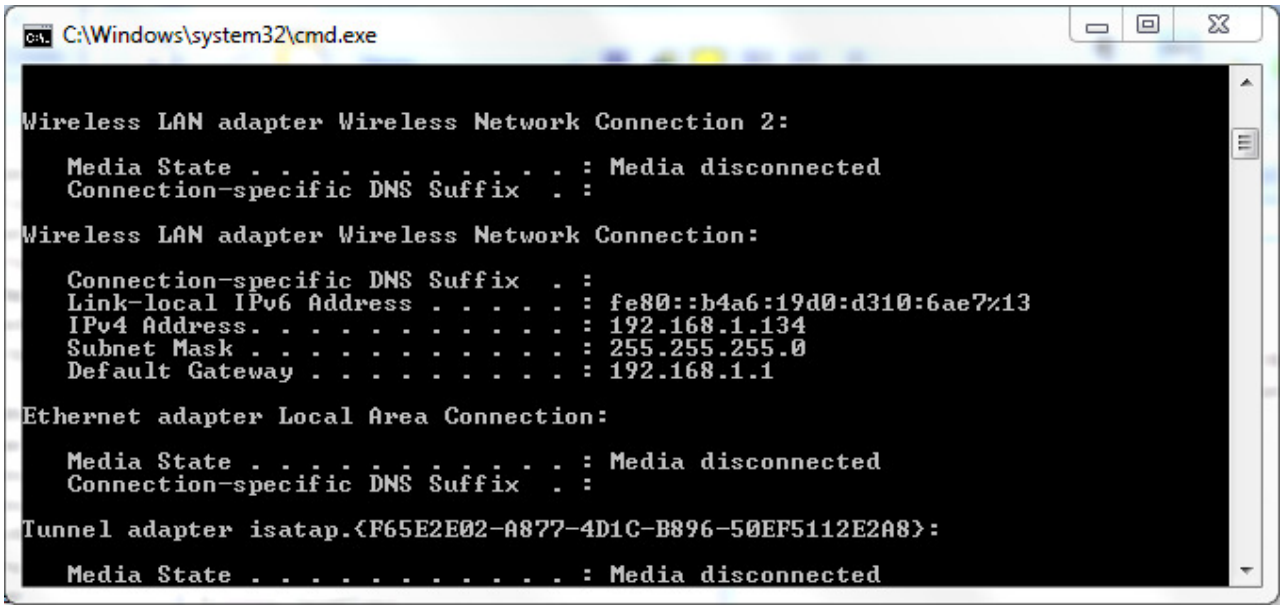
This number sets the address that the direction finder uses to stream audio to your computer. If the direction finder is connected to the same LAN as the computer then this text box will not be displayed. If the direction finder is outside of the LAN, for instance if it is connected to the Internet, then an incoming ip address is required. The software will attempt to determine this address. If an address is displayed then this will typically be the correct address to use. If no address is displayed then you will need to determine your external ip address. Contact your network administrator or log on to your router to determine your external IP address. See the section on ***port forwarding*** to configure your router to receive audio.

PORT FORWARDING

MPT User Interface requires audio from the primary site in order to operate properly. The direction finder streams UDP audio from the Ethernet connection. If your computer is connected to a NAT enabled router and the direction finder is outside of your local area network (LAN) then you must configure your router and TargetTrack to receive the audio. An example of this would be a DDF7001 direction finder that is connected to the Internet and a computer running TargetTrack that is connected to a modem/router.

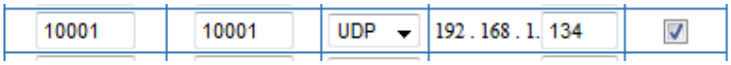
Note: Some Internet providers block access to certain ports. If this is the case try using IP port 80 for audio streaming. If this does not work contact your provider to determine what port to use.

To configure you router you must port forward the audio port that you will receive the audio UDP stream to the local IP address of your computer. To determine your computers IP address open a command prompt and type **ipconfig**. A display similar to the one below will appear



The IPv4 address of the adapter is the IP address that you want to port forward the UDP audio to. Typically this address will be 192.16x.xxx.xxx.

Once you've determined this address then you need to set up the port forwarding in you router, forwarding the audio IP port (default value is 10001) to the IP address you obtained above. A typical entry in a port forwarding table is shown below



RADIO MODEM

The radio modem page is used to configure the DDF7001 for remote use with a radio modem.

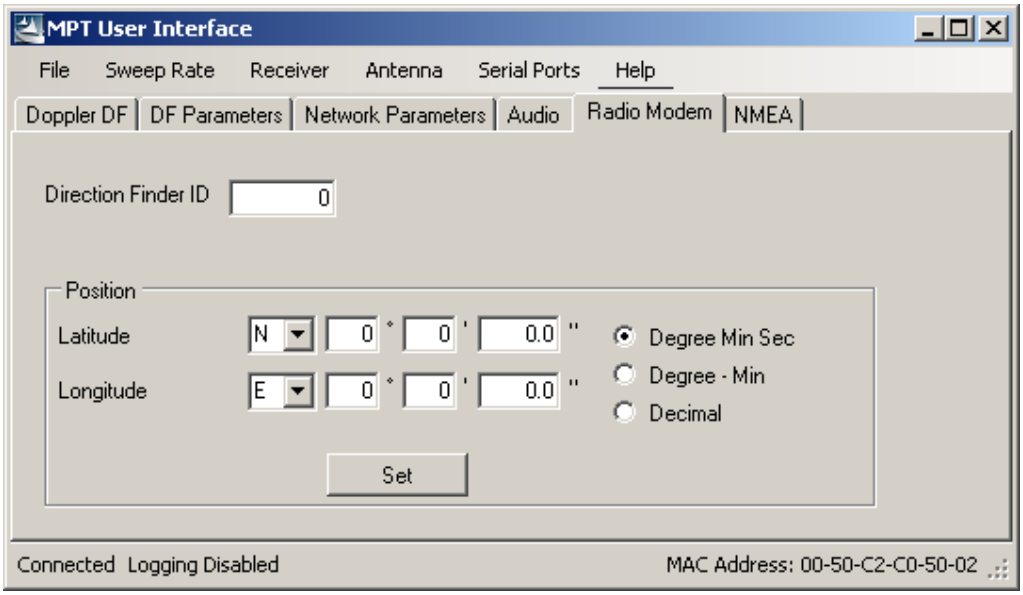


Figure 18: Enter the ID and the Site Position

Direction Finder ID

Each direction finder on a radio modem based networked must have a unique identification number between 1 and 31. Enter this unique ID in the text box and press enter.

Position

The DDF7001 sends its position to the control site each time the bearings are transmitted via the radio modem. If there is a GPS device connected to the DDF7001 then the position obtained by the GPS will be used. If a GPS is not used, the user must enter the geographical location of the direction finding site.

SELF TEST

The MPT user interface is able to test the summer and the antennas connected to the summer using the self test feature. There are two ways to perform this test. One way is to use an over-the-air signal and the other way is to use a Doppler DDF6431 self test generator connected to the DDF7001 via a USB-to-serial converter.

Testing Using an Over-the-Air-Signal

Select the **Self Test** tab and enter a frequency of a known continuous signal such as the weather station as depicted in the figure below.

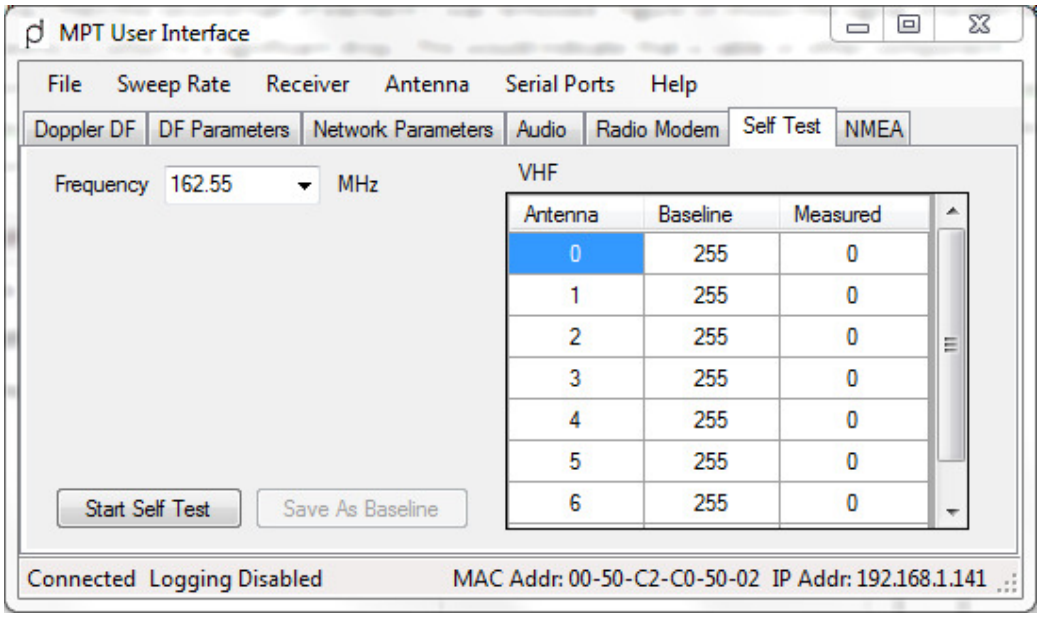


Figure 19: Self-Test Start Screen

Press **Start Self Test**

After the self-test completes the screen should appear as shown below.

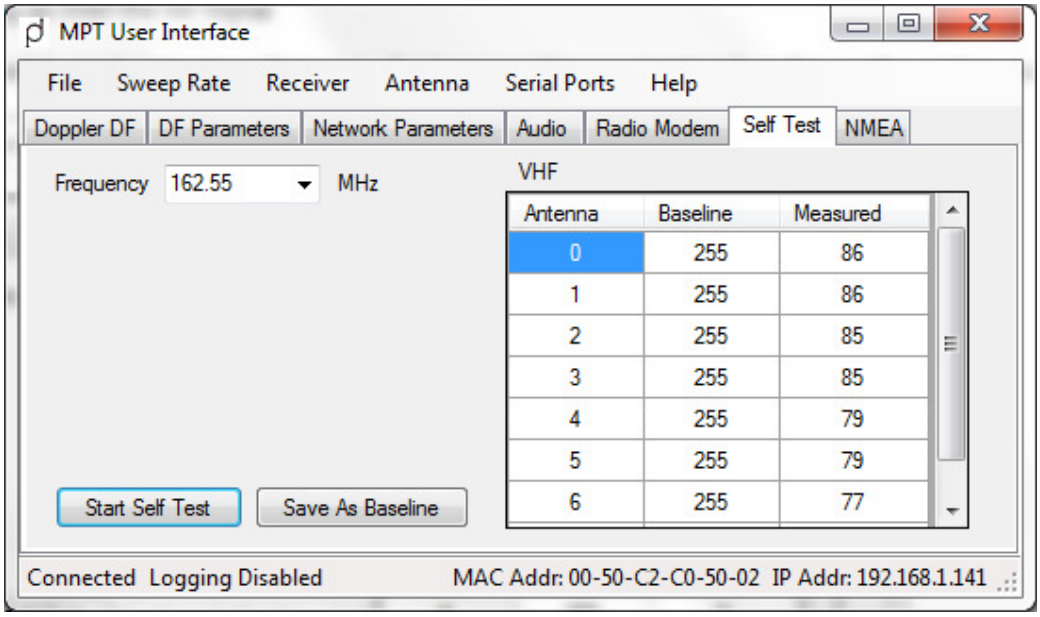


Figure 20: Displays Results of Self-Test

If the system is using a fixed site 8 element antenna the readings are the received signal strength of each of the antennas. If a four element antenna is being used only the first four readings are applicable. If all the readings are close to the same then the antenna is working. If this is the first time this test has been run press the Save as Baseline button to save the readings. Later the test can be run again and the measurements compared. Note that the signal strength of an over-the-air signal can vary due to a variety of conditions so exact signal strength readings should not be expected. This is particularly true in a mobile installation.

Using the DDF6431 Self-Test Generator

The DDF6431 Self-Test Generator is connected to the DDF7001 through a serial port on the direction finder. Typically this would be connected to the DDF7011 core unit on the Compass connector. The self-test generator should be mounted somewhere in an out of the way location without a lot of human traffic. To use the Self-Test Generator you must assign the serial port to Pass Through (see Serial Ports in the Menus section above). On the DDF7011 the Compass port is assigned to port 2.

When the DDF6431 is properly connected to the DDF7001 the **Self Test** tab will appear as shown below

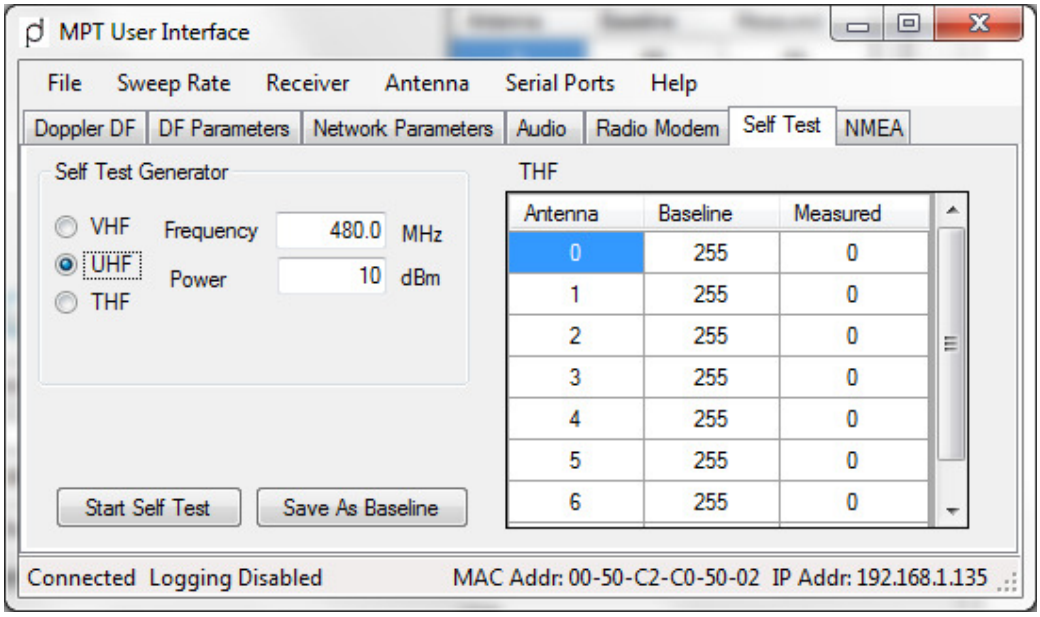


Figure 21: Self-Test Start Screen

Press **Start Self-Test** and the direction finder will be tuned to the frequency and the self-test generator will begin transmitting on that frequency. After 10 seconds the results of the test will be displayed as depicted in the figure below.

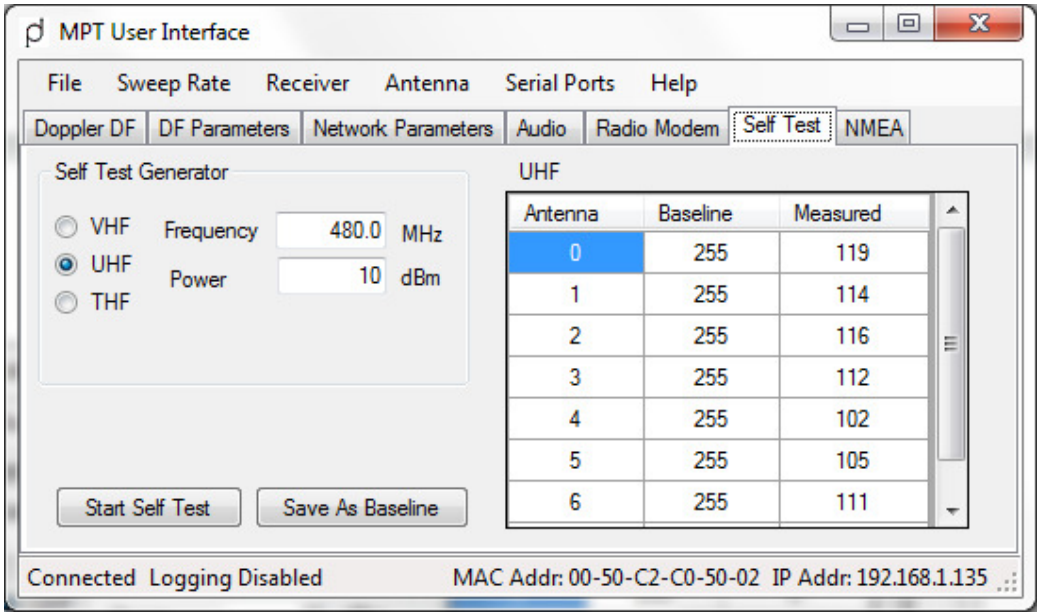


Figure 22: Displays Results of Self-Test

If this is a new installation then press the **Save As Baseline** button to save the results for future comparison as shown below

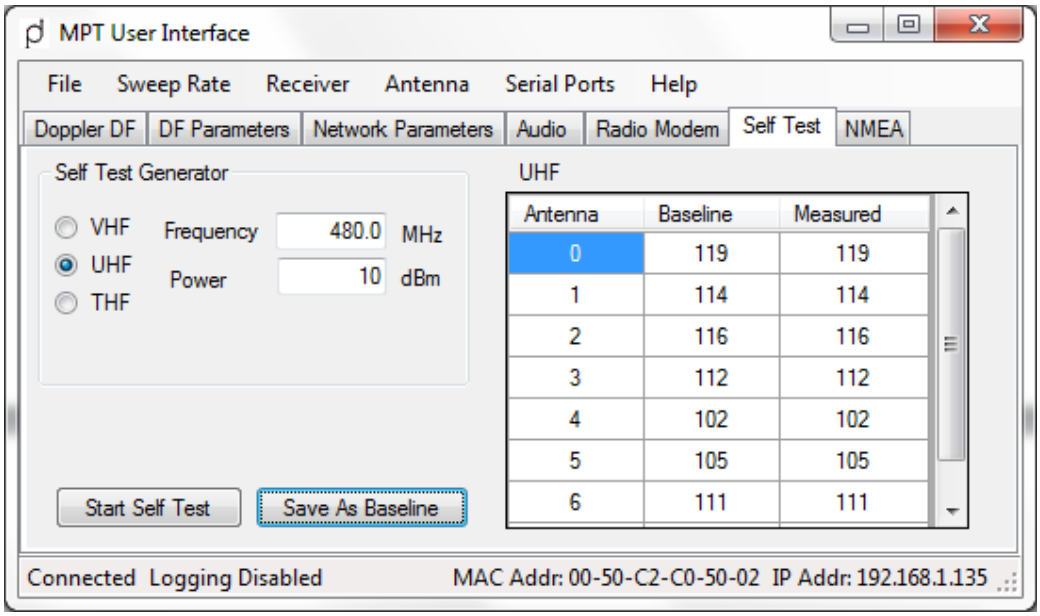


Figure 23: Save the Results of the Self-Test for Future Comparison

Once a baseline is established future tests should yield similar antenna gains providing the self-test generator is not moved and nothing at the site has been changed or added.

NMEA

The NMEA page is used to display the GPS and compass data.

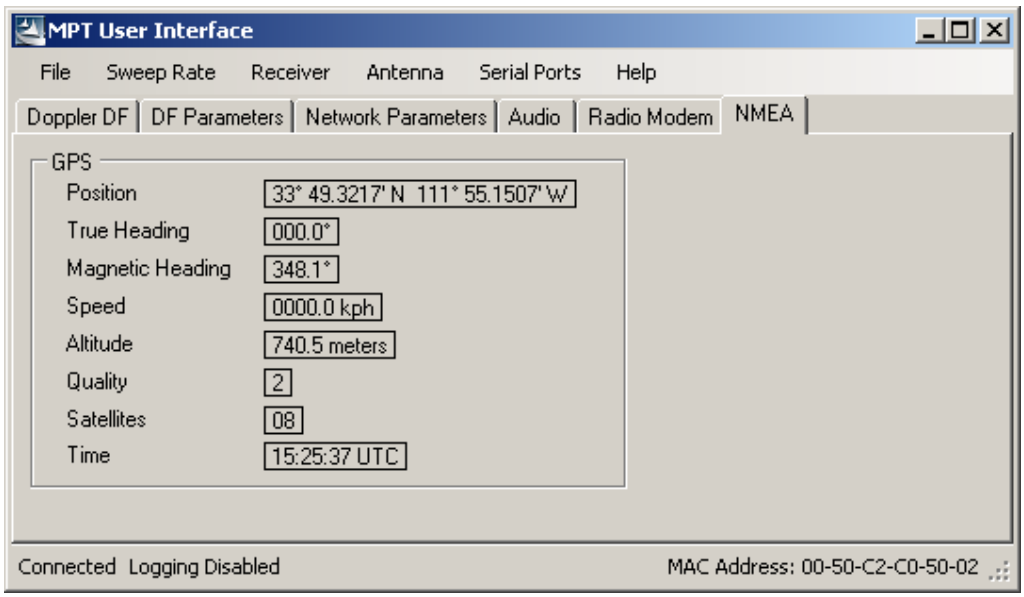


Figure 24: Displays GPS and Compass Data

Chapter 5

DOPPLER DF DISCOVER

Doppler DF Discover is used to retrieve the IP Address, IP Port, MAC address, and location of any DDF7001 direction finders connected to a LAN and/or directly connected to the PC. To use it connect the direction finder to a network or directly connect it as discussed in the ***Getting Started*** chapter.

Next power up the direction finder, wait 10 seconds, and then launch Doppler DF Discover. The following dialog will appear on the computer screen.

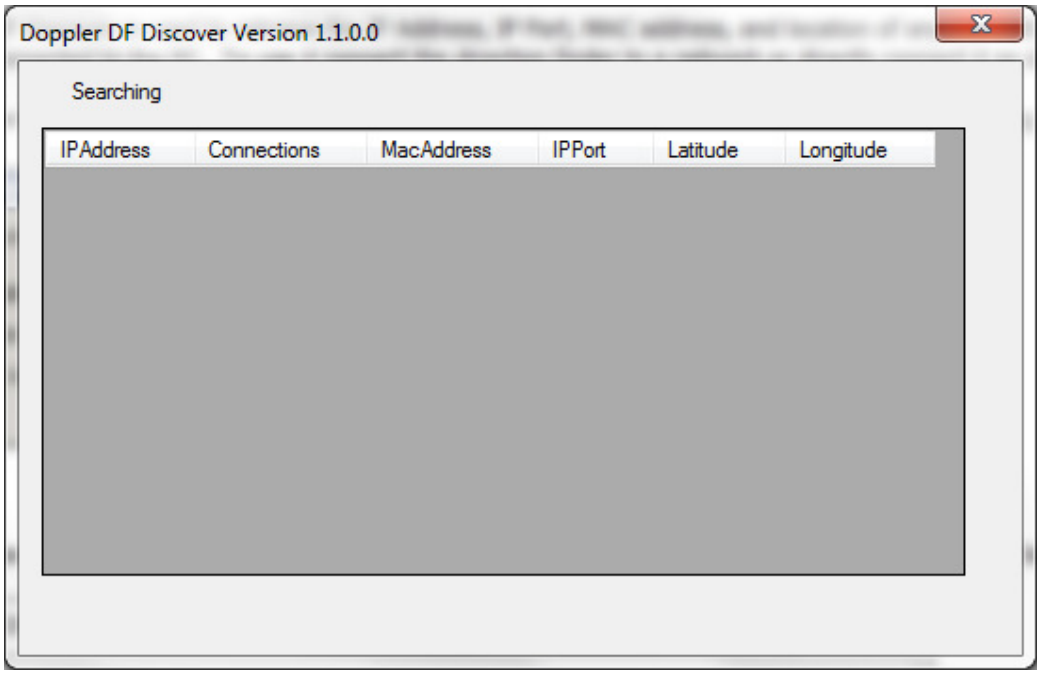


Figure 25: Initial Dialog

Within 5 seconds the information in the dialog box will be updated to show the DDF7001s connected to the network. The figure below shows the results for two direction finders.

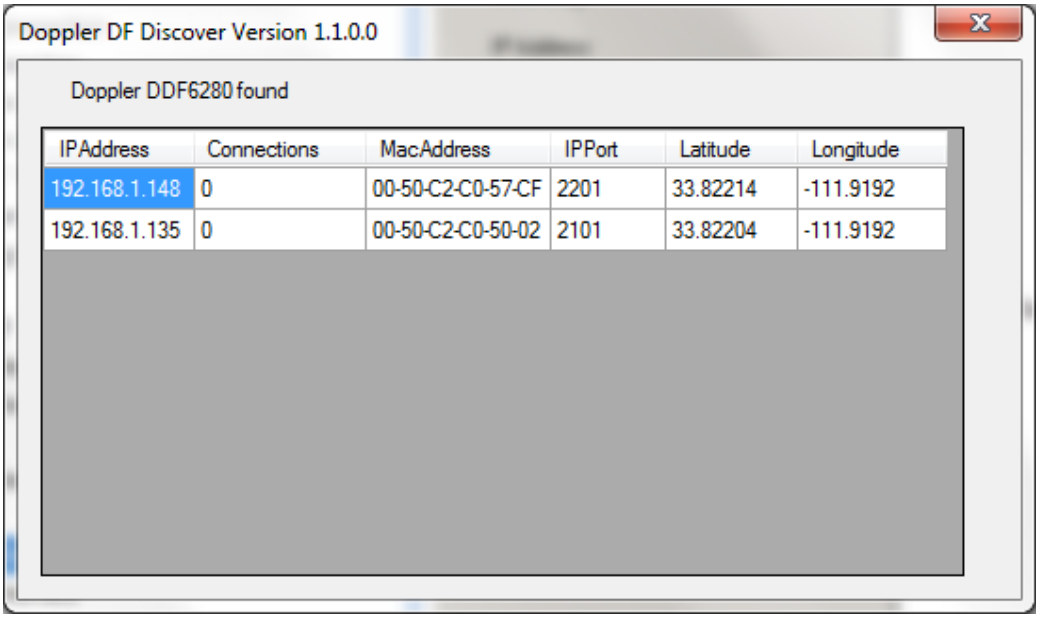


Figure 26: Identification of MPT Connected to the Network

Make a note of the IP Address and IP Port for future reference.

Chapter 6

WEB BASED INTERFACE

The DDF7001 also provides a web browser based interface that allows the user to make many of the same adjustments to the DDF7001 parameters. To access the web based interface launch a web browser (Internet Explorer, Google Chrome, Firefox etc.) and type in the IP address of the direction finder. The following page will be displayed.

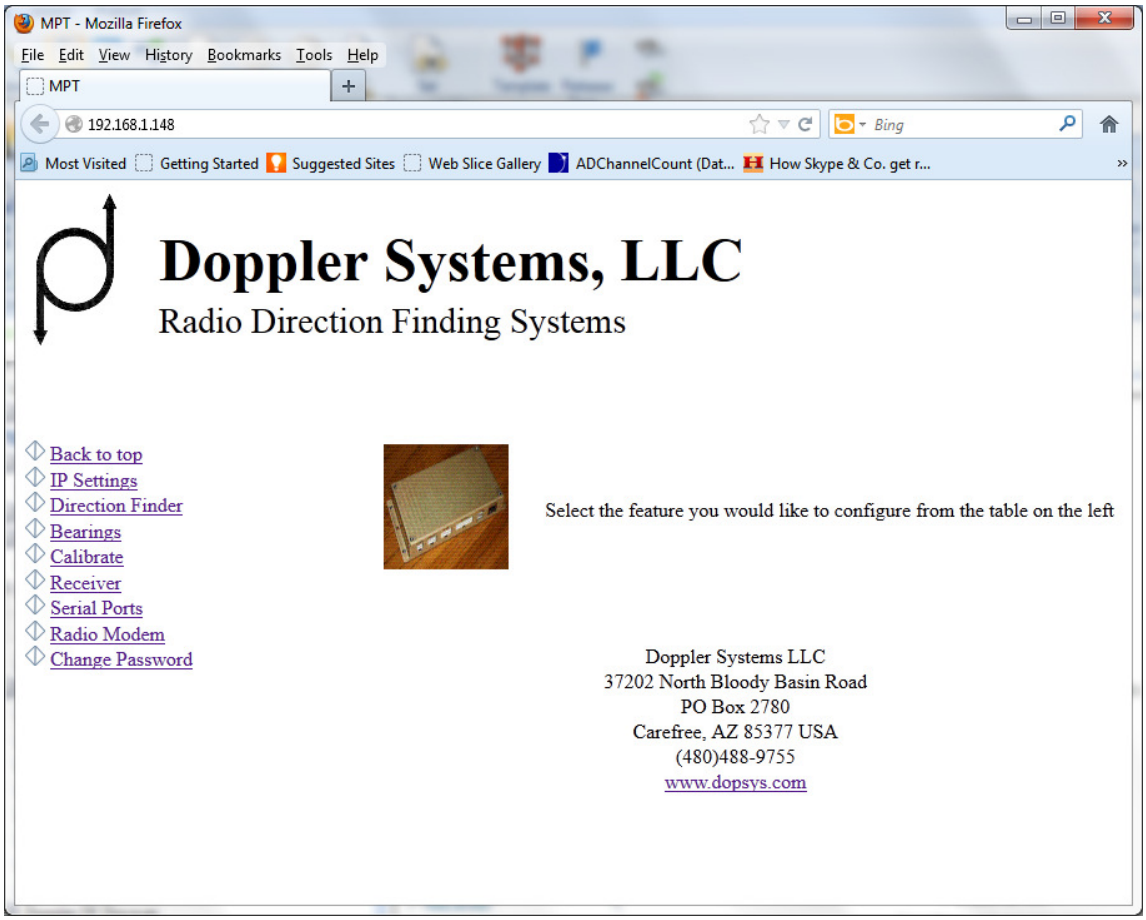


Figure 27: Home Page for the Web Based Interface

Use the navigation tabs on the left to select the particular settings to be changed. The settings are password protected. The default user name is **doppler** and the default password is **admin**. These can be changed using the **Change Password** tab.

REQUIRING A PASSWORD TO CONNECT TO THE MPT

If you are using the DDF7001 on the Internet then you may want to require a password to limit access from users outside your organization. To require a password click on the Change Password link, check the Password Required check box, and press Submit. After you do this you will be required to enter a password when using the MPT User Interface software and TargetTrack. Passwords do not work with SignalTrack so do not check Password required if you are using SignalTrack.

Figure 28: Check Password Required to Require all Connections to Furnish a Password

Chapter 7

MPT FLASH

From time to time it may be necessary for Doppler Systems to make firmware changes to the DDF7001 to add new features or to make minor bug fixes. These firmware changes will be available on our web site for downloading and installation into the DDF7001. The MPT flash utility is used to upload the new firmware into the DDF7001.

To use MPT flash connect the direction finder directly to the computer using a cross over cable as described in the ***Getting Started*** chapter. Power the DDF7001 and wait for 15 seconds. Launch the DDF7001 Flash application and wait for it to discover the direction finder. When it does an **Open File** dialog will be displayed. Select the new file that was downloaded and open it. The flash programming should begin immediately and the progress shown on the screen.

Warning. Do not exit DDF7001 Flash, power down the unit during the flash programming, or interrupt the flash programming sequence. Doing so may result in an unusable direction finder.

Chapter 8

TROUBLESHOOTING

The following paragraphs describe some issues occasionally experienced by users.

- Unable to stream the audio using the MPT User Interface software
  Usually this problem arises when the user's computer is not on the same local area network as the direction finder. In most cases there is a firewall between the user's computer and the direction finder. Information on configuring your firewall can be found in our application note "Connecting a DDF7001 Direction Finder to the Internet" available on our website.

- Unable to connect to the DDF7001
  Inability to connect to the DDF7001 can be caused by inadvertently entering the wrong IP address when changing the default IP address or in rare instances by a corruption of the configuration flash memory in the DDF7001. The solution is to set the DDF7001 IP parameters back to their original configuration. This is accomplished by disconnecting all the connectors except the power connector from the unit. Connect a USB keyboard to the DDF7001 and apply power to the unit. Wait 30 seconds. On the USB keyboard type "dopplermpt" (do not type the quotation marks) followed by the Enter key. Doing this will set the default IP address to 10.0.0.100 and the default IP port to 2101. It will also enable DHCP.

- Unable to reprogram the flash memory using MPT Flash
  Inability to flash the DDF7001 is usually caused by an IP address issue or perhaps an interruption of a previous flash attempt. All is not lost however, because the boot firmware has the ability to initiate the flash sequence. Perform the following steps to use the boot firmware to reprogram the unit.
  - Configure you computer's IP parameters as shown in Chapter 3, Direct Connection
  - Disconnect all cables except the power cable from the DDF7001
  - Make sure the power to the unit is turned off
  - Connect a crossover cable from the computer to the DDF7001
  - Launch the MPT Flash program
  - Wait 10 seconds
  - Apply power to the DDF7001
  - The MPT Flash program should respond with an open file dialog allowing you to select the flash file.
  - If the open file dialog does not appear within 15 seconds, power down the DDF7001 and try again.
  - If after several tries it is still not working contact the factory for assistance (http://www.dopsys.com/contact/form-page.html)

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