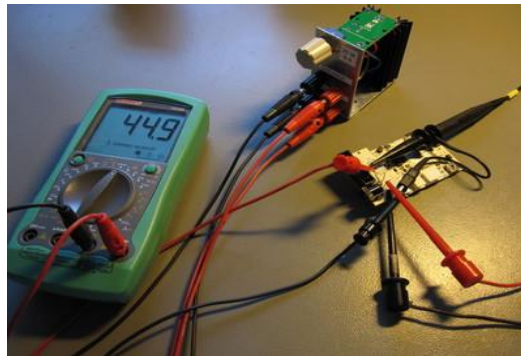


# TESTING VESNA'S POWER SUPPLY

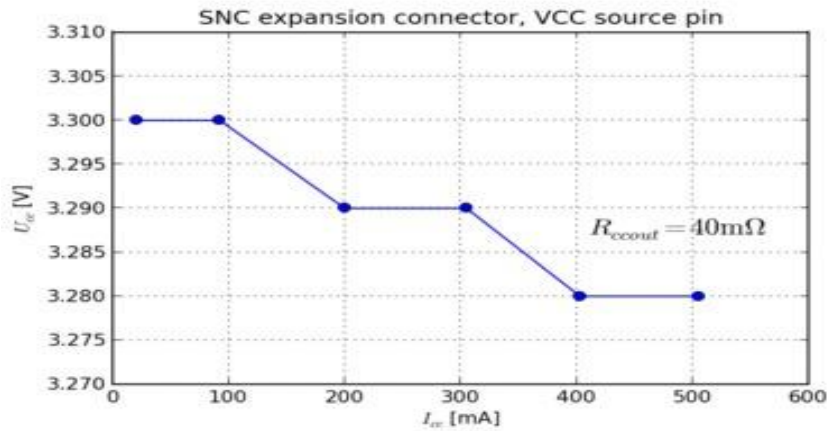
Now that I have Re:load, I seem to end up checking every power supply that lands on my desk if it meets its specifications. I put VESNA's to the test yesterday.

VESNA core board has a switching power supply that supplies around 5V and 3.3V to any expansion boards connected to it. The source can be a battery, solar cell, USB cable or a DC voltage from some external supply. I tested it with a 12V external supply, which is the most common case when you power a node from the grid using a wall wart or something like that.

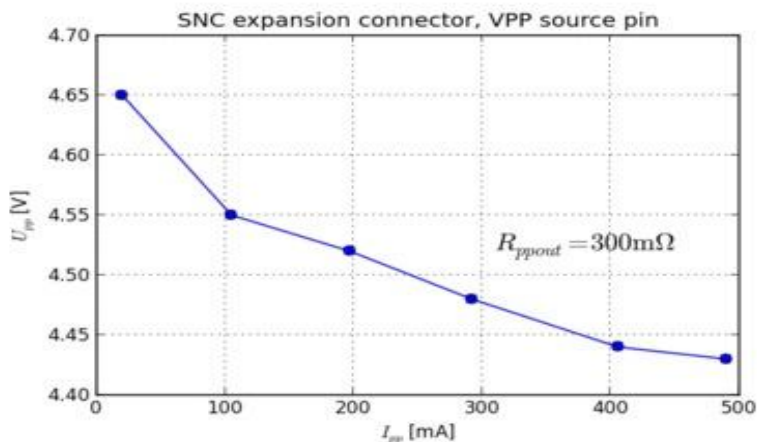


VCC pin on the expansion connector supplies 3.3V. This line also powers VESNA's main ARM CPU. Datasheet says it can supply at most 500 mA to the expansion board and this is approximately what I've also seen in my test. With a setting on Re:load higher than 500 mA, the voltage fell sharply to around 2 V where Re:load wasn't acting as a current source anymore.

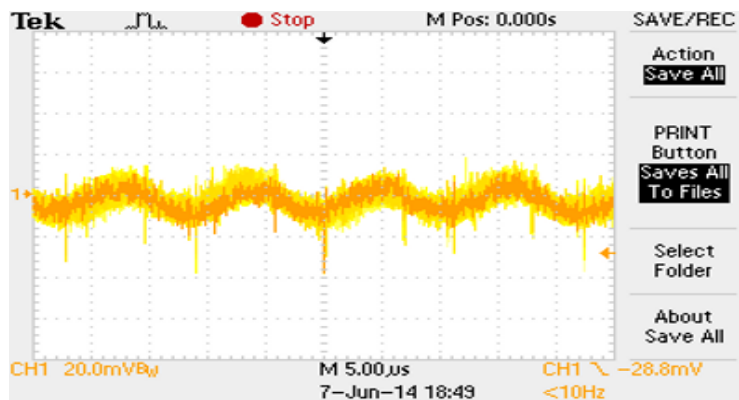
I've measured the voltage using my oscilloscope, so the resolution on the vertical axis isn't as good as it could be. Still, I think 40 mΩ is a fair estimate of the internal resistance for VCC.



Voltage on the VPP pin is typically around 4.5 V. This pin is also supposed to supply a maximum of 500 mA to the expansion board. In my test it managed just a little bit below that, but considering the accuracy of my measurements that's within the margin of error.



I also checked the ripple on both VCC and VPP pins. With low loads the power supply seems to operate in discontinuous mode and the ripple is a bit high at 100 mV peak-to-peak. With higher loads, it goes into continuous mode and the peak-to-peak voltage falls. This is how it looks like on the VPP pin with near maximum load:



So, I'm happy to say that everything looks here as it should. The ripple is a bit high for my taste, especially when powering analog electronics.

Part of why I tested this is because my new UHF receiver will put a higher load on this power supply than other expansions I've worked with on VESNA. With around 350 mA of load my board puts on the VPP line, it looks like VESNA will be able to power it without problems. It won't be able to power two receivers at once however and some auxiliary power supply will be necessary for that.

Source: [https://www.tablix.org/~avian/blog/archives/2014/06/testing\\_vesnas\\_power\\_supply/](https://www.tablix.org/~avian/blog/archives/2014/06/testing_vesnas_power_supply/)