

## Using SDR Sharp with the SDRplay Module



### Overview

The SDRplay Radio combines together the Mirics flexible tuner front-end and USB Bridge to produce a SDR platform capable of being used for a wide range of worldwide radio and TV standards. This document provides an overview of the SDR Sharp installation process and operation of SDRplay plug-in. The document covers installation of the SDRplay device drivers, SDR Sharp, the SDRplay plug-in, basic usage of the SDR Sharp interface is also covered.

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## 1. Installation of the SDRplay Device Driver

The first step in getting the SDRplay module installed is to download the SDRplay device driver from the SDRplay website. The device driver comes in an installation package with the Mirics API. The API provides the user with a DLL and associated documentation such that the SDRplay module can be controlled from within a software program.

- Firstly ensure the SDRplay module is disconnected from the PC. Then download the *Windows API and Hardware Driver installer* from the SDRplay download section of the website.

### API/Drivers

[Windows API & Hardware Driver Installer \(8MB\)](#)  
[Linux/86 API & Install Notes](#)  
[API Ubuntu 32 bit/64bit Self-extracting Installer](#)  
 Android API: send an email to [Support](#) requesting the Android API  
[Mac OSX API](#) (gzipped tar file, install instructions as per Linux Install note above)

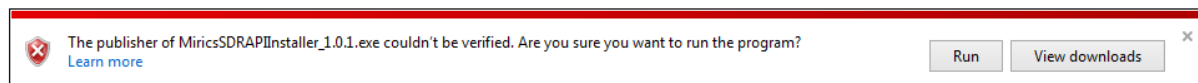
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Download the  
Windows Installer

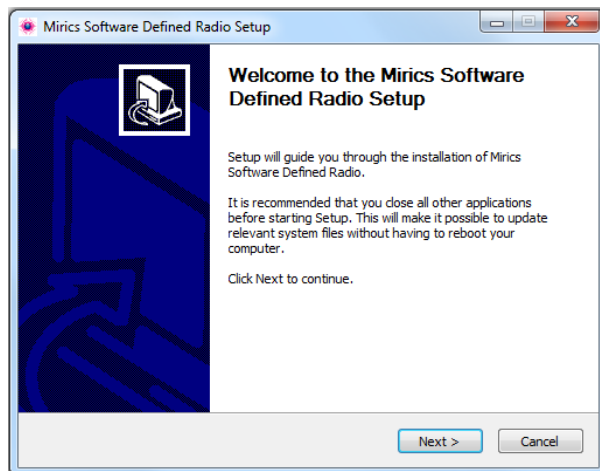
- When prompted to do so select run



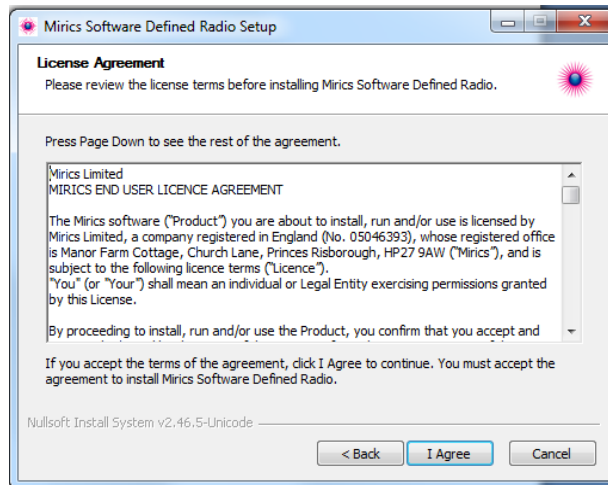
- You might be warned that the publisher could not be verified, in this case click run.



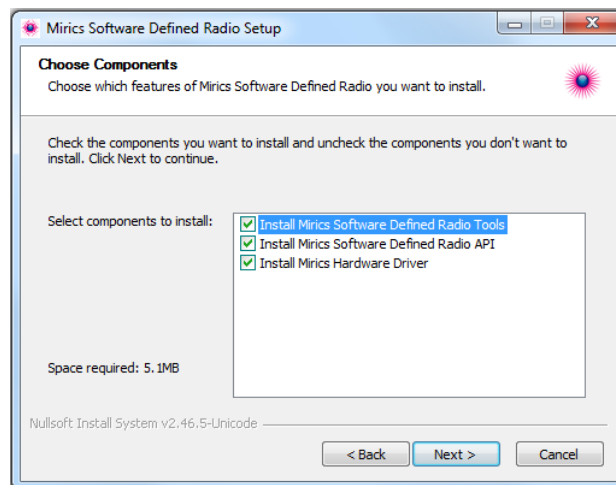
- The installation will process will begin click next and follow the onscreen instructions.



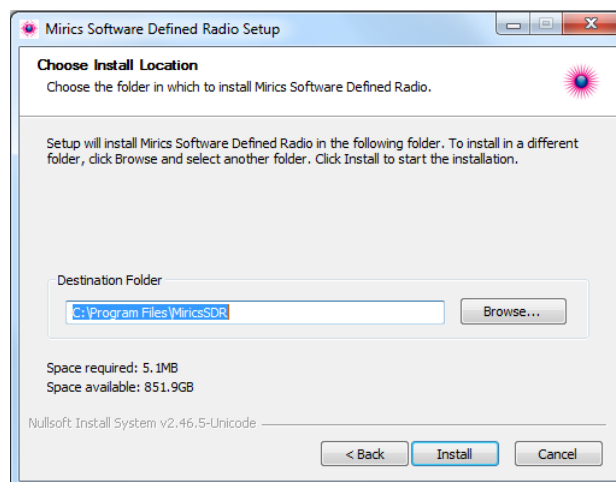
- Click I agree to accept the license agreement



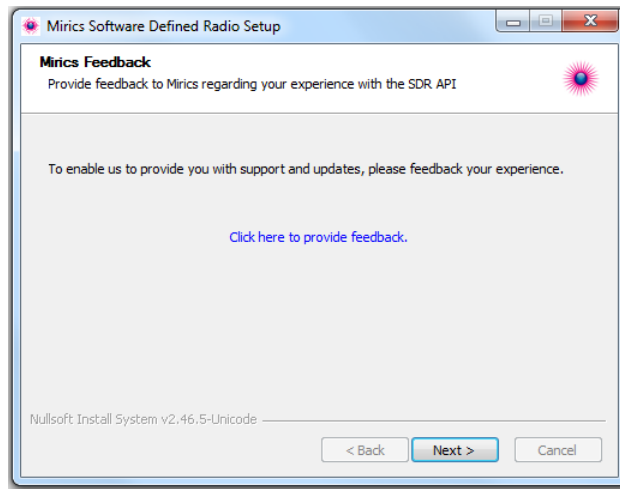
- Ensure that all three components are selected and then select next



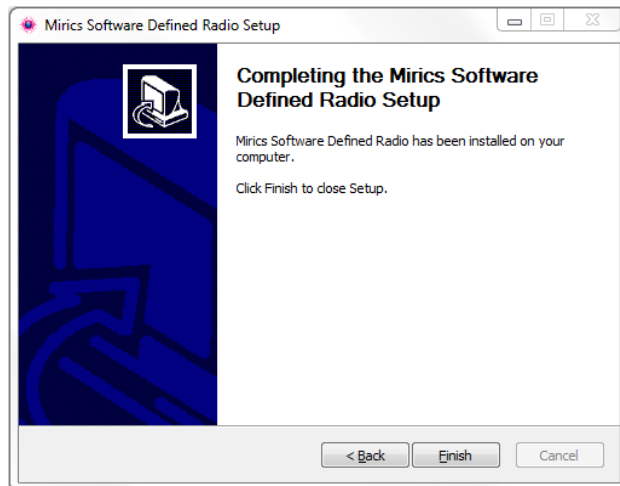
- Select a directory in which to install the software. A default directory is proposed.



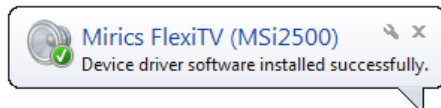
- The installation of the driver will begin, after installation is complete there is an option to provide feedback



- Finally when the installation process is complete click finish



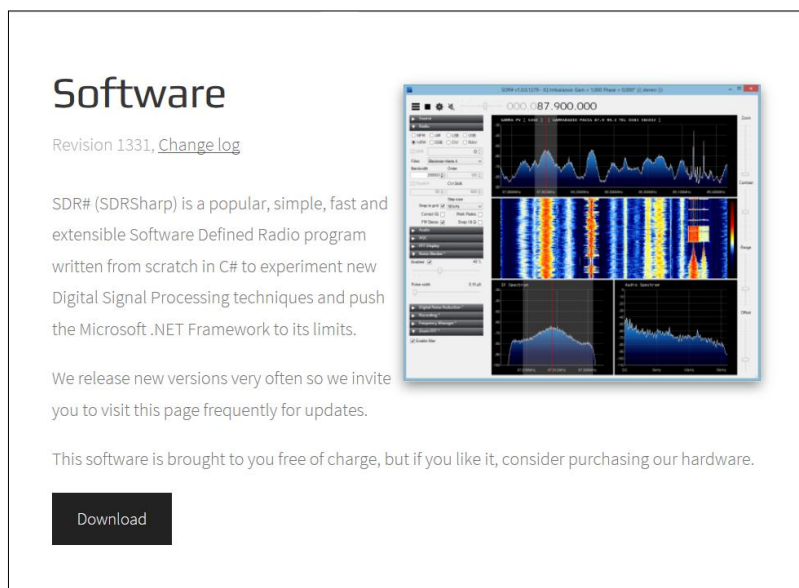
- Finally plug in the SDRplay module into one of the USB ports. You should be presented by a pop up box in the lower right hand icon tray telling you the driver has been installed correctly.



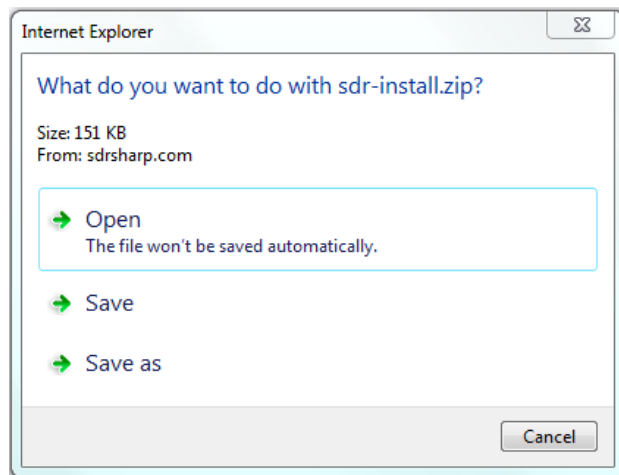
## 2. Installation of SDR Sharp

SDR Sharp is a third party SDR radio interface that can be used in conjunction with the SDRplay module to receive various different signals. To use this software there are two installations that need to be followed. Firstly SDR Sharp software needs to be downloaded and installed. Secondly the SDRplay plug-in needs to be installed. The first step in the process is to download the SDR Sharp software and install it on the local machine

- The SDR Sharp software can be found from <http://sdrsharp.com/#sdrsharp>. Click the download button



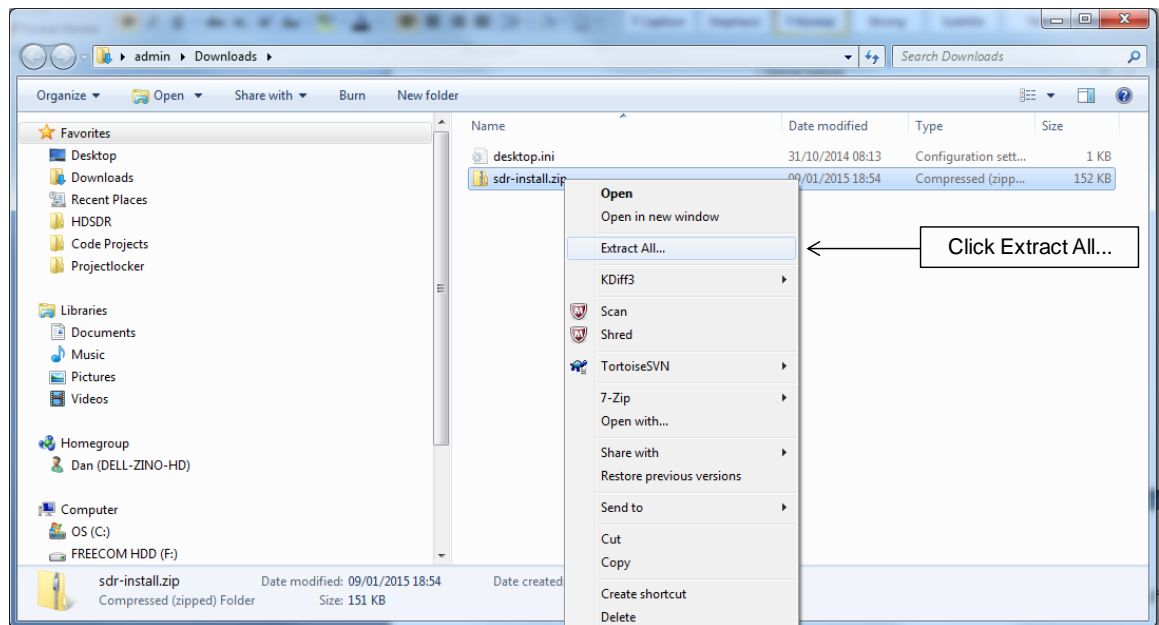
- Once the download button is clicked you will be prompted to download the SDR Sharp installation program. This will be downloaded as a zip file which must be extracted on run from the PC. To do this click Save



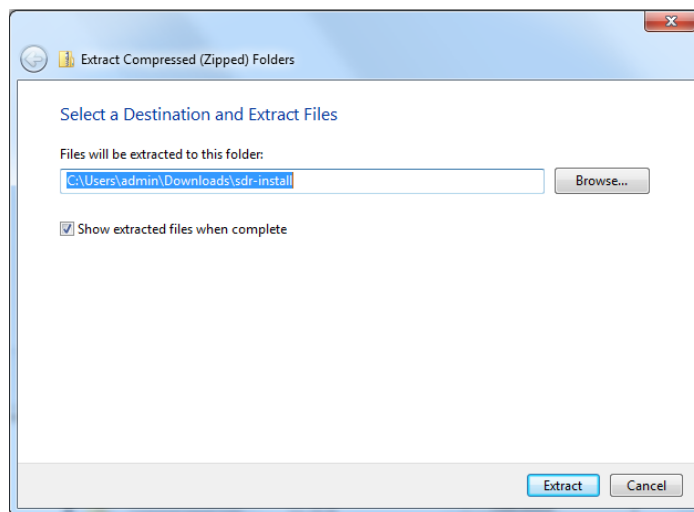
- Once the download has completed click the open folder button to find the downloaded zip file.



- Locate the file sdr-install.zip in the downloads folders, then right click and select Extract All



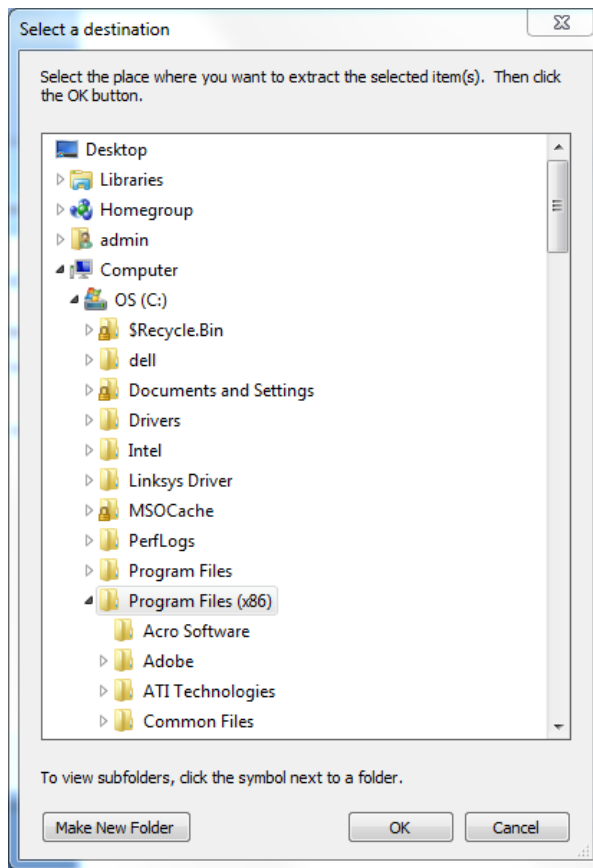
- When prompted click Browse



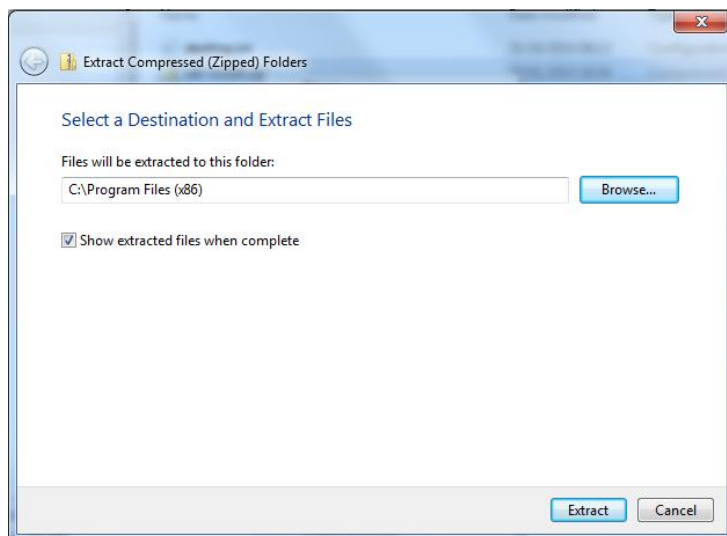
- A suitable location for installing the program must be selected.

For 32bit Windows environments we suggest navigating to C:\Program Files.  
For 64bit Windows environments we suggest navigating to C:\Program Files(x86)

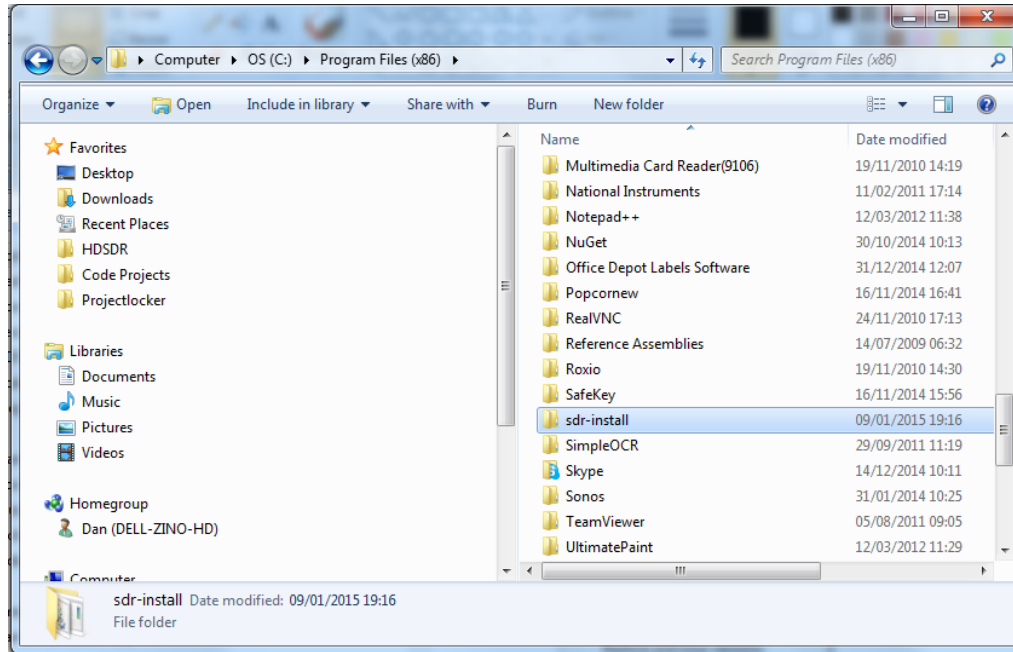
Once the relevant folder is selected click ok



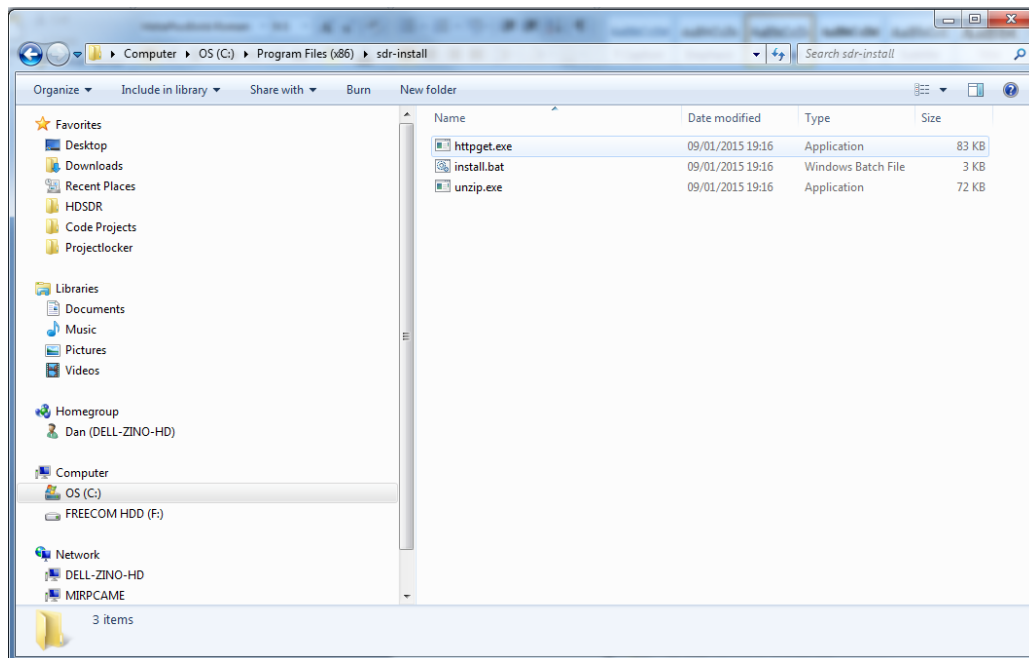
- Once the correct folder appears in the “files will be extracted to this folder” section click Extract. Ensure the Show extracted files when complete tick box is checked.



- Once extracted an explorer window will open. Scroll down through the program files folder until the sdr-install folder is found. Then double click to open the folder.

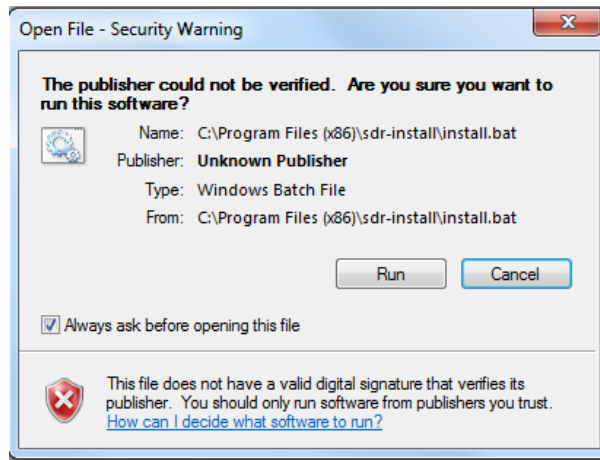


- When the folder is opened you will find three files. Click the Install.bat file to install SDR-Sharp.

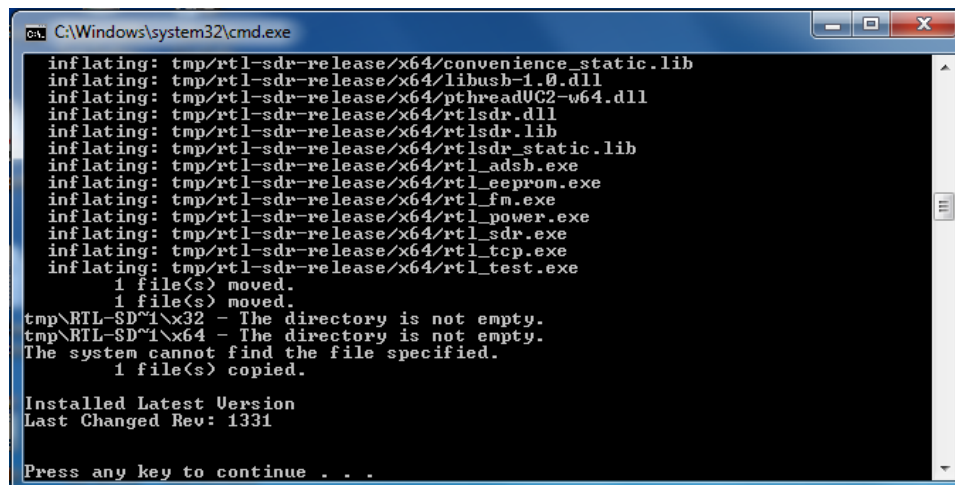




- You will initially be presented with a dialog box, click Run to commence the installation.



- The installation will begin. After a few moments the installation will complete and you will be requested to press any key to continue. At this point do so and the installation dialog box will close.

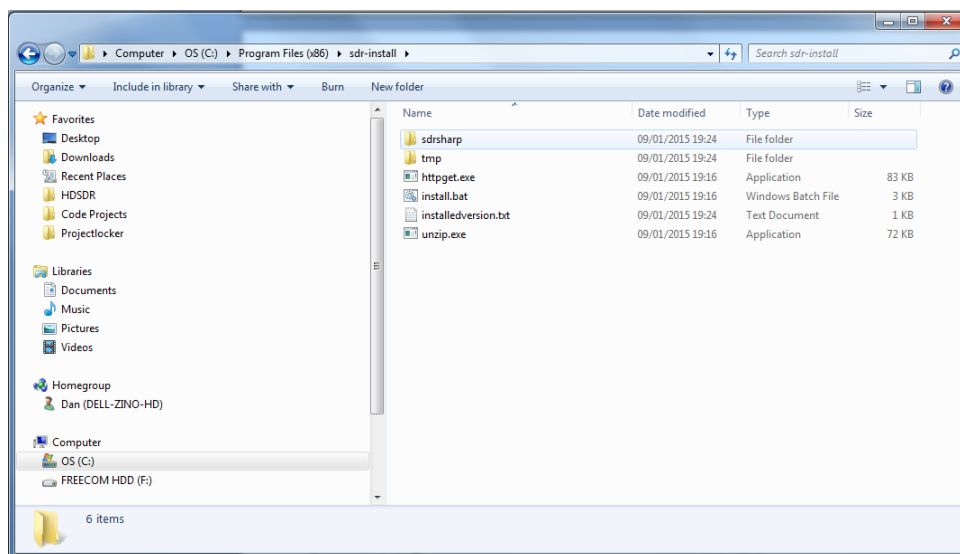


- When the installation window has closed open up an instance of windows explorer and navigate back to the folder where the SDR-Sharp was installed either;

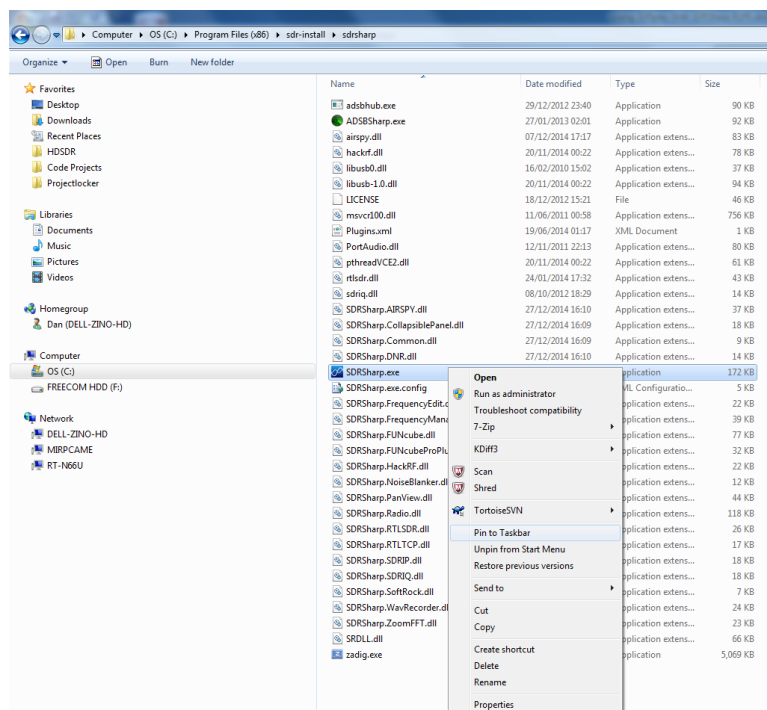
For 32bit Windows C:\Program Files\sdr-install

For 64bit Windows C:\Program Files (x86)\sdr-install

This time you will find an additional folder has been created called sdrsharp. Open this folder



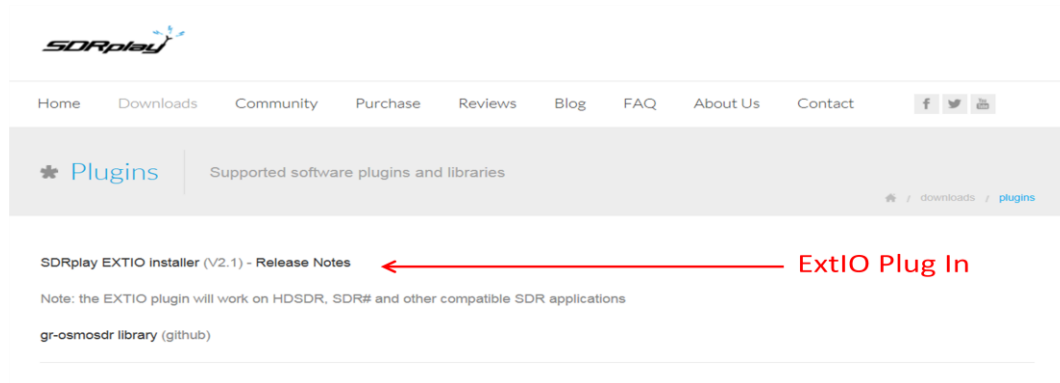
- When this folder opens find the file SDRSharp.exe and then right click and select Pin to Taskbar. This will attach the SDR Sharp program to the main taskbar such that it will appear when you click the windows start menu button.



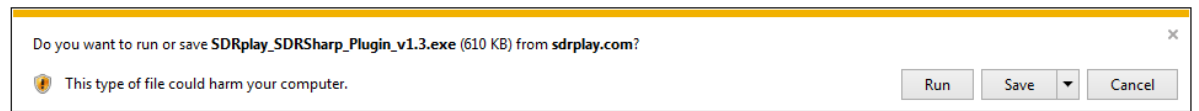
### 3. Installation of the SDRplay ExtIO Plug in

The final step is to install the SDRplay EXTIO plug-in for. This is the module that will allow SDR Sharp to communicate with the SDRplay module.

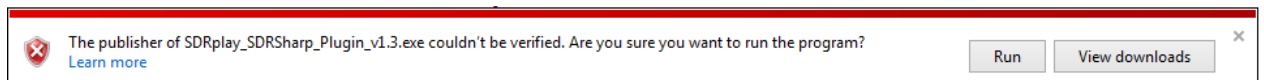
- Download the SDRplay ExtIO plug-in from the SDRplay downloads section of the website. The plug-in can be found under useful software.



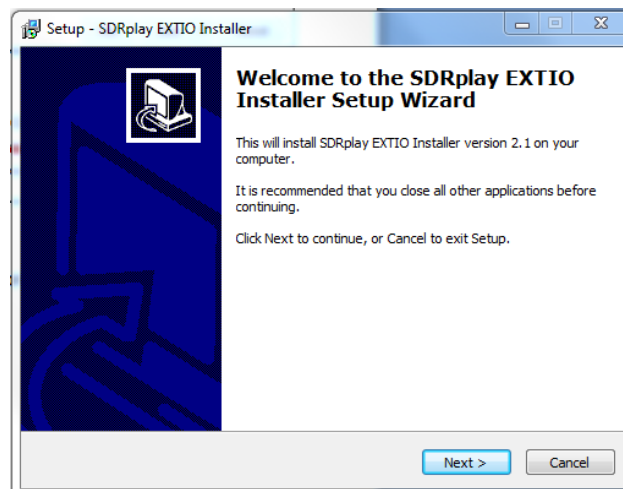
- When prompted click run to begin the installation of the SDRplay ExtIO plug-in.



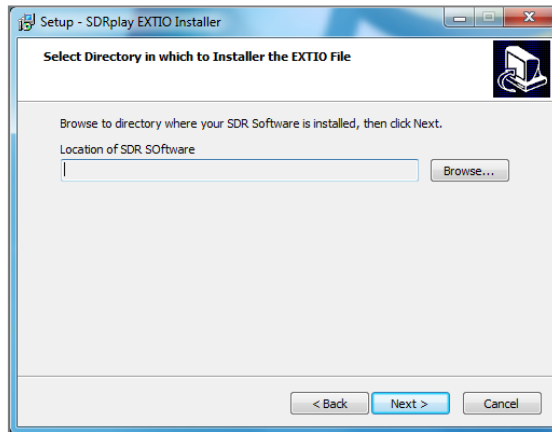
- You might be warned that the publisher could not be verified, in this case click run.



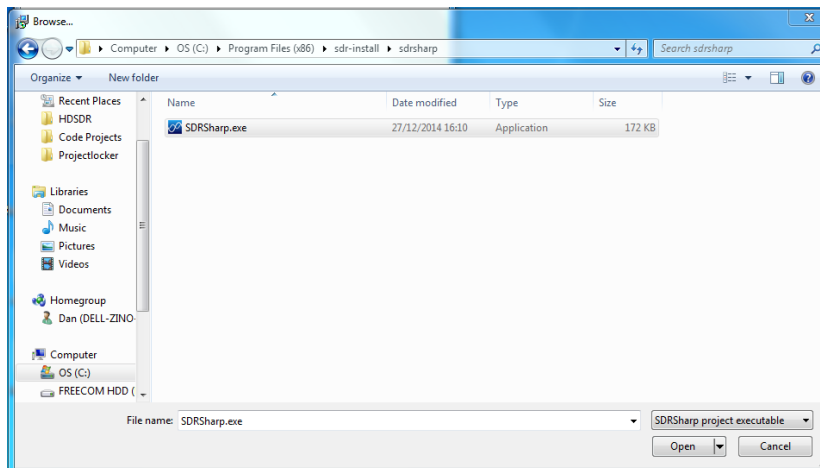
- The initialisation of the SDRplay ExtIO plug-in will begin, click Next to continue



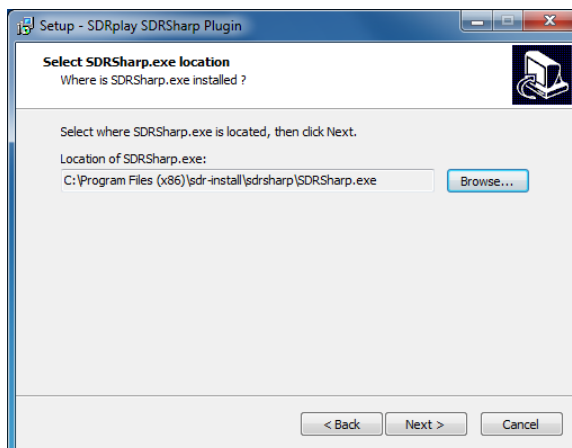
- In order to install the plug-in the installer needs to know the location of the SDR Sharp program. To do this click browse.



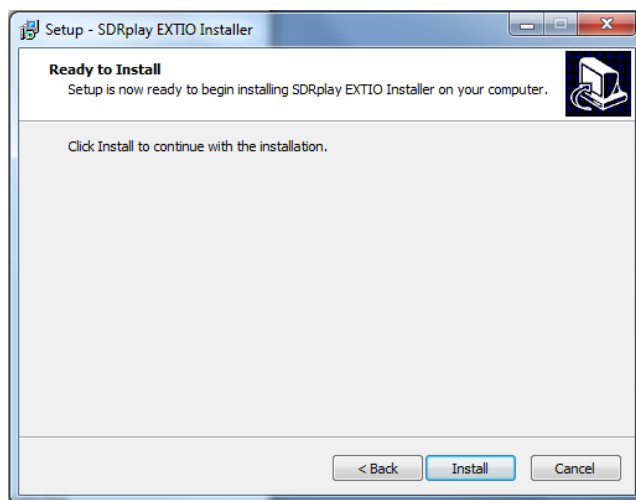
- Navigate to the SDR Sharp installation directory, then click on the SDRSharp.exe and then click Open to identify to the correct path to the installation program.



- After Open has been clicked you should see the path presented in the installation dialog box, Click Next.



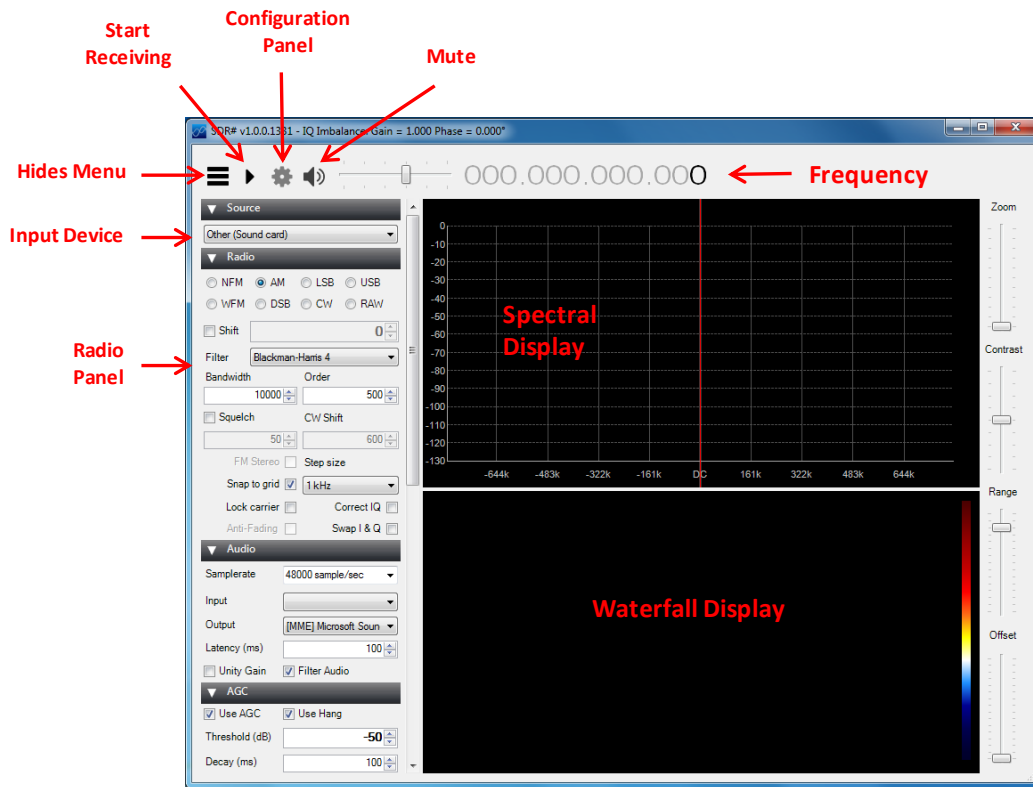
- The installation of the plug-in will commence when completed the Install button is clicked.



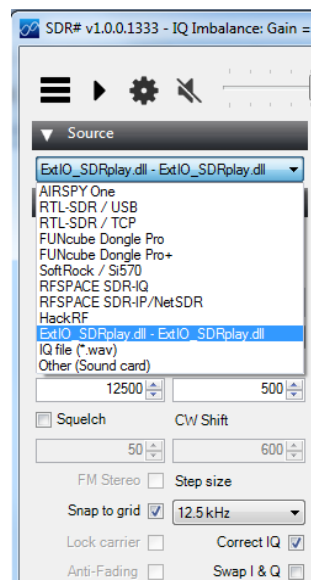
- This completes all the steps that are necessary to get SDRplay working with the SDR Sharp software interface.

## 4. Using SDR Sharp with the SDRplay module

When SDR Sharp has been started for the first time you will see the main screen as shown below.



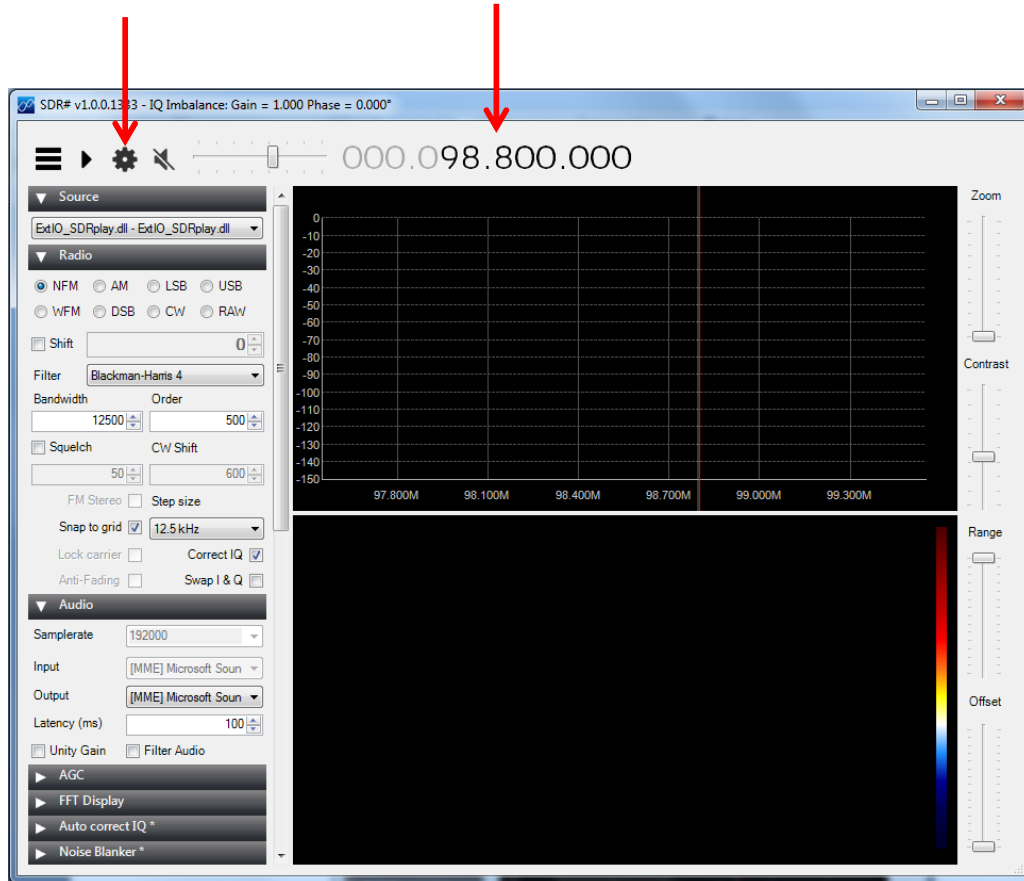
The first step is to select the SDRplay EXTIO plug-in from the input device drop down dialog box.



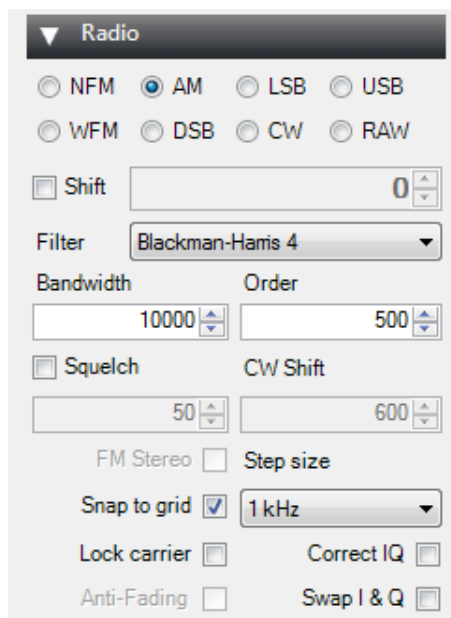
Once the SDRplay device has been selected then the configuration panel cog becomes active. To begin reception then the desired frequency can be entered and the play button hit to start reception.

Configuration Panel  
becomes active

Frequency  
becomes active



To configure the basic radio settings the Radio Panel can be used.



**NFM** – Narrowband FM

**LSB** – Lower Side Band AM

**WFM** – Wideband FM

**CW** – Continuous Wave

**AM** – Amplitude Modulation

**USB** – Upper Side Band AM

**DSB** – Double Side Band

**RAW** – Unprocessed IQ Data

**Shift** – This is to input an offset if an up converter or down converter is used so that the selected frequency is corrected to display the actual tuned frequency. Simply check the **Shift** box and enter your offset. This is not normally required for the SDRplay module.

**Filter Type** – This is to select the desired filter type that will be applied to the signal being processed. Different filters will cause changes in the demodulated signal audio response curve due to differing envelopes and filtering profiles.

**Filter Order** – A modifier for the selected filter. The default setting works for most applications.

**Filter Bandwidth** – This is the effective width of the signal being processed for the mode selected. You can see the affected area in both the **FFT** and **Waterfall** area of the display when zoomed in, and you can either change the filter width here, or by dragging the outer edge of the grayed out area in either live display.

**CW Shift.** – Changes the frequency shift when operating in CW mode.

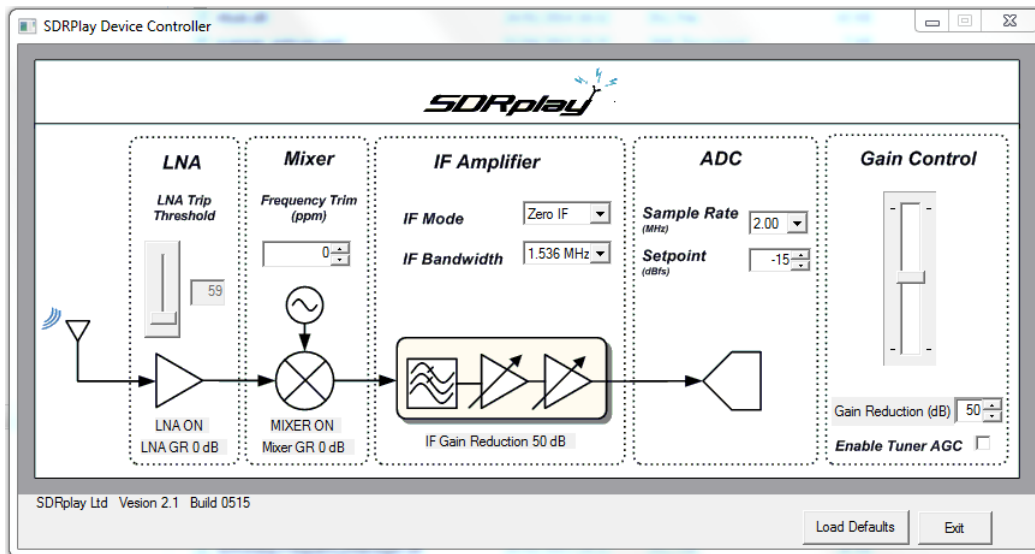
**Snap To Grid** – Forces frequency to snap to frequency steps selected when drag tuning.

**Correct IQ** – Enables SDR#’s exclusive Automatic IQ Correction.

**Swap I & Q** – Swap I & Q inputs. Useful when using sound card input devices Swaps L/R inputs to I/Q



To configure SDR play specific settings click the configuration panel cog button on the main SDR Sharp display. The display gives an overview of the SDRplay receiver architecture coupled with the different parameters that can be configured.



**LNA Trip Threshold** – The point at which the LNA turns on/off within the gain reduction range can be controlled by value in the LNA Trip Threshold. By lowering the value the LNA will turn off closer to maximum gain. Increasing the value means that the LNA will stay on for longer thus providing better noise performance but at the added risk of overload.

**Frequency Trim** – The SDRplay uses a crystal as its reference and as such there will be some inherent frequency offset. The frequency trim allows trimming of the reference crystal frequency to adjust errors in absolute frequency.

**IF Mode** – Sets the tuner into either Zero IF mode or Low IF mode. There are three different IF modes available 450kHz, 1.62MHz and 2.048MHz. The IF bandwidth drop down menu will automatically update with the appropriate selection of IF filter bandwidths.

**IF Bandwidth** – Sets the bandwidth of the IF filter. The selections available will depend on the IF mode selected. For the full range of IF bandwidths selections then the tuner must be operating in ZIF mode.

**Sample Rate** – Sets the sampling frequency of the ADC.

**Setpoint** – Sets the target level power at which AGC routine will attempt adjust the power on the ADC input. A larger value will position the signal near the top of the ADC range. A lower value will reduce the signal power and hence levels at the ADC input.

**Gain Control Slider** – The gain control slider can be used to set the gain of the receiver. Maximum gain occurs at the top of the slider, minimum gain at the bottom of the slider.

**Gain Reduction** – The gain reduction value controls the amount of gain, in dB, that the maximum tuner gain will be reduced by. For example a gain reduction of 50 represents 50dB below maximum receiver gain. This value is tied to the gain control slider.

**Enable Tuner AGC** – This enables a software AGC leveling routine within the plug-in that attempts to change the gain reduction value to achieve a specified signal power at the ADC input. The level which the routine will adjust the ADC input power towards is defined in the Setpoint control box. In this mode it is not possible to adjust the tuner gain reduction manually.

**Load Defaults** – This button loads a predefined set of defaults back into the receiver.

**Exit** – Close the SDRplay control dialog box.

For more information contact [support@sdrplay.com](mailto:support@sdrplay.com)

## 5. Legal Information

SDRPlay modules use a Mirics chipset and software. The information supplied hereunder is provided to you by SDRPlay under license from Mirics. Mirics hereby grants you a perpetual, worldwide, royalty free license to use the information herein for the purpose of designing software that utilizes SDRPlay modules, under the following conditions:

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