MESHTASTIC PRIMER

- MESHTASTIC from Mesh and Fantastic

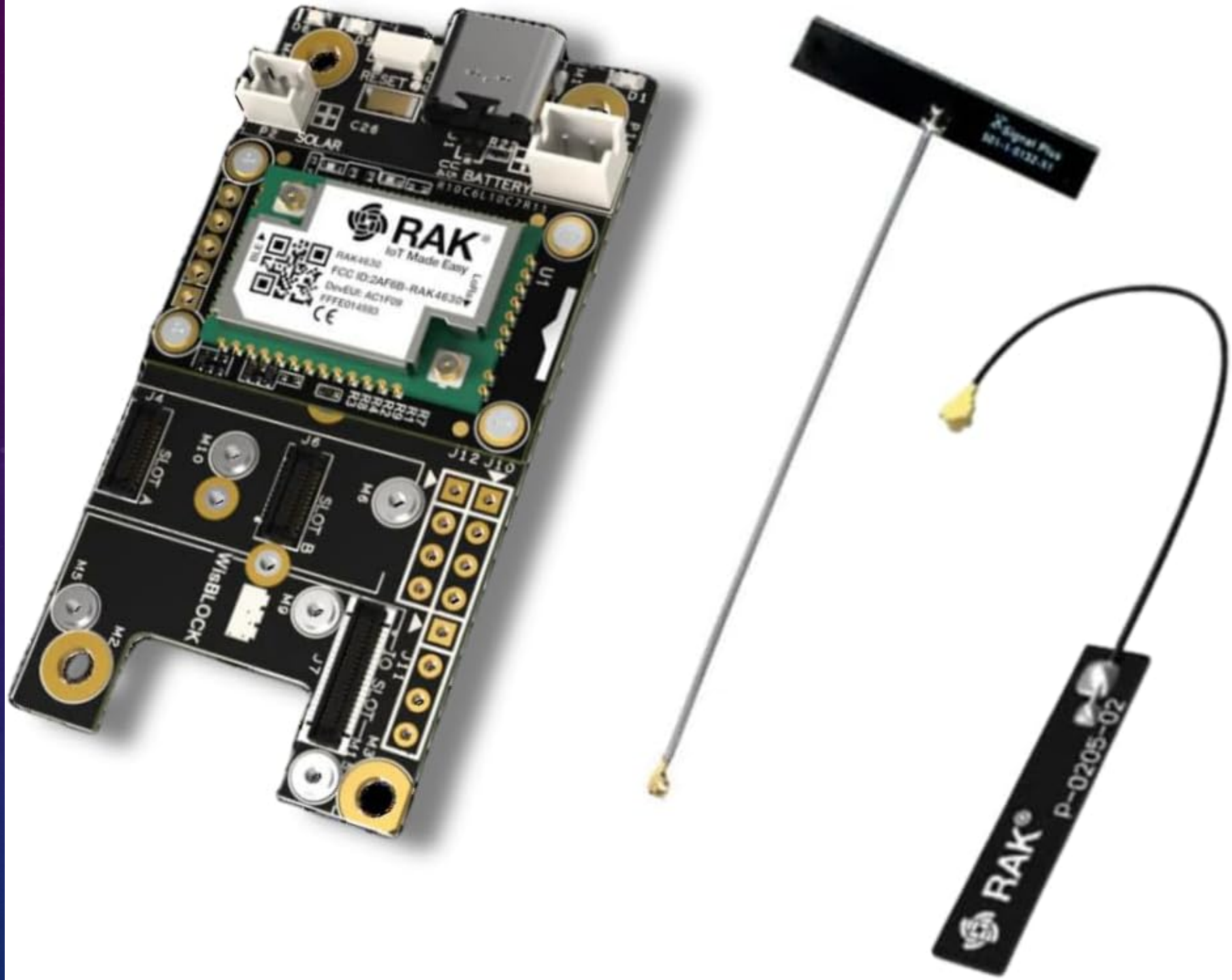
- LoRa- Long range protocol mostly on 33cm band (ISM) so license not required
  - Low power
  - International (frequencies vary by location. In US ~915mhz
  - Can have encryption but is not super secure AES 256 but keys are vulnerable
  - Low speed data and text type data only including sensors reporting location and data such as weather
  - Can report locations
- Open Source, decentralized-does not need but can use the Internet

- MESH is formed by devices connected by RF
- Devices pair to phones or computers via Bluetooth
- App used to configure the device
- App will send message to the device which then transmits the message
  - Can send a message to a specific device
  - Can send to a group
  - A receiving device determines if the message is for it and if not will send on and decrement the number of times it will be sent
    - “Hops”

What's it for?

- Fun!
  - Making contacts –airborne, line of sight on the ground
  - Data collection-remote sensors for weather or other data
  - Emergency communications
    - low tech local network for sharing information
    - Need to have established before needed
    - Would having one high node be useful

- Several companies make devices for use in the spectrum
- International and increasing popularity in the Amateur community over the last few years
  - Does not work unless there is enough people with the right equipment to get the signals over wide enough are to form the Mesh
- Not APRS which is point to point or relies on the Internet


RAK
IoT Made Easy
RAK4630
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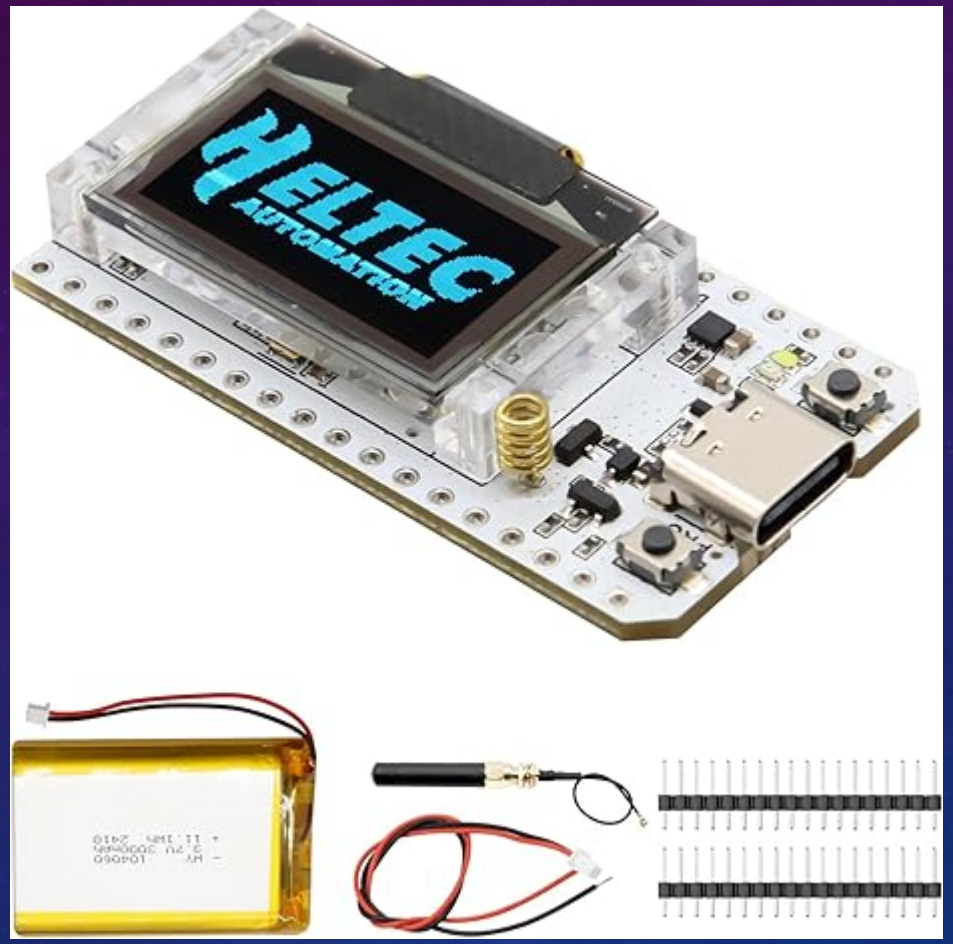
SOLAR
BATTERY
RESET
SLOT A
SLOT B
I/O SLOT
WisBLOCK
P-0205-02


HELTEC
AUTOMATION


meshtastic.org
LILYGO


Meshtastic 3440
27.3 km
Signal: 80%
407 hours ago


915M
915M
MHz

- REAL WORLD
  - Not many nodes in the area
  - Working on getting from the north side of NL to the south edge
  - Upgrading antennas
  - Probably will need intervening nodes
    - Low power use so good set up for solar
    - Scavenging a solar flood light
- Get random nodes when connecting but not sure where they are from
- Adjusted position repointing frequency to faster time(decreased battery life)

Software

- Meshtastic
- Meshcore
- Reticulum
- Rnode

Issues

- ESP32 Bluetooth in some devices have trojan instructions

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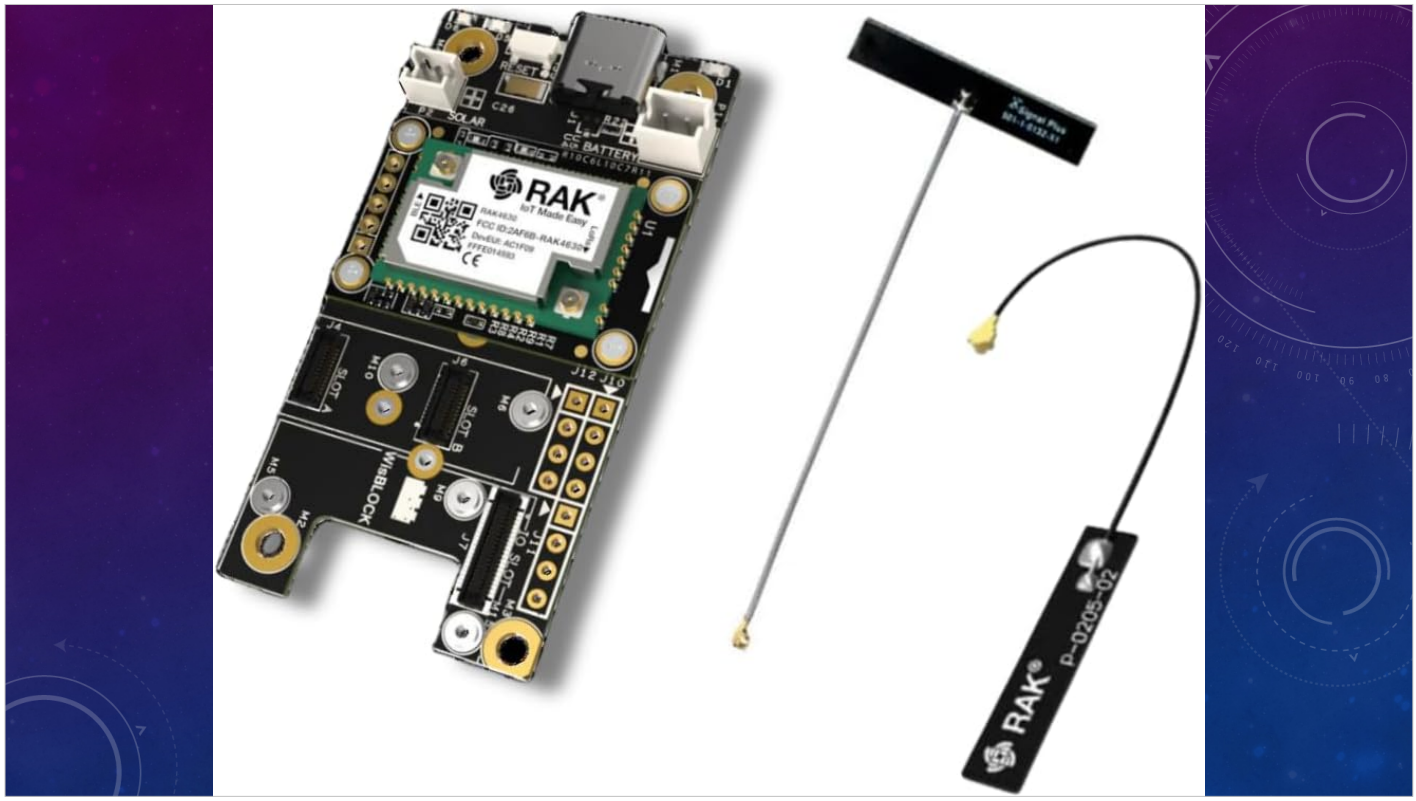
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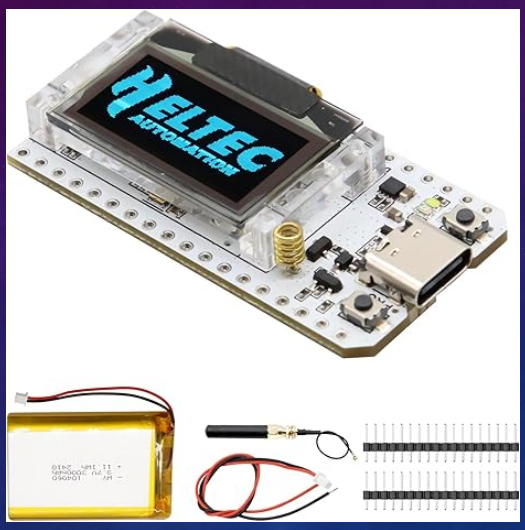
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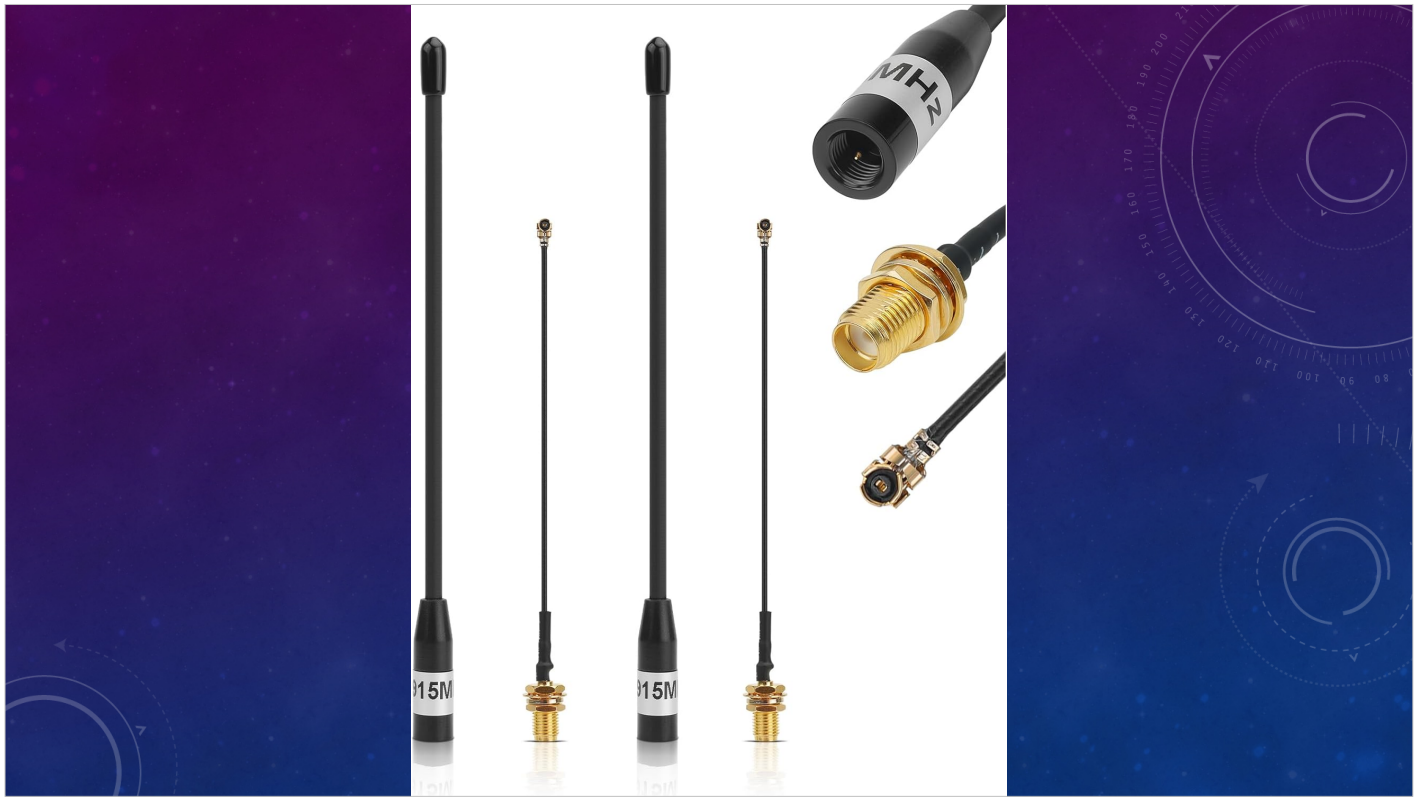
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