

Tracking Aircraft

Using the RTL-SDR Dongle



Gadget Talk:

<https://www.youtube.com/watch?v=o1KhiKV-8z4&t=401s>

ADS – B = Automatic Dependent Surveillance – Broadcast

https://en.wikipedia.org/wiki/Automatic_Dependent_Surveillance%E2%80%93Broadcast

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| ADS – B |
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Frequency = 1090 MHz = 1.090 GHz [UHF]

$$c = 299\,792\,458 \text{ m} \cdot \text{s}^{-1} \approx 3 \times 10^8 \text{ m} \cdot \text{s}^{-1}$$

$$\text{Wavelength} = \frac{c}{f} = 27.50 \text{ cm}$$

$$\text{Dipole antenna} \mapsto \boxed{l = \frac{\lambda}{2}}$$

$$\text{Length of the dipole} \mapsto \boxed{l = 13.75 \text{ cm}}$$

$$\text{Monopole antenna} \mapsto \boxed{l = \frac{\lambda}{4}}$$

$$\text{Length of the monopole} \mapsto \boxed{l \approx 6.9 \text{ cm}}$$

Using the Internet:

<https://www.flightradar24.com/>



RTL-SDR ADS-B Tutorial Page:

<https://www.rtl-sdr.com/adsb-aircraft-radar-with-rtl-sdr/>

To install **dump1090** on **Windows** follow these steps:

1. Download the **dump1090-win.20150731.zip** as well as the **source code zip file** to the same folder, say **dump1090** folder (create it).
2. Extract the **dump1090-win.20150731.zip** file into the folder already created before and named as **dump1090**.

3. In the **source code zip file** find the folder “**public_html**” and extract this to the folder **dump1090** where you have already extracted the **dump1090-win.20150731.zip** file into.
 4. Now open with **Notepad** (in Portuguese: **Bloco de Notas**) the **dump1090.bat** file. You should add some flags such that the new edited **dump1090.bat** file should read as follows:

```
dump1090.exe --interactive --oversample --net --phase-enhance --net-ro-port 30002 --net-beast  
pause
```

Then, save and close **Notepad**.
 5. Plug in your **RTL-SDR** dongle (with the antenna, obviously) and then double click on the already edited file **dump1090.bat**. If a **Windows** firewall window pops up, click **Allow Access**. Now a command window, showing all the aircraft being received, will pop up.
 6. You should now navigate to the URL <http://localhost:8080> in a web browser and be sure to find your location on the map. *You should see planes* over your region.
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[Taguspark: GPS Coordinates](#)

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Latitude = **38.74274**

Longitude = **- 9.30359**

REFERENCE

<https://fenix.tecnico.ulisboa.pt/disciplinas/PAnt/2022-2023/1-semester/sdr-book>

Carl Laufer, **The Hobbyist’s Guide to the RTL – SDR**, *Fourth Edition*

Section: ADS – B Receiving Guide (Tracking Aircraft) – pages 67-71