

Meshtastic!

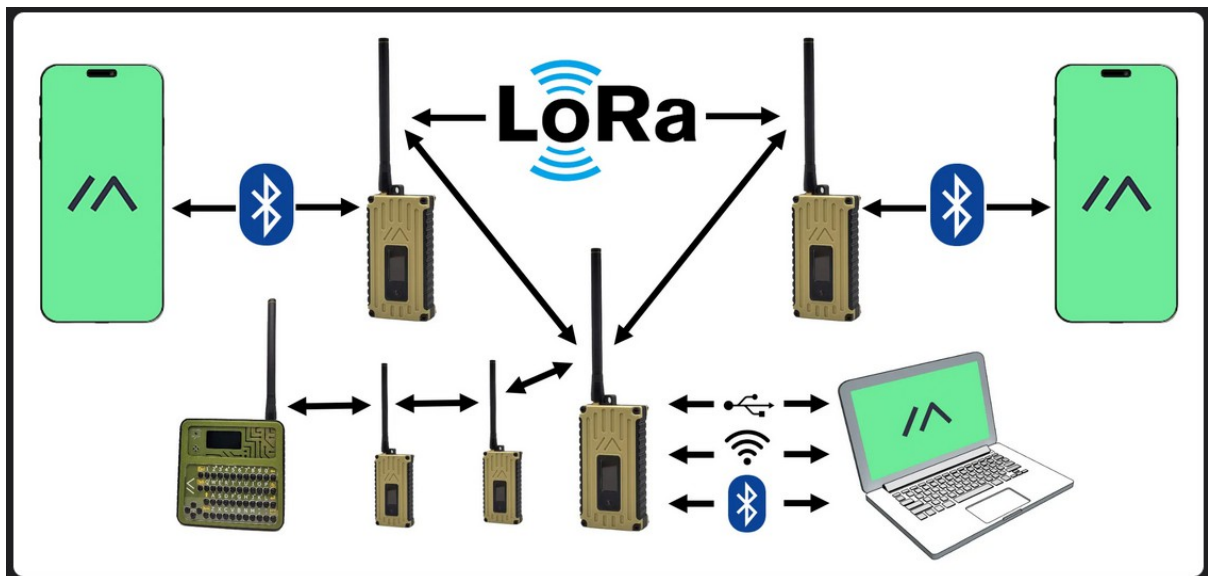
After seeing these devices on various technical YouTube channels, I found that CBRS club member Richard (VK4AAY) had been experimenting with them for a while.

Richard gave a technical demonstration of his various devices at our November club meeting which proved very interesting. For around \$35 I decided to purchase a Heltec V3 unit and delve into this world to see how it would compliment further understanding of radio theory.

What is Meshtastic?

From the Meshtastic website > <https://meshtastic.org/docs/introduction/>

*Meshtastic® is a project that enables you to use inexpensive LoRa radios as a **Long Range** off-grid communication platform in areas without existing or reliable communications infrastructure. This project is 100% community driven and open source!*



How it works

Meshtastic utilizes LoRa, a long-range radio protocol, which is widely accessible in most regions without the need for additional licenses or certifications, unlike HAM radio operations.

These radios are designed to rebroadcast messages they receive, forming a mesh network. This setup ensures that every group member, including those at the furthest distance, can receive messages.

Additionally, Meshtastic radios can be paired with a single phone, allowing friends and family to send messages directly to your specific radio. It's important to note that each device is capable of supporting a connection from only one user at a time.

Is Meshtastic Amateur Radio?

Short answer, No!

However, like 27Mhz C.B. radio of the 1970's this can be a cheap way for people to discover radio communications. No licence is required to operate these devices and there are many features to explore with setup and experimentation all at a relatively low cost.

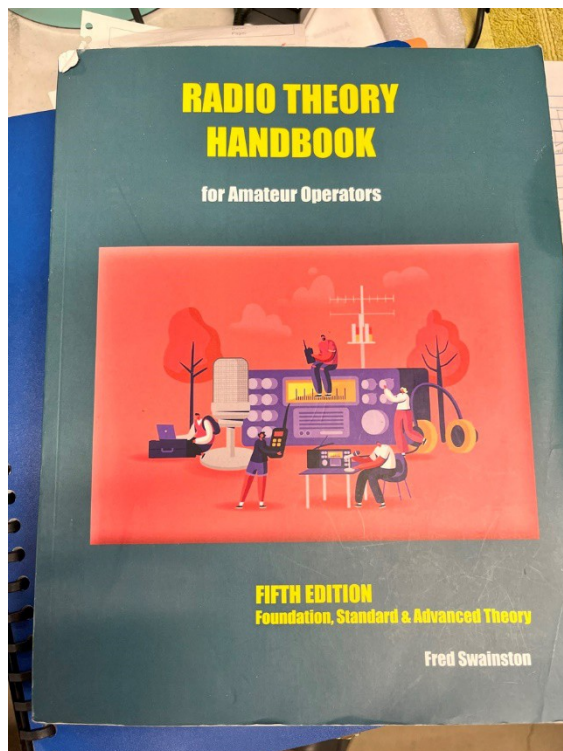
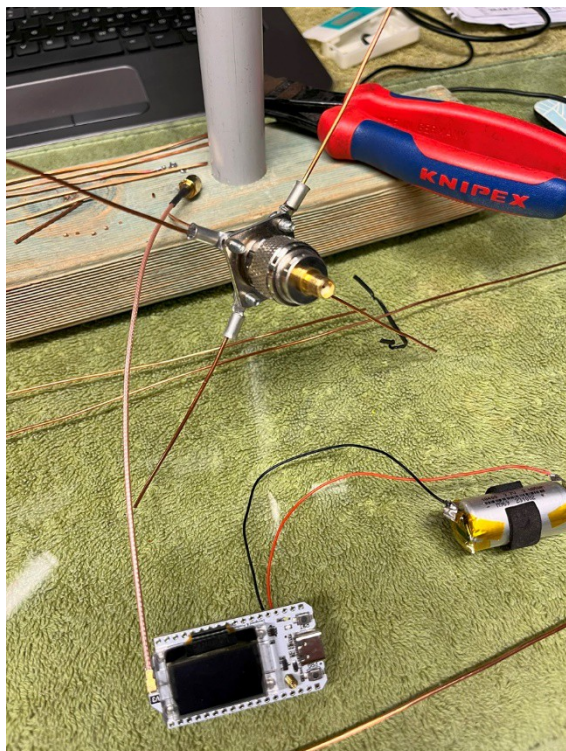
What's like?

Basically, it's like texting random people via an App on your phone or PC (with a small amount of setup required) and a few other bits of technical information thrown in. So far, I've communicated with a several people around Brisbane, confirming contacts/settings/technical information and general chit-chat, with some being Licenced Amateur's.

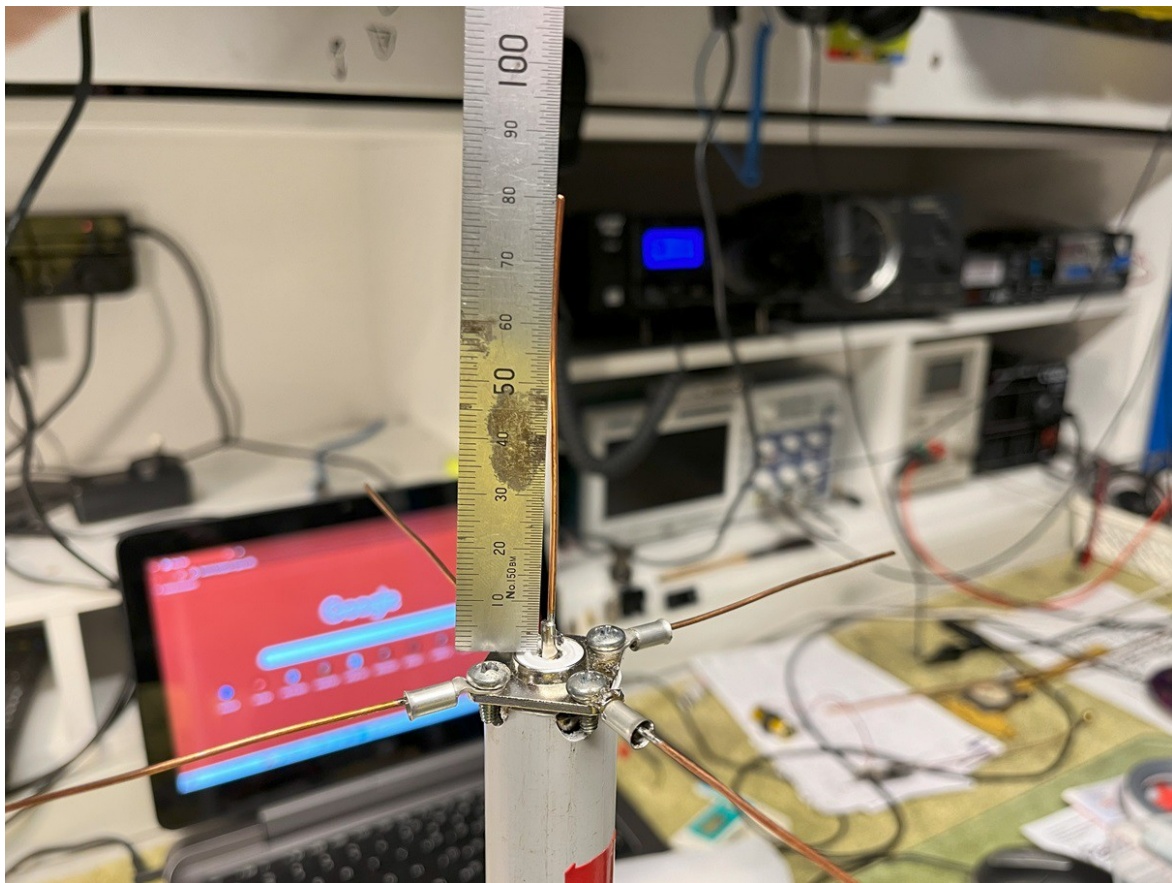
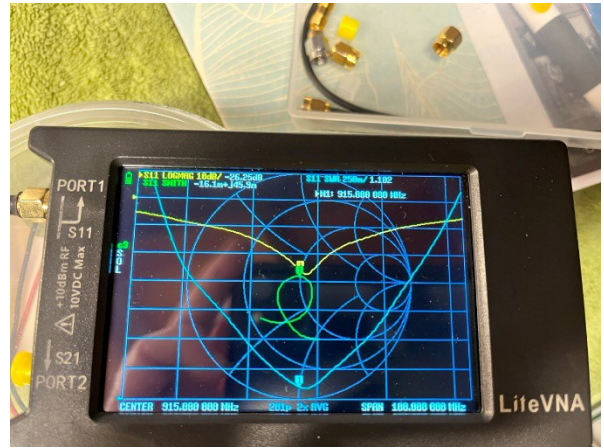
What can we learn using Meshtastic?

There are a few different bands that you can use Mestastic devices in Australia. The most popular being the 915 Mhz (approx. 33cm Band).

My first modification was to add an external Li-ion battery then increase range by making a better antenna. Coming standard with my radio was a rather small Helicoil antenna, so I made a $\lambda/4$ vertical with 4 radials (approx. 81mm) of 1mm \emptyset CU wire, soldered to a SO239square base which immediately gave better performance.



This design was straight out of Fred Swainston's '*Radio Theory Handbook*', with some tweaking via my *LiteVNA* the SWR came down to a respectable 1:1.1 @ 45.9 Ω , taking roughly 20min to complete.



Time permitting, I intend to experiment with a range of antennas using various material laying around the shack to put into practise and increase my understanding of various construction techniques.

Other features of the Heltec V3 are GPIO pins, these can be programmed to perform various tasks interfacing with other devices. This gives a good scope for experimentation.

Summery

As with device such as the Raspberry PI and Arduino, the various LoRa boards can be used to supplement your knowledge at a relatively low cost. Will we see an uptake of the 144Mhz units, only time will tell.

I think by having a presence on the 33cm band and with encouragement, the technology could provide a pathway to introduce people to the world of Amateur Radio. As with a lot of interests, there is a FaceBook group for Meshtastic >
<https://www.facebook.com/groups/1169993994163108>

Peter - VK4APV