ADS-B Aircraft Traffic Receiver
Using an RTL-SDR Radio USB Dongle
(Joseph A. Counsil - K0OG)

1) Download some drivers for the RTL-SDR dongle and put them in a directory, into which you will put the files from 1) and 2) below:
   http://sdr.osmocom.org/trac/raw-attachment/wiki/rtl-sdr/RelWithDebInfo.zip

   A) These are drivers necessary for running RTL1090, and do not come with the RTL1090 download. I thought they did, but I just looked and see they do not in the RTL1090 Beta 3 I suggest you use, which is why you must get them separately. Do this first before proceeding with the other steps.

2) Download Zadig - the driver installer for the RTL-SDR dongle:
   http://zadig.akeo.ie/

   A) Then run Zadig, check the box to view all devices, pull down the device list to either "Bulk interface device 0" or some such, or perhaps your system will identify it as an RTL-SDR already, and select that device. Then click the button to install (or reinstall) the driver.

3) Download RTL1090 to use the RTL-SDR dongle to tune to 1090 MHz and decode the ADS-B, etc. signals:
   www.globe-s.eu/download/rtl1090.beta3.zip

   A) The configuration is fairly straightforward, so no instructions needed there.

4) To put icing on the cake, for a nice interface, I use Virtual Radar Server to view the data:
   www.virtualradarserver.co.uk/Files/VirtualRadarSetup.exe

   A) To fully optimize the Virtual Radar Server is more complicated, but not too bad, especially if you don't intend to put it on the 'net for the world to view.

It's not really very complicated. There are little things you can do to optimize reception, but in general, just running the RTL1090 with auto-gain & AGC turned on works well.

I actually started using another program called Dump1090 which is a command-line utility functionally similar to RTL1090, but without any GUI. RTL1090 has a nice "waterfall" utility built in called SISEX, which is good for running tests, watching the waterfall while working with antennas to observe the signal & noise conditions. Once I got things working well watching the waterfall in RTL1090, I started using Dump1090, and it seems to decode a little better, more sensitive to weaker signals. There are some command-line switches in Dump1090 that allow for enabling increased sensitivity by fixing bad bits, and some other tricks. You can use Dump1090 to view the decoded traffic as there is a built-in map and web server (go to http://127.0.0.1:8080 with a web browser on your local machine running Dump1090 and you'll see the Dump1090 built-in web server with traffic). However, to just basically get it running and do some testing with the SISEX waterfall viewer, the RTL1090 is the best place to start I think.

I just followed the procedure detailed in the first three steps above, and in just a few minutes I had it all running. After a couple of minutes, it copied some aircraft with just a 7cm straightened paperclip stuck in the RTL-SDR for an antenna, here in my basement radio room, and this is what it sees:

73,
-Joe-
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