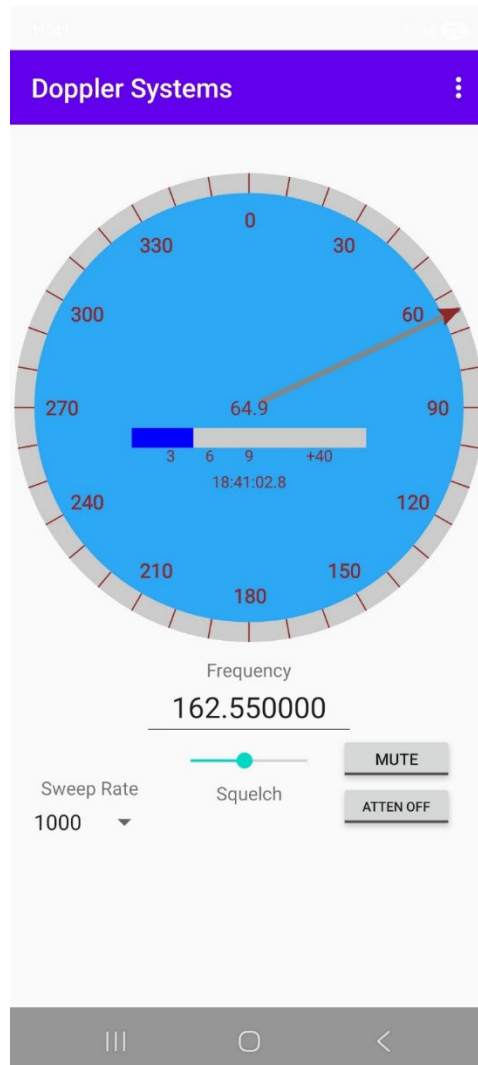


A Simple Homing Direction Finder Using a DDF7001 and an Android Device

A Technical Application Note from Doppler Systems

02 June 2026



1.0 Introduction

Many mobile direction finding applications simply require a bearing to the RF emitter measured relative to the vehicle. For this type of application, a laptop running our Doppler UI interface software may be inconvenient. For this reason, Doppler has developed an Android application that can be used wirelessly in a vehicle to provide bearing and signal strength readings to the operator. It also can be used to change a subset of the direction finder settings.

2.0 Hardware Configuration

To use the Android application, you must establish a wireless network within your vehicle. In this application note we will use the TP Link TL-WR802N wireless travel router (Figure 1); however, any wireless router will work. The TP Link router operates off 5 volts supplied by the DDF7001 USB port and connects directly to the DDF7001 RJ-45 connector. A block diagram of the hardware setup is shown below along with a photograph of a typical setup. The external speaker is optional, since the audio is streamed to the Android device.



Figure 1: TP Link Router is 2.2 x 2.2 x 0.7 inches

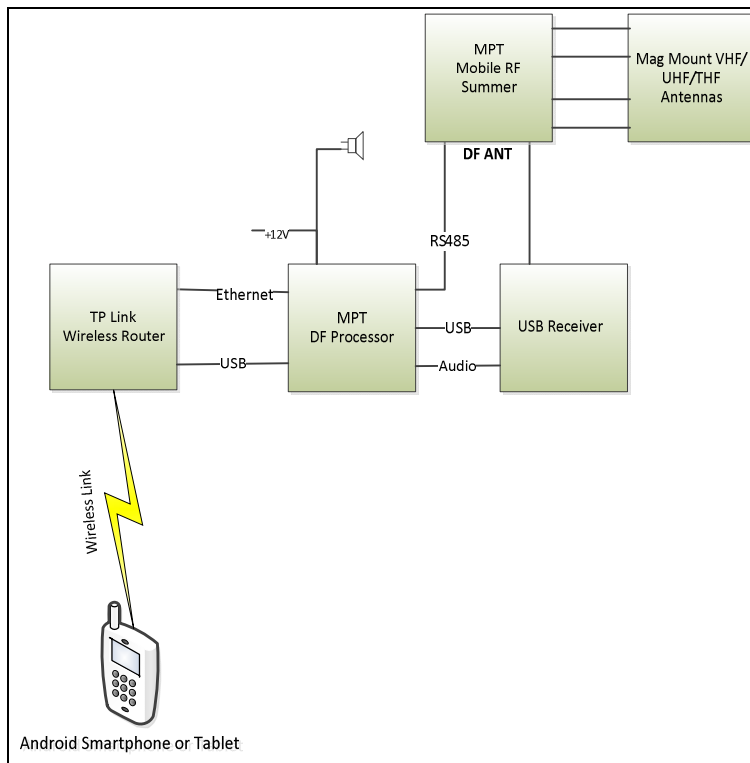


Figure 2: Block Diagram of Hardware Setup



Figure 3: DDF7001 with TP-Link TL-WR802N travel router

3.0 Configuring the Router

The TP Link router is configured as an access point. To accomplish this, follow the instructions provided with the router. The basic process is

1. Connect to the router using a laptop computer or a cell phone. The default SSID and WPA pin are supplied with the router
2. Once connected open a web browser and connect to <http://tplinkwifi.net> or use the IP address 192.168.0.1.
3. A web page will be displayed requiring you to set a password. Set the password.
4. Click Next to start the Quick Setup. Select Access Point and click Next.
5. Keep the default Wireless Network Name (SSID) and Wireless Password or customize them and click Next
6. In the displayed dialog, select Smart DHCP.

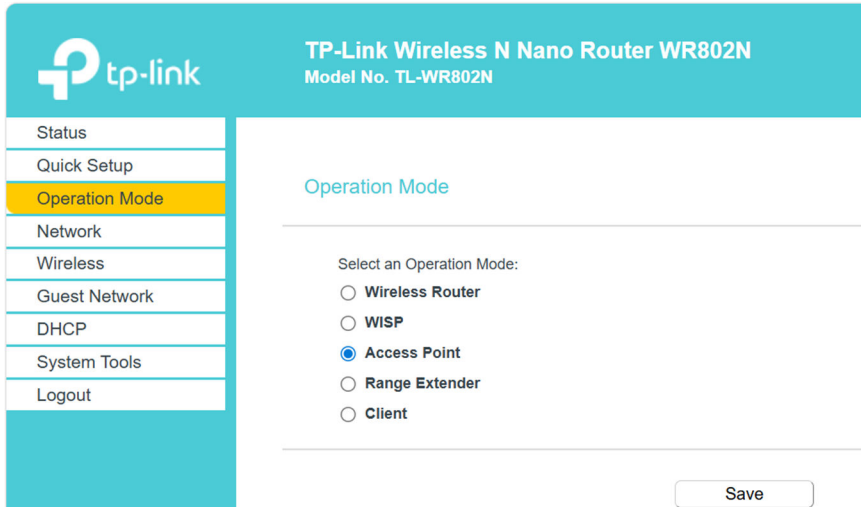


Figure 4: Select Access Point as the Operation Mode

7. After you have configured the router as an Access point it will reboot.

4.0 Setting up the direction finder

Set up the direction finder using a laptop and the [MPT User Interface](#) program. The only setting that will require change is the receiver. Set it to the receiver that you are using or other if you are using an unsupported receiver.

5.0 Setting up the Android Device

When connected to the internet, use your Android device to install Doppler RDF User Interface from the [Google Play store](#). Then set up your Android device to connect to the wireless router that is connected to the DDF7001 using the SSID and PIN of the router.

Launch the app and a screen like the one below will be displayed.

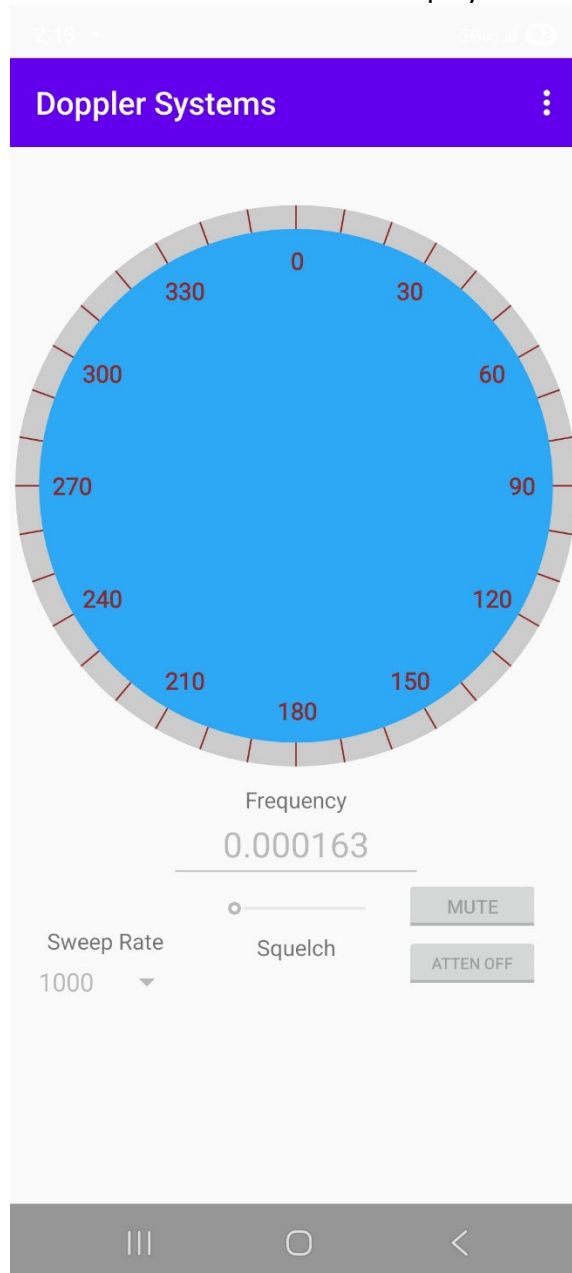


Figure 1: Screen at Startup

Press the menu selector at the top and select DF List from the menu.

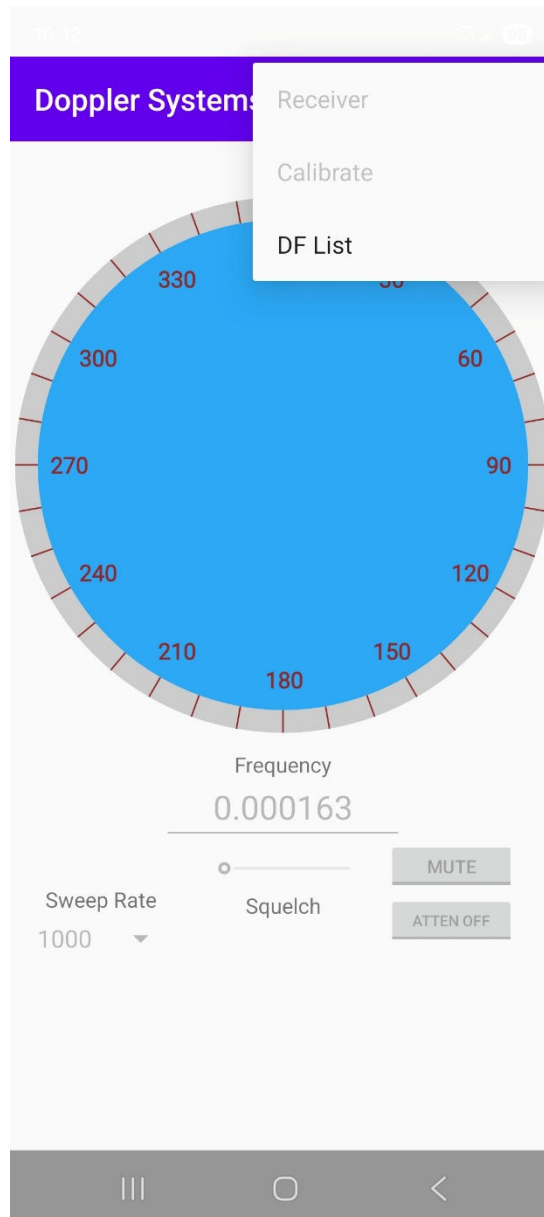


Figure 8: Select DF List

If the direction finder is powered and the Android device is connected to the router, you will see the MAC address and the IP address of the direction finder displayed.

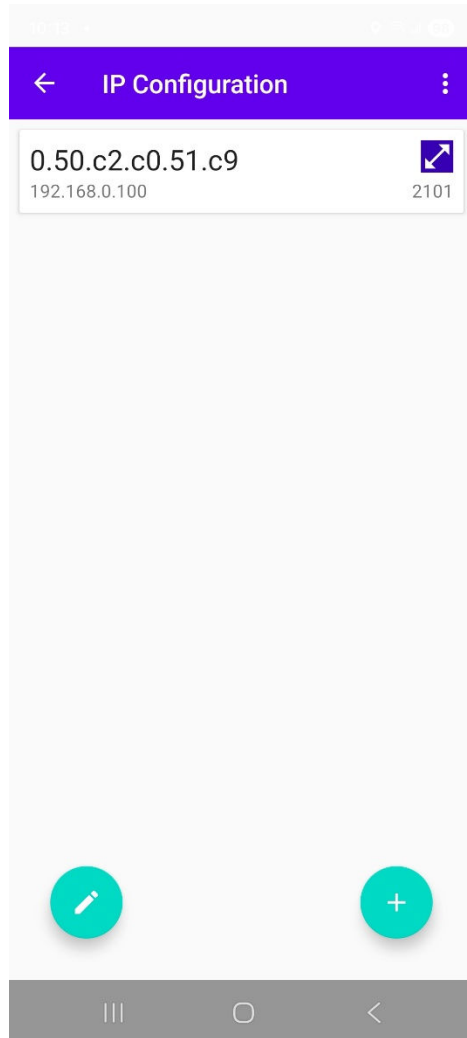


Figure 9: Displays the direction finder on the network and its MAC address

If you want to give the direction finder a more friendly name, select it and press the edit button. Enter the name and press the save button in the upper right corner.

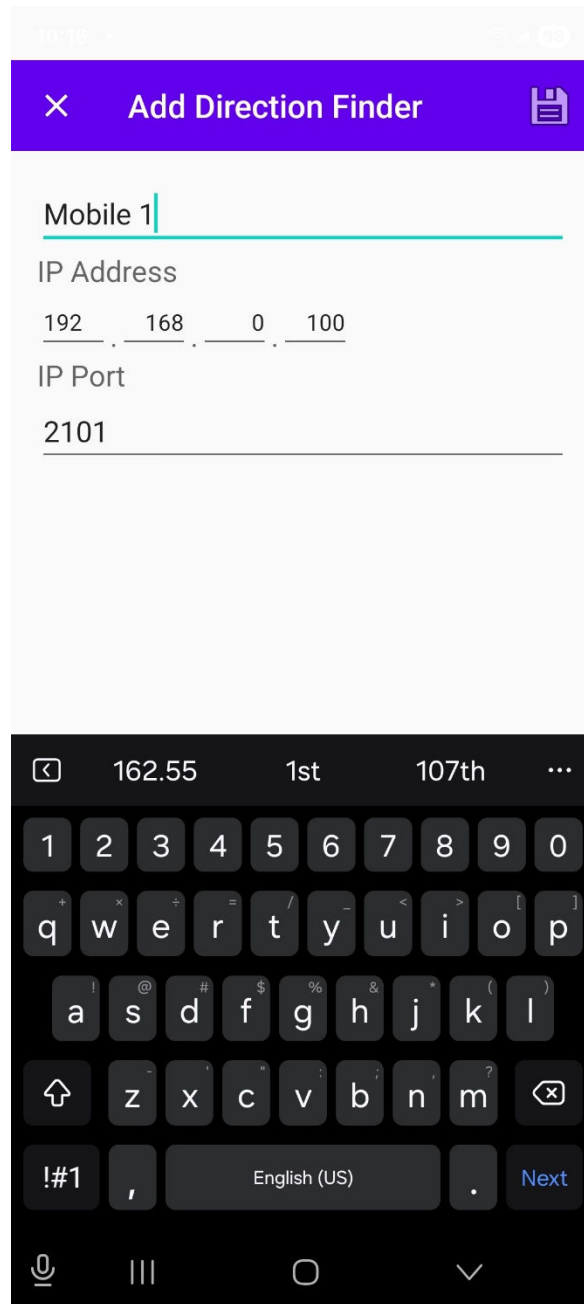


Figure 10: Change the name of the direction finder to a name you would like

Then press the double arrow button to the right of the direction finder display. This will initiate the connection.

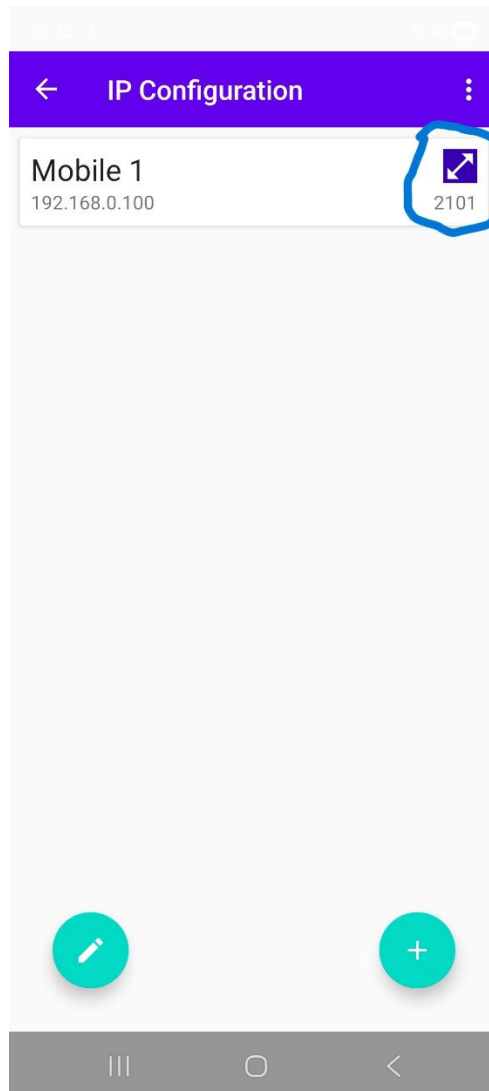


Figure 11: Press double arrow button to initiate connection

If the connection is made the main screen will be displayed and the system is ready to direction find.

5.0 Operation

To check your installation, first tune the receiver to a frequency where there is no signal. Adjust the receiver squelch to quiet the receiver. Next tune the receiver to a frequency that has a continuous signal (e.g. weather station). You should see a bearing being displayed like below. If you do not see a bearing line and are not hearing audio from the direction finder, try increasing the receiver volume until a bearing line is displayed. Next drive the vehicle in a circle and watch the display. If the system is installed properly the bearing display will rotate as you drive in a circle.

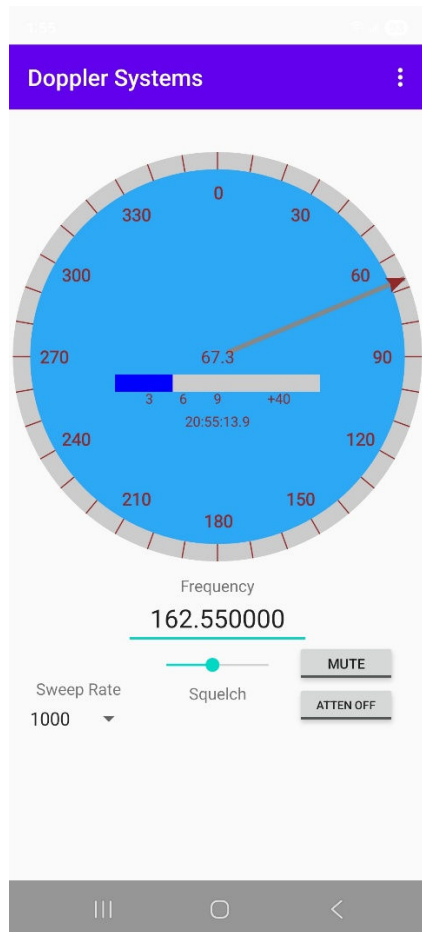


Figure 12: Typical Bearing Display

If you are using one of the DDF7001 supported receivers you do not have to calibrate the direction finder.

If you are using an unsupported receiver then you will need to calibrate the direction finder. Point the vehicle at a signal source. Tune in the signal source and note the measured bearing. Select Calibrate from the menu. Enter 0 as the calibration angle and press OK. The bearing angle should now read close to 0.

Note: Doppler Systems recommends that a person other than the vehicle driver uses the Android application to perform the direction finding.