

At the Repair Bench – NanoVNA – August 2022

Fairly recently, another member – **Rich Subers W2RHS** – and I entered into a complex trade agreement wherein he would give me an unbuilt MFJ antenna tuner kit for me to build, and in exchange, I would replace his failed NanoVNA with a new and slightly larger one. Rich threw in the failed NanoVNA, so I figured I would give it a try to see if I could repair it.

This particular NanoVNA is encased in a multi-piece 3-D printed plastic enclosure, which does a good job of protecting the unit. It would also serve to keep things in place post-repair. Rich had told me that the unit worked, even though there was no display on the screen, as he could connect it to his phone or PC and use the functions of the NanoVNA with no trouble via the software. I suspected that the problem was in the display backlight wiring.



We were fairly sure that the problem was a bad solder joint underneath the display, which was attached to the main PCB with some strong adhesive. The first question was whether or not I could successfully separate the display and the main board. I tried using some monofilament line to cut the adhesive, but the line kept breaking. Ultimately, I tried using some AWG24 solid copper wire, which did the trick nicely.

Once I had the unit open, I powered it up and started putting localized pressure on the end of the Kapton cable that connects the display to the main board. There are about twenty individual connections carried in that cable, so I had to determine which ones were faulty. It soon became evident that there were multiple joints open, as pressing on various connections would illuminate different LED's in the four-LED backlight system.

These wire connections are on a pitch or spacing of about 0.050", so I chose NOT to attack this job with a soldering iron. Instead, I fired up my hot air reflow gun and heated the area with the hot air while placing light pressure across the entire Kapton cable end. This approach was quite successful, restoring the unit backlight to full operation. The best part was that no undue damage was done to the Kapton cable, and I did not have to worry about solder bridges.

I flipped the display back in place, where the original adhesive bonded back together and held the display tightly. I then reassembled the plastic enclosure and the job was complete. Just for fun, I tried a calibration and then swept some coax, some lamp cord, and a couple of antennas. All worked as it should.

Because Rich had a new unit and did not want this one back, I casually offered it to the first taker on a Tuesday Noonday Net, and it was gone inside of five minutes. Now, another member, **Anthony Cerami KD2RPI**, is the proud owner of a resurrected NanoVNA.