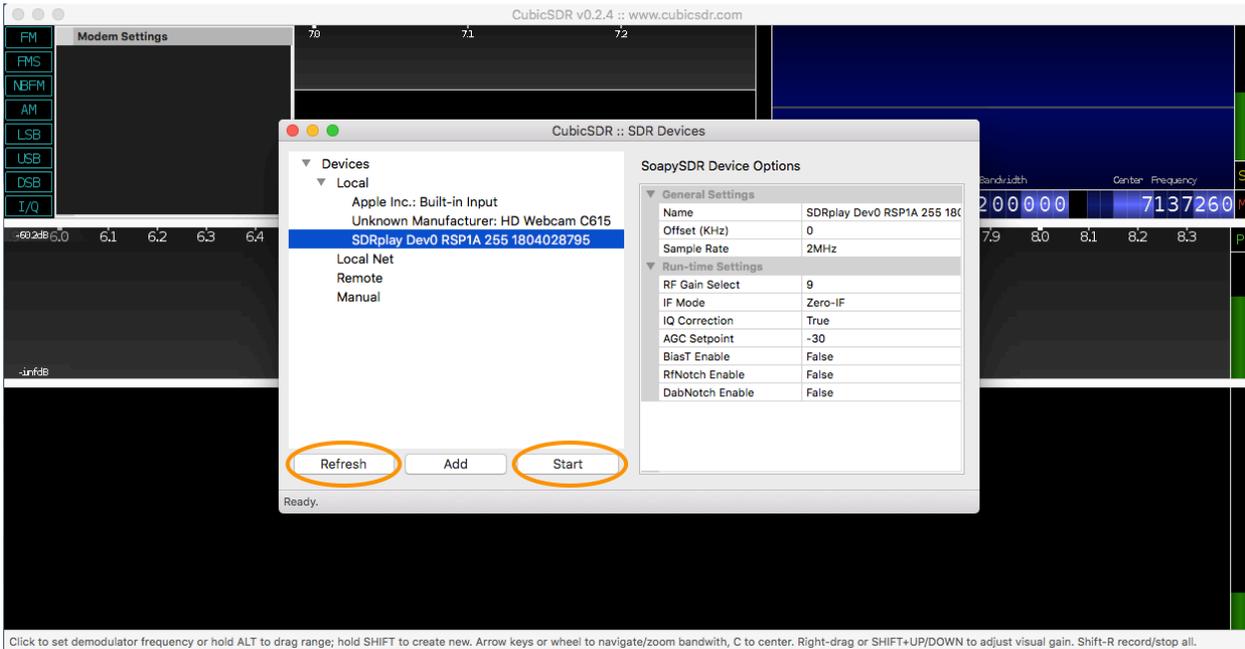


Setting Up a Panadapter on your Mac with the RSP1A and CubicSDR

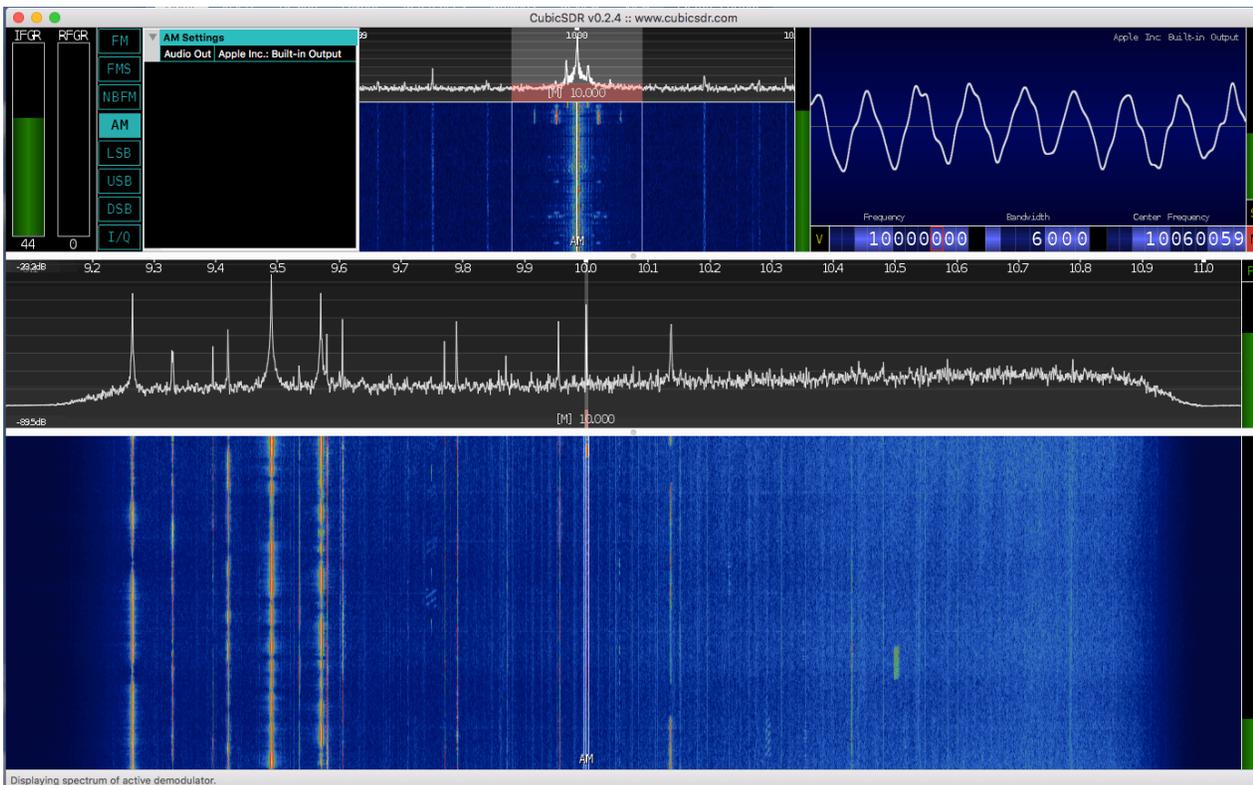
This app brief is a quick overview of adding panadapter capability to your rig using the RSP1A and CubicSDR running on a Mac. CubicSDR is the most popular SDR package for the Mac and allows full bandwidth performance of the RSP family (10MHz bandwidth) on Macs with fairly modest specifications. OS X 10.9.5 or newer is required and in this example a mid-2011 Mac Mini is used.

Installation

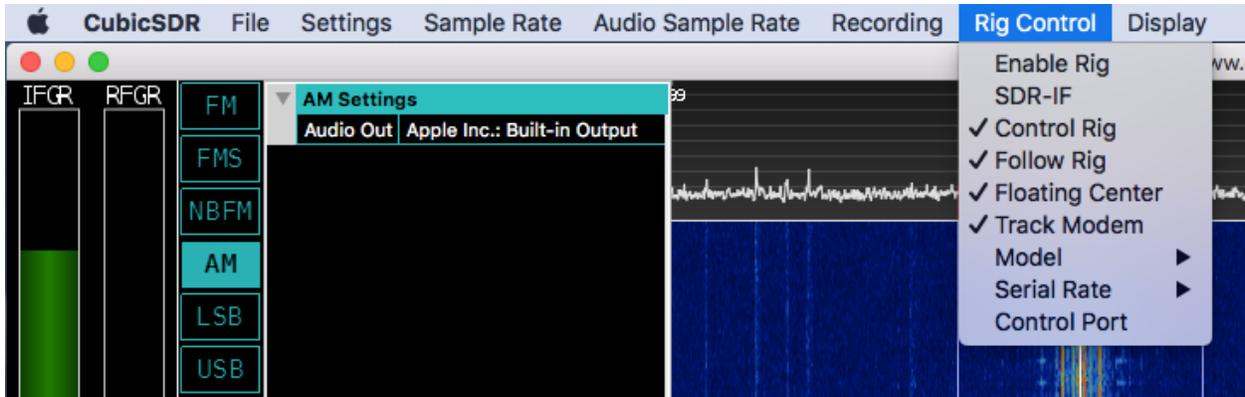
1. The first step is to arrange for RF signals to be shared between both the rig and the RSP. In the example shown the Kenwood TS-590SG is used which has a DRV output which can provide high bandwidth signals to the RSP while offering protection to the RSP during transmit. Other rigs that do not have RX outputs can be used in conjunction with a T/R switch, or in some cases using the rig's IF output. These considerations are covered in detail in the App Note "GUIDE TO SETTING UP AN RSP AS A PANADAPTER" available from the sdrplay.com website:
<https://www.sdrplay.com/wp-content/uploads/2017/10/171011PanadapterGuide.pdf>
2. The second step is to locate the drivers for the CAT interface to your radio. This interface may be available from the radio manufacturer or from 3rd party sources. It will usually consist of a special cable to connect from the USB port on the radio to the USB port on your Mac, or in some cases, a cable from a DB-9 type serial connector to USB. The drivers can usually be downloaded from the manufacturers website.
3. It is good practice to first verify correct operation of the SDR software with the RSP receiver, essentially using the RSP as a simple general coverage receiver:
 - First download the Mac API from sdrplay.com and install it.
 - Then download the CubicSDR image file and copy the application over to your Applications folder.
(If necessary go to System Preferences – Security & Privacy and allow the software to be installed)
 - Using CubicSDR simply consists of connecting the RSP to a USB port on your Mac and double clicking the CubicSDR icon in your Applications folder.
 - Select the RSP from the Devices menu and then click "Start."



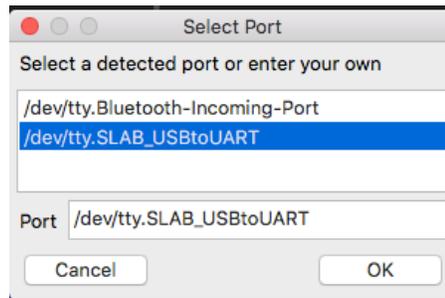
Note: If the RSP does not appear on the Device Selection screen try clicking the "Refresh" button



4. Make sure your radio is turned off. Now install the drivers for your radio's CAT interface that you located in Step 2.
5. Connect the interface cable from your radio to a USB port on the Mac. Turn on the radio.
6. Select the Rig Control menu item from the CubicSDR menu bar:



- Hover over “**Model**” and select your radio from the list.
- Hover over “**Serial Rate**” and select a baud rate that matches the menu settings on your radio.
- Click on “**Control Port**” and select the driver you installed in step 4:



- **Control Rig:** causes the rig to follow frequency changes made in CubicSDR.
- **Follow Rig:** causes CubicSDR to reflect frequency changes made on the rig (tuning dial).
- **Floating Center:** Allows the center frequency to remain unchanged with changes in tuning frequency (required to keep the center frequency offset from the tuning frequency to prevent issues from the “dc center spike” in ZeroIF mode).
- **Track Modem:** Synchronizes the rig tuning frequency to CubicSDR,s tuned frequency, and not the center frequency.
- **SDR-IF:** Only used with IF output from the rig to specify the IF frequency.

Usage

Setup is now complete. Any frequency changes made in CubicSDR will now be synchronized with the rig. If the rig is tuned with the tuning dial CubicSDR will also retune to match the frequency.

Please bear in mind the following considerations:

- The Mode selected in CubicSDR is not communicated to the rig (note 1). So, if the mode buttons are used in CubicSDR (AM, USB, LSB etc.) the corresponding changes should also be made using the mode buttons on the radio.
- Audio is available from both the rig's internal speaker and from the Mac's audio system (note 2). The audio heard on the Mac will be delayed due to the time taken to perform the software digital signal processing. We suggest using the Mac's audio for listening to stations and the rig's audio for QSOs.
- If Control Rig functionality is disabled CubicSDR can be used to monitor other potential signals without retuning the rig, or indeed monitoring other frequency bands of interest.
- The TS-590SG is specified to be a 60MHz receiver, although we did not measure the frequency response of the DRV output we were able to successfully tune ATC and 2m VHF frequencies on the RSP supplied by this output (obviously it is not possible to sync the Kenwood itself to these frequencies!) (note 3)

Notes:

1. This was the case with the TS-590SG, it may vary with other radios.
2. Simultaneous audio may not be available in all hookup configurations, especially when a T/R switch is used.
3. When a T/R switch is used the RSP will usually be able to tune any frequency for which the connected antenna is suitable, regardless of the rig's tuning range.

For further information

A companion video is available on our YouTube channel: <https://youtu.be/dKCRDLz0cl8>

Other applications information and much more is available at sdrplay.com

CubicSDR Users Guide: <http://cubicsdr.readthedocs.io/en/latest/>

Silicon Labs USB Drivers:

<https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers>

Panadapter setup guide:

<https://www.sdrplay.com/wp-content/uploads/2017/10/171011PanadapterGuide.pdf>



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