

Devices: Airtop3 With Linux Mint and Debian's Jonathan McDowell Studies a PCB

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- [Airtop3 Manages A Passively-Cooled Core i9 9900K + Quadro RTX 4000](#) [3]

CompuLab today announced the Airtop3, the latest in their series of industrial-grade, excellently built fanless PCs. The CompuLab Airtop we benchmarked back in 2016 while showing its age now with the Core i7 5775C Broadwell processor is still running strong with its original design and even after what's been hundreds if not thousands of hours of benchmarking workloads still is running strong. Then again, that isn't too surprising as we continue to be improved by their build quality now after benchmarking their systems with Linux for the past decade.

- [Fanless mini-tower runs Linux Mint on up to 5GHz octa-core i9-9900K](#) [4]

CompuLab's passively cooled, Linux-friendly Airtop3 mini-tower builds on a 9th Gen, octa-core Intel Core i9-9900K with Quadro RTX 4000 graphics plus up to 128GB DDR4, NVMe and SATA storage, triple displays, 2x GbE, 6x USB 3.1, and -40 to 70°C support.

CompuLab has launched a redesigned Airtop IoT edge server that accomplishes the challenging task of passively cooling Intel's high-end, 9th Gen Core i9-9900K processor. The Airtop3 is nearly twice as powerful as the 7th Gen Kaby Lake based Airtop2 mini-tower

while maintaining the fanless, embedded-oriented design, says CompuLab. Linux Mint and Windows 10 Pro are available.

- [Jonathan McDowell: Making my first PCB](#) [5]

I then started to notice I was getting JLCPCB ads while web browsing, offering 10 PCBs for \$2. That seemed like a good deal, and I thought if I did things right I could find the right case and then make sure the PCB fitted in it. I found a small vented white case available from CPC. This allows me to put a temperature sensor inside for some devices. KiCad seemed like a good option for trying to design my basic schematic and lay it out, so I installed it and set to work trying to figure out what I wanted to put on the board, and how to actually drive KiCad.

As the core I chose an ESP-07 ESP8266 module. I've used a few of them before and they're cheap and convenient. I added an LDO voltage regulator (LD1117) so I could use a 5V PSU (and I'm hoping with a heatsink I can get away with a 12V supply as well, even if it's more inefficient). That gave enough to get a basic schematic once I'd added the necessary pull-up/down resistors for the ESP8266 and decoupling capacitors. I included a DC barrel jack for the PSU, and pin headers for the serial port, SPI pins and GPIO0 for boot selection. One of my use cases is to make an LED strip controller, so I threw in a screw terminal block for power + control - the board is laid out to allow a MOSFET for a simple white 12V LED strip, or the same GPIO taken straight to the terminal block for controlling a WS2812 strip. By including a couple of extra pull-up resistors I added the option of I2C for further expansion.

After I had the basic schematic I moved to layout. Luckily Hammond provide 2D CAD files for the case, so I figured I would import them into KiCad's PCB layout tool to make sure things would fit. That took a little bit of effort to go from DWG to DXF and trim it down (I found a web tool to do the initial conversion and then had to strip out the bits of the case that weren't related to the PCB size + mounting points). I wasn't confident enough that the edge cuts layer would include the mounting holes, so I manually placed some from KiCad over the right spots.

[GNU Linux](#)

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[3] https://www.phoronix.com/scan.php?page=news_item&px=CompuLab-Airtop3

[4] <http://linuxgizmos.com/fanless-mini-tower-runs-linux-mint-on-up-to-5ghz-octa-core-i9-9900k/>

[5] <https://www.earth.li/~noodles/blog/2019/04/my-first-pcb.html>