

A One Tube QRP Transmitter for 40 or 80 Meters

This neat little QRP rig first appeared in the now defunct magazine 73 Amateur Radio Today. We have not built this at Ocean State but we would like to present this article to you. It is not very complicated to build and the parts count is very low. Looking at the schematic this rig should work the first time around if wired correctly. This is a good opportunity for you to build a tube type rig. One of the nice features is that it operates on only 12vdc. Not only is this good for portability, but its also safe to work on and operate. Ocean State stocks all the parts to build this little rig. For those parts not listed on our website, please give us a call. Happy building and let us know how it works so we can pass the information on to others.

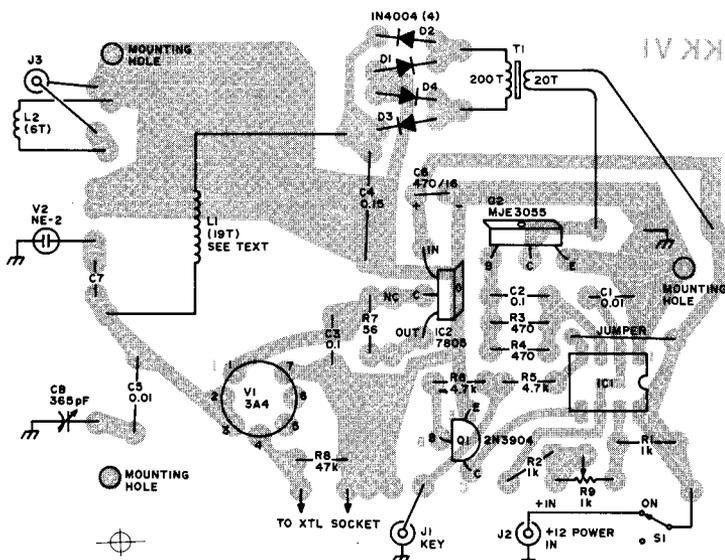


Figure 2. Parts layout diagram.

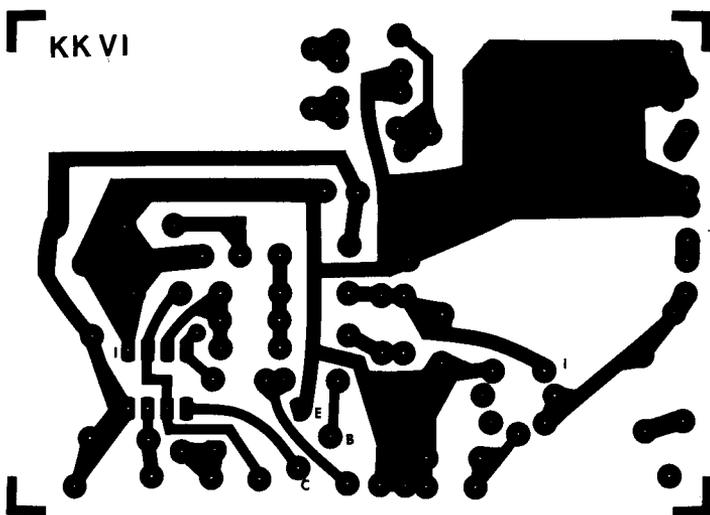


Figure 3. Foil diagram.

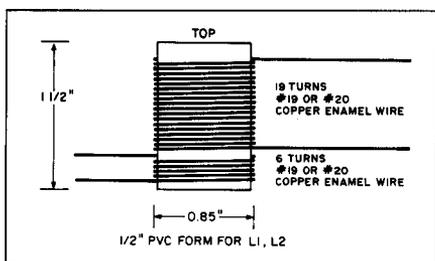


Figure 4. A piece of 1/2" PVC pipe serves as the coil form for L1 and L2.

PC foil pattern drawing in Figure 2, and stuff the parts on the board. The tube socket is made up of five Concord #09-9006 socket pins (cost of five is less than two bucks) soldered in place on the circuit board. But you can also use a regular tube socket and wire it to the circuit board with short leads.

Winding T1

The transformer's two windings are wound on the nylon bobbin supplied with the EA-77-375 "E" core. Wind 20 turns of #26 copper enamel wire in a solenoid fashion on the bobbin. On both windings, leave at least three inches of wire at each end to con-

nect to the circuit board. Place a layer of plastic tape around the winding to complete the primary. On top of the primary winding, wind 200 turns of #26 copper wire for the secondary and tape in place. Place the bobbin between the two cores and tape or glue in place.

Winding L1/L2

The tank circuit is wound on a 1-1/2" length of 1/2" PVC cold water pipe that actually measures 0.85" in diameter. Just about any hardware or plumbing shop will have the PVC pipe on hand.

Refer to Figure 4, and close wind 19 turns of #19 or #20 copper enamel wire on the form for L1. Space down the form about the width of two turns, and wind 6 turns of the same size wire for L2. An easy way to keep the windings in place and looking neat is to drill two wire size holes for each wire end, and fish through for a snug fit.

Making the Chassis

Since cabinets are so expensive and difficult to find, the Wave Ryder was constructed on a piece of 0.05-inch thick aluminum cut to 7" x 5-3/4". To duplicate our Wave Ryder, just follow the drawing in Figure 5.

Parts List

C1	0.01 μ F/100V	Mylar
C2,3	0.1 μ F/50V	disc ceramic
C4	0.15 μ F/250V	Mylar
C5	0.01 μ F/630V	Mylar
C6	470 μ F/16V	electrolytic
C7	10 pF/500V	disc ceramic
C8	365 pF variable	broadcast type
D1-4	1N4004 1 amp	silicon
IC1	555	timer
IC2	7805 5V	regulator
Q1	2N3904	transistor
Q2	MJE 3055 power	transistor
V1	3A4 miniature power amp	pentode tube
V2	NE-2 or similar	neon lamp
R1,2	1k 1/4W	resistor
R3,4	470 ohm	resistor
R5,6	4.7k	resistor
R7	56 ohm 1/2W	resistor
R8	47k 1/4W	resistor
R9	1k trim pot	single turn
J1-3	RCA jacks	phono
S1	Small switch	toggle on/off
T1	EA-77-375 core and bobbin	see text
L1,2	Chassis, circuit board, knob, grommet, crystal socket, hardware, wire, etc.	
Misc.		

J1, the crystal socket, S1, and the neon lamp, all mount to the front panel. The neon lamp is placed in the middle of a chassis mount rubber grommet with one lead going to the circuit board, and the other to circuit ground under the grommet's lip. The tuning capacitor and circuit board are mounted to the chassis' bottom, and the two remaining jacks are located on the back lip.

Making Waves

Connect power, a dummy load, a crystal, and close the key. Start with C8 at maximum capacitance and rotate clockwise until V2 lights. Tune a receiver to your crystal's frequency, and send a few dits. Slowly rotate C8 clockwise until a clean, chirp-free tone is heard. With R9 set at its maximum resistance, the B+ voltage will be at its minimum with an RF power output slightly under one watt and at its minimum resistance the B+ will be at its maximum with an output of over one watt. If Murphy didn't make an untimely visit to your shack, you should now be ready to make waves.

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