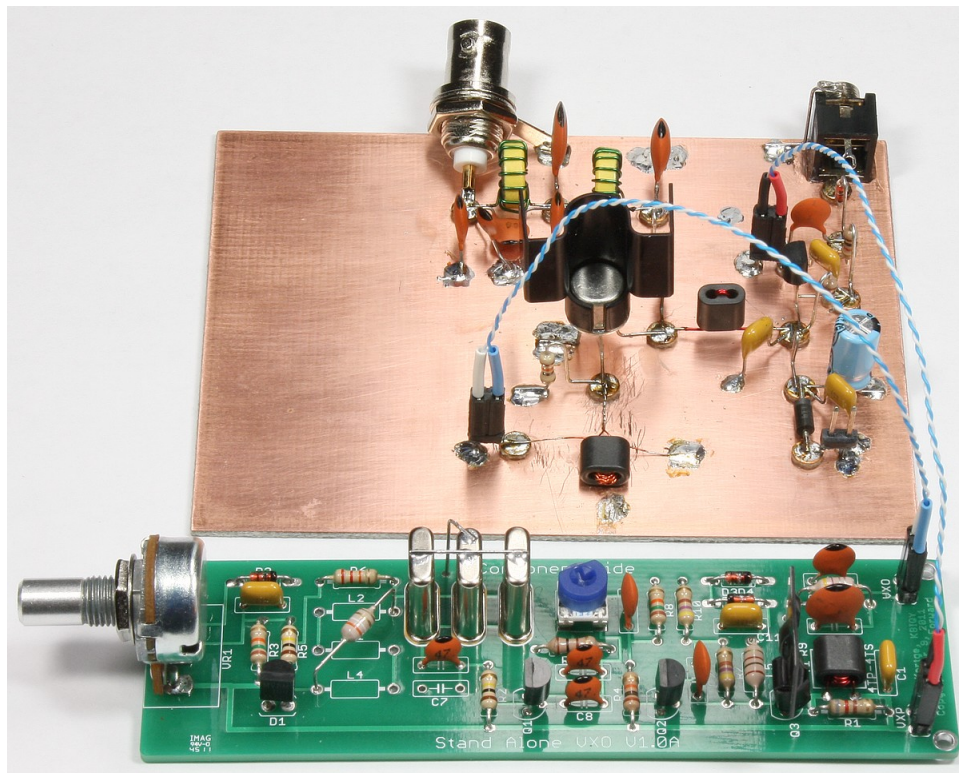


# Test Driving the SAVXO on 17 Meters

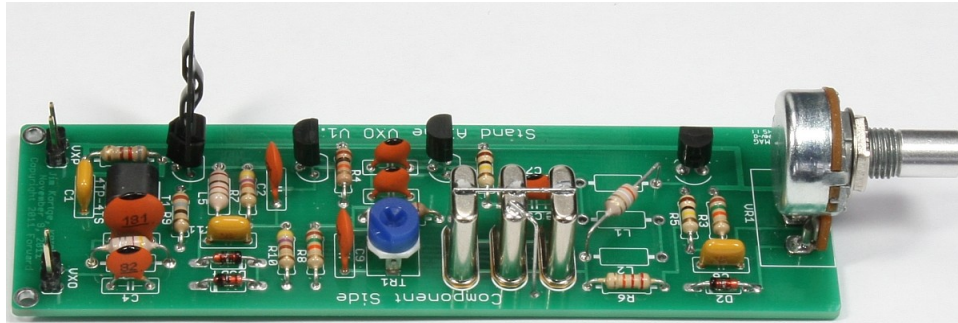
V1.0B – February 21, 2012



Jim Kortge, K8IQY  
February 18, 2012  
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The Stand Alone VXO (SAVXO) is a kit sold by the Four State QRP group and can be obtained at this web location: [www.wa0ipt.com/savxo.html](http://www.wa0ipt.com/savxo.html). As supplied, the kit contains crystals for 40 Meter operation. However, one of the goals of the design was to be able to use the SAVXO on any frequency between 160 Meters and 10 Meters directly and higher if heterodyning methods are used. During the development of the SAVXO, a number of ham band crystals from ESS were tried to assure that the design worked over the previously mentioned frequency range.

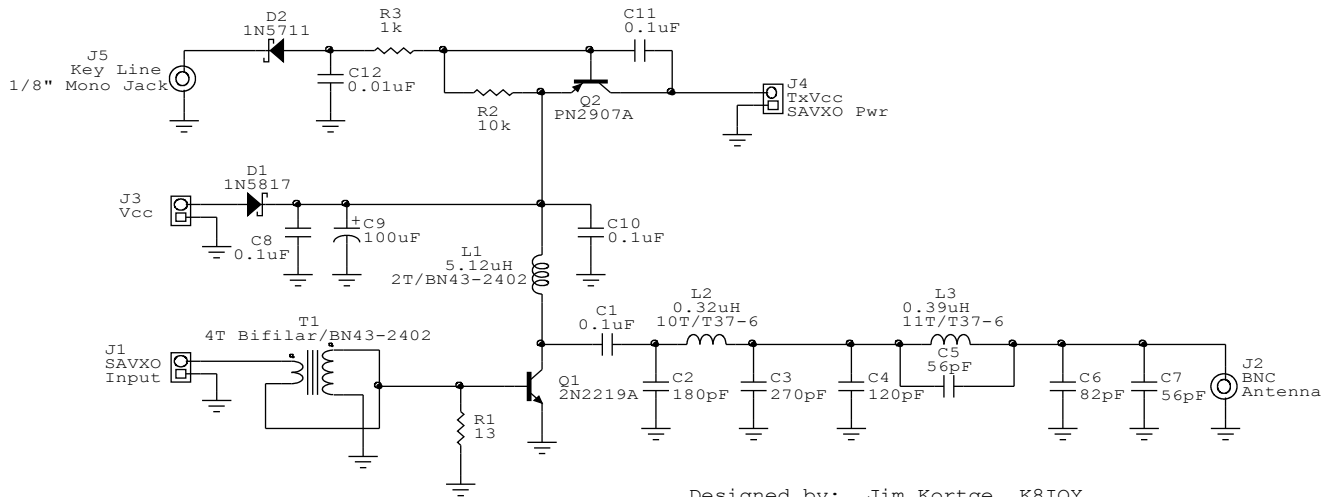
After the SAVXO development ended, the set of 18.096 MHz crystals were installed into a prototype SAVXO board with the thought to turning this unit into a 17 Meter transmitter. That unit is shown in the photo below.



Using these crystals along with a 3.9 uH inductor, a tuning range of 18.072 to 18.096+ could be obtained. The next larger value molded inductor, 4.7uH, resulted in the lowest frequency being below the bottom of the band, so was not used. The power output from this SAVXO was in excess of 200 milliwatts, suitable for QRPp operation with the addition of an external low pass filter to make it Part 97 legal.

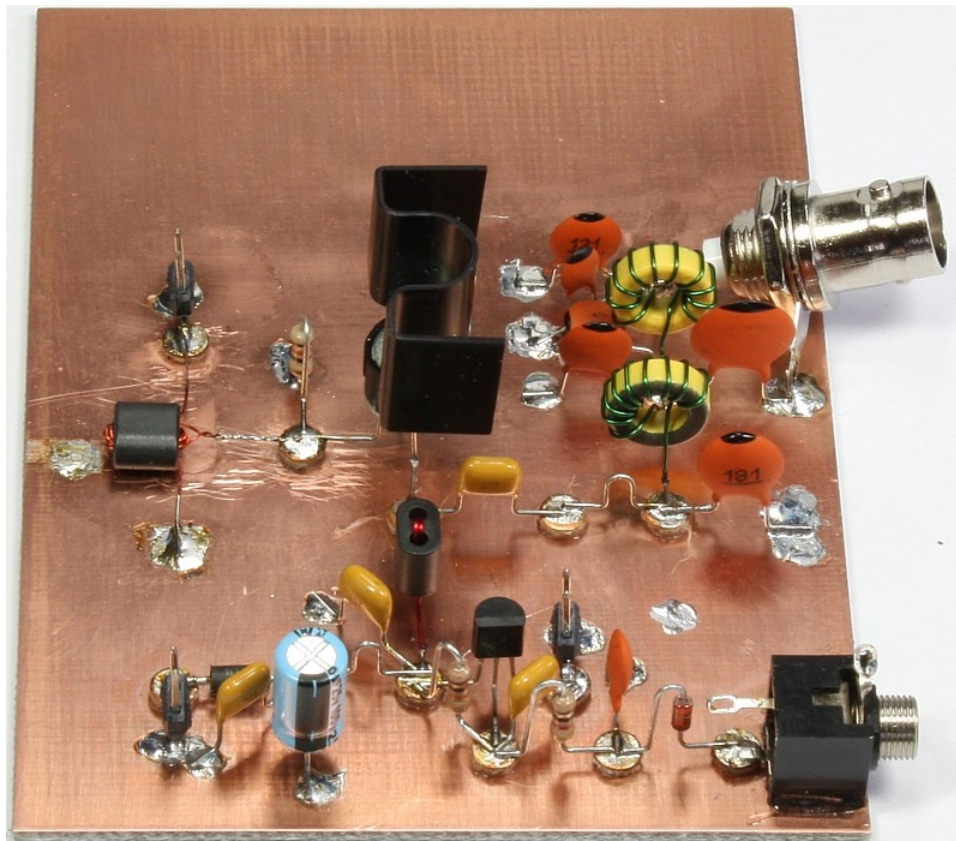
However, it was thought that a bit more power would be nice to have, so a single transistor (2N2219A) amplifier was designed and built using Manhattan-style construction. Included with the amplifier was a PNP switch that would provide voltage to the SAVXO, so it was being keyed. That would also allow this 17 Meter transmitter to be used with the K8IQY MagicBox Solid State T/R System, also sold by the Four State QRP group. That kit can be found here: [www.wa0ipt.com/mbmagicbox.html](http://www.wa0ipt.com/mbmagicbox.html). Below is the schematic of the 17 Meter Amplifier and PNP Keying Switch.

## 17-Meter Transmitter for use with SAVXO on 18.1 MHz



Designed by: Jim Kortge, K8IQY  
February 18, 2012  
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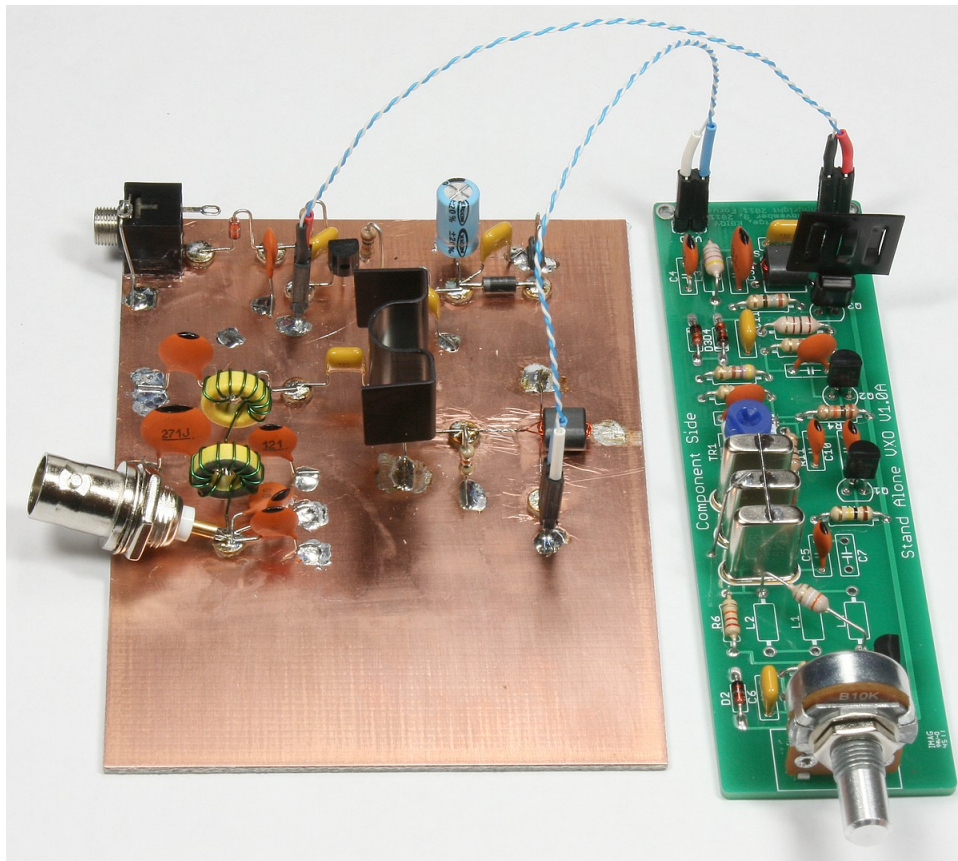
A photo of this amplifier built Manhattan-style is shown below.



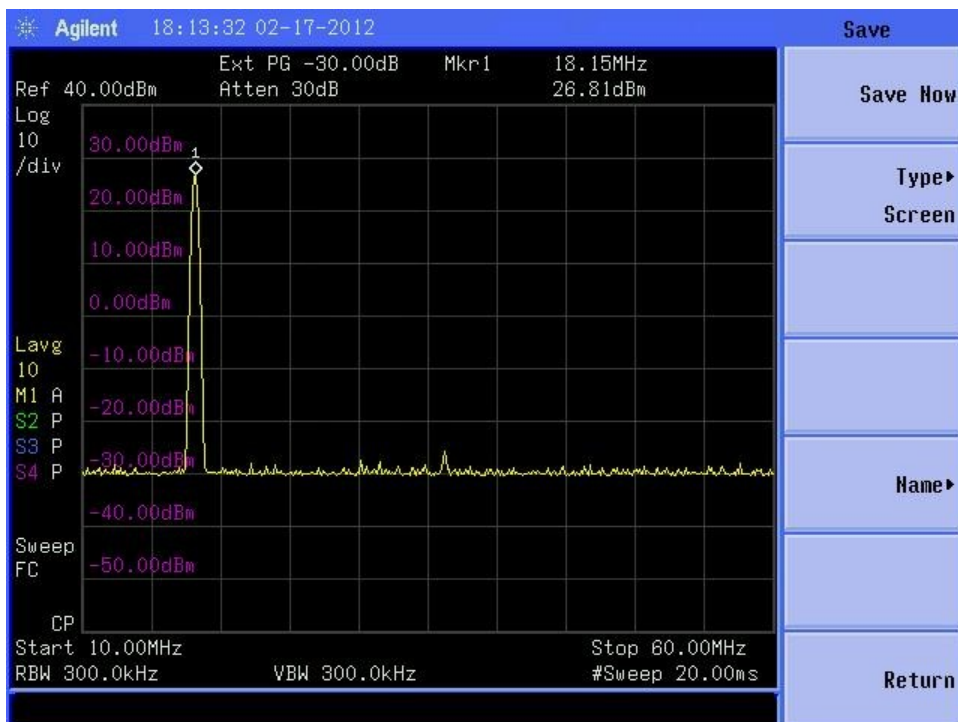
With the available drive from the SAVXO, it will run about  $\frac{3}{4}$  watt of very clean output RF into 50 Ohms. The intent is to run it at about  $\frac{1}{2}$  watt, to keep the dissipation on the 2N2219A at a level the heat sink can handle. That power level should be fine for CW contacts on 17 Meters.



Next is another photo is of the SAVXO and 17 Meter Amplifier wired together.



The final photo is a Spectrum Analyzer plot of the output into a 50 Ohm dummy load with the power level set to 1/2 watt.



The small blip in the center of this plot is the 3<sup>rd</sup> harmonic energy at about 55 dB below the carrier, which is the big peak on the left side.

This whole effort was directed at demonstrating the utility of the SAVXO as a building block for other designs. It is a versatile little board which, with a bit of imagination, can be used in a variety of ways. An undocumented project also has it being used as the frequency control element in a 10 Meter CW transmitter.