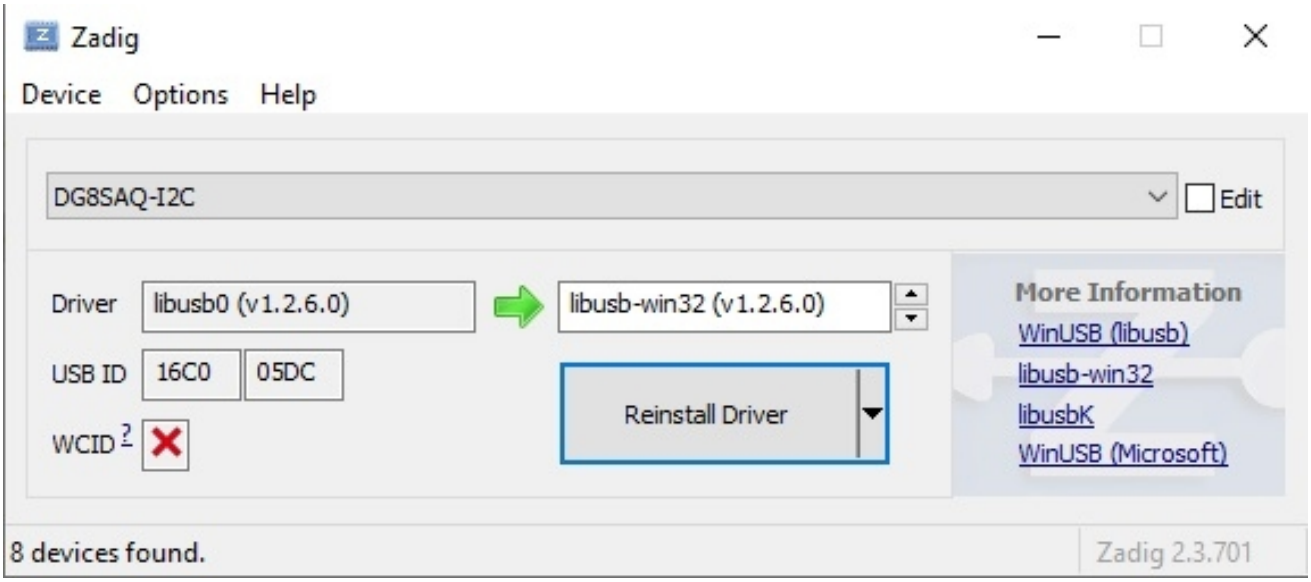
Software Setup and Calibration Guide

Section 1: Initial RX Setup

At this point you need to choose a software Program and install drivers for the USB. If you ever had a Softrock type radio connected to your computer then all you need to do is connect USB to computer and it should find drivers and connect OK. In device manager it should show up as softrock(I don't remember exactly). If not and to avoid issue with other radios like Peaberry/ Omnia/Multus radio then you should use Zadig.



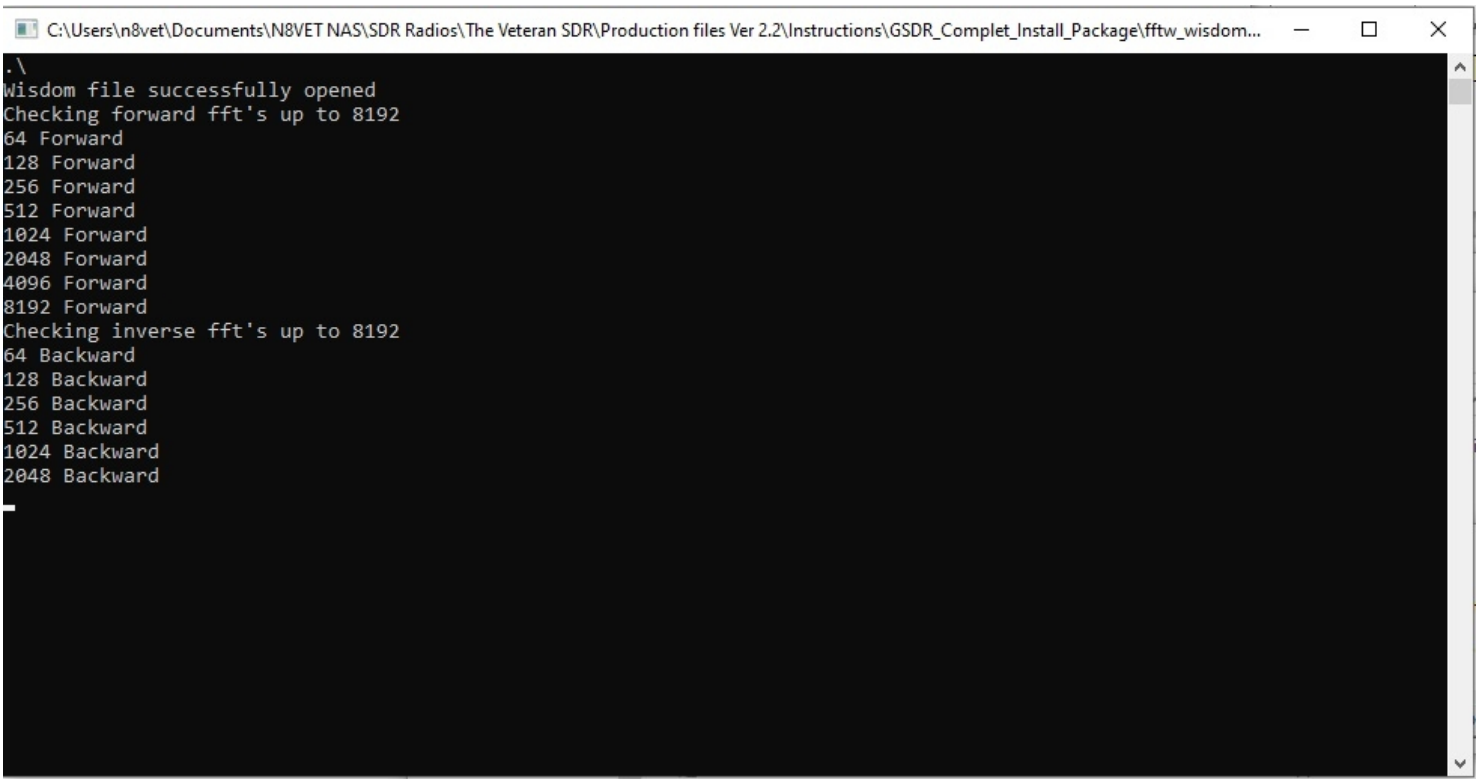
When you first open without any drivers the left window near "Driver" will show something else. My computer already has the correct driver. In the right window choose libusb-win32(v1.2.6.0) and click install driver(again mine shows reinstall driver). In device manager it should show up as DG8SAQ-I2C.

Connect a stereo input cable to P2 jack. I will be using GSDR which works pretty well.

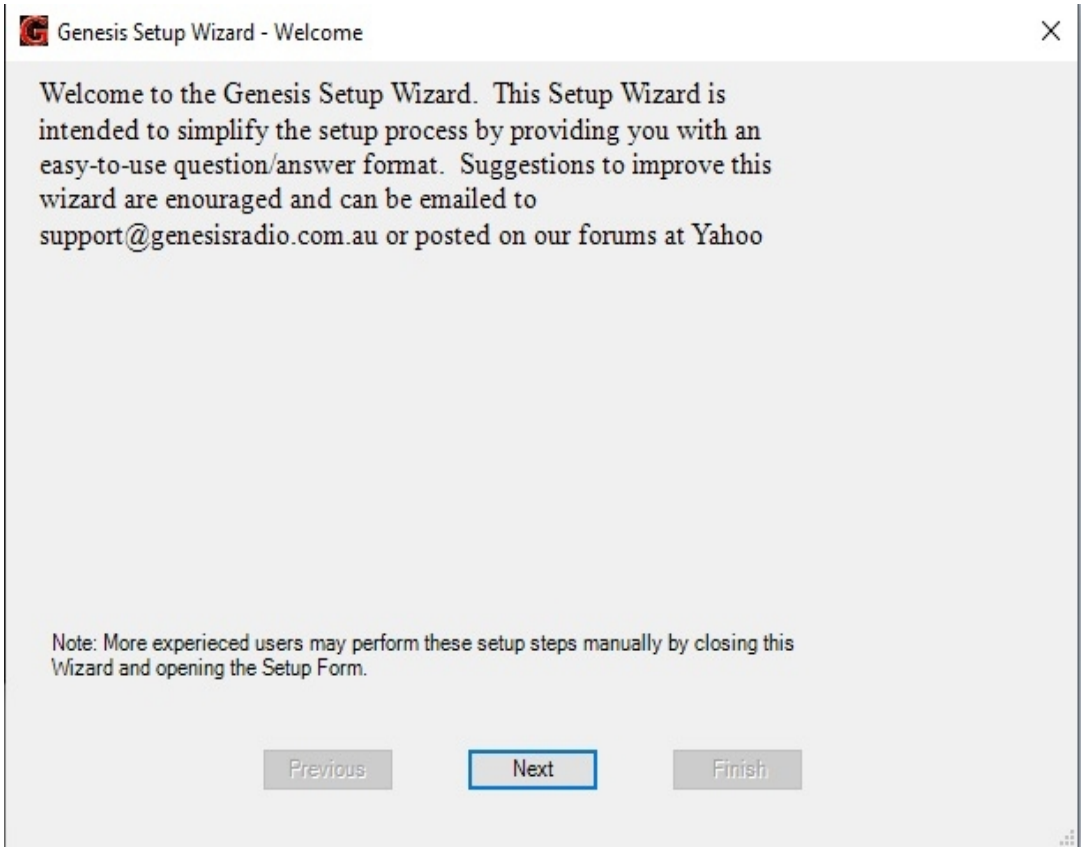
Go here GSDR Down load and download the file GSDR_Complete_install_package.zip. Extract this to your computer.

Now double click on Genesis.exe. Don't use GenesisDX.exe.

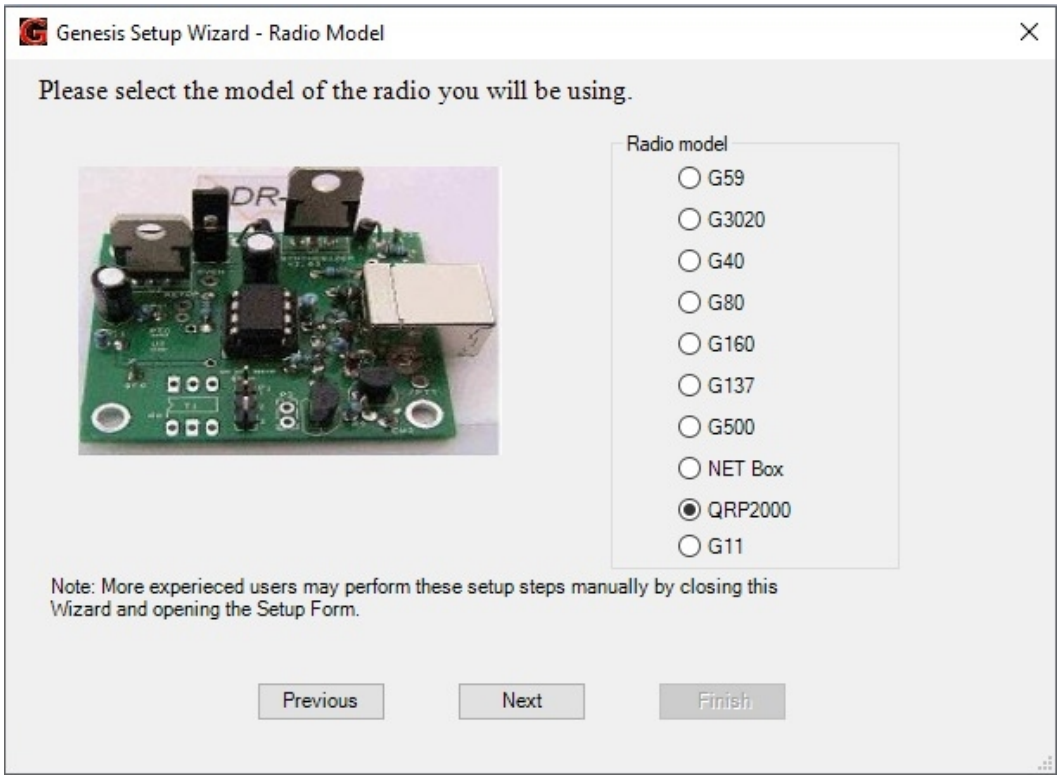
The first window will be a DOS windows to check FFT speeds. Just click OK and let it run.



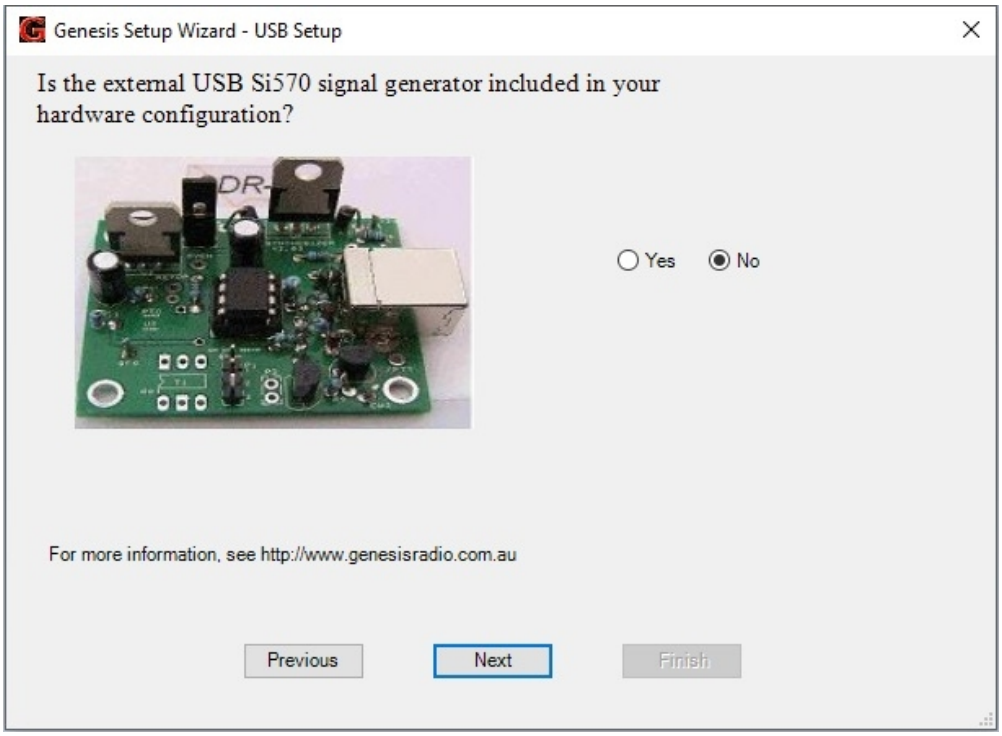
This will be the next window. Click next



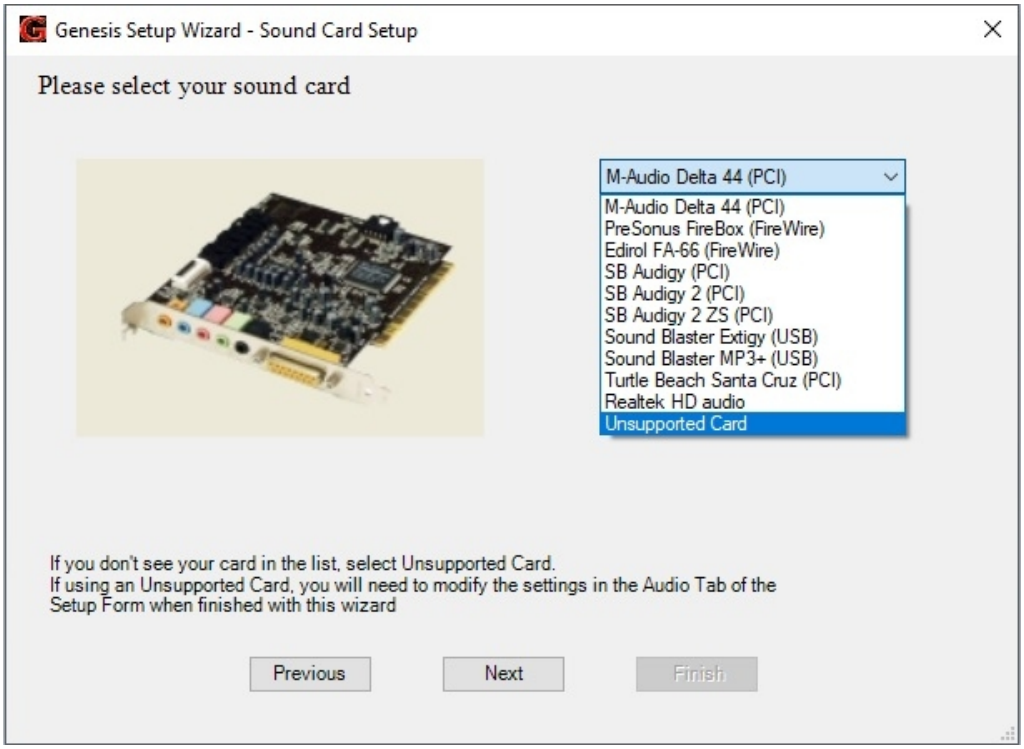
Click QRP2000 Next



Select No
Click Next

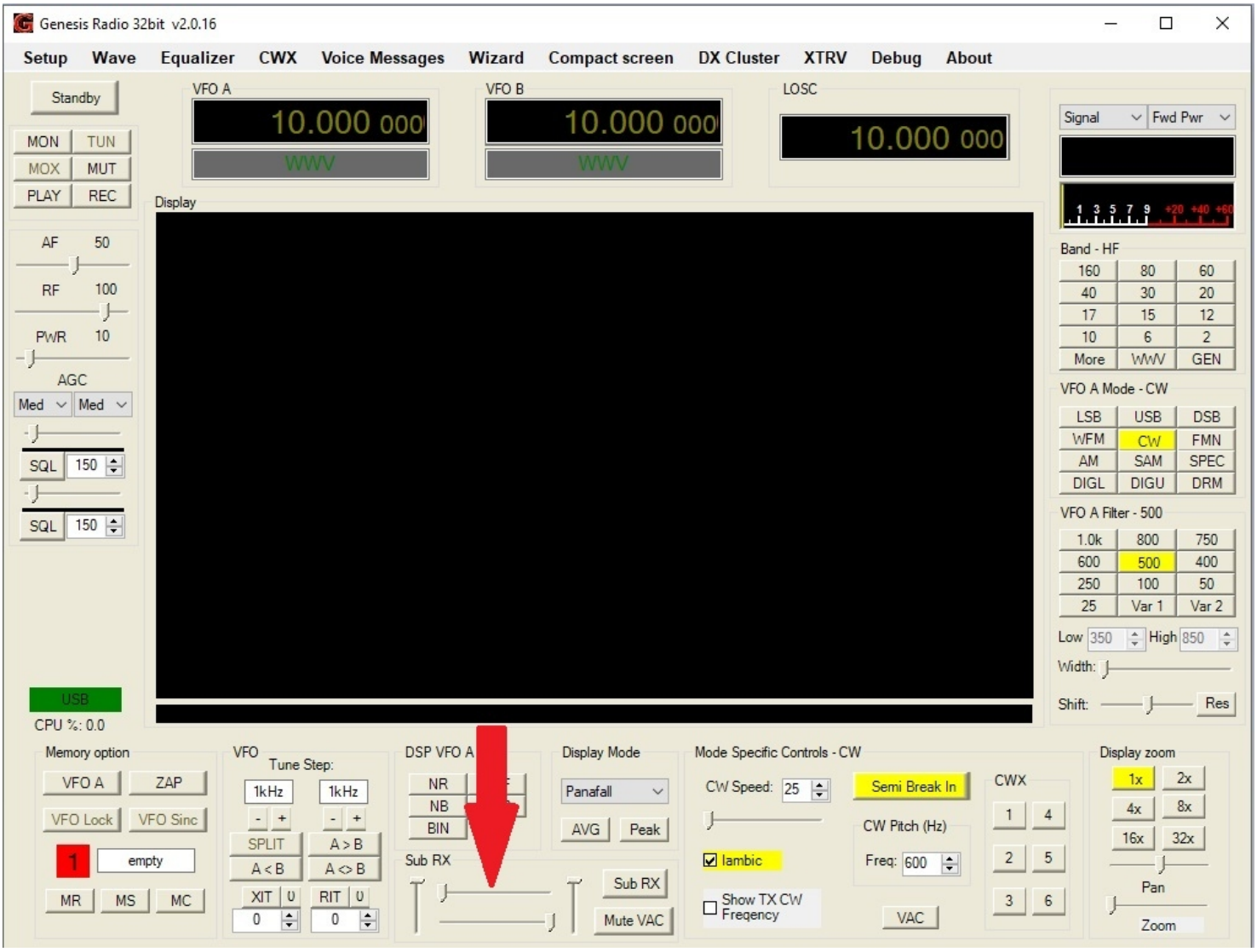


Unless you have one of these legacy sound cards, select “Unsupported Card”
Next

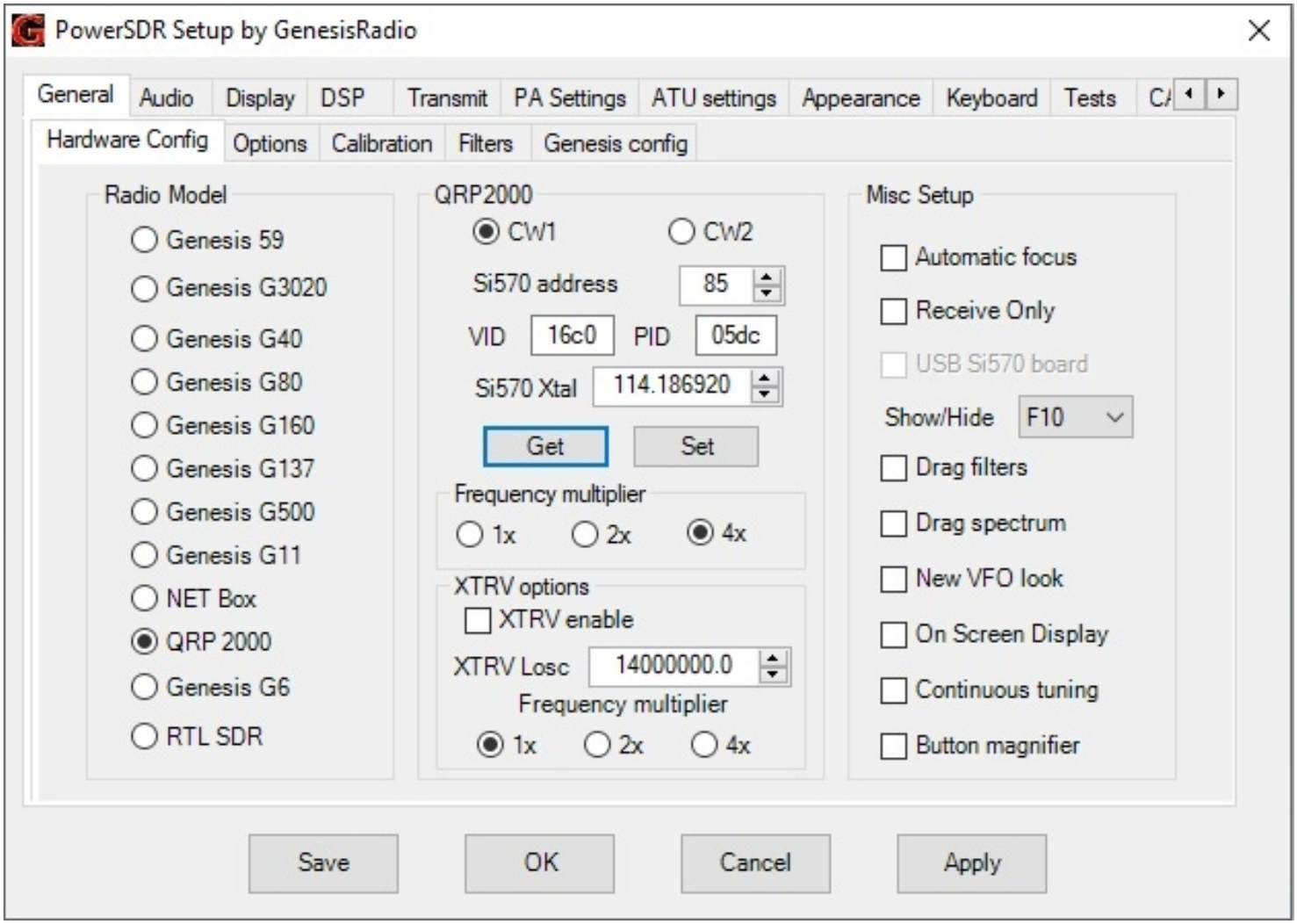


You should now see this with a green USB Button. **Make sure you center the horizontal sliders below the red arrow.** The picture shows the default setting and will mess things up down the line.

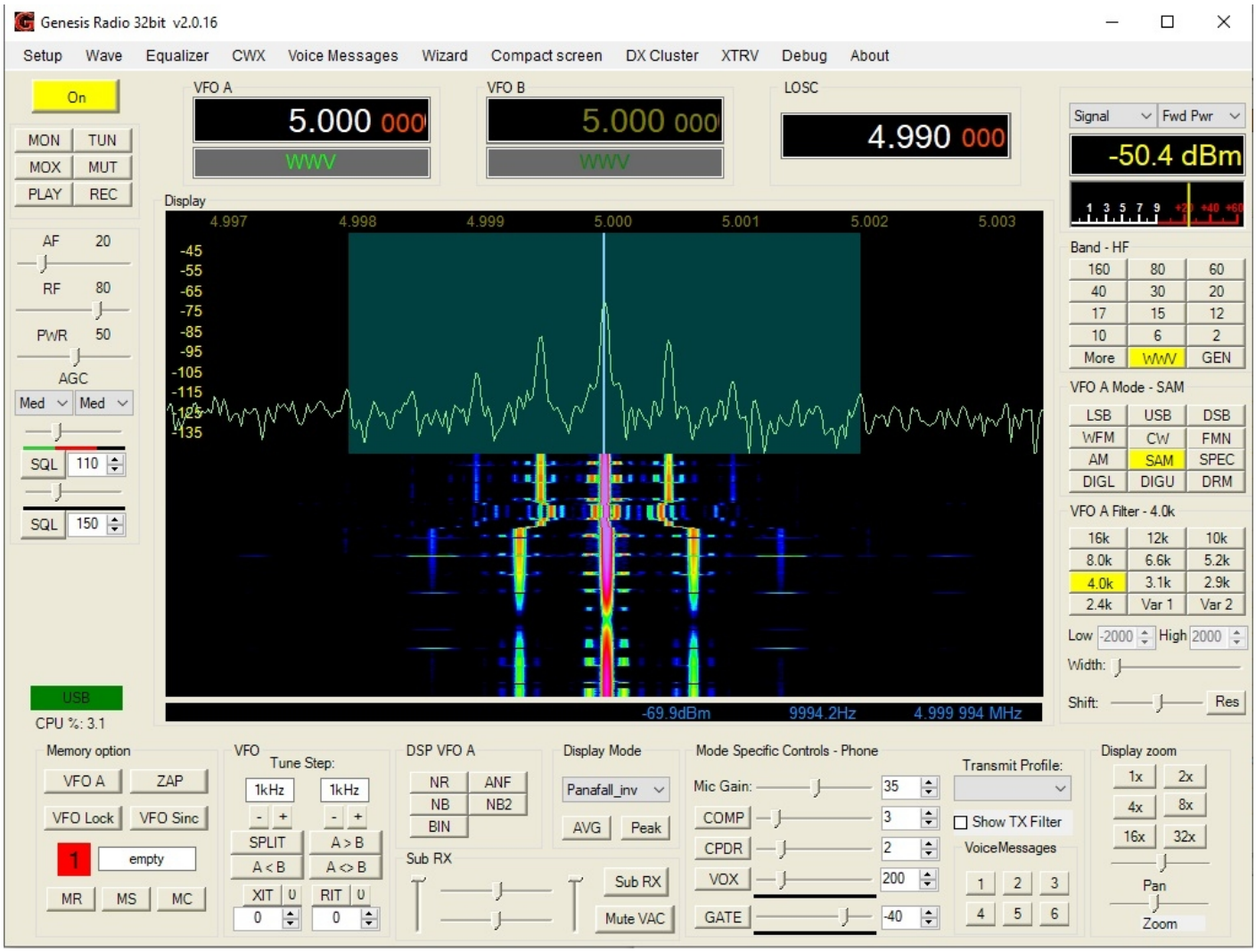
Click on Setup in upper left corner.



General---Hardware Tab. Yours should look like this. In the QRP2000 box you will see CW1 and CW2. Sometime you may have to select the non default CW2 to make it work. I rarely see this but it does happen.
Click on GET and you should se the number change to the stored value in the firmware. You can change the decimal numbers to calibrate the frequency.



Tune up to WWV and you should be able to get it pretty close like this. The up/down arrows might be too course so you'll have to manually enter numbers for the last 3 digits or so.



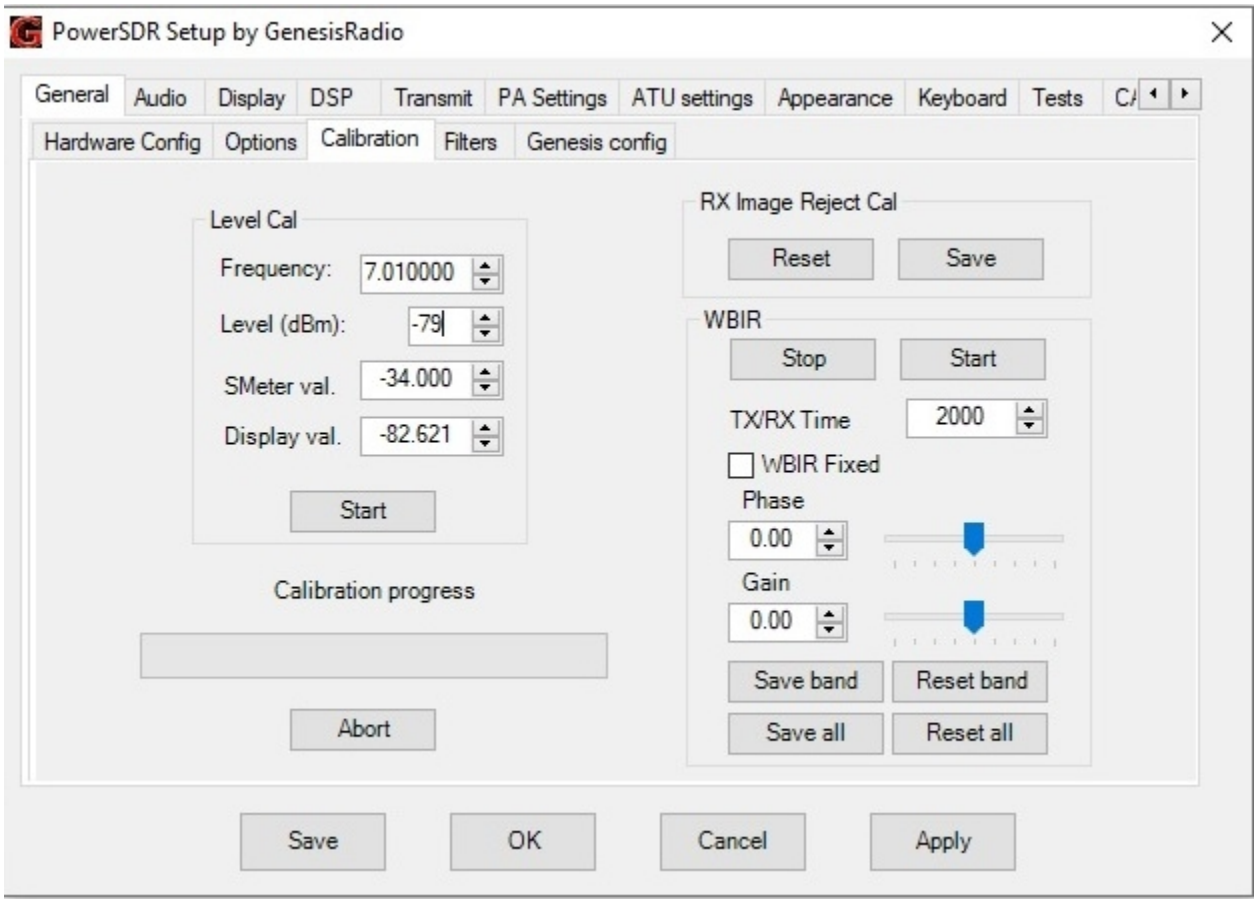
Enjoy RX for a while then on to more building :)

If your still building the radio return to section 7 Filter switching Circuits of the Assembly Instructions

Section 2: RX Calibration

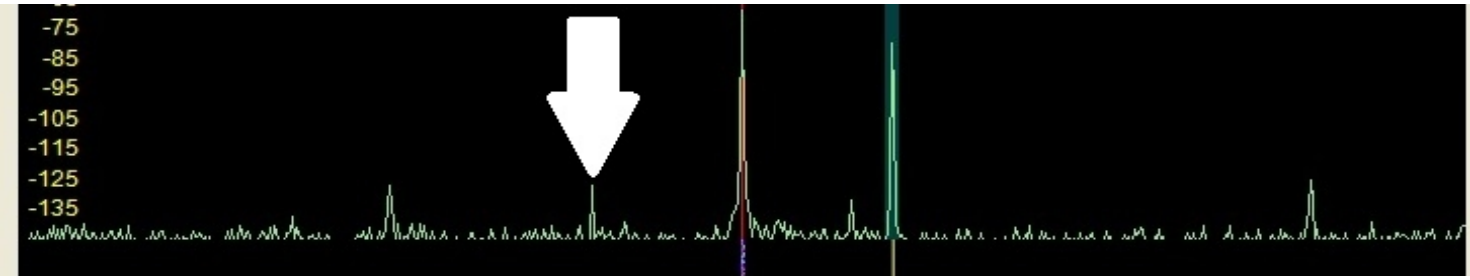
Frequency calibration has already been done. The next step is signal level and RX image adjustment.

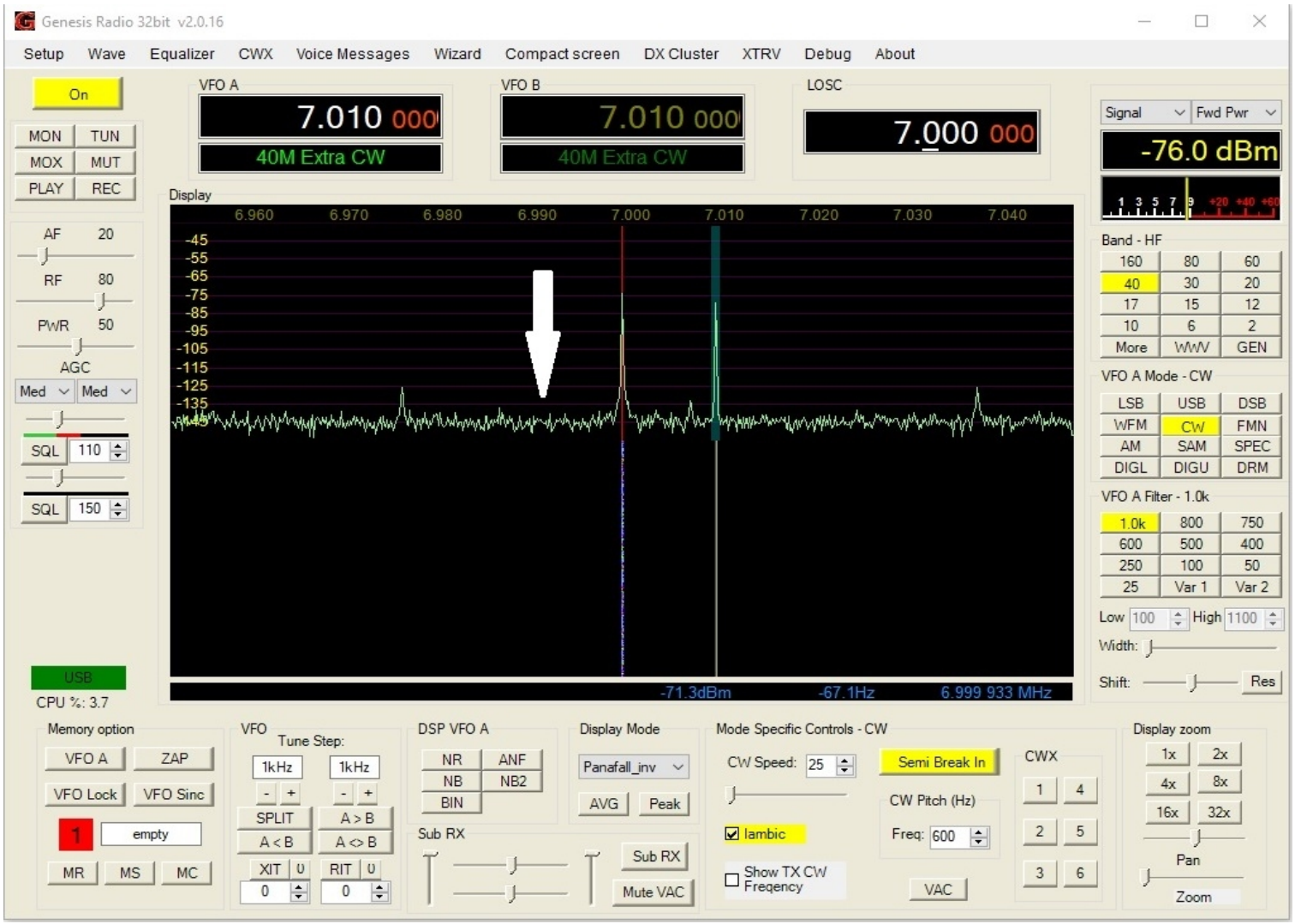
For level adjustment you need a signal source of a know output. Mine is a -79dbm signal at 7.01mhz. Tune radio to that frequency and select Start in Level Cal box. Or you can manually do it by changing Smeter val and Display val numbers.



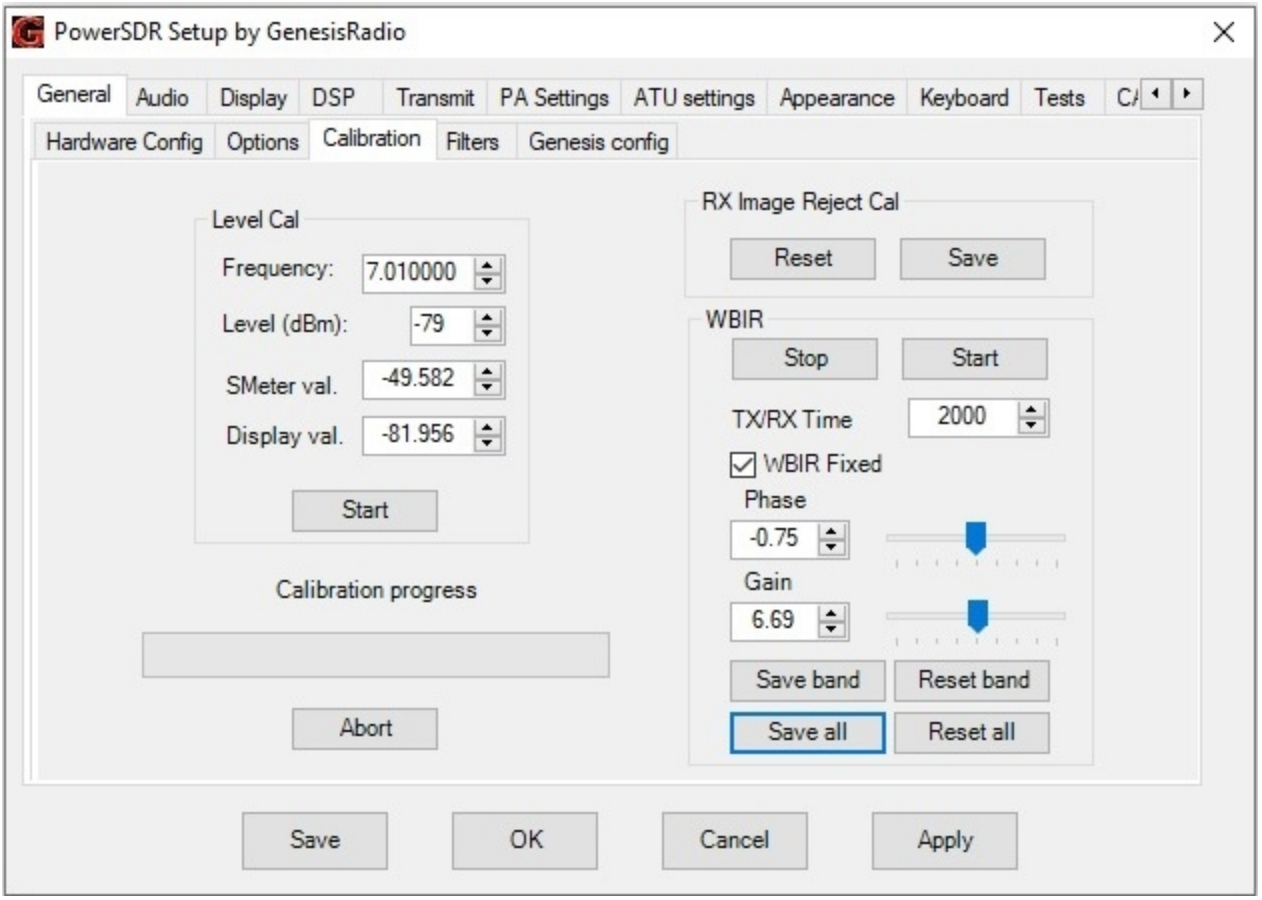
RX image adjustment is next. I have found that a fixed value works the best. Once you set one band you can use the same values for all bands.

The image is located under white arrow and completely suppressed after adjustment.



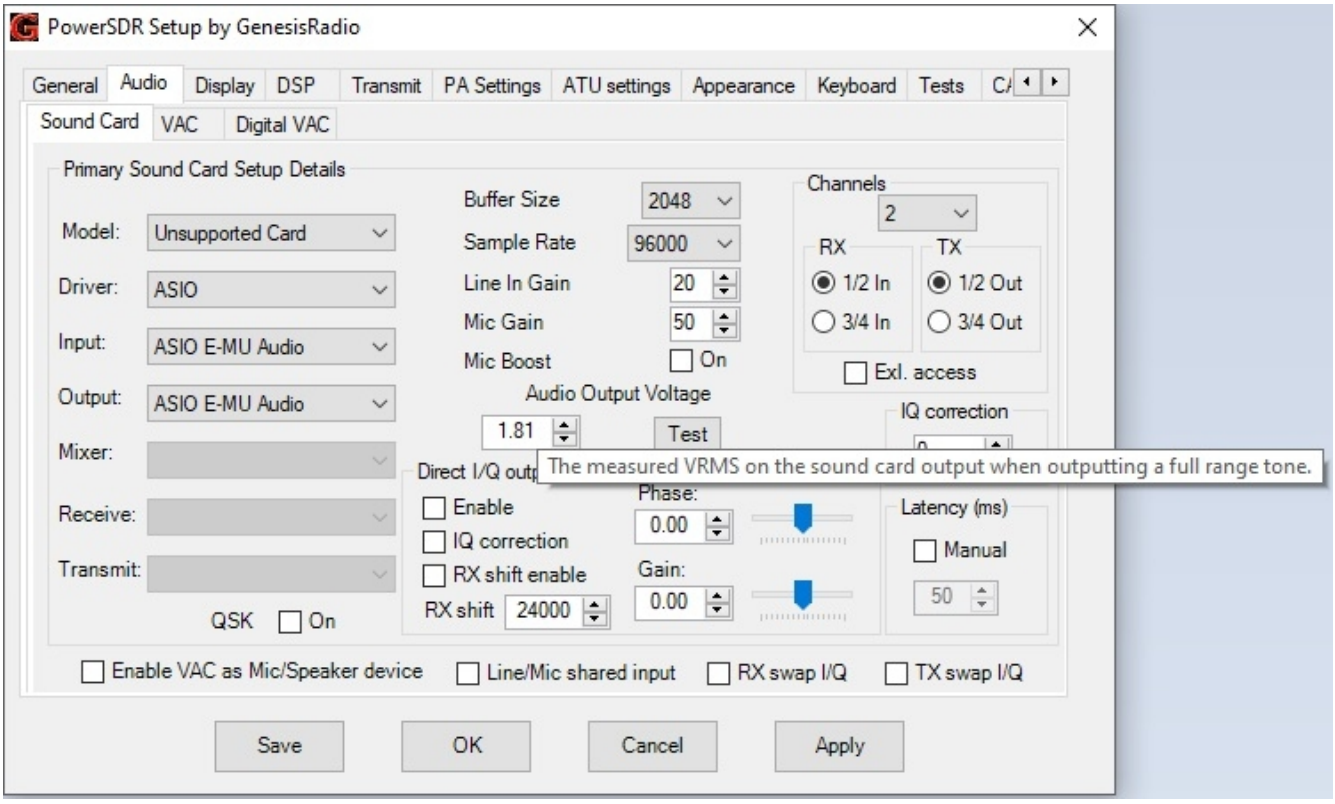


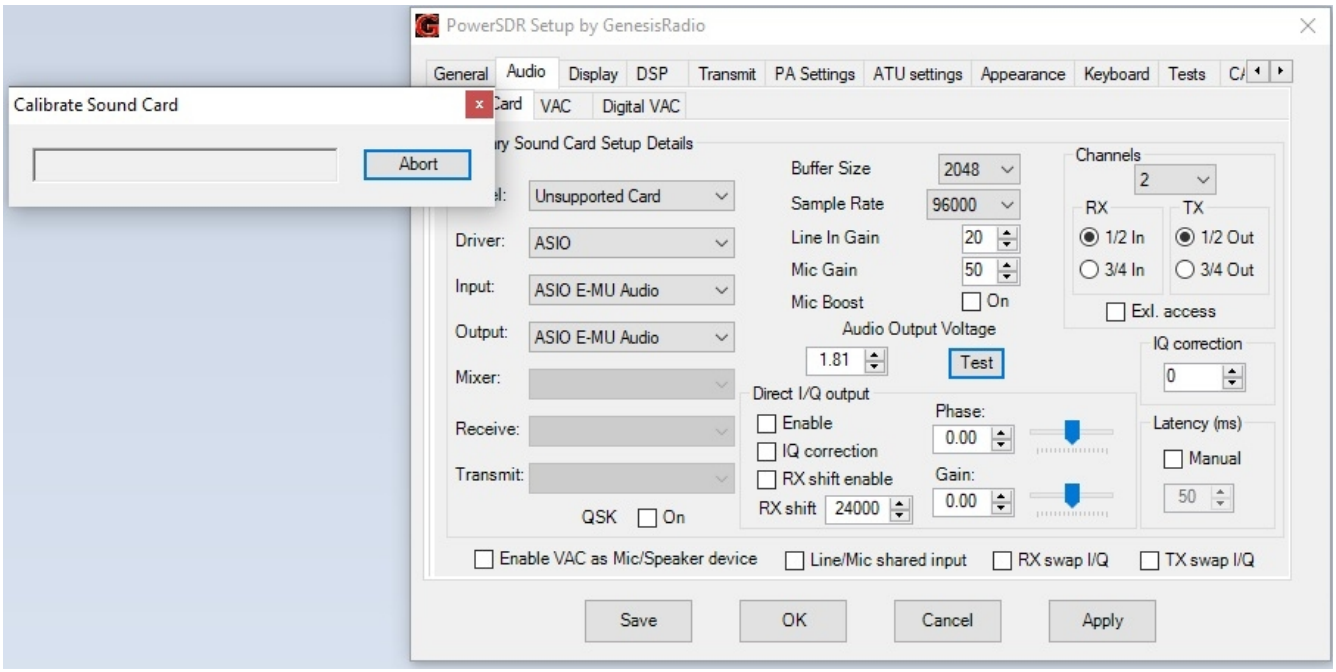
In the WBIR box select Start button, check WBIR Fixed. Then adjust phase and gain as needed. Press Save all button to save settings to all bands.



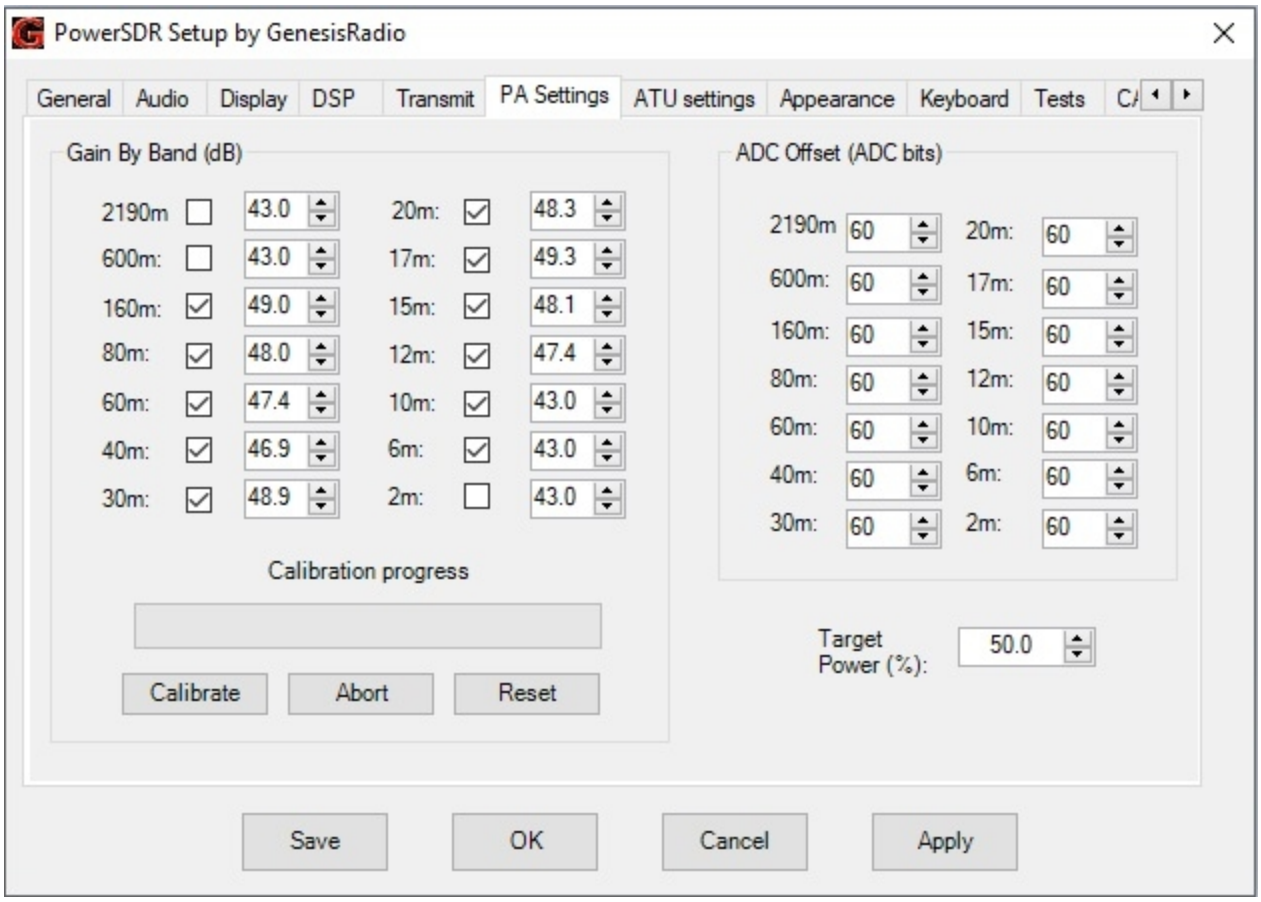
Section 3: TX Calibration

The first step is setting the your sound card Audio Output voltage. Connect a Volt meter using AC scale to sound card output cable. Tip or ring and shield. Press the test button





Record the voltage and press the abort button on pop up. Enter that voltage into the Audio Output Voltage window. This will ensure you have the proper range when adjusting the Power output on the PA tab.



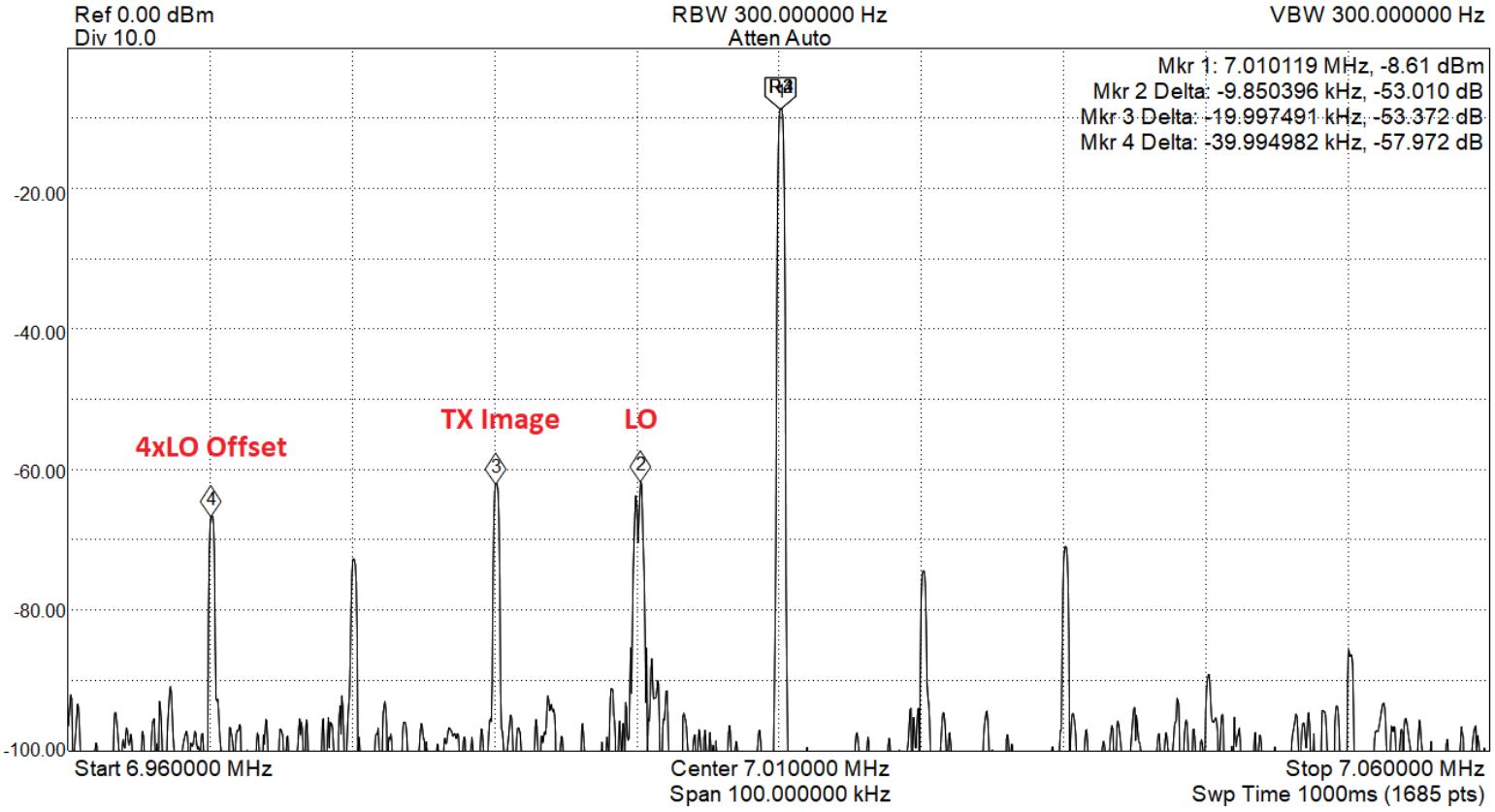
Reconnect sound card output cable to radio. Connect SWR meter and dummy load to antenna jack.

Before you make any power, adjust all the gain by band numbers to 54 or higher to prevent over driving radio. The Amp will put out well over 10W.

Select TUN on the main page and set PWR slider to 100%. Adjust gain by band numbers for 10W output on each band. Lower numbers will result in more output power. Once this is complete we will move onto the TX image adjustment.

There are a couple of ways of determining the TX image. By using a second receiver, Spectrum analyzer or a device by Multus SDR called IQ Balance detector, IQBD.

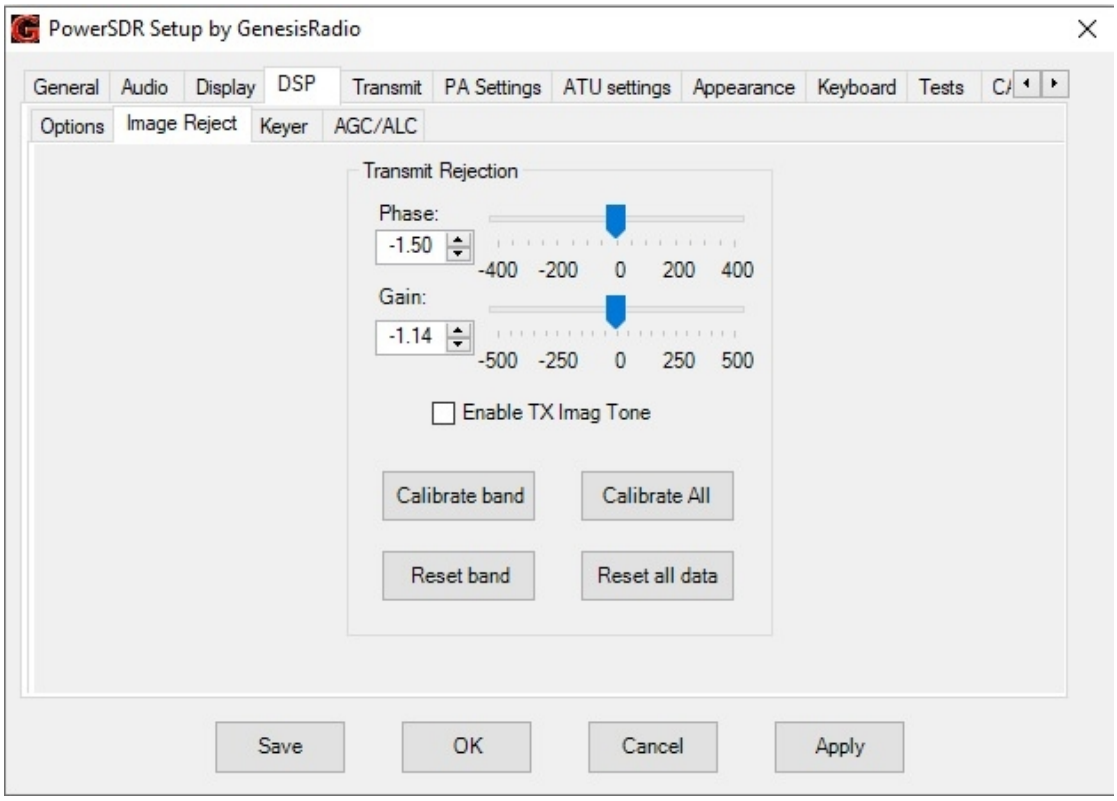
Tune the radio to a frequency, lets use 7.01mhz. Make sure the LOSC is tuned 10khz away to 7.0mhz. This will place the TX image to a known point of 6.90mhz.

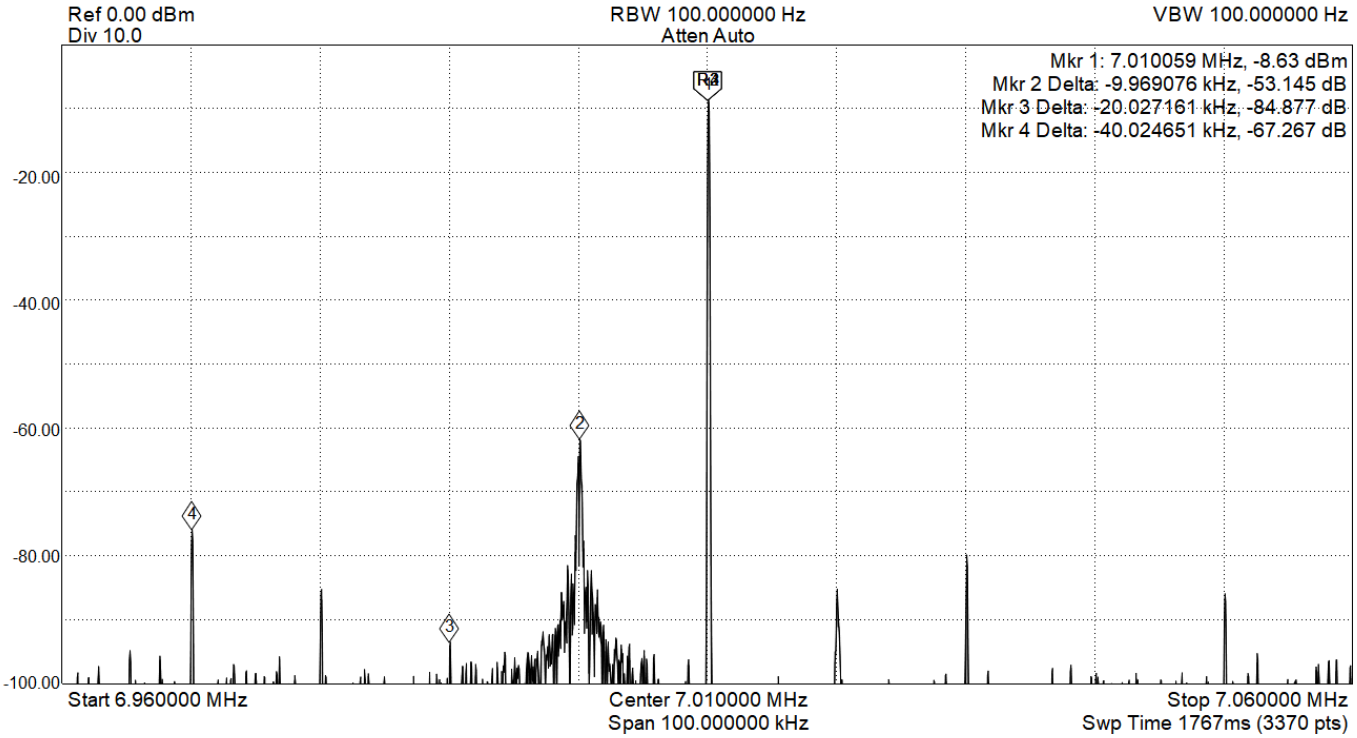


The TX circuit is well balanced and from the many builds I have completed TX image doesn't need adjustment right out of the box to meet FCC regulations. As you can see in the above picture the spurious signals meet FCC limits at 10W.

Lets go ahead and see how well we can suppress the TX Image.

While transmitting adjust Phase and gain to get the best rejection. As you can see very little adjustment was necessary.





This completes the calibration.