

Open Amateur Transcievers

A quick review

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Me

VK1ATP

- Paul Warren <pwarren@pwarren.id.au>
- Sysadmin by trade
- Recent Amateur Radio hobbyist
- Encouraged by Kim and Joshua last year in Perth to go for a license
- Licensed as VK1PAW in April, VK1ATP in August!

Canberra - Australia

Amateur Radio Transcievers

- Many many definitions
- A collection of electronic components that can:
 - Receive and Transmit radio signals
 - Covers one or more Amateur bands
 - One of CW, AM, SSB

Open

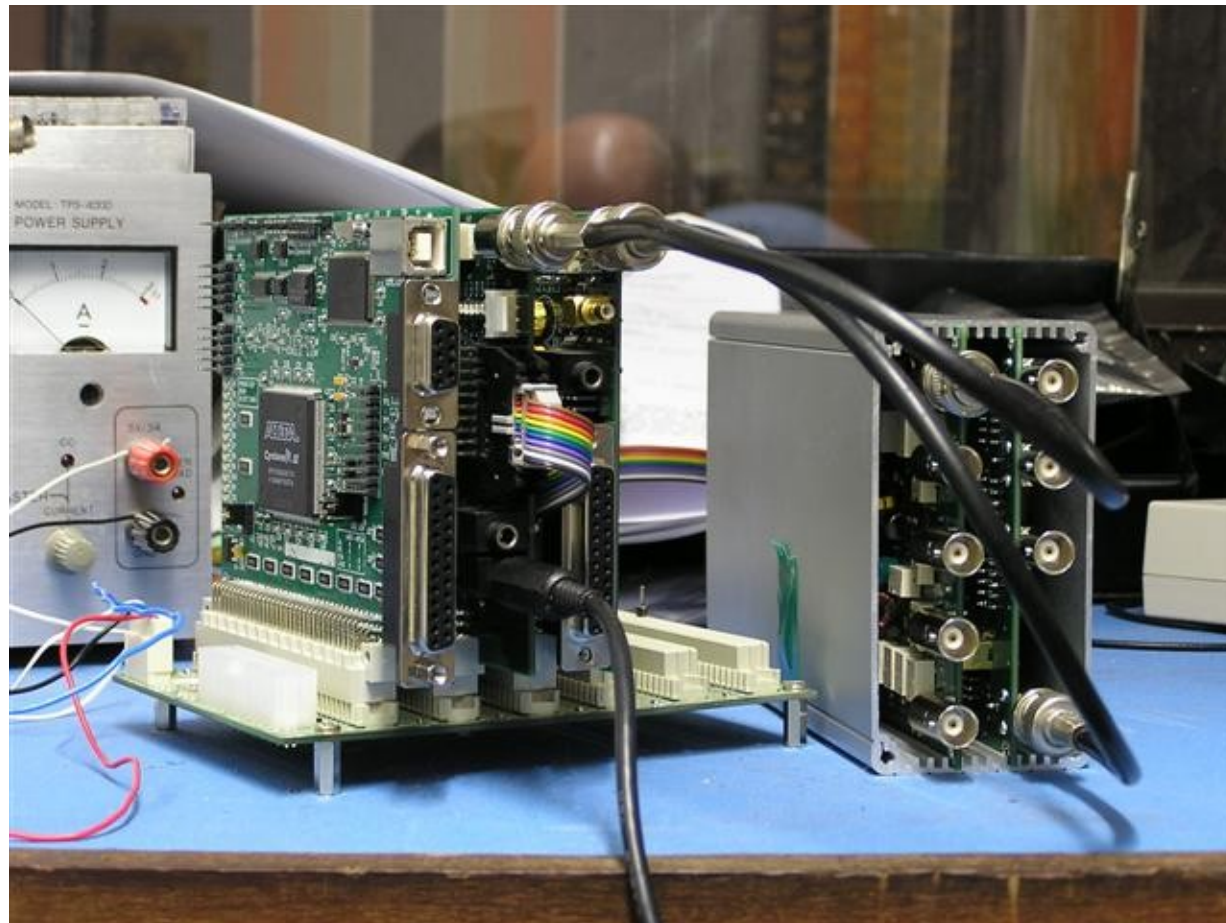
- This can get really tricky
- TAPR OHL hardware?
- GPL or compatible software?
- For what bits? Schematic, Layouts, software

I choose to go with radios that have some attempt at being open.

Stuff you can buy

- Now!

OpenHPSDR



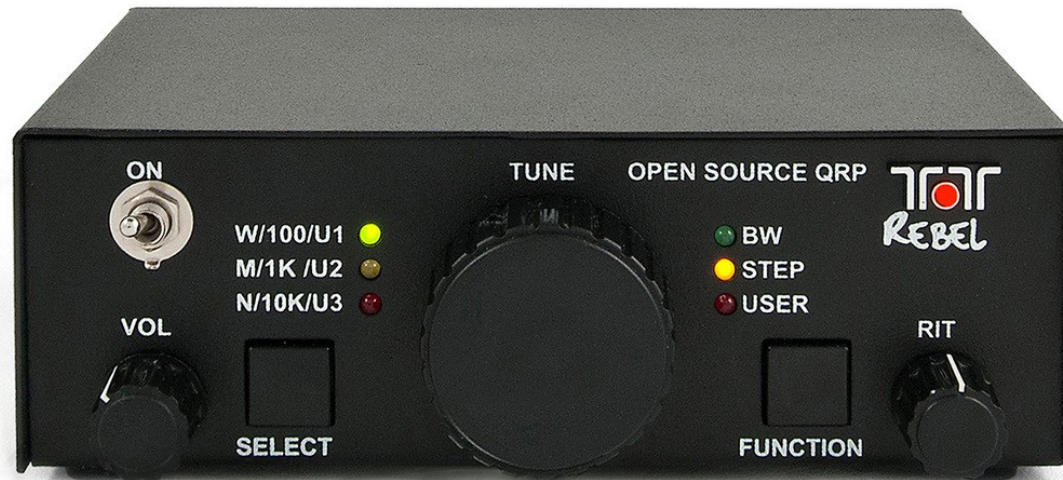
OpenHPSDR

- Ambitious TAPR project
- HF SDR
- Lots of high quality parts
- Open Schematics, boards, software.
- Various modules/designs
- Can purchase through Apache Labs. \$1600 → \$4500 built, 10 and 100W
- Requires PC Software, PowerSDR, GnuRadio etc

OpenHPSDR



Ten Tec



Ten Tec

- Rebel 506 \$200 built
- CW only, no good for us newbies!
- 5W rf output
- No PC software needed
- No license, but Schematic and layout, chipkit firmware source provided
- Some addons by the community, Frequency display, AGC addition
- Upcoming SSB transciever 'Patriot', no further news since Dayton 2014.
- Merged with Alpha Amplifiers, little heard from them since.

SDR Cube



SDR Cube

- Single band
- Softrock internals (see later)
- \$575 built, \$339 for kit
- 1W RF output
- Open Schematics, GPL firmware.
- No PC needed

The Future!

- Microcontroller based SDR stuff
- Cheap!
- Quite computationally powerful
- See David Rowe's talk on Thursday, 10:40 OGGB 260-098 for more on this way of the future!

mcHF



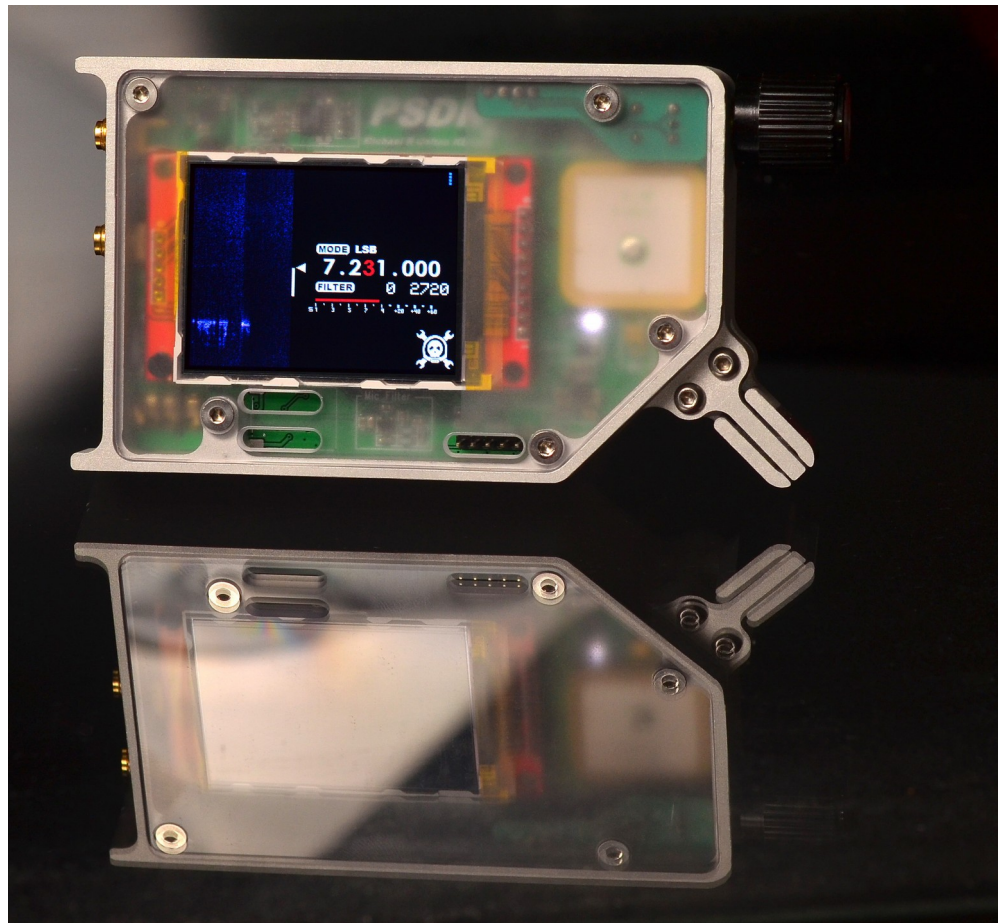
mcHF

- STM32 based SDR with knobs on, no PC needed
- 5w RF out
- All HF bands
- Open Schematics, STM32 firmware, extensive build guides
- No layouts available, boards for sale £38.00 with LCD
- BOM \$150 depending on suppliers
- Lots of 0805 SMT parts
- 3D printed enclosure files available

Coming Soon

- Radios you can't quite buy yet
- OpenQRP

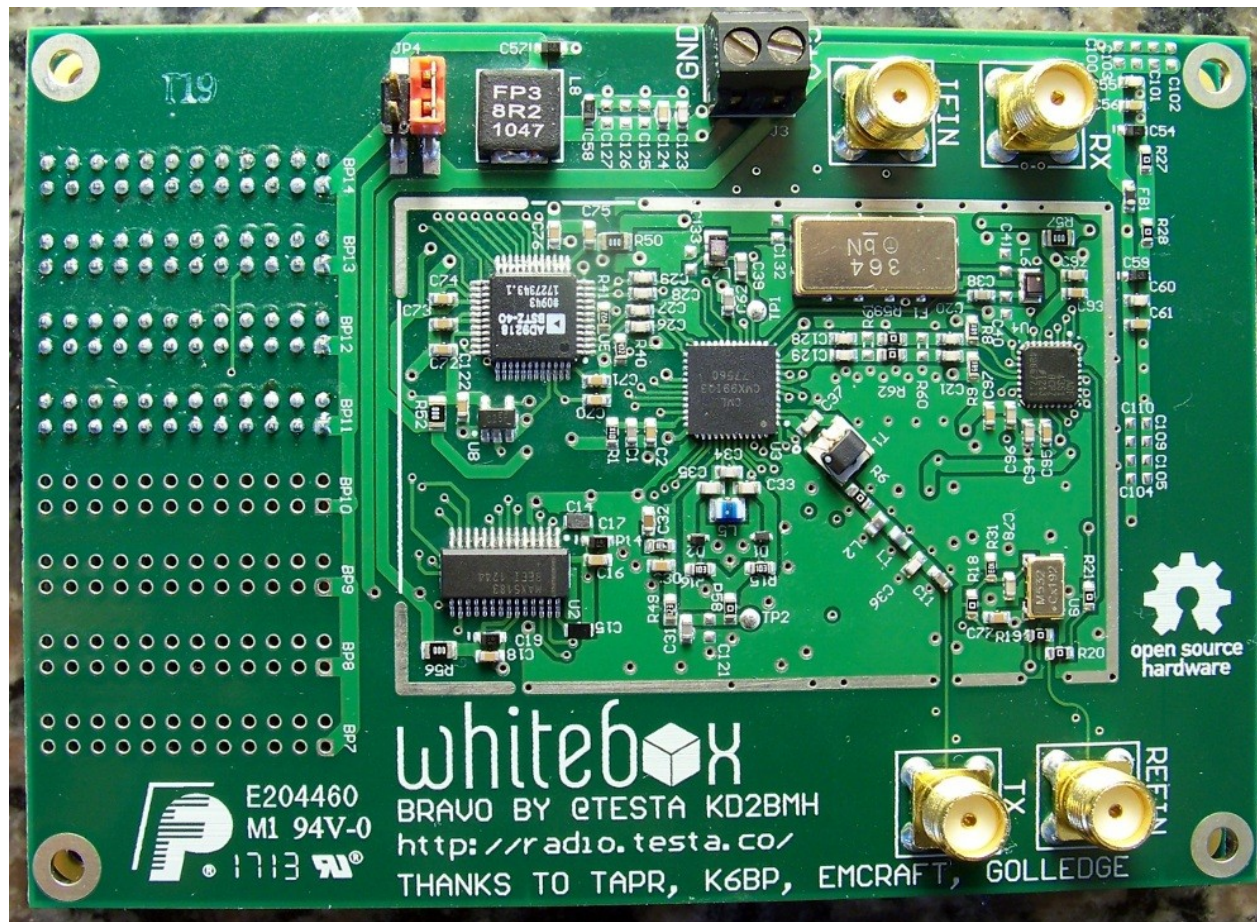
PortableSDR



Portable SDR

- STM32 based SDR with very few knobs
- ~5W RF out, HF + 2m
- VNA and GPS built in
- Lots of possibilities, APRS
- Fully open
- Well laid out, designed to tinker with
- CNC milled enclosure
- Third Place, Hackaday Prize (Satnogs won)
- Nearly ready for version 2 (pictured previously)
- Will probably be a kit with SMT parts

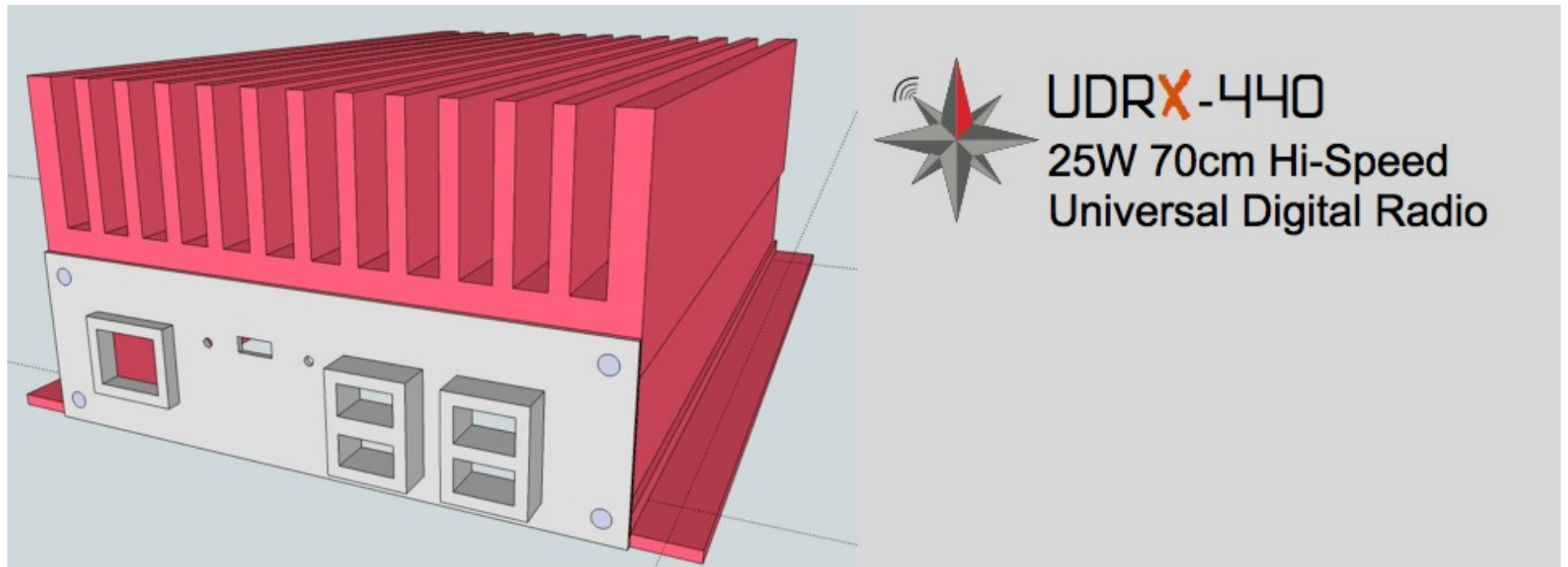
Whitebox Project



Whitebox Project

- Algoram – Chris Testa, Bruce Perens
- SDR with low power FPGA-like thing
- VHF+UHF
- Fully Open
- Sort of like a dev kit for SDR applications
- Probably an update in HamRadioNow's latest episodes, which I haven't watched yet!

UDRX-440



UDRX440

- SDR 70cm, 25W, \$395, Q4 (2014?)
- Built on a Marvell 88SV331x based PC
- Add-on board for AMBE+ stuff
- Open firmware, not sure about the rest
- Web based interface, works on open browsers

SDR Exciters

- 100mW or less
- HackRF, fully open, quite awesome! \$300
- wb6dhw UHFSDR, fully open, kit
- Nuand BladeRF, variously licensed FPGA, USB3 firmware and host software, no schematics/layouts. \$400
- USRP, completely open, very high quality, starts at \$600, the sky's the limit!

Softrock

- SoftRock, not quite open
- Open schematics
- Control software is win32 LibUSB based, exists an open clone: usbsoftrock
- no source provided for firmware.

Finish!

- Thanks
- pwarren@pwarren.id.au
- Questions, if time
- These slides available at
<http://pwarren.id.au/talks/OpenRadio2015.odp>
- <http://pwarren.id.au/talks/OpenRadio2015.pdf>

links

- <http://openhpsdr.org/>
- <https://apache-labs.com/>
- <http://www.tentec.com/rebel-model-506-open-source-qrp-cw-transceiver/>
- www.sdr-cube.com
- <http://www.m0nka.co.uk> - mcHF
- <http://hackaday.io/project/1538-portablesdr> - PortableSDR
- <https://satnogs.org/>
- <http://radio.testa.co/> - Whitebox
- <http://nwdigitalradio.com/> - UDRX440
- <https://greatscottgadgets.com/hackrf/>
- http://wb6dhw.com/For_Sale.html - UHFSDR
- <http://nuand.com/> BladeRF
- <http://fivedash.com/> - Softrock