

# Adding wifi to a NanoVNA Unit

## Introduction

After having purchased the unit and got it up and running realised there were a few issues with using it.

Size of screen.....at my age!

This was solved by installing Nanovna on my PC which allows a full screen version of the program

<https://github.com/nanovna/nanovna-saver-v2-support>

Difficulties with the coax leads, the arrangement not being “mechanical sound”.

The obvious way forward was to add a wifi comms system.

## Searching the Web

Found a usb – wifi converter system using an Rpi4 and bespoke software, though it indicated you could also probably use an Rpi zero w

[https://www.youtube.com/watch?v=gBCNLs\\_5pwM](https://www.youtube.com/watch?v=gBCNLs_5pwM)

This worked, but.....required a reasonable amount of programming expertise to set up properly, also not suitable for my application due to its power requirements.

Not tried with Rpi zero w since none were available

Further searches found an article showing how to use an Rpi zero w and bespoke software which is **FREE** for a single user applications!

<https://www.youtube.com/watch?v=I5zA1IU5Tw0>

**The transfer software for Linux, Windows and Mac @**

<https://www.virtualhere.com/>

## Getting Started

Initially had to set this up using an Rpi4 as the Rpi zero w was unavailable at the time.

This worked well, but.....the setup was obviously unsuitable for a sensible portable arrangement due to its size and power requirements.

I was then loaned an Rpi zero w by Graham.....as long as I didn't break it!!

A few interesting issues were found with the RPi zero w.....The main one being the wifi switches off when not being used to save power. There is then a lag when coming back on....not ideal for a data transfer application!

Digging down into things I found that others were having the same problem.

This needs the wifi sleep mode to be turned off, then to keep it off.

Even this proved more difficult than I expected....you could set it off but on the next reboot it was back on again!

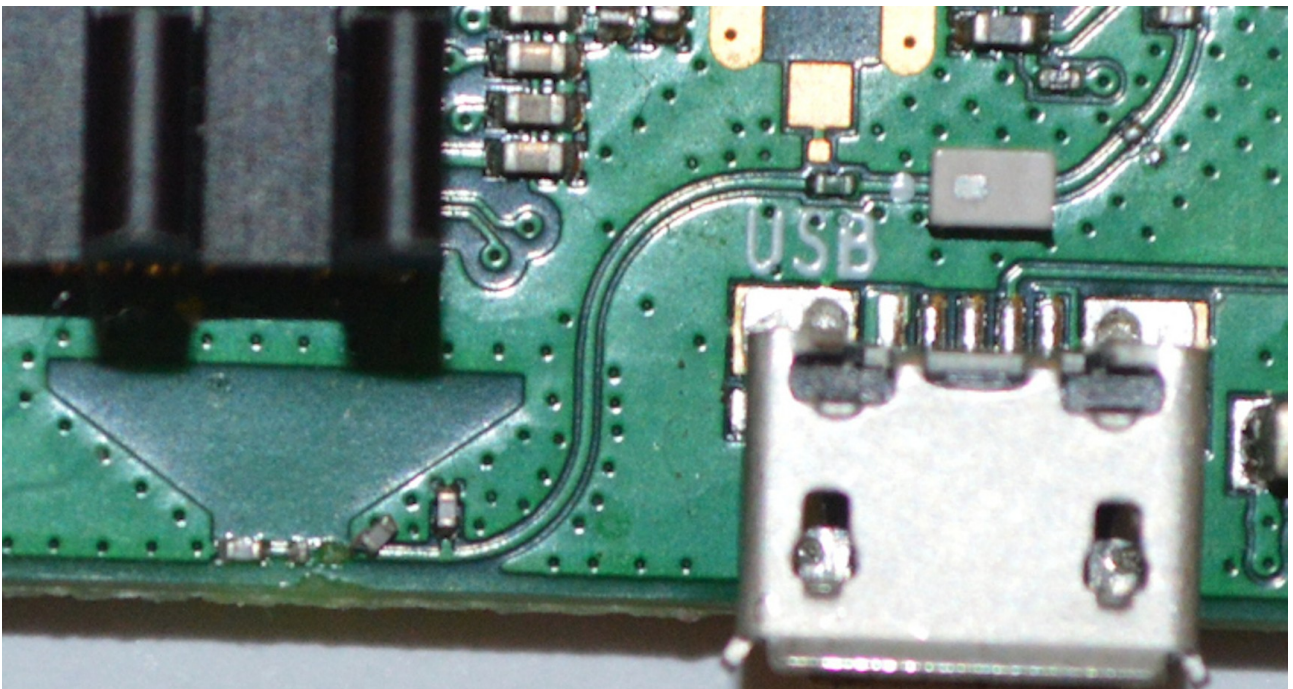
Eventually got this working "on the bench".

Now to try it for real.....

The maximum range was 1 to 2m, not what I expected!!!!

Obviously the wifi link was working but poor range.

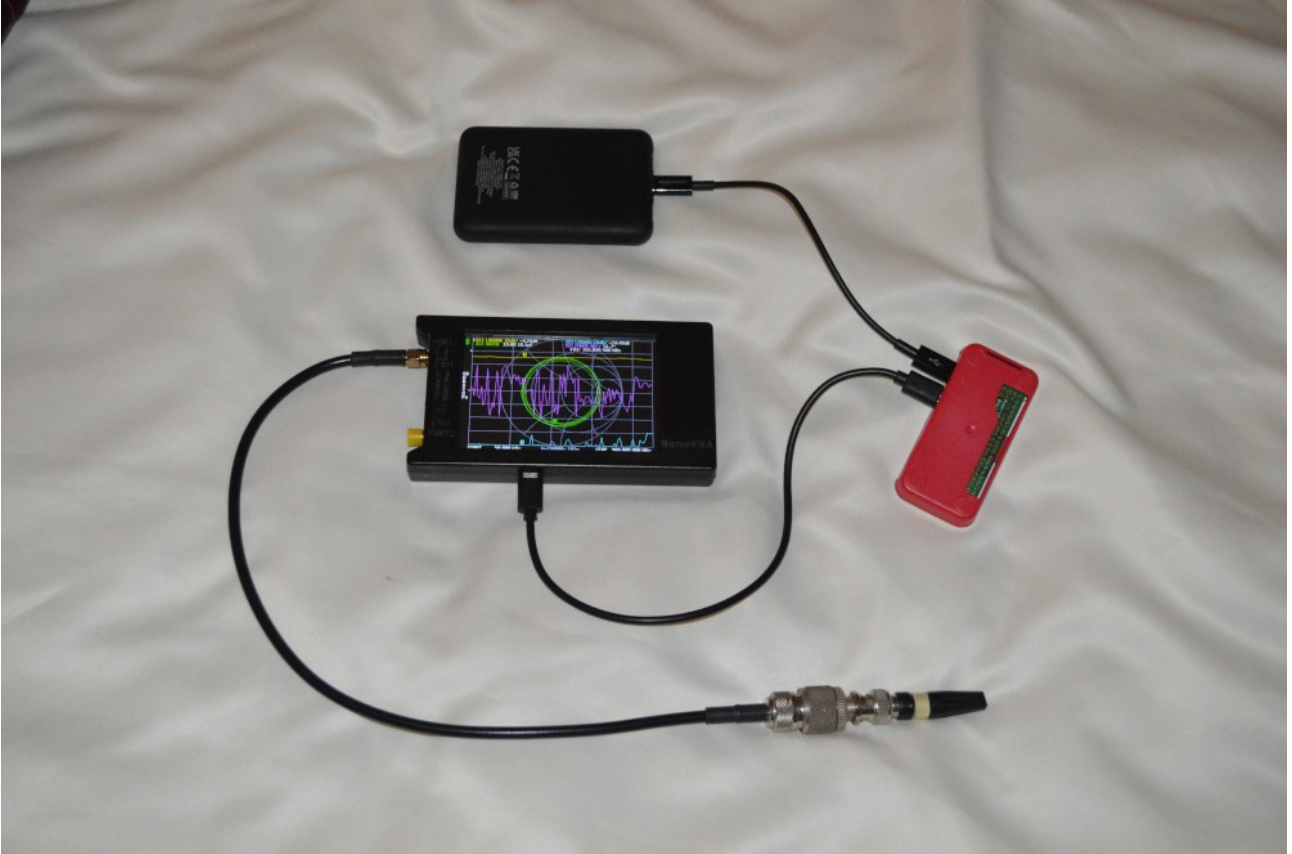
This was traced to a fault on the pcb aerial layout.



Luckily Andy was available to overcome my sight limitations (old age) and steadiness of hand (also old age!)...of having to solder a 0402 capacitor (1mmx0.5mm) into its correct position!!!

The range was now 8 to 10 m.

## The final system.



Since there was no easy improvement to the Rpi rf system, an increase in range was obtained by adding a usb dual ae to my laptop.

**This increased the range to 40 m +.**

## Finally

The last thing was to move the system away from my local network of 192.168.1.0 to 10.42.0.0

This made the system fully portable and independent of any local networks.

<https://www.tomshardware.com/how-to/raspberry-pi-access-point>

The Rpi was put at 10.42.0.1 and the laptop at 10.42.0.2. Hopefully minimising any problems from any neighbouring networks.....

The final thing now to be done is to box it 'nicely' and make the coax connections much more robust.

It would make sense to mount the NanoVNA on a box, due to the connections and controls. Use SMA- UHF leads also mounted on the box to minimise the stress on the SMA connectors.

This could/should be done even if you don't want/need the wifi link.

All in all a good project for me, stimulating the "little grey cells". It has also set me off on investigating the RPi pico w to see if this could be used in a similar way (smaller and much cheaper).

This would require me to get into C/C++ and/or Python.....any offers.....

Also.....Would it be suitable to.....**MAKE THIS A CLUB PROJECT?**