How to use a Yaesu MH-48 microphone with the TYT TH-9800

Based on the work by Danny Efnor and posted to the TYT TH-9800 Yahoo Group at this link:

https://groups.yahoo.com/neo/groups/TYT_TH9800/conversations/topics/2974

Introduction:

Some people report audio quality issues with the microphone that TYT includes with the TH-9800 transceiver. There are several trains of thought about changing deviation settings in the software, changing out the microphone element, etc. This document explores taking advantage of the cost-effective, third-party clones of the Yaesu MH-48 microphone to replace the entire TYT microphone. Even if your microphone is working properly now, it may become damaged in the future. Available for under $20 USD from several suppliers, these MH-48 clones provide a cheap replacement for the TYT radio.

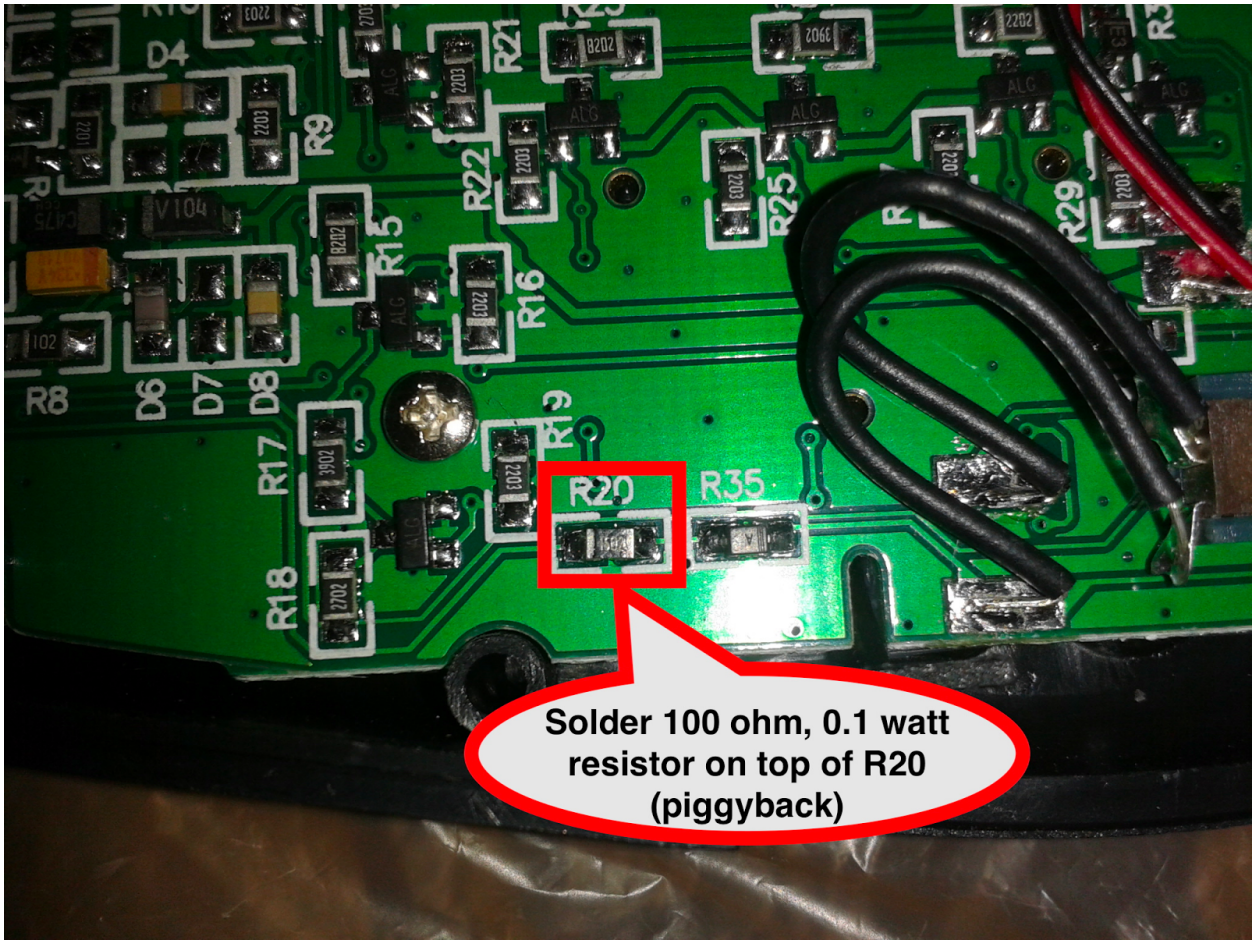
The Problem:

The MH-48 microphone is plug-compatible with the TYT TH-9800 radio. Every function of the MH-48 works when plugged into the TYT radio...except the push-to-talk (PTT) button. Danny Efnor looked at the Yaesu schematics, and discovered that they used a 15K ohm resistor in series with the PTT line. TYT uses a 100 ohm resistor. Danny theorized that the reason for this is because Yaesu uses 8V to power the microphone, whereas TYT uses 5V.

It also bears mentioning that several Amazon reviews of the various MH-48 clones mention that the microphone lighting is extremely bright when used on the Yaesu radio. When used with the lower voltage of the TYT radio, this is not really a concern.

The Fix:

Danny discovered that soldering a 100 ohm, 0.1 watt resistor on top of the existing 15K okm resistor (piggyback) solved the problem and allowed the PTT button to work. Both of the clone microphones that have been opened up so far have the same silk screening and component locations. The resistor that needs to be piggybacked is R20, per this photo by Danny and annotated by me:



Working with tiny surface-mount resistors with a conventional soldering iron is not simple, but it can be done. I personally recommend getting a strip of these resistors, because I lost a few trying to get one into place for soldering. Note that Danny used a standard through-hole resistor on his microphone mod, which was much easier to solder and achieves the same result.

Results:

Danny reported improved audio quality and full functionality with his MH-48 microphone after this modification. I have not performed an audio test with mine yet, but it does key up the radio when I push the PTT button and every button that I've tried so far seems to be working properly.

Parts used by the author:

Zeadio clone of Yaesu MH-48a6j microphone ($14.99 as of October, 2015):
http://www.amazon.com/gp/product/B00LKK9JEC

100 ohm, 0.1 watt resistors (quantity 500):
http://www.amazon.com/gp/product/B00K307POQ

(Danny used a standard through-hole resistor with leads on his modification, which is another option and certainly easier to solder.)

There are several other microphone options available. Check the Amazon reviews, as some come with longer cords and others are reported to have heavier coiled cords that don't stretch as easily as the factory Yaesu cable. I chose the above solely based on being available for next-day Amazon shipping, not based on any technical reasons.

Revisions:

October 13, 2015 - original version
October 17, 2015 - added Danny's note about his use of a through-hole resistor and not a surface-mount one