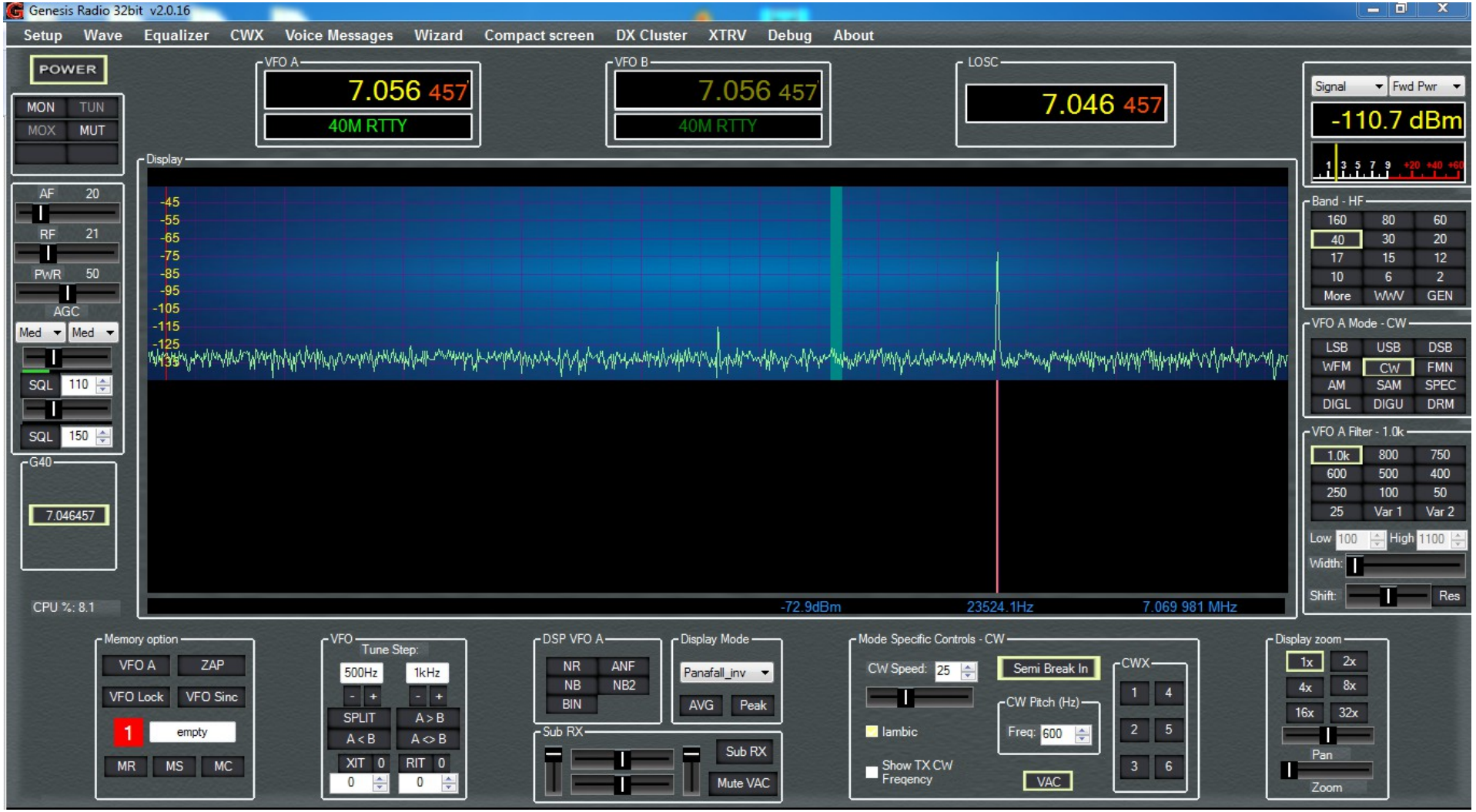
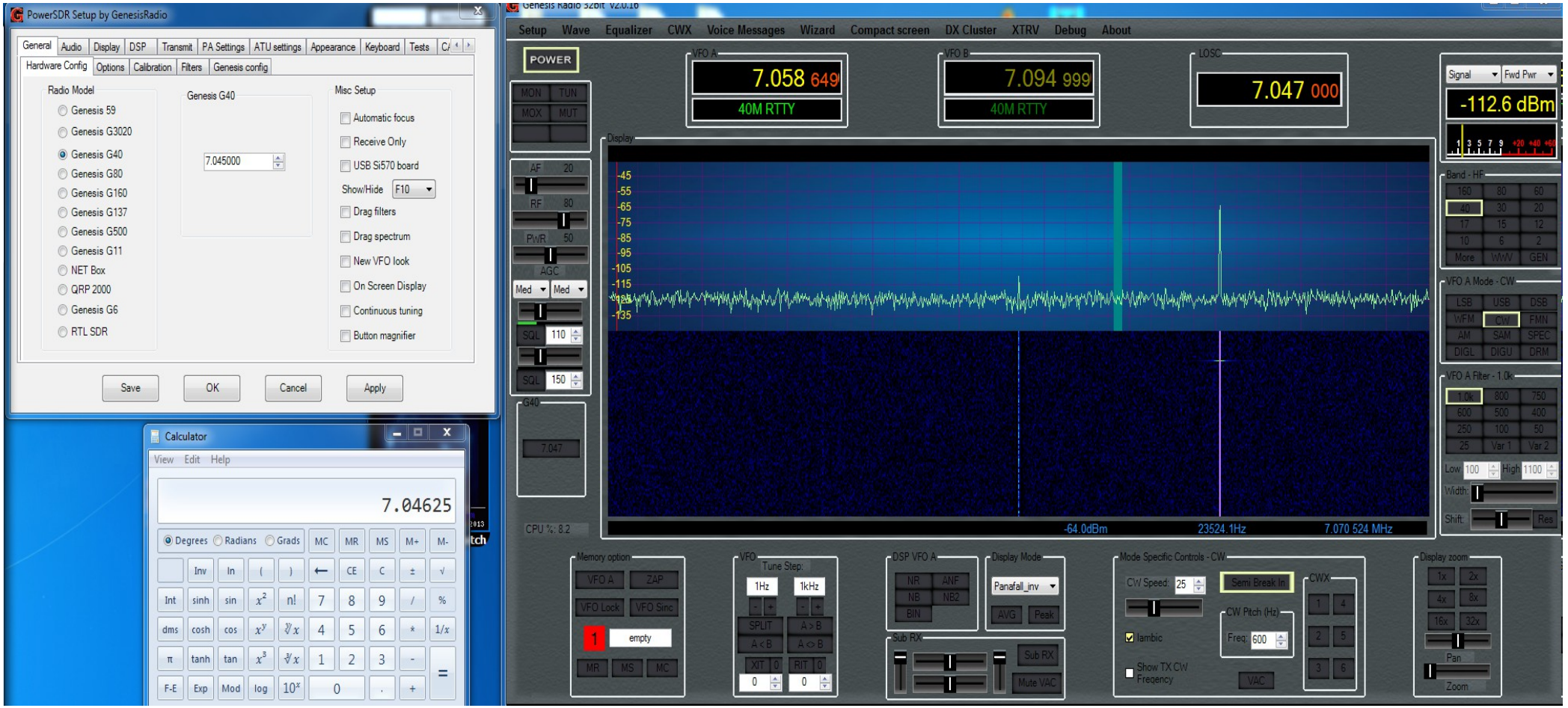
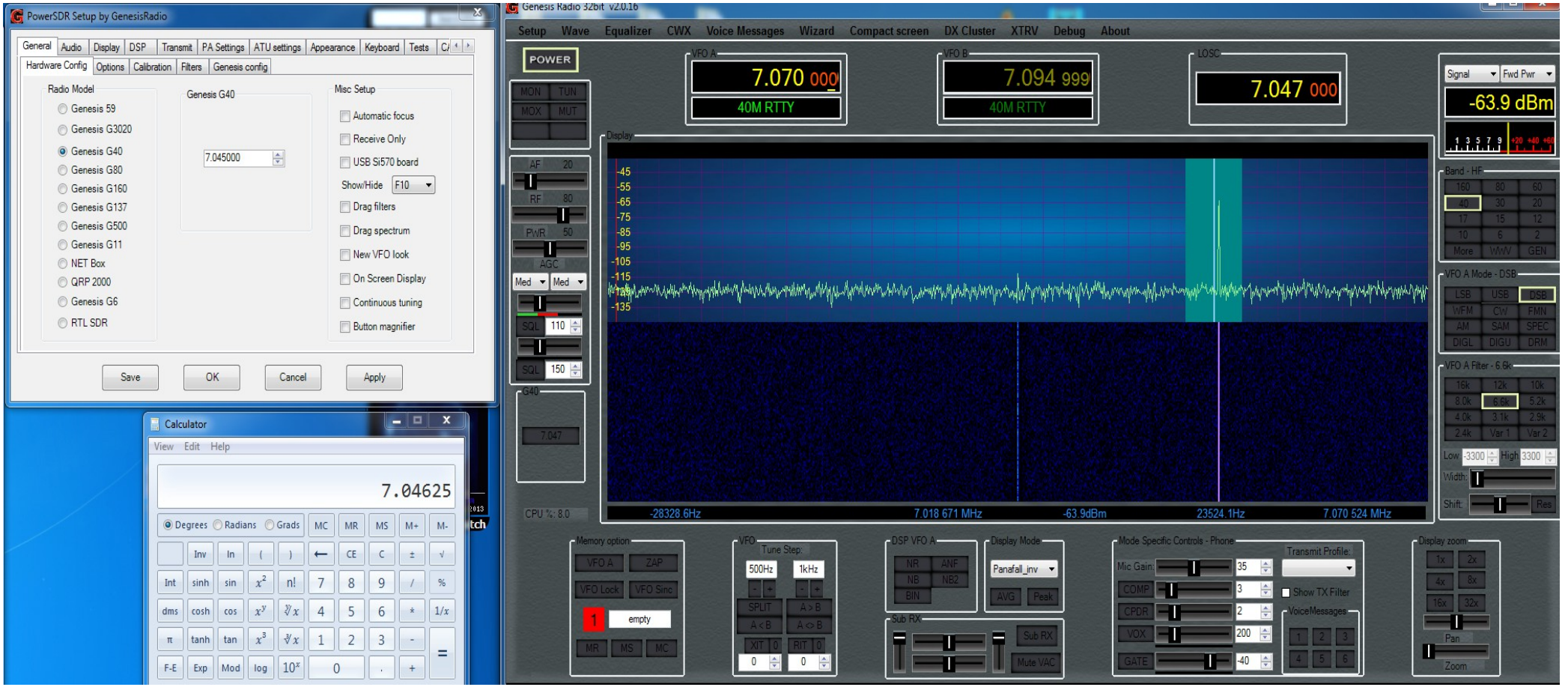
Transmit Setup and calibration instructions for crystal controlled Avala-01 and G40/3020 using Genesis Radios GSDR 32bit update 21022014



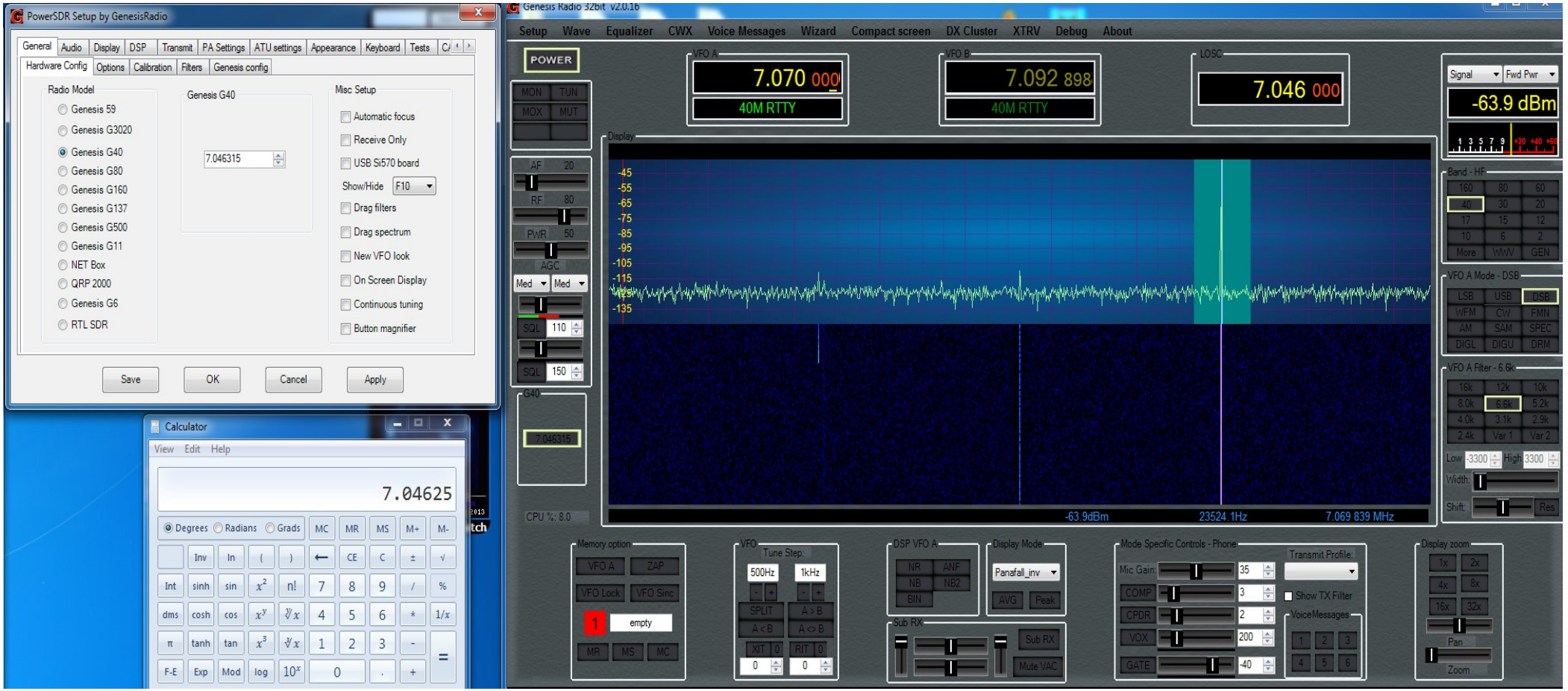
First, lets review RX setup
Frequency Calibration:
1. First take the crystal frequency and divide by 4
2. Enter that into the freq box. Doesn't have to be exact.
I left it at default setting.



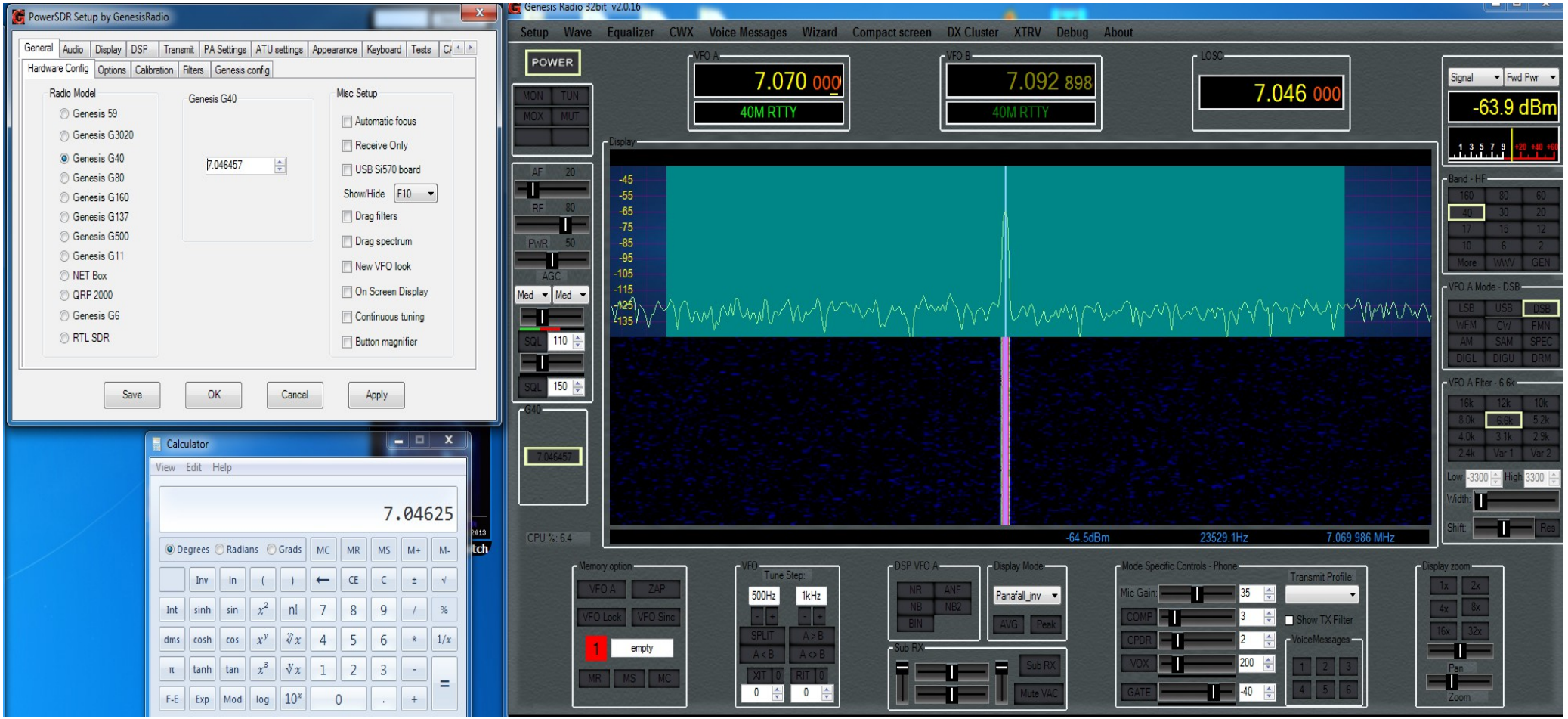
Using a signal source of a known frequency, select DSB and tune VFO A to that frequency



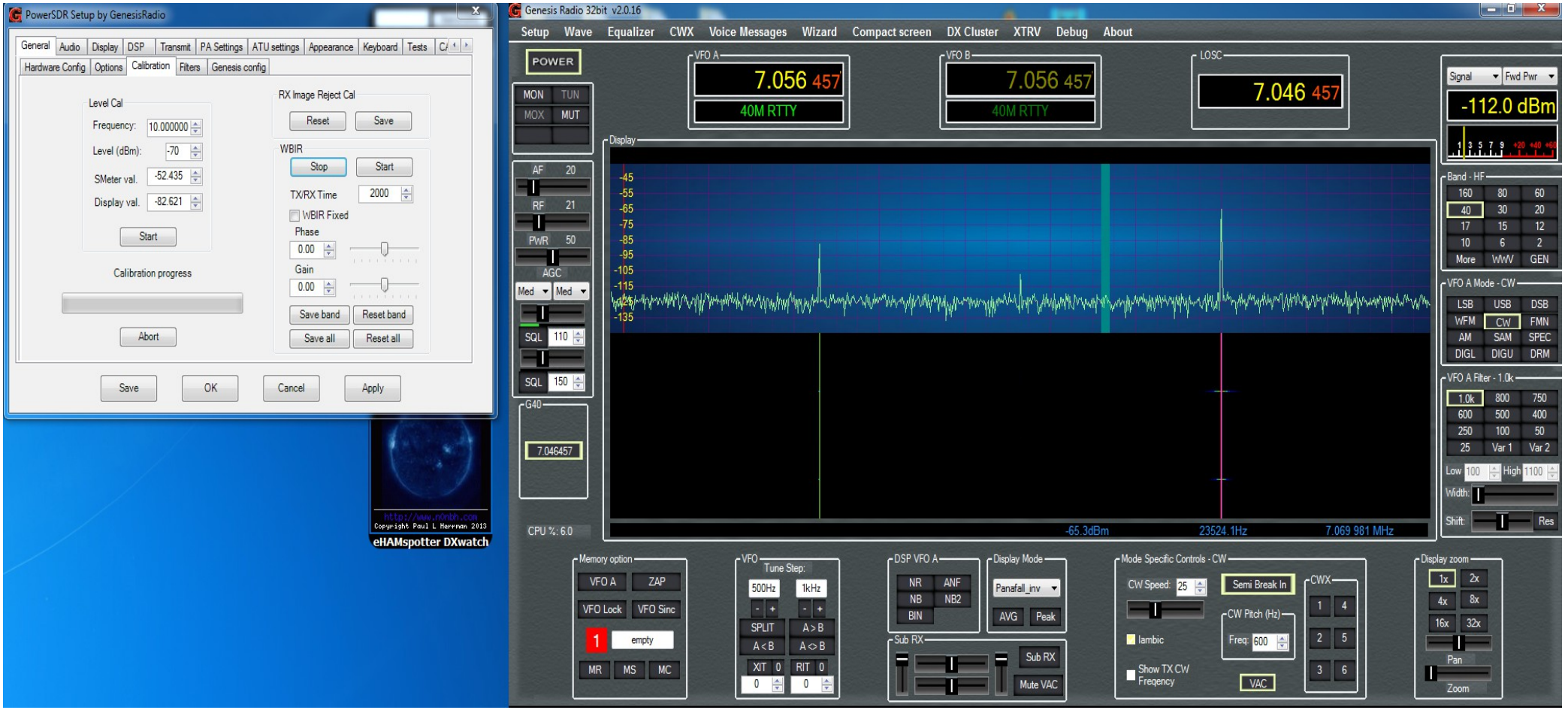
Select up or down arrows to the right of the frequency. Until it is close to on the center line.



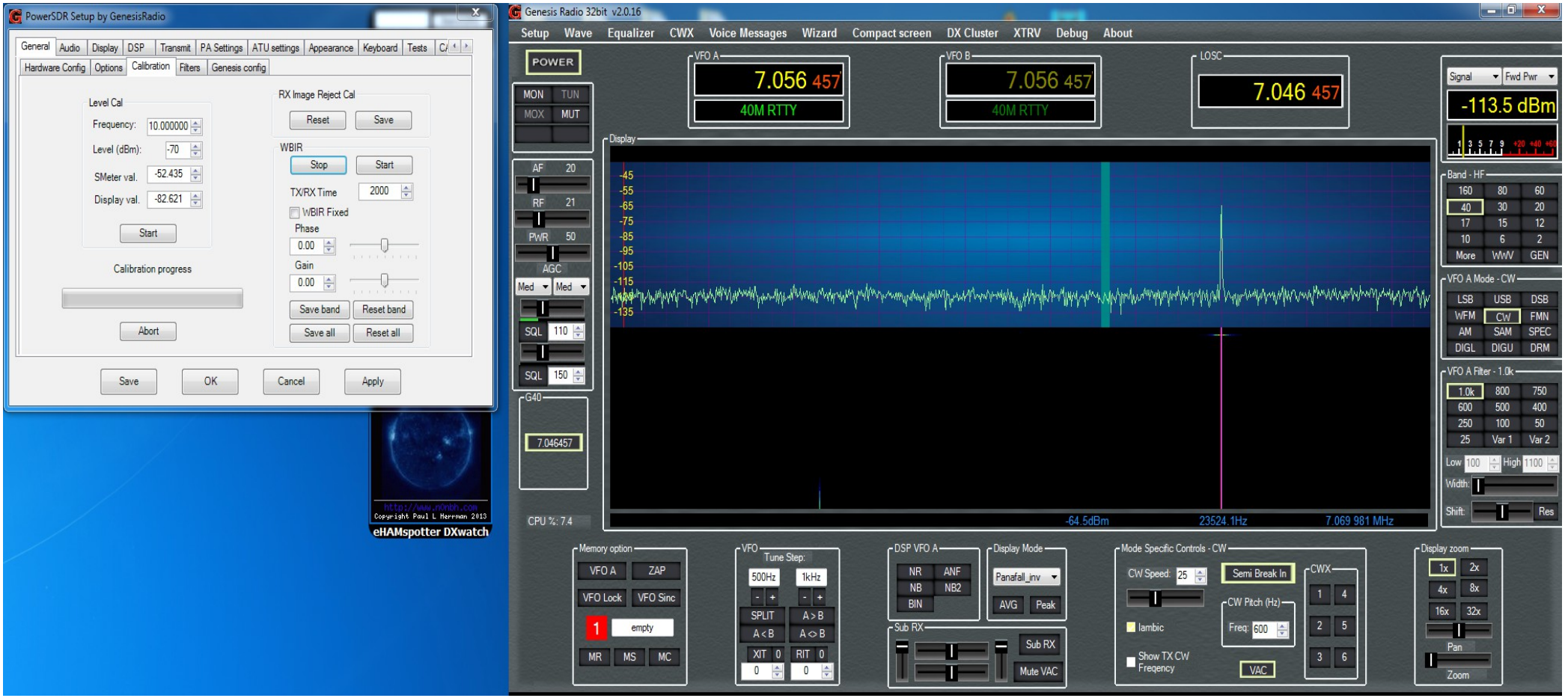
Select Display zoom, and adjust frequency until it is centered. Frequency Calibration is complete



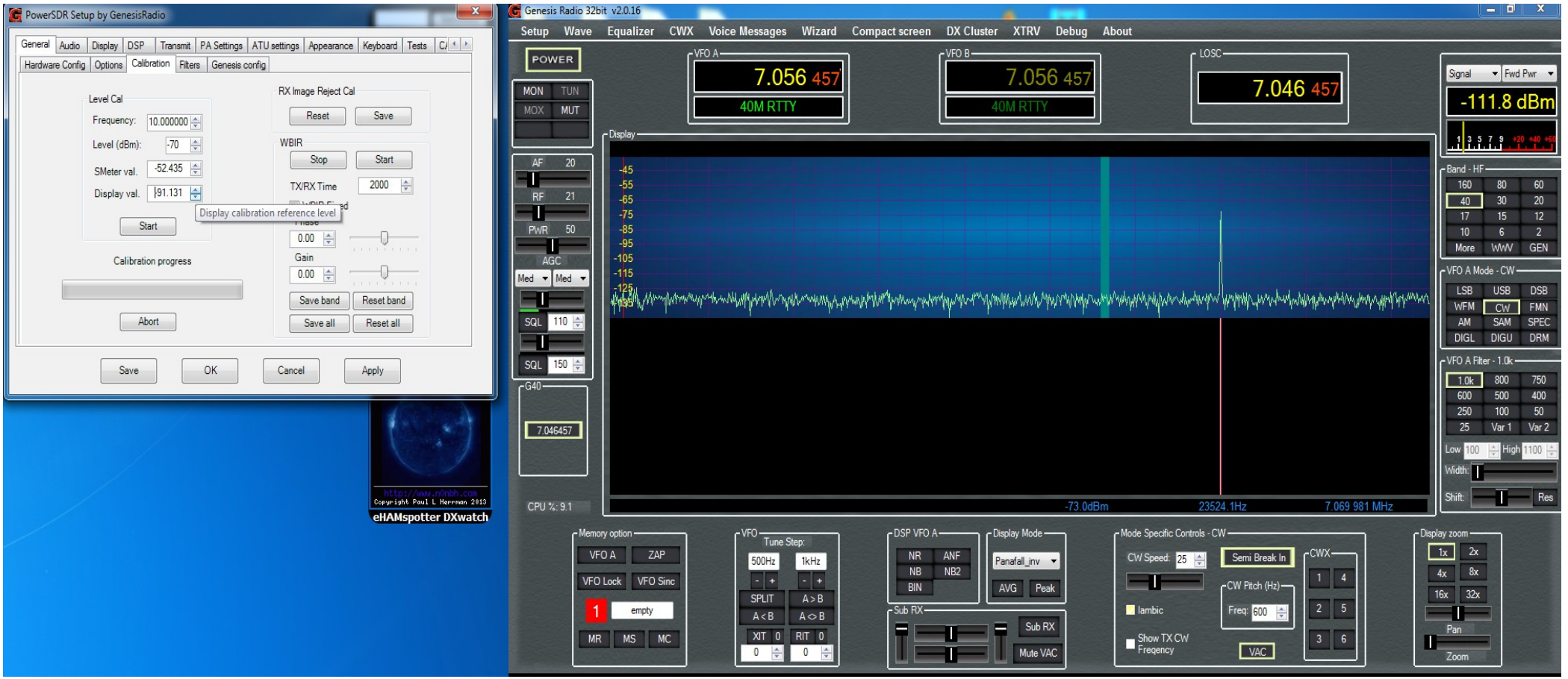
You may see an RX image on the other side of LOSC. If so, go to the calibration tab and select Stop WBIR



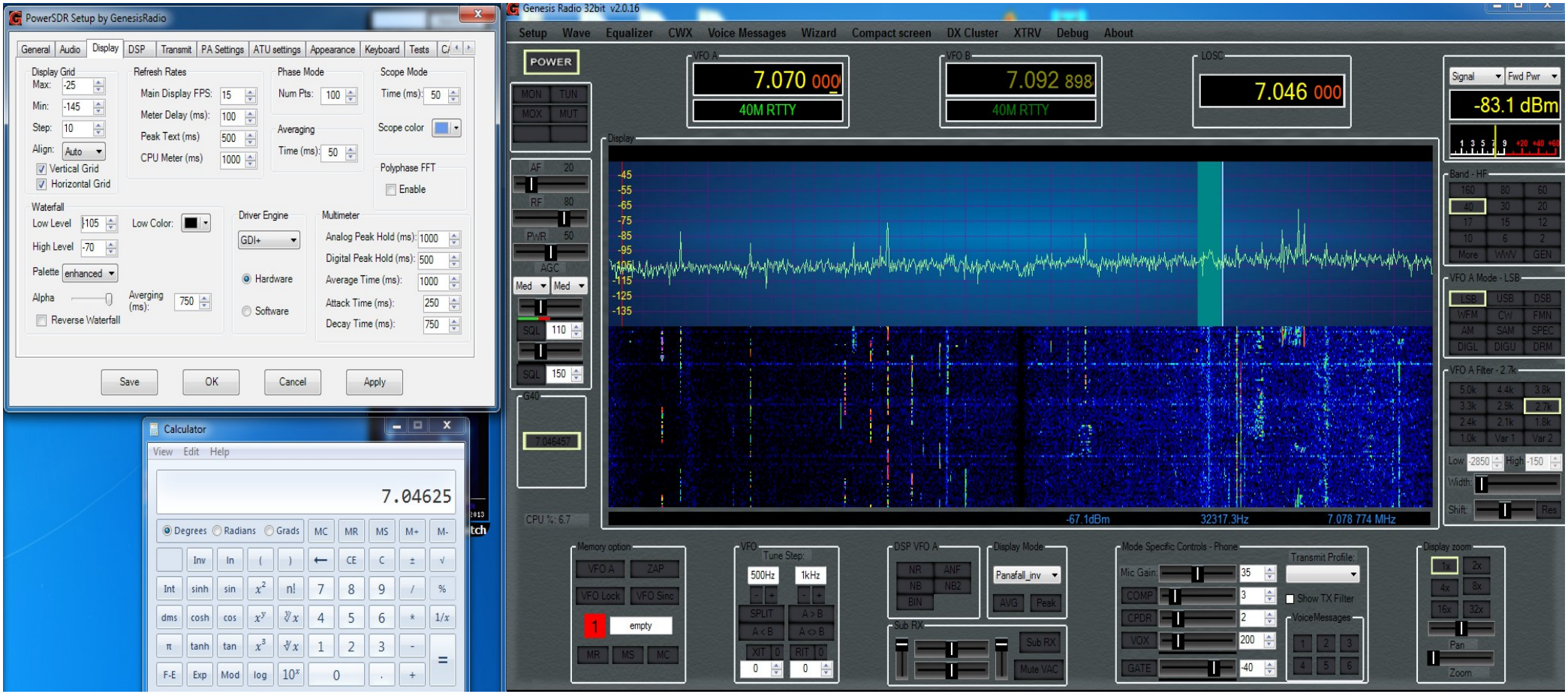
Adjust R2 until image is gone. Then select Start WBIR



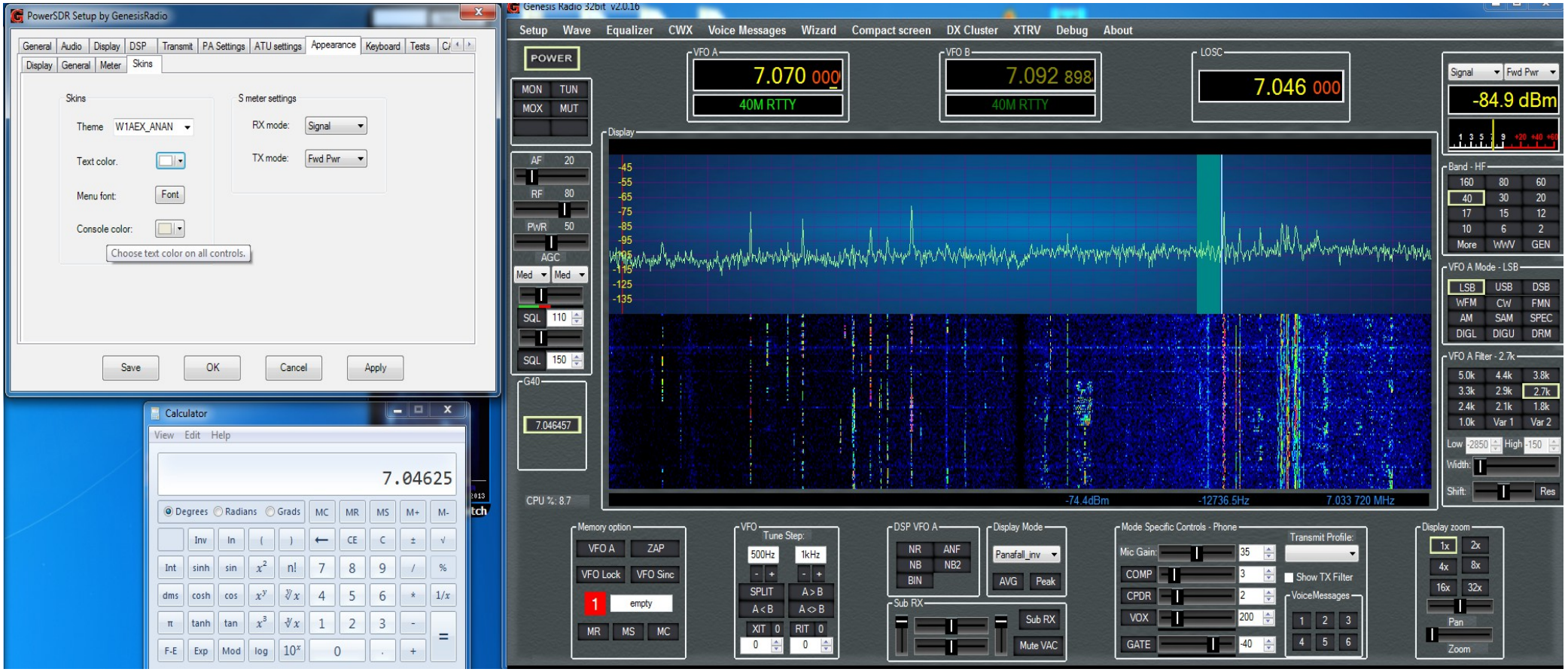
Next is to calibrate the signal level
With a signal of known level. adjust Display Val arrows up or down to set level. In the panadapter there is a reading at the bottom of highest signal level displayed. Mine is -73dbm



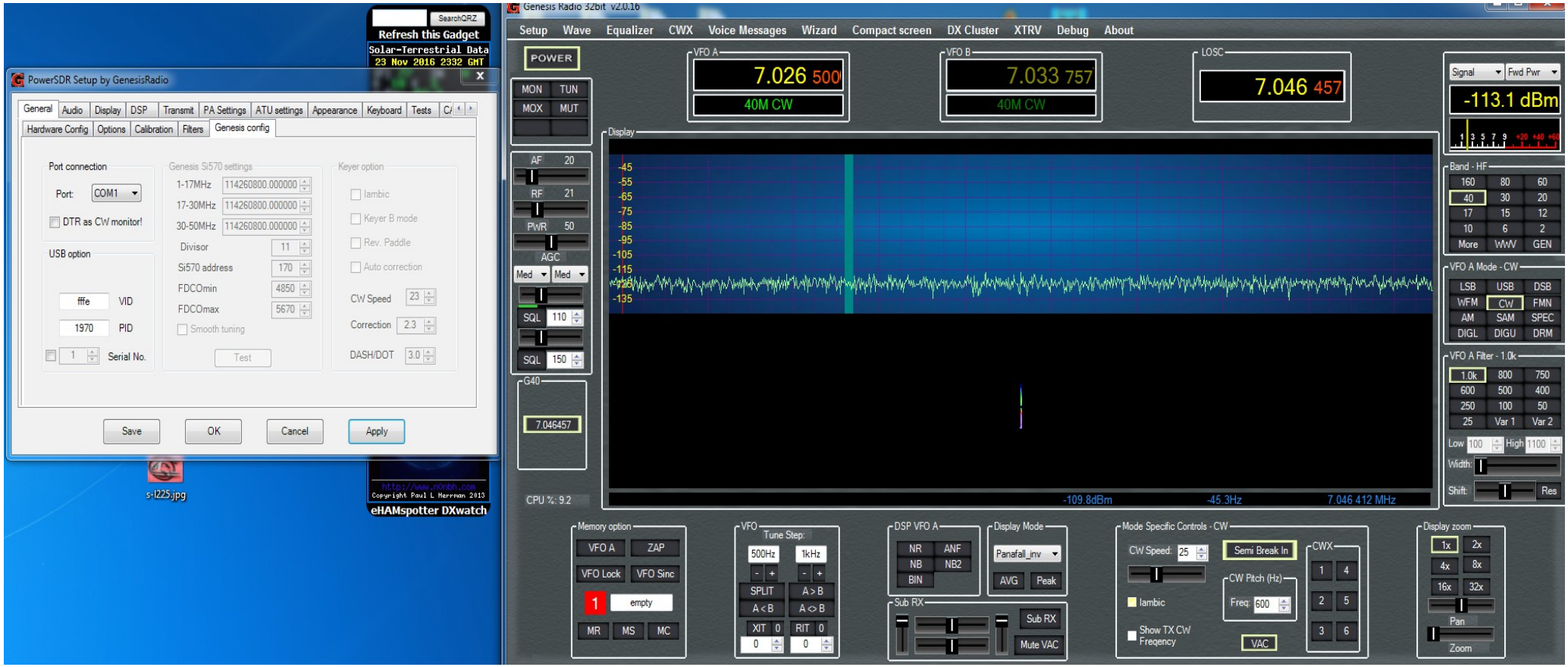
You may notice the text letters are black. Next page shows how to change that.



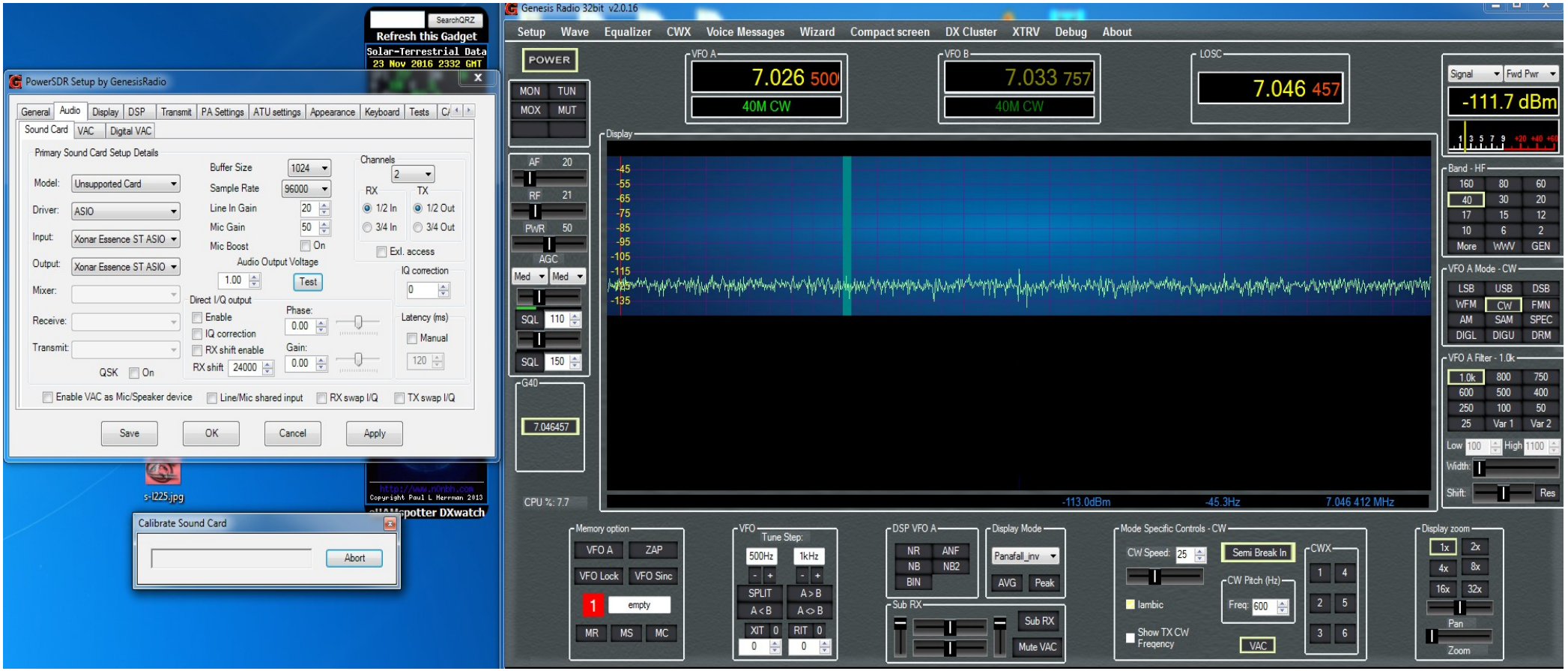
Go to appearance ---> Skins Tab, change text color to what ever shows up better



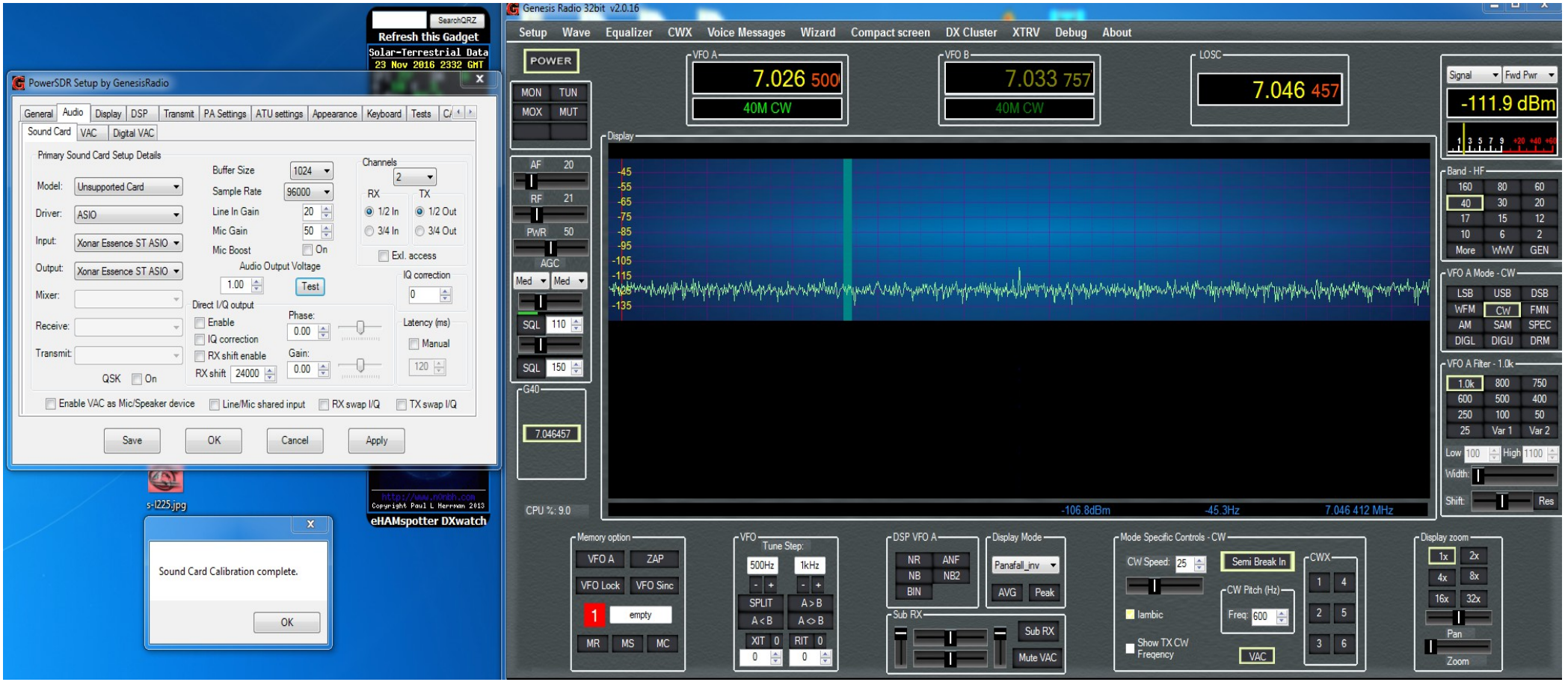
Now for the TX setup. Connect your serial cable and select the port it is using, mine is COM1. Connect dummy load and press TUN button. Radio should Transmit.



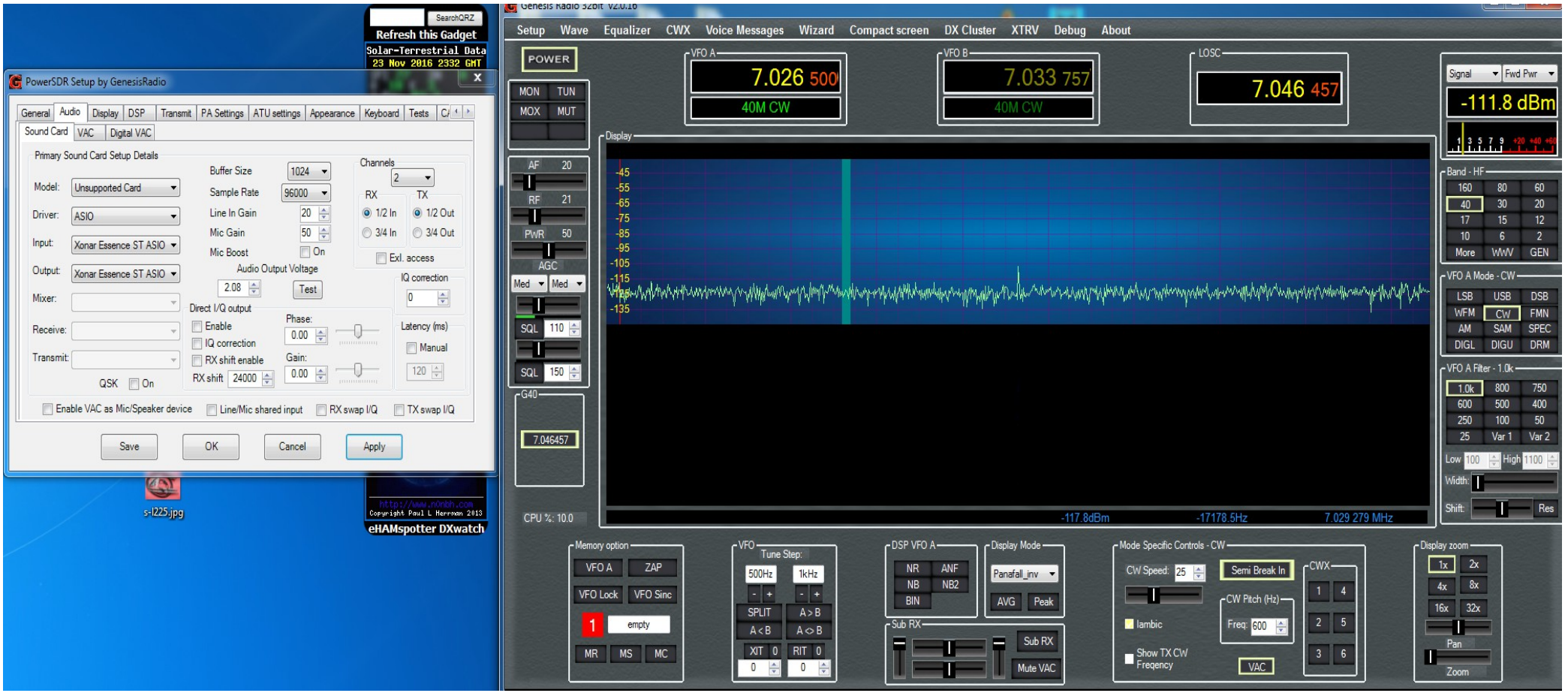
Now we need to set the Sound card Output voltage level. With a volt meter set to AC scale, connect to tip and sleeve of cable coming from sound card output. Press TEST button and you should see a voltage reading. Then click Abort on small window that popped up.



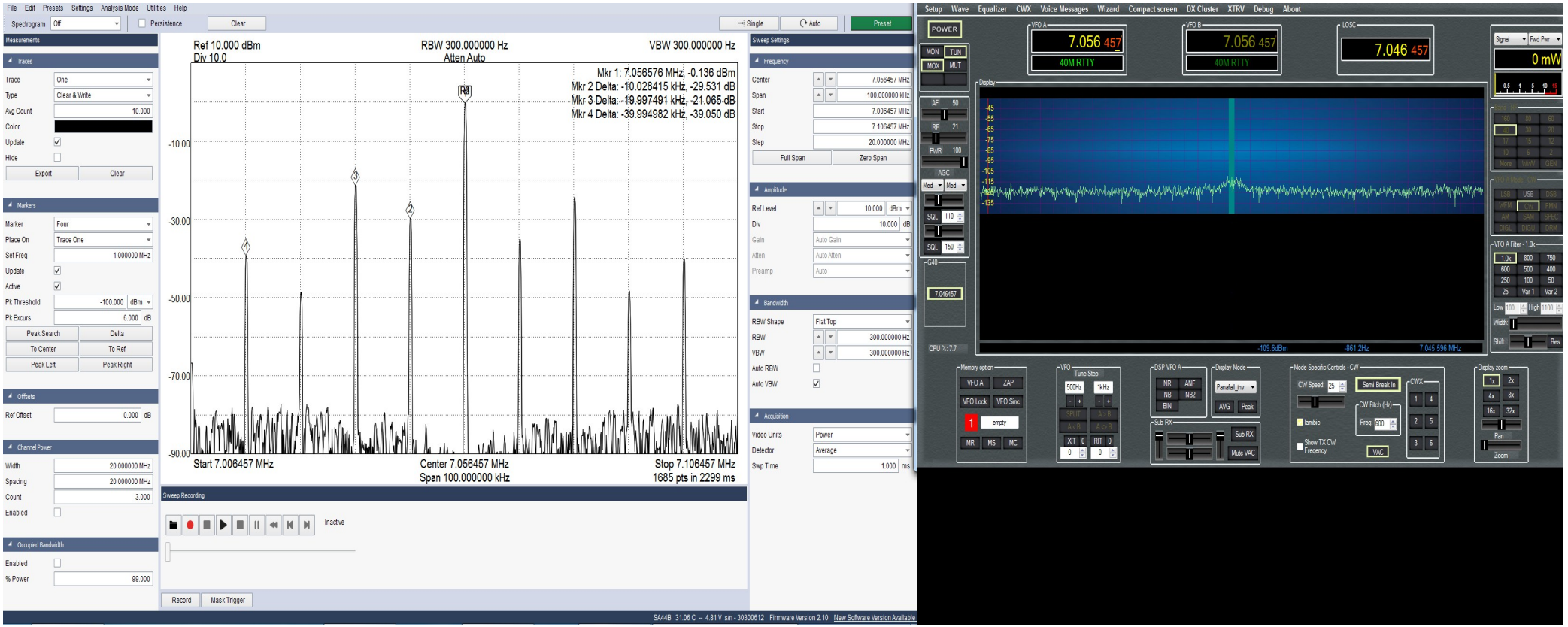
Another small window pops up, click OK. Then enter the voltage reading into Audio Output Voltage. Sound card is now calibrated



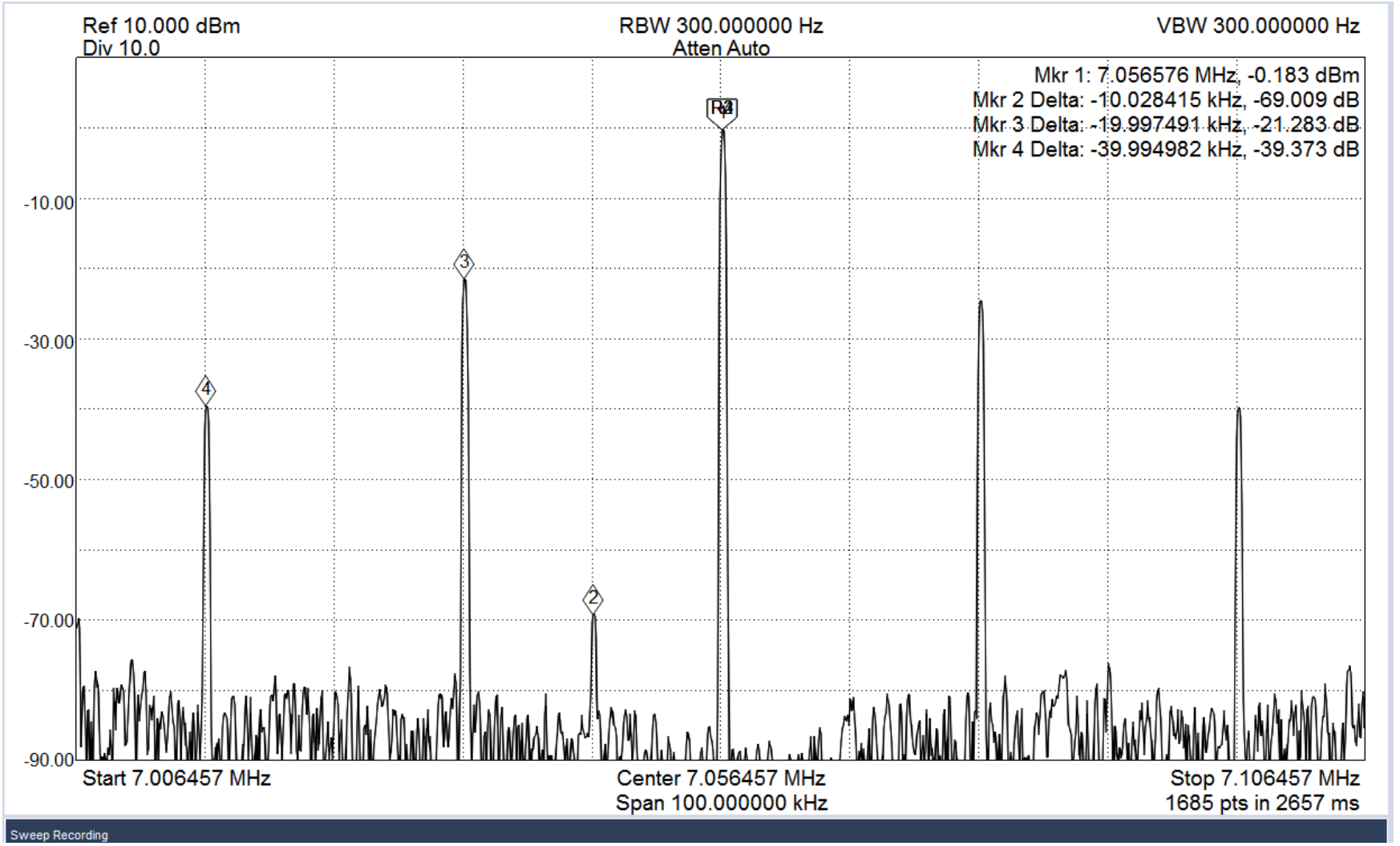
New Voltage entered



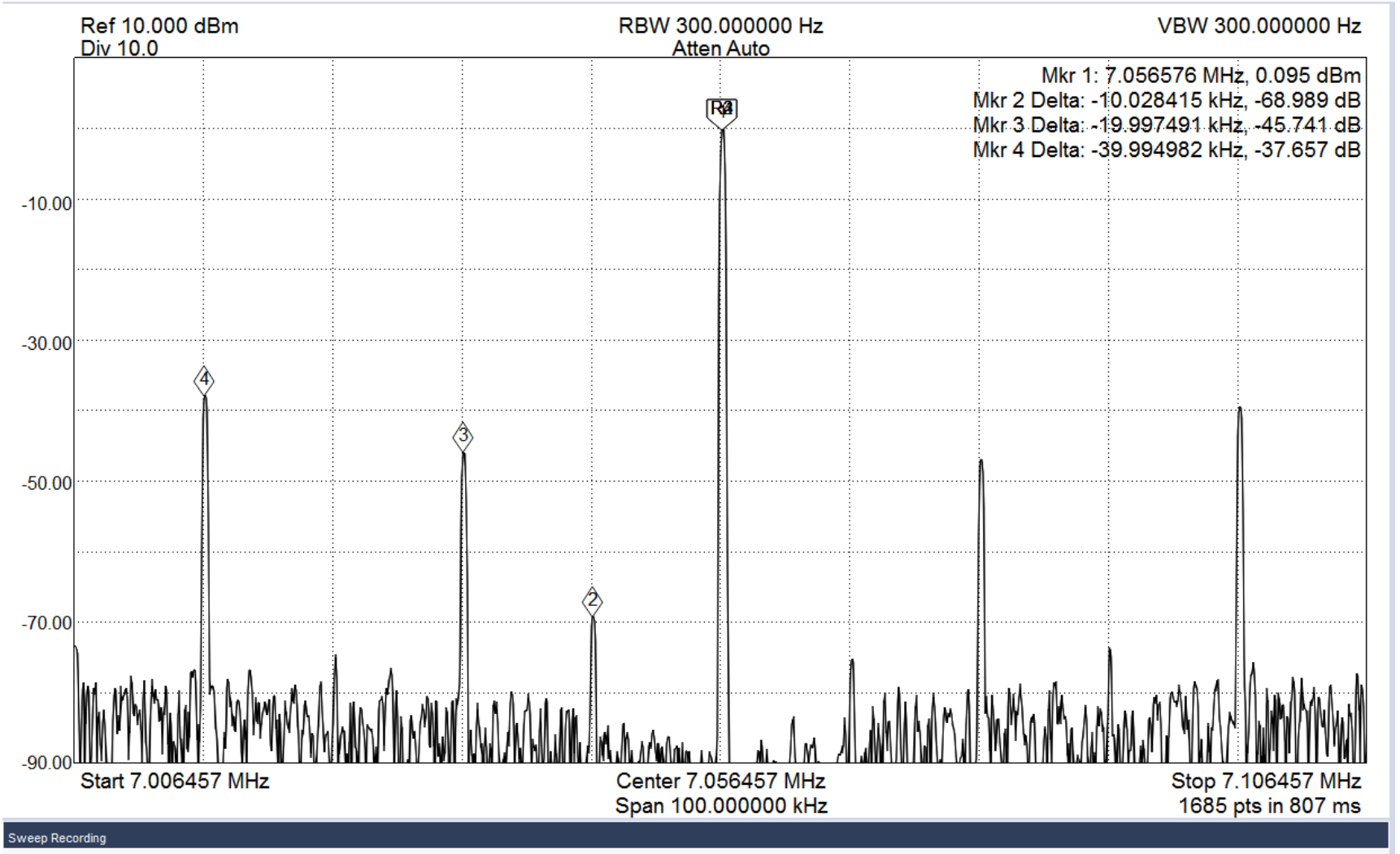
To make explaining this easier I'm using a Spectrum Analyzer. Another receiver can be used. To make this process easier lets pick an offset from the LOSC that we can easily figure out the 1st, 2nd, 3rd and 4th signals that we need to work with. I chose 10khz. Lets go over the markers. 1 is the transmitted signal, 2 is the LO signal, 3 is the TX Image, 4 is a signal that is adjusted by your sound card drive level. A strong signal here is caused by overdriving the radio.



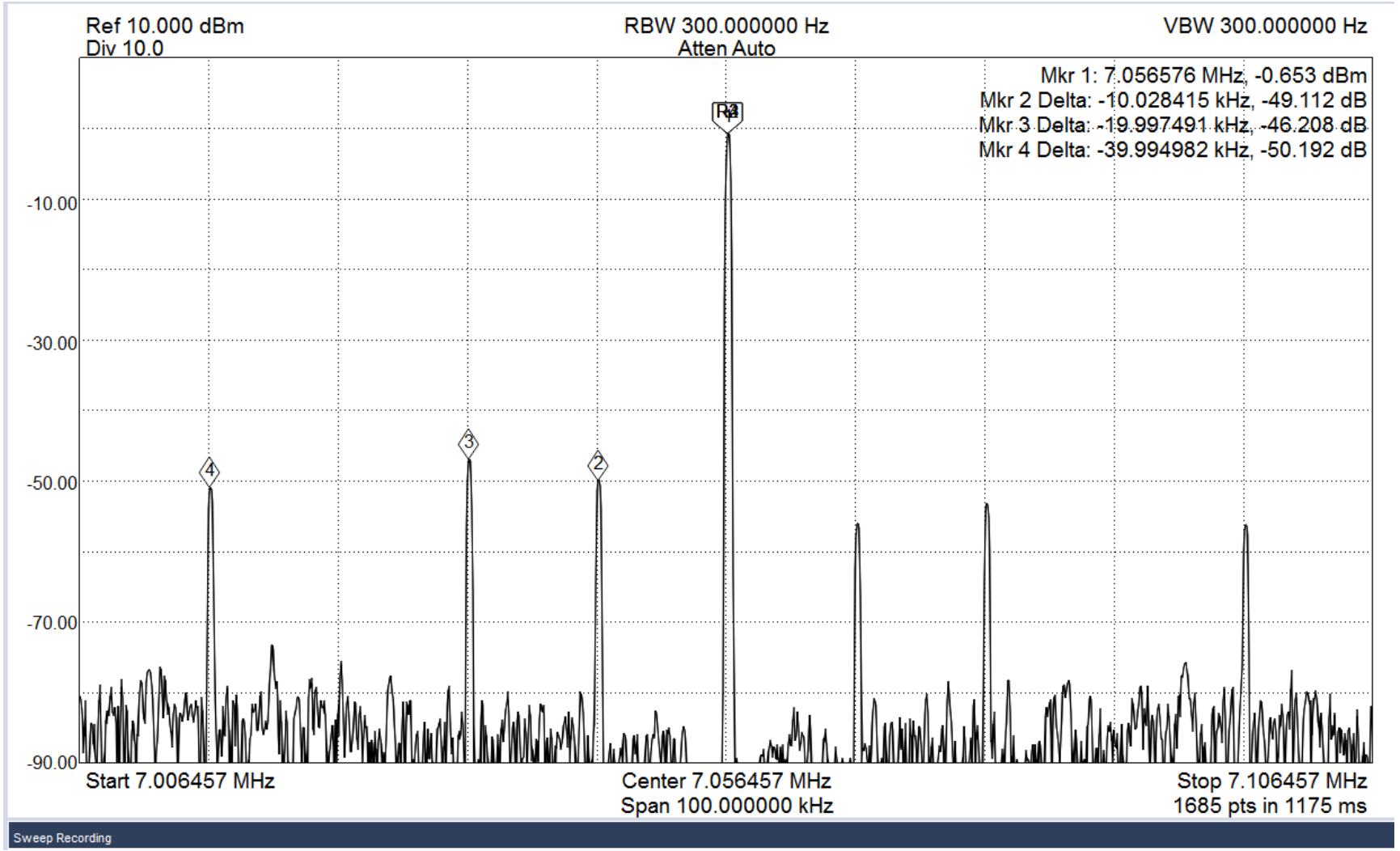
First thing we are going to do is adjust the trimmers,R9 and R10 back and forth until we get the LO(2) reduced as far as we can go while transmitting into a dummy load. Make sure you monitor the PA heat sink! Let cool between adjustments as necessary!



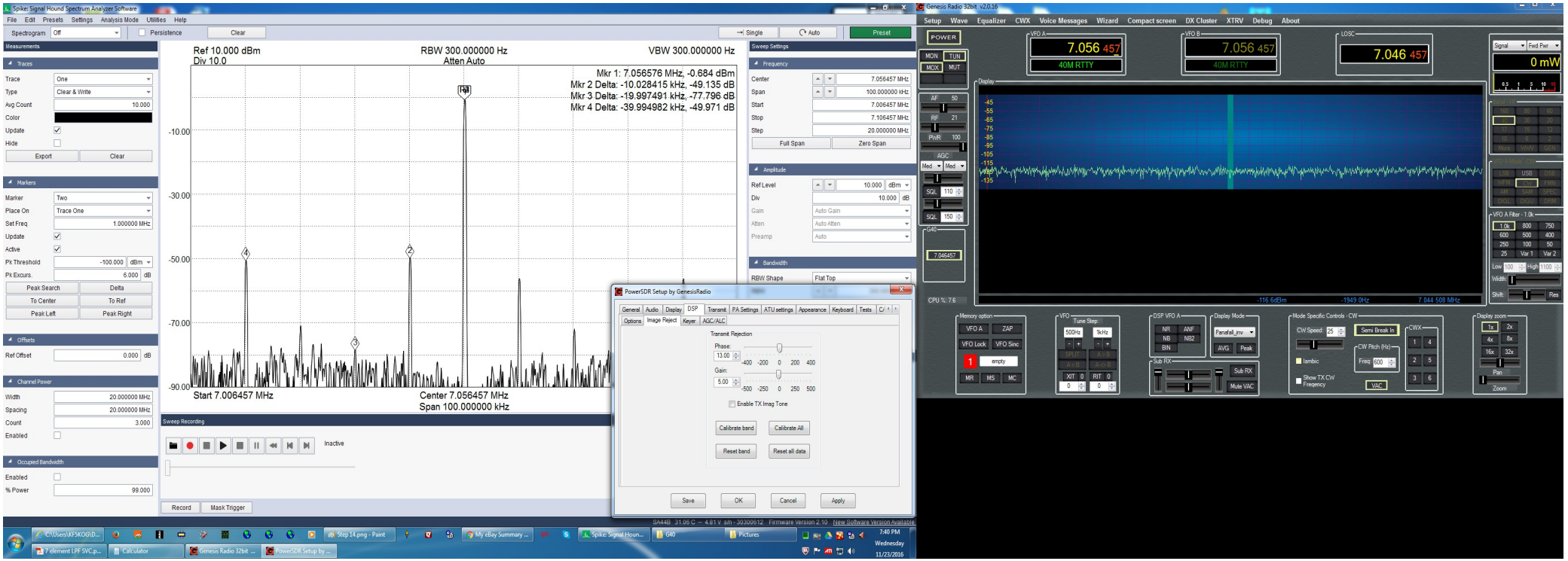
Now adjust the TX image(3) with Trimmer R67 for lowest level. This is only half the adjustment. Software is next.



You may have to go back and adjust the LO signal again. Everything seems to interact with each other. LO, TX and RX image adjustments.



Now the software TX image adjustments. Adjust sliders Phase and Gain until you get image(3) as low as possible. Click Save.



Now adjust drive level until the 4th signal is within limits. Initially my power output was 7 watts now it is 6 watts. Do not try to over drive this radio! A tip I learned if using another RX radio. Set the transmitted signal to show S9 on the meter. If all 4 of the signals in question don't show a needle deflection you are good to go!