Using
SDR-Console V3 by Simon Brown

SDR-Radio.com

Quick Start Guide for the SDRPlay RSP
&
Hints & Tips
for User Technical Preview #3
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Welcome, this is a quick start guide that will be a constantly upgraded document as changes are made to the SDRPlay RSP and to SDR-Console. **Major Changes to existing sections will be in RED**

**Hardware Driver**

Step 1.

Firstly visit SDRPlay.com and click on the platforms tab and select windows. We are about to download the Windows API software, this is the hardware driver for your RSP, so that windows will recognize the RSP. If you are only going to use SDR-Console, you only need the API, the EXTIO is used in other software like HDSDR/SoDiRa/Spectrum Lab etc...

Select the Current API installer on the right hand side of the page, this will download the software, once downloaded, run and it will install your API driver, plug in your RSP, and windows will finish the install of the hardware driver.

**MAKE SURE YOU HAVE THE LATEST SDRPLAY DRIVER TO USE THE NEW 1.95 API**

You can download the EXTIO if you wish, but as I said earlier SDR-Console does not use this file.
SDR-Console Download

Step 2.

We need to download the latest version of SDR-Console V3.

http://sdr-radio.com/V3_preview_downloads (screen shot may change)

Simon is always releasing new versions, so always PLEASE check you have the latest version downloaded and only download from sdr-radio.com

Once downloaded run and install the program, we will now go through the simple setup procedure for SDR-Console, V3 will install into a separate folder than V2.3 so you can keep V2.3 running, as all the features are not enabled in V3-UTP (User Technology Preview). More features will be added over time, same as the evolution of 2.3
SDR-Console setup configuration

Step 3. We will now configure SDR-Console V3 to use the SDRPlay RSP.

Firstly launch the SDR-Console V3 and you will get a select radio screen nearly identical to the older V2 screens, they may change as the development progresses, but they will always look similar.

At this point the screen will show NO radios listed, so click on the Definitions button at the bottom right of the screen, this will pop up another window.

From the search button at the top of this window, click on the drop down and you will see SDRPlay listed, select and it should say 1 entry found update list? Click on YES, then click on OK.
Now you should have the SDRPlay listed in the window with a green check next to it, (should read Version 1.81, click on it once so it's highlighted, and you can also select your Sample Rate, on this screen from 250Khz to 8Mhz, so now the start button should become un-greyed and you can click on start.

Changes in Preview #3, Sample Rate changes, the choices are now 500khz, 1Mhz, 2.048Mhz, 6Mhz, 7Mhz, 8Mhz.

The first three, up to 2.048Mhz now use the LowIF Mode, and these give the best results on HF, No DC spike at the center of the spectrum, the latter, 6-8 Mhz use ZeroIF mode, and will have a slight DC Spike, but the software should remove it if you have your gain set at the correct level.

There was also 5Mhz & 10Mhz, but at the time of writing this, there were issues, so Simon has removed those, as they require more work.
Now you should (fingers crossed) have a running SDR-Console

This is the default layout screen, this program can be customized to suit your own monitoring habits and we will give you some quick shortcuts and options to get you going and picking up signals right away.

V3 defaults to starting up with one RX (VFO), new to V3 is unlimited RX's (24 in preview) only limited by the performance of your PC (CPU/RAM/CUDA Card).

The only limitation right now is the bandwidth you selected on start up, so for instance on a test laptop here, Intel i3 @ 2.4Ghz with 6GB of ram, I can easily run 12 RX's across the maximum 8Mhz of bandwidth, if I go higher, I start to get audio stutter, On a faster dual-quad core system with 32Gb of ram, I easily ran 2 SDRPlays each with 24 RX's across 16Mhz of Bandwidth.

Keyboard Shortcuts for options have not been enabled yet such as changing MODE and Keyboard Direct Entry of the Frequency.

OK so now let’s get down to some more tips for the SDRPlay...
SDRPlay Radio Controls

The Gain controls for the RSP are on the HOME tab, updated in preview #3 I'll cover the basic setting, but it all depends on what band you are on and what antenna you are using, for this I'll give two examples (similar to V2.3 Build 2381)

#3 Changes, Gain now has two settings, Manual and Auto as you will see when you click on Gain, I tend to run on manual -50db, and visual on 0db when on HF, and have to add some Visual Gain when on VHF and Up. LO MODE gives you the option to change the LO Band Plan, as with the ExtIO, Auto/120Mhz/144Mhz/168Mhz, this helps with moving any images you may have. Radio Configuration also lists some help and advice from Simon,

HF using a 65ft longwire:
The LNA gain has two settings, ON or OFF, Simon has implemented his own algorithm for the DC spike removal, and so far I’ve found I actually get better results with the LNA on, the DC (center spike) is almost completely removed when the LNA is on, then just adjust the RFGain (gain reduction) accordingly. If using a sample rate greater than 6Mhz, lower sample rates now use LowIF, so the LNA should not be used.

For a large antenna on HF you will want the GR set at -50 to -80 to get the best results and so as not to overload the radio, but you may find the display will drop off the screen, so no waterfall is visible, this can be altered under the display tab and the spectrum scale, I run mine on AUTO for the HIGH and -140db for the LOW, this normally displays signals all the time, you can then add more visual gain if needed, or less, this will add more to the signal, on HF, I run 0 to -10 on the VG

1. The zoom button at the right of the display with a center button below it.

2. Click on the zoom down arrow and it will change to HIGH, this allows yo to move the slider to alter the top scale, ie +10 +20 etc

3. Click again and it will change to LOW, this will allow you to move the noise floor level down to the bottom bar, so you don’t see signals below a certain level, play with it and have fun....
VHF/UHF on a Discone

I still tend to leave the LNA ON, but on VHF/UHF you will want to push the Gain Reduction up to the Smaller values, so 5-25 for example and the Visual Gain also in the PLUS range, for example, crazy but true, I managed to pick up some UHF satellites using my HF longwire, I had the GR set at -5db and the VG set at the +25db and the signals were very visible.

Again the Gain is really dependent on your setup, what band you are on and what antenna you are using at the time. As we all know, gain will vary from HF to UHF....

The LO Mode has four options, Auto/120Mhz/144Mhz/168Mhz to access these on the home tab and click on the Radio Configuration button next to the visual gain

When originally released, the SDRPlay had a gap from 370mhz-420Mhz, this has since been removed, the original LO frequency was 120Mhz, this is still an option to choose, and you will still have the gap from 370-420 (approx) you can also choose to use a LO of 144Mhz with gaps of 250-255Mhz and 400-420Mhz or LO of 168Mhz which will give a gap of 250-265Mhz and Auto which switches between LO's to give you a NO GAP coverage of 100Khz-2Ghz . Normally you can leave this on Auto, but if you do switch to any other be aware that you may need to stop and start the sdrplay if tuning through the gap frequencies. The advantage this gives, is that some frequencies may give images but changing the LO may well remove these images from the display. If you do see any images, try changing the LO to one of the other options to see if they disappear.
The Main Display Screen.

So this is your basic layout when starting V3, looks a little like 2.3 but you will see the VFO windows are no longer visible, instead we now have unlimited receivers across the total bandwidth of the SDRPlay that you choose on startup.

So the image above has one single receiver, and to the left you can see the DSP Panel, this can be turned on or off, I even have a keyboard shortcut setup the D key, turns this panel on and off once programmed. At the top is the frequency and RX info, this will change to the active RX that you are listening to.

Below is the Audio Drop Down to select which audio is enabled on the current RX, i.e. Speakers or VAC for decoding.
**Mode Selection**

Clicking on the little graphic equalizer icon next to the speaker will turn the audio spectrum display on or off.

Clicking on the ellipsis (...) will bring up the mode window this will allow you to choose which mode buttons are displayed, for example you may choose not to show DSB, so you can turn that off.

**Filter Selection**

Clicking on the ellipsis (...) will bring up the filter definition window, this will let you choose which filters are displayed in the button window, also you can now click on a filter and the edit and second window will pop up, this will let you alter the filter definition as in skirts and response.
Favorites (Favourites)

The favorites now save the bands and also lets you save multiple VFO/RX’s so for example if you have the 60m channels saved, it will save each VFO setting as well as the bands, you can’t at the moment save or edit the band edge frequencies in the update window.

You can see I clicked on my 60m and it opened up all the saved RX’s and loaded them all up.
Graphic EQ

To get to the Graphic Equalizer, go to Receive Tab, then options and click on GEQ, you have to. You can then change the audio settings to your personal taste, the 0db button will reset all your changes back to a level 0db.
The MATRIX

This is one of Simon’s game changers in my opinion, allowing for currently 24 in the test version, but in theory limited only by your computer’s processing power.

The MATRIX is accessed via the receive tab, you will see a Matrix button, this will open up a complete new window, but it is still part of the SDR-Console process.

This is the matrix window with just one active RX in this screenshot, right in the middle of the ribbon bar is a matrix button.

This is like an Excel box, just drag your mouse over the grid for the layout you want, could be 3 side by side, or 3 on top of each other or if you have 9 active RX’s you could have a 3x3 grid.

The layout of the matrix is totally up to the user.
You can see zoom and height on the matrix ribbon bar, this allows you to change the window zoom and display height but it will affect all windows, each one is not independent, they all zoom or change height.

The DSP panel can also be turned off if you wish on the matrix window, you can select each window from the buttons at the top of each display.

**Keyboard Shortcuts**

You can add Keyboard Shortcuts from the More Commands menu

This will bring up the editor and you can save any shortcuts that you want.
Ribbon Bar Expansion

It is possible to add commands to the ribbon bar, I find myself wanting to change RX’s/VFO’s while on screens other than the receive tab, for instance, if I’m changing the gain levels on the home tab, I have to switch to the receive tab to change RX, well there is a shortcut you can add all the current VFO’s to the command ribbon bar.

Go to customize quick access toolbar and the above window will pop-up, select receive in the top box, and then receive dropdown as highlighted above and then the add tool, then when you are on any tab, you will have access to your list of RX’s.
External Radio (Panadapter)

For Preview #2, Simon has added the external radio option, it has to be enabled before you can use it. (Ribbon/View/More Options)

Clicking on this will bring up a request box that you must tick external radio, this will ask you for a restart, click ok to continue.

This will add two new sections, one in the more on the tool bar, and an external radio in the RX DSP panel. You must have omnirig installed and configured on your computer and working with your radio, using the omnirig system, you can interface sdr-console and your RSP (or any sdr) to your radio, most radios with CAT/C-IV are supported by Omnirig. If you do not have omnirig, you can download it from http://www.dxatlas.com/omnirig it is FREEWARE.

Once you have the external radio panel open as below, click on the ? in the external radio window and a popup will appear that will let you configure your settings, there are several options, it can be used on the IF out, or you can use on a RX out / Standalone RX that will track
your radio, I personally use mine on my Yaesu FTdx3000 on the RX out rather than IF out, it allows me to have several active VFO’s thus adding true DUAL RX, not only in band, but other bands within the 8mhz bandwidth of the RSP, so I can be active on 20m, but listening to the 17m band for openings etc. I will go into more detail in a later edition of this document, but this should get you started and up and running with the external radio option, a lot of the options are similar to V2.3 once it is running.
FM RDS Decoding

RDS and FM Stereo has now been added to Preview #2, it needs to be turned on, it is off as default. Once enabled, it can be turned on/off from the View/Waterfall Extras tab.

Click on the enable and show PI code if so desired, a fact I only found out last month was that the decode from the PI code will not always show the actual station name, you can check PI codes at [http://db.wtfdt.org](http://db.wtfdt.org) enter the PI code and it should list the station, great for ID’s.

As you can see the PI code is 129A and the ID shows as KAZQ, but the station is WXYL 102.5 out of Charleston SC, and it ID’s as such on WTFDA, some stations will show the calls, some will not. It seems this happens more in the USA to Clear Channel owned stations. (RDS on/off will be in the ribbon/view bar, it can be turned on/off from there, if you have statistics turned on
the display will be smaller, unless you drag the divider between the spectrum and waterfall so that the waterfall is larger than the spectrum display.

**Tuning Options**

A new option has been added to the tuning.

Under Receive options then tuning, you can select No Action or Adjust, the adjust will automatically center the display on the active VFO if you scroll out of the window width, so if you tune with the mouse wheel after selecting the digit in the RS DSP Panel frequency display, so 1khz or 1Mhz, as you scroll the VFO will go out of the window, once it does, it will scroll the whole display will move and re-center, I found this very good when having an active VFO for all the Amateur bands open, even though they were not all active, as I clicked on the RX/VFO it makes each one active and centers up so they display in each window, just experiment and have fun.
Recording and Playback

This is a new addition to Preview #3

A new recording toolbar.

Pressing the record button will bring up a simple schedule window, that allows a stop and start time, with day/date but not a recurring scheduler.

The open for playback will only be available if your SDR is stopped, then the Open will be clickable.

The browse option just lets you view the folders; you cannot select the playback from this window.

When recording an extra info panel will be displayed in the waterfall.
During play back an extra window with extra information can be opened, this will show the recording broken down into 5 minute blocks, which you can click on to advance the recording.

The red block indicates the current playback period.

This feature applies to all SDR’s for the latest info visit sdr-radio.com
Features not yet included

Things not available in the UTP#3 (to be added)
Direct Keyboard Frequency entry
Digital Modes
Frequency Database
Scanner Operations
Spectrum Analyzer
Sweeper/WideBand Analyzer
Transmit (ANAN Radios Only to start, possibly LimeSDR)
And Much More.......
Document & Author Information

This document will be updated and revised constantly, so please check for revisions on the facebook SDRPlay group page, but this will get you started and up and running. http://www.facebook.com/groups/SDRplay

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Any comments or additions you can think of please email me

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Please visit my My Website for any updates http://www.nn4f.com

Thanks, Paul – NN4F
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