Implementing an APRS Digipeater on a Raspberry Pi

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Introductions

- Clay Jackson – N7QNM
  - Licensed 1991
  - Amateur Extra
  - Computer/Data Background
  - Ham radio interests
    - Digital
    - EmComm
    - Search and Rescue

Agenda

- What the heck is a Raspberry Pi?
- Components of a Digipeater
- TNC-PI
- APRX
- Connecting the dots
- Gotchas
- Q & A

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What the heck is a Raspberry Pi?

- “Good Eats”
- A small, low power single board computer
  - Quad Core ARM CPU
  - 1 Gb RAM
  - Powered by 5V USB supply
  - Built-in HDMI Video
  - General Purpose I/O
  - Linux

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Pi Now Does Windows!

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Raspberry Pi 2 Model B V1.1
© Raspberry Pi 2014
BROADCOM
HDMI

Components of a Digipeater

- TNC
  - May contain a limited Digipeater
- Computer
  - Many SingleBoard options
- Radio

TNC-PI

- Single Board Dedicated TNC
  - PIC Based
  - Native X25
  - KISS Mode
- Why?
  - Past experience with Coastal
  - Modular
  - Low power

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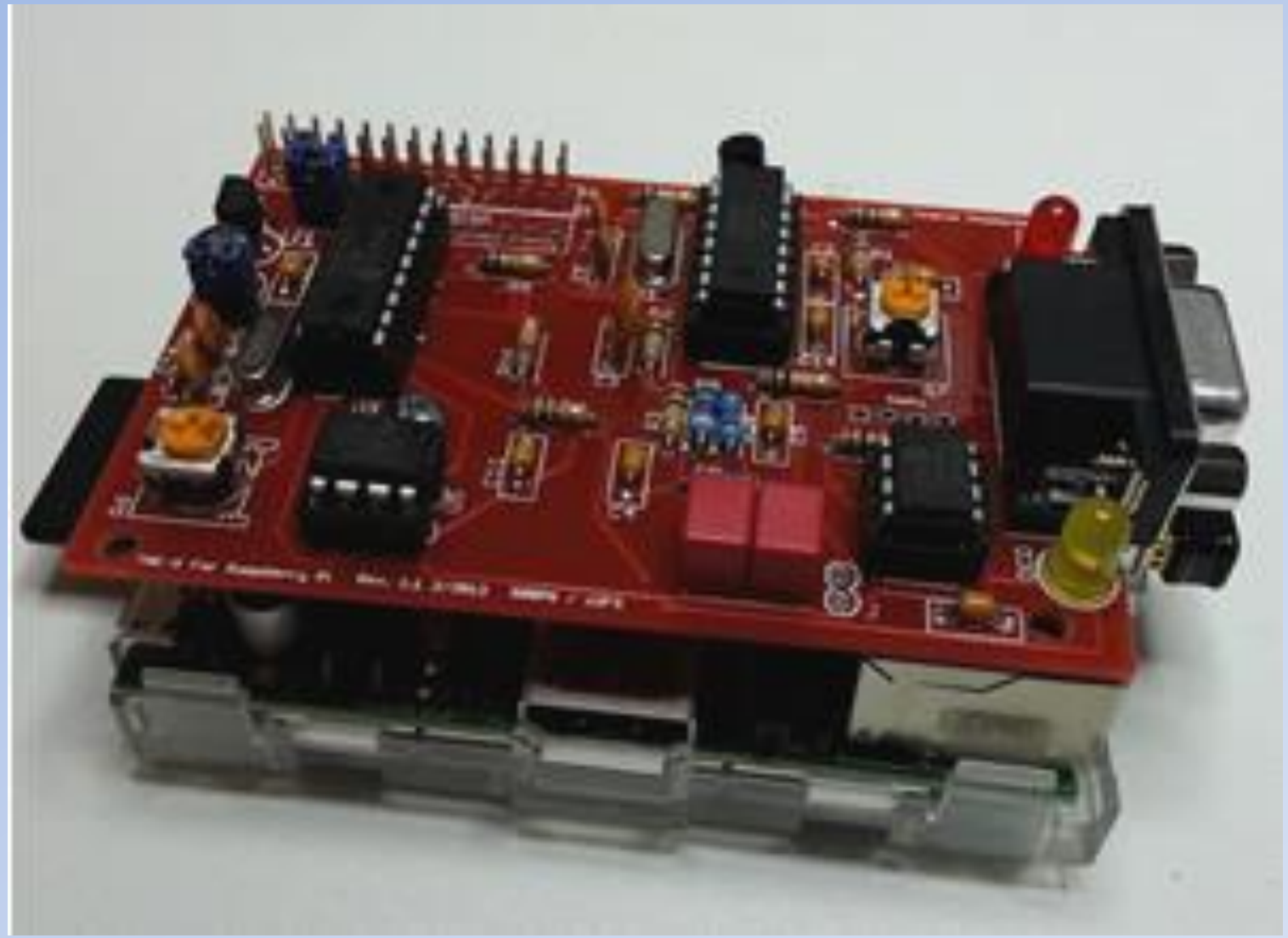
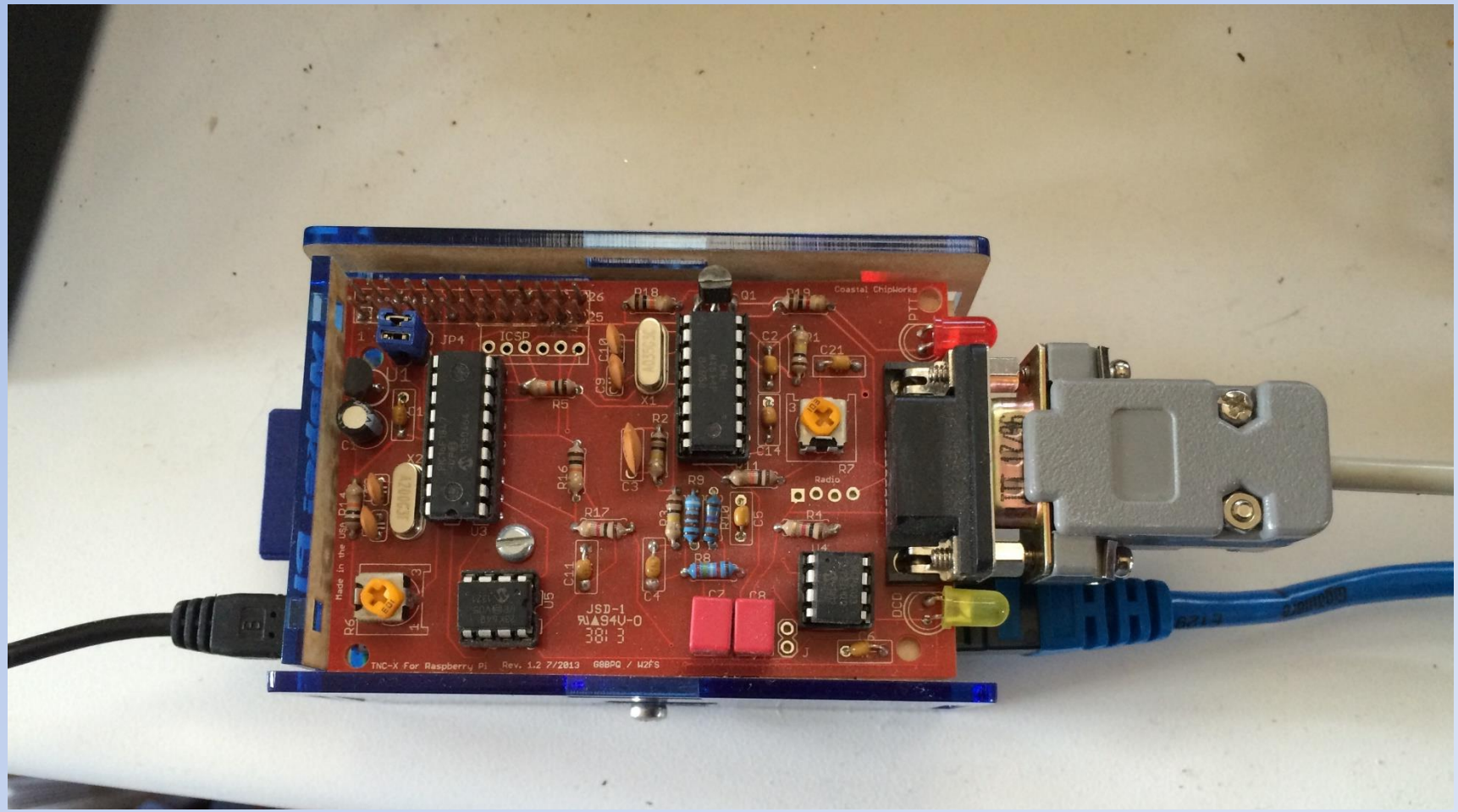


3.5” Tracker - Just add radio and GPS Under $300

PROSSR Digi


Coastal ChipWorks
TNC-X for Raspberry Pi Rev. 1.2 7/2013 G8BPQ / W2FS

APRX

- Open Source
- Originally by Matt Aarnio, OH2MQK
- Now maintained by Kenneth Finnegan
- APRS Digipeater
- APRS iGate (Internet Gateway)
- APRS-to-DPRS Gateway

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Connecting the dots

- Build the kit ($40)
  - No surface mount
  - About 4 hours
- Or pay Coastal $65 for the Assembled and Tested Version
- Connect a radio
  - Standard 9 pin D-Sub
  - Cables from Internet

Connecting the dots

- Configure TNC
  - Audio Levels
  - TX Delay

Connecting the dots

- Configure the Pi
  - HDMI Monitor (TV OK)
  - Mouse and Keyboard (USB)
  - Network (see Gotchas)
  - Get Raspbian (see Resources)
  - Use I2C (See Gotchas)
  - Follow the Friendly Manual
  - Get APRX (see Resources)

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Connecting the dots

- Configure APRX
  - Decide what you want to do
  - PROSSR – Digi/iGate
  - Get APRS-IS Passcode
  - /etc/aprx.conf

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PROSSR

```
mycall PROSSR
passcode xxxxx
 <interface>
        serial-device   /dev/ttyAMA0    19200   8n1     KISS
        callsign        $mycall
        tx-ok           true
</interface>
```

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<beacon>

beaconmode BOTH

cycle-size 10M

beacon symbol "I#" $myloc comment "N7QNM Prosser iGate/Digi"

</beacon>

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```
<digipeater>
    transmitter     $mycall
    <source>
        source          $mycall
        relay-type      directonly
        viscous-delay   5
    </source>
</digipeater>
```

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Gotchas

- Had to use I2C mode in TNC
  - See Manual
  - Download I2C
- Networking
  - Be prepared to hardwire
  - Network dongles have VERY small antennas

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Resources

- www.rasberrypi.org
- http://tnc-x.com/TNCPi.pdf
- http://k4gbb.us/docs/tncpi.html
- http://thelifeofkenneth.com/aprx/
- http://thelifeofkenneth.com/aprx/aprx-manual.pdf
- http://www.mstewart.net/super8/aprs/RASP/index.htm

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Q & A

Thx

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