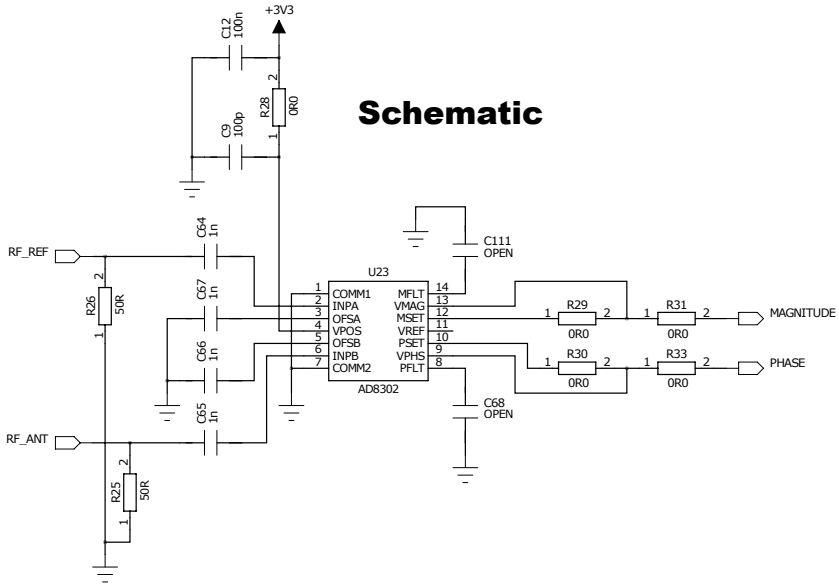
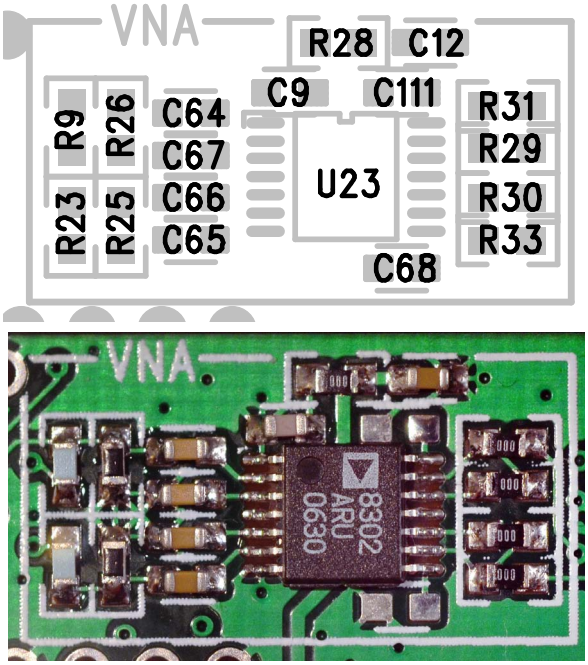
Vector Network Analyzer

Schematic



Top Assembly Diagram



Design Notes

This design follows the datasheet for the AD8302 (Page 16, see link below) with some modification.

R29-30 are present to allow tuning of the center point and slope of the output (See page 18). Set at 0 Ω, the output is 30mV/db and 10mV/Degree. *Include the formula?*

R25 and 26 are terminating resistors so signals into the VNA see a 50 Ω load.

TODO: What are C68 and 111 for again?

C9 and 12 and R28 are probably just power supply conditioning

Datasheets and other resources

Description

The PSDR2 includes a Vector Network Analyzer (VNA) function for two reasons. The first is that it requires only a modest increase in system complexity, using much of what the PSDR2 already includes, while adding some very useful functions to the radio, making it a powerful tool for circuit analysis. The second is that the PSDR2 is meant to be usable in the field. That sometimes means setting up less than ideal antennas or constructing antennas from materials on hand. With the built in analyzer, it is possible to construct an antenna, and evaluate its performance in the field to tune it for best performance on a desired frequency, or, for an existing antenna, determine what frequencies are most likely to be usable.

The heart of the Vector Network Analyzer function on the PSDR2 is the AD8302 from Analog Devices. The PSDR2 uses its frequency synthesis and transmitting blocks to generate a signal at a desired frequency, or to sweep a signal across a range of frequencies. The AD8302 compares this signal to the one received back from the Device Under Test (DUT) THEN WHAT HAPPENS?

How can it be used for circuit analysis? etc. How about graphing it, math, etc.

The other port

How about what pins on the microcontroller is it connected to? Whre is it controlled in code?