

K4CHN / Jon Marler

Amateur Radio Operator / Hacker

- First radio - Lafayette KT-200
- Passed Technician @ DefCon 27
- Passed General @ DefCon 28
- Passed Extra & DefCon 29
- 40m voice
- Fairly active on 40m FT8
- Monitor 14.230 SSTV
- Breaker and fixer of all things



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N COMEDY SPECIAL

JON MARLER

LIVE AT SECOND CITY!

From kpop to curling to the cyber security world's darkest secrets, this 4 hour standup special will leave you saying... "wait what?"

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Popular on Netflix

MURDER MYSTERY

OUR PLANET

TIDYING UP WITH MARIE KONDO

Dead to Me

RAISING DION

AMY SCHUMER GROWING

THE IRISHMAN

Beyoncé's BLACK HOMECOMING A FILM BY BEYONCÉ

Presentation Agenda

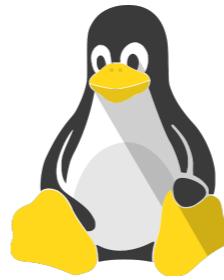
SBC Alternatives to the Raspberry Pi for Ham Radio Digital Modes



What is an SBC?

arm

Pi Alternatives



Linux OS

What is an SBC?

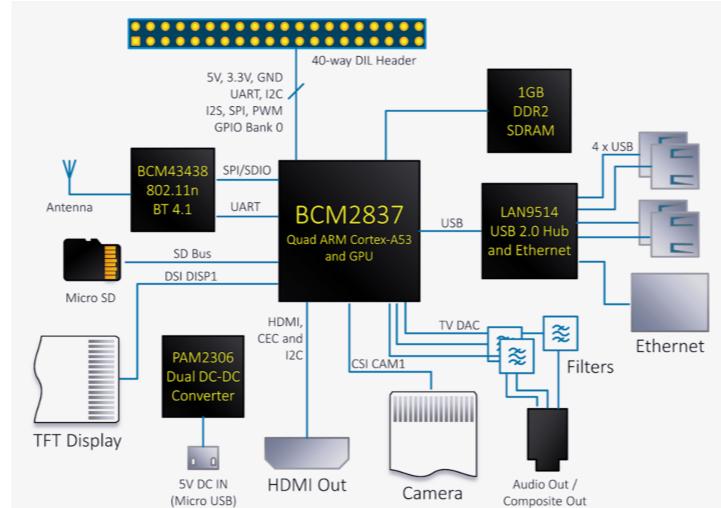
What are some good alternatives that aren't made of unobtanium?

What OS should we use and how do we load ham digital mode tools on it?

What is a Single Board Computer?

Single Board Computers Intro

What is a single board computer (SBC) ?



In essence, it's an entire computer on a single PCB. CPU, RAM, ROM(s), GPU, and I/O.

Raspberry Pi Alternatives

Libre Computing

Which Libre boards have I tested and recommend?

- Libre Renegade
 - 4GB DDR4 BT WiFi5 4 Core 1Gb Ethernet CPU **\$50.00**
- Libre Potato
 - 2GB DDR3 100Mb Ethernet CPU **\$35.00**

Bought on Amazon. Allwinner H6 Quad-Core 64-Bit. Potato is more like the RPi 3B+ with faster RAM and slower ethernet

Orange Pi

Which Orange Pi boards have I tested and recommend?

- Orange Pi 4 LTS
 - 4GB DDR4 16GB MMC 2+4 Core CPU **\$72.90**
- Orange Pi 5B
 - 4GB DDR4 32GB MMC BT5 WiFi6 4+4 Core CPU **\$85.00**
- Orange Pi 5
 - 4GB DDR4 PCIE 4+4 Core CPU **\$74.90**

Runs latest armbian like a champ. Bought through AliExpress. The 5b has some tweaks you have to make to get the emmc to work.

Linux OS for Ham Radio

KM4ACK's build-a-api Script

Easily install ham tools using KM4ACK's installation script

- Clone from git
 - `git clone https://github.com/km4ack/pi-build.git`
- Launch the installer
 - `./pi-build/build-a-api`
- Select packages
- You may need your callsign and some credentials depending on what you choose
- Come back tomorrow

Takes freaking forever to install all the tools using the pi-build script if you choose to install a lot of packages. Everything is downloaded and compiled. Packages are not used. This takes a long time, but it works. Be patient.

Orange Pi 5b Notes

Notes specific to this board

- Armbian for non-raspberry pi board doesn't include pi libraries
 - sudo apt-get install libraspberrypi0
 - sudo ln -fs /usr/lib/aarch64-linux-gnu/libbcm_host.so /usr/lib/libbcm_host.so.0
 - sudo ln -fs /usr/lib/aarch64-linux-gnu/libvcos.so /usr/lib/libvcos.so.0
 - sudo ln -fs /usr/lib/aarch64-linux-gnu/libvchiq_arm.so /usr/lib/libvchiq_arm.so.0
 - sudo ldconfig
- The release armbian image is **not** configured for the 5b board (no emmc)
 - Open armbianenv.txt and change fdtfile=rockchip/rk3588s-orangepi-5.dtb to fdtfile=rockchip/rk3588s-orangepi-5b.dtb
 - Install to emmc with the armbian-install command
 - Includes WiFi on the board. Worked without any issues.
 - The date may be very wrong. This will cause endless problems and prevent apt from working

Windows will not recognize the vfat boot partition. Use a linux system to edit, or boot the SD card, mount the boot partition, edit the file, save, unmount, and reboot. Booting and running the system from SD card is slow AF. Install to emmc first thing.

Orange Pi LTS 4 Notes

Notes specific to this board

- Armbian for non-raspberry pi board doesn't include pi libraries
 - sudo apt-get install libraspberrypi0
 - sudo ln -fs /usr/lib/aarch64-linux-gnu/libbcm_host.so /usr/lib/libbcm_host.so.0
 - sudo ln -fs /usr/lib/aarch64-linux-gnu/libvcos.so /usr/lib/libvcos.so.0
 - sudo ln -fs /usr/lib/aarch64-linux-gnu/libvchiq_arm.so /usr/lib/libvchiq_arm.so.0
 - sudo ldconfig
- Includes WiFi on the board. Worked without any issues.

Takes freaking forever to install all the tools using the pi-build script

Libre Renegade Notes

Notes specific to this board

- Boots Libre's Raspbian without issues and includes pi libraries
- Use rasp-config to enable ssh and NetworkManager
- Does not have WiFi on-board. Must use a USB dongle. I used an RTL8811AU device.
 - I followed the instructions at <https://github.com/morrownr/8821au-20210708> and chose the AP driver to enable the “hotspot” package provided by build-a-pi
- Install the `gnome-classic` package if you want the classic menus
- If you want remote desktop use RealVNC
 - <https://downloads.realvnc.com/download/file/vnc.files/VNC-Connect-Installer-1.3.0-Linux-ARM64.tar.gz>

Takes freaking forever to install all the tools using the pi-build script

General Notes

Notes not specific to either board

- Install the `gnome-classic` package if you want the classic menus installed by the script
- Use `armbian-config` in armbian or `raspi-config` in raspbian to configure system
- If you want remote desktop use RealVNC
 - <https://downloads.realvnc.com/download/file/vnc.files/VNC-Connect-Installer-1.3.0-Linux-ARM64.tar.gz>
 - Don't use the .deb installer as I had to fight with it to make it work due to missing libraries
 - Armbian is the worst with these library issues
 - VNC is great for using apps like wsjtx and

Takes freaking forever to install all the tools using the pi-build script

Fin

Stay in Touch

How to stay in touch with me

- QRZ - <https://www.qrz.com/db/K4CHN>
- Email: K4CHN@arrl.net