A Review of SDRplay's RSP2 Radio Spectrum Processor for FM Dxing

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It was a couple of years ago now that I received an email from Jon Hudson of SDRplay telling me about a new SDR they had developed, called the RSP. I wrote back to Jon, telling him that if he would like to send me one, I'd try it and then write a review on it for its FM DXing potential. Jon sent one. I tried it. I liked it and I bought it and since then it has been my receiver of choice for FM DXing, helping me work many summertime skip openings and log new stations.

So it surprised me recently when Jon emailed me again and told me about a new offering from SDRplay. He explained that this was an enhanced version of my original RSP. This one is called the RSP2 and operates with SDRuno software. He again offered to send me one to review. I said sure, so here we are again.

Since I already use an RSP1, I physically compared both of them. As you can see, both are about 3" wide. My original RSP (one of the first built) is about 4" long while the newer RSP2 is 3 ¾ inches long, just shy of mine. Both are about 1 ¼" in height.

My original RSP has an F fitting on one end while the newer RSPs were changed to SMA fittings and also have black housings instead of the blue and white housing that mine has. The RSP2 housing is now shielded and has three antenna inputs with two SMA fittings plus one green terminal which can be used for long wire antennas or loops. The two SMA inputs work from 1500khz through 2ghz. The other input works from 10khz through 30mhz. The antennas are switched through the software. The RSPs connect to a computer with a USB cable. Be advised you'll need at least one SMA to F adapter fitting for FM DX use.

While playing with my RSP2 I noticed that the noise floor on FM was about -120dBm which was about the same as my RSP1. I also noticed that when switching from one SMA input to the other, my strong local WAQY 102.1 registered a 60db signal but registered 20db on the other input with no antenna connection. One of my local LPFMs (WSIM-LP 103.5) registered 20db with the antenna connected and S-9 with the empty input chosen. We may have an isolation issue here.

SDR Uno

To get your RSP2 working, you'll need to download SDRuno software first from the SDRplay website. Once you finish downloading the software, connect your RSP2 and run it. When you run SDRuno, you will encounter one of the windows shown on the left, called the Main Window. If you use the software with an RSP1, you will see the window on the left. If you use an RSP2 you will see the window on the right. The Main difference between the two is the buttons for antenna switching. To start SDRuno, click **PLAY**.

When people first download SDRuno, their thoughts are probably like mine. They think "Is that all there is and what did I do wrong!!"

Well, you didn't do anything wrong. This is where you start, and where you finish could be something like where I ended up, which is here:
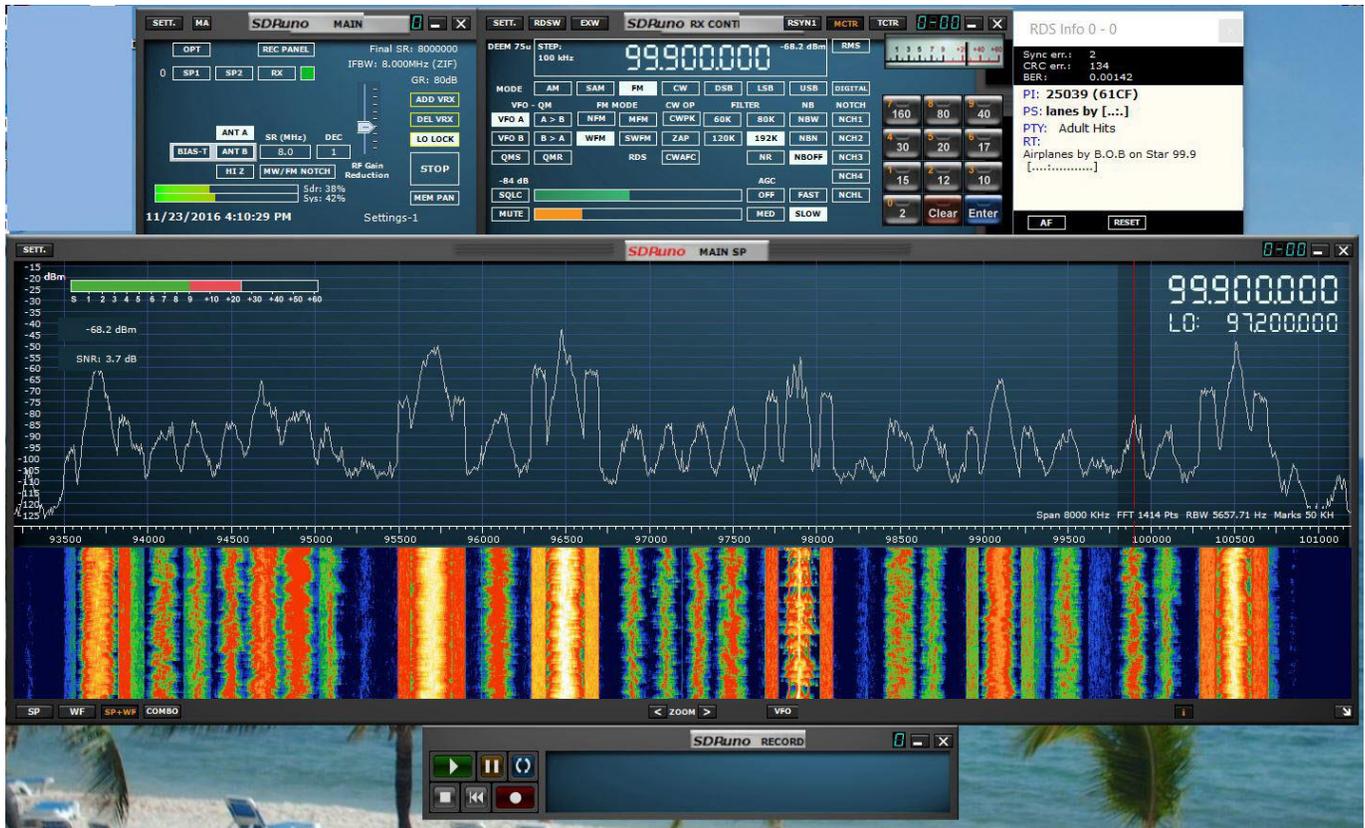
As you can see, I have five windows showing. This is all I need for FM Dxing. What you use and how you put them together is up to you.

Now that you see these windows, how do you get them to appear on your monitor? It's easy.

A. To add the RX control window (top row, middle) just go to your Main window and click on the RX button.

B.   To add the RDS info window, go to your RX control window and click on the RDSW tab on the top.

C. To get your Main Spectrum window (big window in the middle) go to your Main window and click on SP1.

D. To get the Recording Window, go to the Main window and click on REC PANEL.

There are other windows available. If you are a ham you'd probably appreciate them. If you want to check them out later, go right ahead.

Move these windows wherever you want. Resize whichever you want. Every window has a SETT button on the upper left side of each window (except RDS). Click it and you'll find all kinds of settings and ways to customize your windows.

Then save your settings. Go to your Main window and look on the bottom. In my picture you'll see Settings-1. This is a Profile name. You may see something else. It doesn't matter. Hold down your CTRL key and keep it depressed. Click on whatever you see there and when you see a menu drop down with the same name on it, click on that name in that menu again. Then release your CTRL key. You have just saved your layout and all

settings. You can also change the name to something you like better by double clicking on the profile name, typing in something else and hitting enter.

THINGS YOU SHOULD KNOW.

De-emphasis comes with 50us as a default. The US value is 75us. Change it. Go to your RX Control window, click on the EXW tab, make sure DEEM is turned on and select 75us. Note that the FM stereo noise reduction slider is on the bottom of that window. Click on the bar and move it left or right to change the NR.

RDS Pty settings come set with European settings. Change them back to RBDS (North American) settings. Go to your RX control window. Click on the RDS tab and select PTY Region NA.

How much spectrum you want to see depends on you and it depends on how much your computer wants to deal with it. Ten mhz is nice to see but your computer might not handle it. You may experience freezing, locking or stuttering in your recordings and playbacks. Your computer might digest 8 mhz or even 6 mhz better. You can change your spectrum bandwidth by going to your Main window and changing it by double clicking on the SR (MHz) box and typing in something else (8.0 instead of 10.0). Or click and get a menu that shows all choices between 2 and 10mhz and select one.


Functions of the Main Window that we've talked about

When you select the FM band, you have two choices on the RX Control window. You have WFM (wide FM mono) or SWFM (wide FM stereo). You also have four filtering presets: 192khz, 110khz, 80khz and 60khz. You can choose one of those or anything in between. Just click on the SP2 box on the Main window and move the red line either left or right. On the image below we have selectivity set for 100khz.
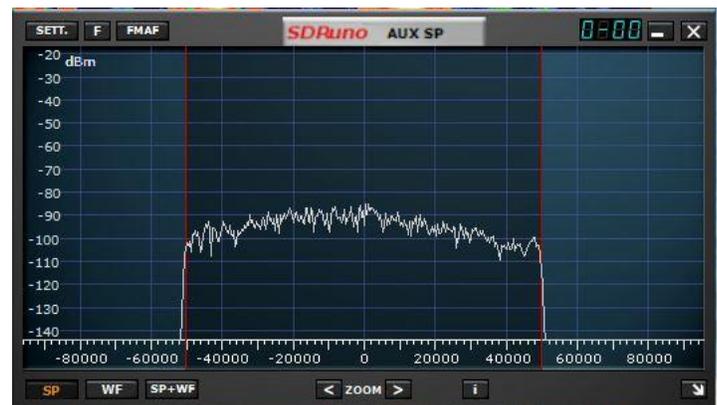
RDS Works best from around 150-192khz filtering. Once you narrow it more you may find that RDS on weaker stations may not decode. 150khz is a good compromise.

Next, we will deal with the recording window.
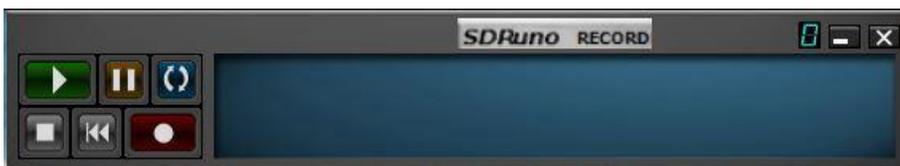
Here is the recording window. Before we record anything, first we need to tell SDRuno where to put the recording, so put your cursor anywhere in the bluish area to the right of the controls and right click. A menu appears and lets you select the folder where you want to keep

your spectrum files. Press the red button with the white dot to begin recording. Next we need to find where to find the spectrum files we just recorded. Go back to the Main window, look for the OPT box and click on it. Look for SELECT INPUT and select wav file. Once that is selected, click the green button on the recording window and the file will play.

There are a few ways to change frequencies. Consult the user manual (found by clicking on the OPT box on the Main window) and then clicking on the User Manual. The easiest way to enter an FM frequency at the beginning is to look at the RX window frequency display, then count over 9 places to the left of the last digit. Put your cursor there and then type in the proper frequency. For 100.5 you would need to type in 100500000 then hit enter (found under the keypad). This will show in the display as 100.500.000. Once you do this, changing from one frequency to another should be relatively easy with the mouse wheel (or just put your cursor anywhere in the SP1 window and click to change frequencies OR click on the frequency digits in the SP1 window.)

The LO LOCK button on the Main window serves two purposes. When turned on (shown as a white block with black letters) the red tuning bar moves while the spectrum stays locked. The button in this position locks the center frequency, LO or local oscillator. With the LO LOCK turned off, the tuning bar stays locked while the spectrum moves. For DXing the FM band, LO LOCK turned on works best as it lets you tune the entire spectrum window.

Tuning steps can be changed by right clicking in the frequency display and selecting 100khz from the menu of steps that appears.

To stop or exit the program, go to your Main window and click STOP. Then X out that window to quit.

CONCLUSIONS

The RSP-2 is an RSP-1 with enhancements. Both perform very well as FM DX machines. Audio, selectivity and sensitivity are very good. On my heavily congested FM band, I had no problem with overloading. The RSP will work on a 2.6 ghz dual core computer although spectrum files may stutter on recording or playback. Recording and playback work fine on my core 2 duo 2.6 ghz desktop. For heavy recording, an external drive along with a USB 3.0 port would be recommended.

The RSP-2 sells for $169 and can be ordered from Ham Radio Outlet in the United States. The RSP-1 is on sale from HRO for $119.95. Both perform very well on FM with the free included SDRuno software. Pick the one that suits your needs best.

Additional resources consist of the SDRplay Group on Facebook, the SDRplay SDRuno Group on Facebook and the SDRplay Community Forum on the SDRplay website (http://www.sdrplay.com/community). The Facebook groups are administered by users/beta testers and contain a wealth of information for users and for those thinking about purchasing an RSP. If you have a problem or question, you'll get your fix or answer there.