SDRPlay2RSS/ Radio-Sky Spectrograph Quick Start


This document will take you through the process of installing and configuring Radio-Sky Spectrograph (RSS) and SDRPlay2RSS with the ultimate goal of utilizing a SDRPlay receiver as radio-science spectrograph.   SDRPlay1A and SDRPlay2 model receivers were used in establishing these instructions. Other models may not work. While we have tried to make this process as simple as possible, some computers may require additional steps. Troubleshooting options are presented at the end of this presentation. This is a Quick Start guide and thus doesn't go in depth as to normal operations and adjustment. Additional resources include:

Using SDRPlay2RSS (Brown and Flagg)
The Radio-Sky Spectrograph Help File. (Sky)
The SDRPlay2RSS Help File (Townes)
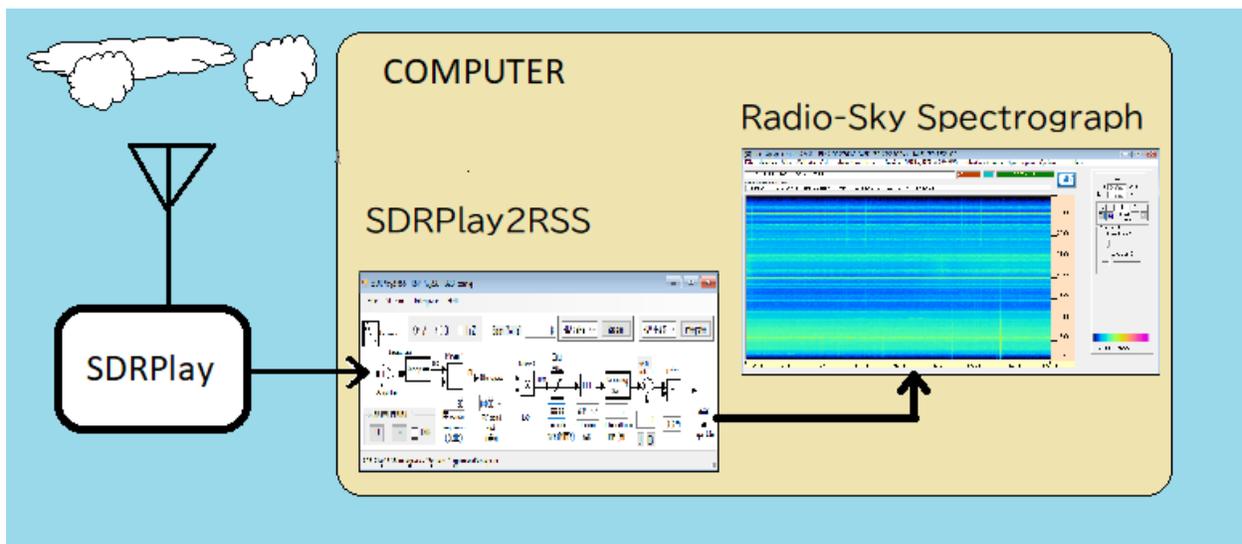
RSS uses a separate program, SDRPlay2RSS, to gather spectral data from the SDRPlay receiver and feed it RSS for display and archiving. This program, written by Nathan Towne, installs along with RSS, and is our most tested tool for working with the SDRPlay receivers.   Much of the remainder of this document will deal with SDRPlay2RSS configuration and usage.

If you have not already done so, download and install the latest version of SDRuno from the SDRPlay website download page at http://sdrplay.com/downloads. **Do not connect the SDRPlay to the computer until the install routine tells you to connect it.**   After installing, and successfully establishing that the SDRPlay radio is working, close SDRuno. You may wish to use SDRuno as a flexible control program for your receiver and to test that the SDRPlay receiver is functioning properly, however, SDRuno cannot be used when the SDRPlay receiver is connected to Radio-Sky Spectrograph.

Download and install (in default directory!) the latest version of Radio-Sky Spectrograph (RSS) from: http://radiosky.com/spec/Spectrograph.exe . After installing RSS on Windows versions 7

or higher, you must configure the program to run a*s Administrator*. To accomplish use *File Explorer* navigate to the *C:\Program Files (x86)\Spectrograph* directory and find the file *Spectrograph.exe*. Right mouse click on the file and select *Properties*. Click on the *Compatibility Tab* then check the box that says *Run as Administrator*.
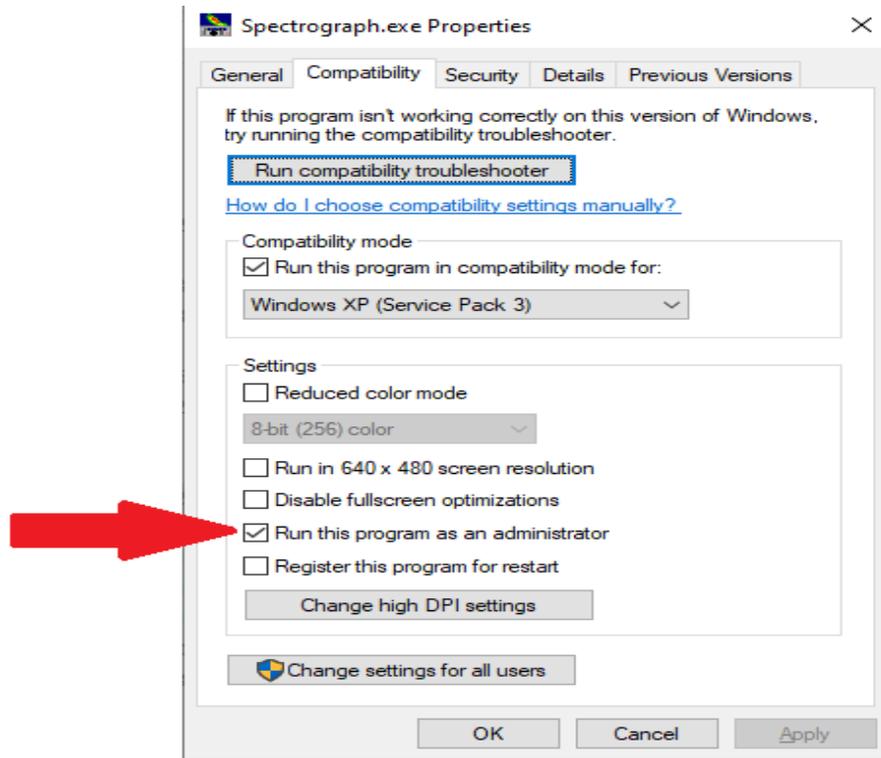

Illustration 1: Set Radio-Sky Spectrograph to Run as Administrator in the program's Properties / Compatibility window.

When you run RSS for the first time, click the ***Identity/Antenna*** menu and, at a minimum, fill in your name and observatory name (limit 20 characters), latitude, and longitude. Before actually sharing files you should complete information thoroughly.   Keeping good metadata is key to the usefulness of your observations.
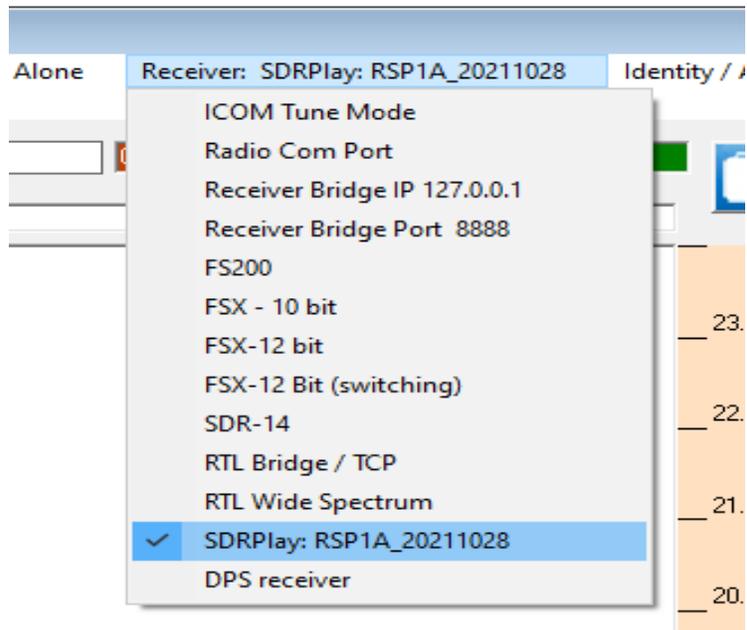
In RSS, Click on **Receiver** and select the **SDRPlay** option. You will then be given an option to select a configuration file for SDRPlay2RSS. Select the configuration file that corresponds to your receiver model *RSP1A_xxxxxxxx.config* or *RSP2_xxxxxxxx.config*.
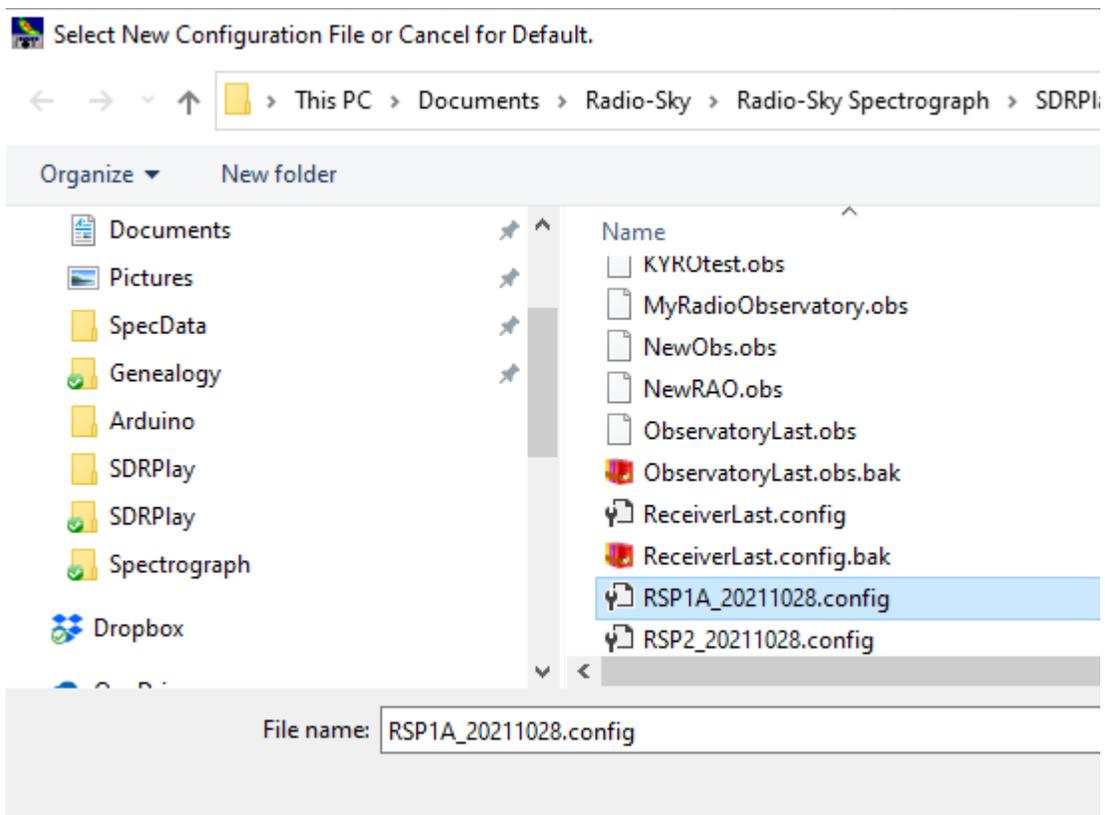
You may now hit the **Start** button in RSS. RSS will attempt to open and start SDRPlay2RSS The first time SDRPlay2RSS is opened it may ask you to select an observatory file. Select the file that corresponds to your observatory name, in our example, "MyRadioObservatory.obs", and click **Open**. This file was created when you filled in your Identity/Antenna form and clicked **OK**.
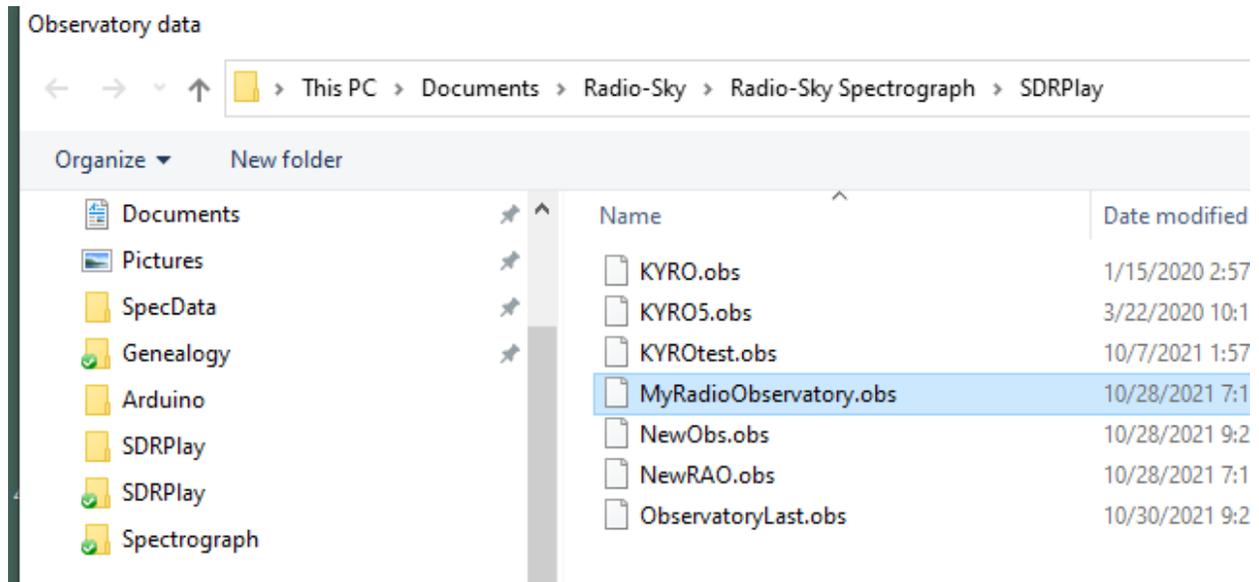
After a few seconds your spectrograph should begin taking data. The **Integrate** button in SDRPlay2RSS should be yellow and you should see the spectrogram scrolling in RSS. If this doesn't happen see the Troubleshooting section that follows.

Normal Operations

Note that once **Integrate** button turns yellow, there is no need to turn it off SDRPlay2RSS every time you stop saving data. In other words, RSS can start and stop collecting data without doing anything in SDRPlay2RSS after the **Integrate** button turns yellow.

The configuration files used in this Quick Start may require some optimization for your particular radio and antenna. Understanding the various parameters that may be adjusted will help you produce the best observations. This information can be found in *Using SDRPlay2RSS* and in the **Help** menu in SDRPLAY2RSS.

Troubleshooting

- "RSS won't start or ends with an error." Are you running RSS *As Administrator*? Running in administrator mode is essential for this program to function.

- "I don't see data scrolling but neither do I see errors displayed." To be sure that RSS isn't just saturated to one color (white). Look at the red status box above the upper spectrogram. This is the number of spectra or sweeps that have been received. If it is incrementing, data is being received. Try increasing the **Color Offset** control in RSS. This should make the spectrogram visible, if that is the problem. It is also possible that one of the settings in SDRPlay2RSS needs to be adjusted.

- "SDRPlay2RSS won't start. I don't see window for it." There is a desktop icon for SDRPlay2RSS. Try starting it from there. No luck? SDRPlay2RSS.exe is probably already running in the background, just not displayed. The program did not close down properly the last time it was used. This seems to be common fault in Windows. You can open the **Windows Task Manager** and force the program to close with **End Task**. SDRPlay2RSS (32 bit) may appear in either *Apps* or *Processes* list in Task Manager.

- "I see both programs but nothing happens." Starting and stopping SDRPlay2RSS may sometimes result in a locked condition where SDRPlay2RSS is visible but refuses to resume "integrating". Try closing and re-starting RSS and SDRPlay2RSS. Stubborn cases may require rebooting.

- "SDRPLAY2RSS runs but then stops with a error message in the status bar". When this happens, the most likely cause is that the computer processor failed to keep up with the data stream arriving from the SDRPlay receiver. This problem can be triggered by a human interaction with the program while it is running, such as selecting a menu item. Other programs running on the same computer may require too much of the CPU's attention and cause this crash.

- "I don't see my problem here. Where can I look for clues?" SDRPlay2RSS produces two trouble logs that can be helpful in resolving an error. When the program stops select Help / SDRPlay2RSS.log. The text log will appear in Notepad. Scroll to the bottom for the most recent error. For example;

```
2021-10-30T22:56:24 ============================= ArgumentException
SDRPlay.integrating - ReadPacket failed 1 times, mir_sdr_HwError.
   at SDRPlay2RSS.SDRPlay.Integrating(Double integrationtime, Double recordfreqstart, Double
recordfreqend, rspConfig& devconfig, Double triggeredduration, ObservatoryData obs, DataSinkType
datasink, Int32 retries, String filepath, String tapspath, Double integrationblocksize)
   at SDRPlay2RSS.SDRPlay2RSS.IntegrateButton_Click(Object sender, EventArgs e)
```

While this log entry may seem formidable, the error description can be useful in troubleshooting the current problem. The error shown above is the typical result of data dropped because the computer could not keep up with incoming data.

This "ReadPacket failed" error commonly occurs due to a busy state.

Jim Sky 11/1/2021