

## SOME THOUGHTS ON THE WORLD'S SMALLEST CODE- PRACTICE OSCILLATOR

By Sam Ulbing, N4UUAU, 5200 NW 43<sup>rd</sup>  
St, Ste 102-177, Gainesville, FL 32606;  
n4uau@arrl.net

◇ Following the publication of this popular project, I had a few thoughts on the World's Smallest Code-Practice Oscillator that might be of interest to the readers.<sup>1</sup> You can make the oscillator even more portable by replacing R1, the 1 M $\Omega$  resistor, with a 10 M $\Omega$  resistor. This done, you can key the oscillator simply by touching the two wires with your damp fingers. If you hold one of the key wires in one hand and tap the other wire as if you were using a straight key: You'll be sending code without the need for a bulky straight key. If you use a 3-V lithium battery and an ear-bud headphone, the entire package is so portable you can practice CW on the bus, waiting at the doctor's office, etc.

If the battery impedance is large relative to the circuit current demand, there will be a change in voltage to the circuit that pulses with the audio tone. This "noise" causes the tone frequency to change or even become squawky. You can reduce or eliminate the noise in any of three ways: Connect a decoupling capacitor (100  $\mu$ F or greater) across the batteries; reduce the audio load using a higher-impedance speaker, or add a resistor in line with the speaker. A 10- $\Omega$ , 1/2-W resistor will halve the current requirement when using an 8- $\Omega$  speaker.

You can add a volume control by placing a pot in line with the speaker. I have used a 5-k $\Omega$  pot to control the volume. At settings of less than 100  $\Omega$ , the current flowing through the pot might be more than the recommended value, but I have not discovered any problems to date, possibly because of the intermittent nature of CW.