

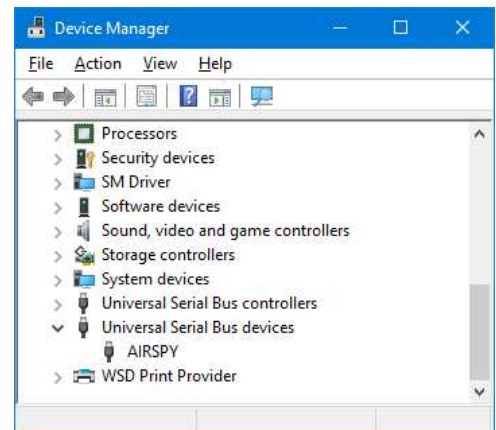
Installing AirSpy and SpyVerter with SDR# and Radio-Sky Spectrograph

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1. Install the Radio-Sky Spectrograph (RSS) software from the Radio-Sky website:
http://jupiter.wcc.hawaii.edu/spectrograph_software.htm
 - a. Open the downloaded file but do not install in the Program Files folder; instead, use something like `c:\Tools\Spectrograph\`
 - b. Open RSS and update it using the procedures in the window that pops up when it starts. If you do not see the pop-up, click Help – Check for Updates; always uses the latest available version
 - c. Select the Identity / Antenna menu and fill in the details for your observatory
 - d. Leave Spectrograph open; additional changes will be made later
2. Install the SDR# software from the AirSpy website: <http://airspy.com/download/>
 - a. Unzip the file to an installation folder such as `c:\Tools\SDR#\`. Do not use the Program Files folder.
 - b. The installation should automatically install the AirSpy software driver but, if not, the driver can be downloaded from the AirSpy website above but wait to do this until 4. below.
 - c. Go to the SDR# installation folder, right-click the file **SDRSharp.exe** and select **Create shortcut**. Drag the new shortcut to your Desktop or Start folder
3. Install the SDR# RSS plug-in from: <http://1420mhz.wixsite.com/website/downloads>.
 - a. The plug-in is a single dynamic link library file **SDRSharp.RadioSkySpectrograph.dll**. (Note: If you are unable to download the file from this website, please contact me)
 - b. Copy the plug-in file to the SDR# installation folder in 2. above.
 - c. Find the Plugins.xml file in the SDR# installation folder, and place a copy in another folder as backup. Open the original Plugins.xml file with a text editor such as NotePad or NotePad++.
 - d. Add the following line to the Plugins.xml file (place everything on one line and do not delete or add spaces and be sure indenting is the same as other file entries; suggest copy/paste to avoid errors):

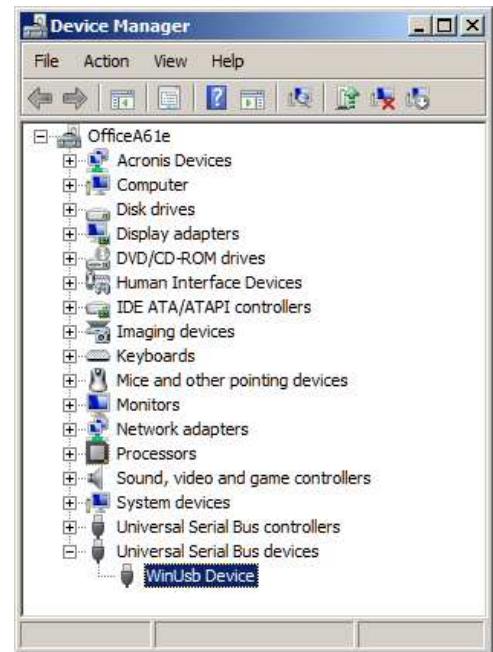
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<add key="Radio Sky Spectrograph"  
value="SDRSharp.RadioSkySpectrograph.RadioSkySpectrographPlugin,SDRSharp.RadioSkySpectrograph" />
```

Note: The position of the Spectrograph plug-in in the SDR# left panel can be changed by placing the above line at different positions in Plugins.xml (it does not have to be placed at the end)
4. Airspy connections
 - a. AirSpy: Connect the Airspy USB port to a PC USB port (do not use a USB hub); connect the antenna to the AirSpy RF input
 - b. AirSpy with SpyVerter: Connect the AirSpy USB port to a PC USB port (do not use a USB hub); connect the SpyVerter IF output to the AirSpy RF input and the antenna to the SpyVerter RF input
 - c. Confirm the PC recognizes the AirSpy. Go to Device Manager, scroll down to Universal Serial Bus devices and expand it. If the AirSpy has been recognized you will see it as shown right (AIRSPY). If it is not shown as AIRSPY, Windows labels it as WinUsb and you may need to update the device driver. Note: You initially may see AIRSPY with

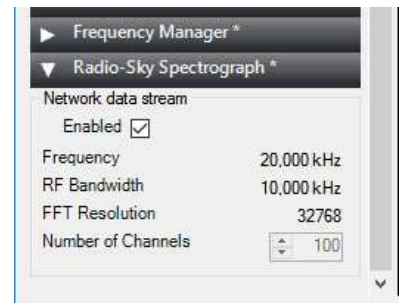
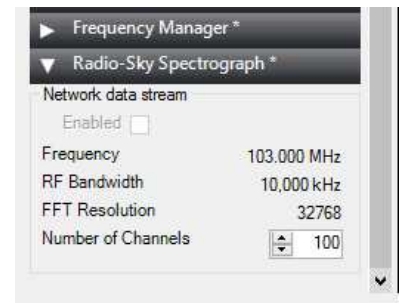
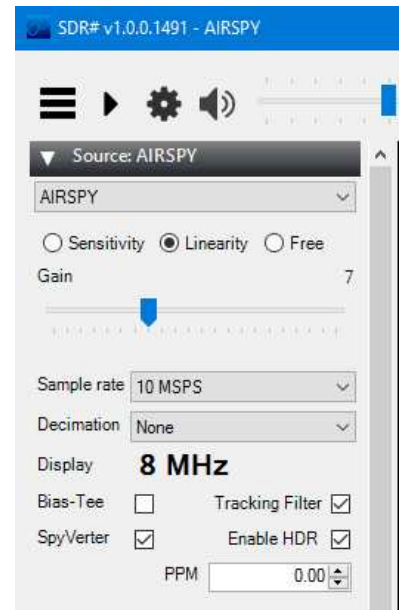


a warning triangle under Other Devices but it will disappear after about a minute and will be moved to the Universal Serial Bus device entry as WinUsb Device as shown right. Presumably Windows has automatically updated the driver during this time. To make sure the driver is the latest, go to the webpage in 2. above and scroll down to *Compatibility driver*. Download the driver and unzip it to a folder such as c:\Drivers\AirSpy\. Go back to Device Manager, right-click the WinUsb Device and select Update Driver. Browse to the location where you unzipped the driver and finish the installation. Wait a minute. You may need to unplug/plug the AirSpy or restart Windows.

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5. Check the SDR# installation
 - a. Double-click the shortcut from 2. above to open SDR#
 - b. When SDR# opens the first time it defaults to Source: AirSpy (shown in upper-left corner of main window) and SpyVerter is selected. If you do not have the SpyVerter, uncheck the selection
 - c. Scroll down to the bottom of the left panel to confirm the Radio-Sky Spectrograph plug-in was installed properly
6. In SDR# set the desired center frequency (example, 20 MHz), Sample rate (example, 10 MSPS), decimation (example, None) and Gain. Gain will have to be set experimentally but start with Sensitivity gain mode and Gain setting of 10
7. In SDR# click the Play button (black triangle near top-left of main window)
 - a. The spectrum in the SDR# right panel will start scrolling
 - b. Adjust the Gain setting to suit
8. In the SDR# Radio-Sky Spectrograph plug-in uncheck the Network Data Stream Enabled checkbox, set the desired number of channels (example, 50, 100, 200 or 300) then recheck the box to Enable (see images right). Note that the Frequency and RF Bandwidth are the same as set in 6. above (RF Bandwidth corresponds to the Sample rate). above
9. Now return to Radio-Sky Spectrograph
 - a. In the RSS Receiver menu select RTL-Bridge / TCP
 - b. Click the Start button on the right side of main window
 - c. Now you can use RSS in the normal way to save data, run timed observations, export to CSV file, and so on



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Document information

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0.1 (Added note on plug-in position, contact info and device driver info, 16 Jan 2017)

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