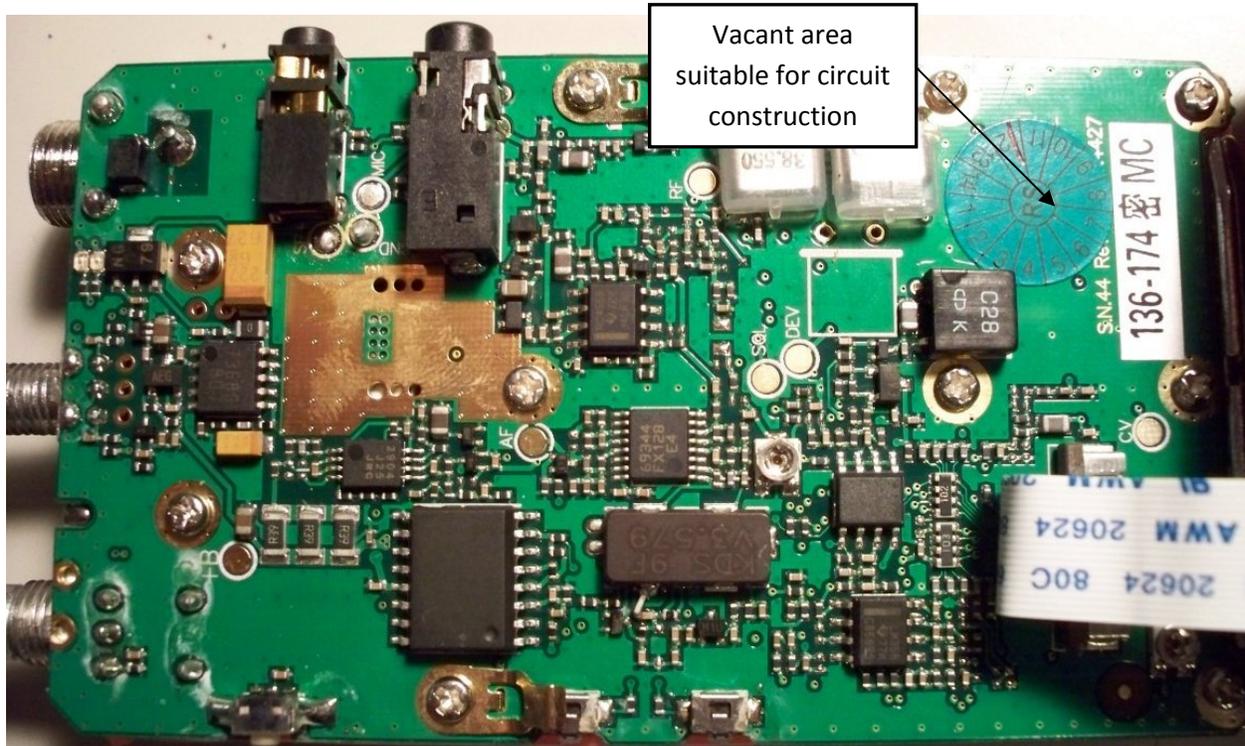


Audible S Meter for the Puxing 777

By KA6BFB

The Puxing 777 handheld transceiver lends itself to adaptation for an internal audible S meter. There is an unused rectangular area on the main PCB that can accommodate a few surface mount parts, as shown below.



The goals of this project were as follows:

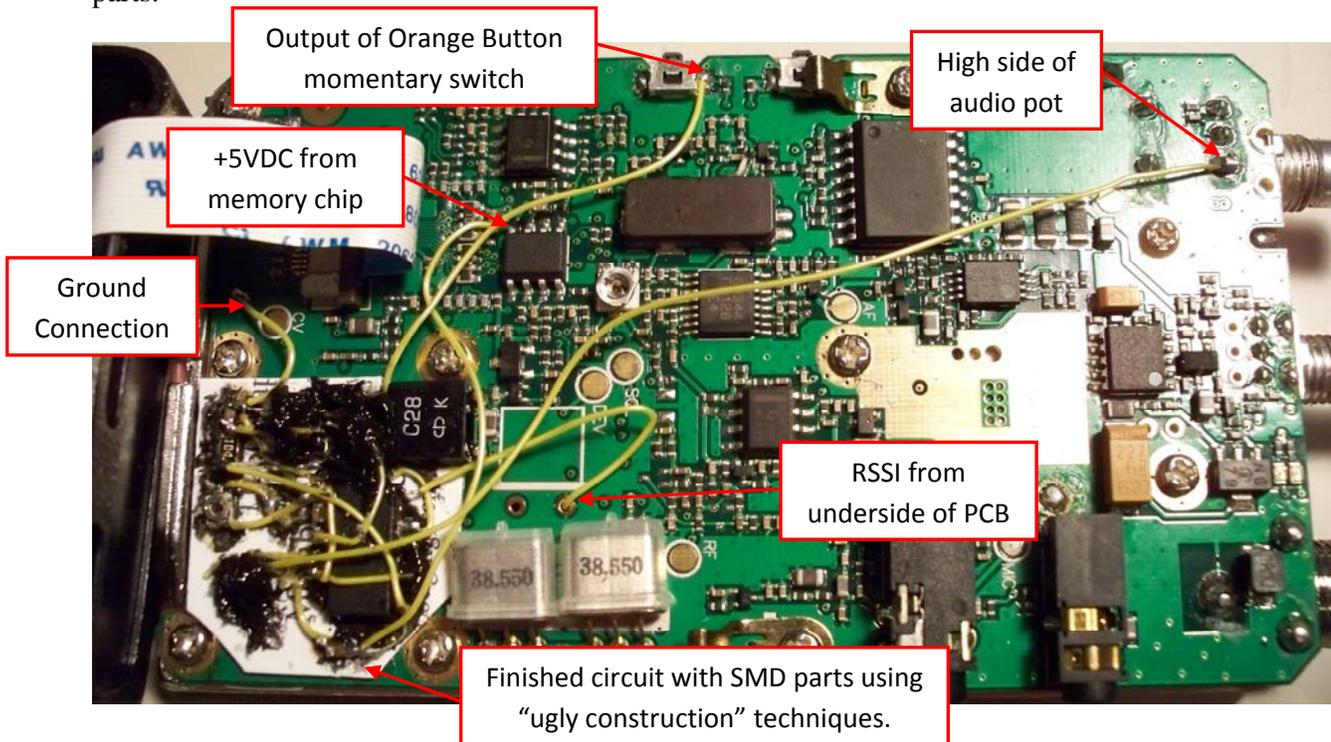
- 1) An audible S meter for Transmitter Hunting. The tone is to change pitch as the signal strength increases.
- 2) The entire circuit is to be contained within the radio, and powered by the radios battery.
- 3) The volume of the tone is to be adjustable through the radios volume control.
- 4) The radio can be used as a normal radio (no audible S meter) if desired.

All of these design goals were achieved with a simple circuit. The radio uses a TA31136 IF amplifier and detector IC that has a Received Signal Strength Indicator (RSSI) output on pin 12. The voltage on this pin on my radio varied from about 0.8 VDC with no signal to about 2.2 VDC with maximum

signal. The Voltage Controlled Oscillator (VCO) section of a 4046 PLL chip is used to convert this voltage swing to a changing pitch tone that is heard through the radio speaker. When the radio is first turned on, the audible S Meter tone is disabled so that the radio may be used normally. Pressing the orange “Call” button on the radio activates the audible S Meter

A full schematic for the circuit is shown below. When the radio is first turned on, the 1 uF capacitor is discharged. The time constant of the 100k resistor and the 1 uF capacitor is 100 mS. This is enough time to assure that the TC7W74 flip flop pin 7 will stay low long enough to put the output in a set (High) state at start-up. This high state inhibits the VCO output. When the orange button is momentarily pushed, the low going pulse resets the flip flop, enabling the VCO and the audible S Meter.

The combination of the total resistance on pin 11 of the 4046 to ground and the capacitor between pins 6 and 7 determines the frequency range. The voltage on pin 9 varies the pitch of the tone, which in turn corresponds to the signal strength. The input at pin 9 is a high impedance CMOS input and does not load the RSSI signal. The capacitor on pin 4 couples the audio to the high side of the radio volume control. Shown below is the finished circuit mounted on a small board with surface mount parts.



Shown below is the schematic. All parts are surface mount because of the obvious need for compact size. The 20k pot is adjusted for the desired frequency range of the pitch of the tone

