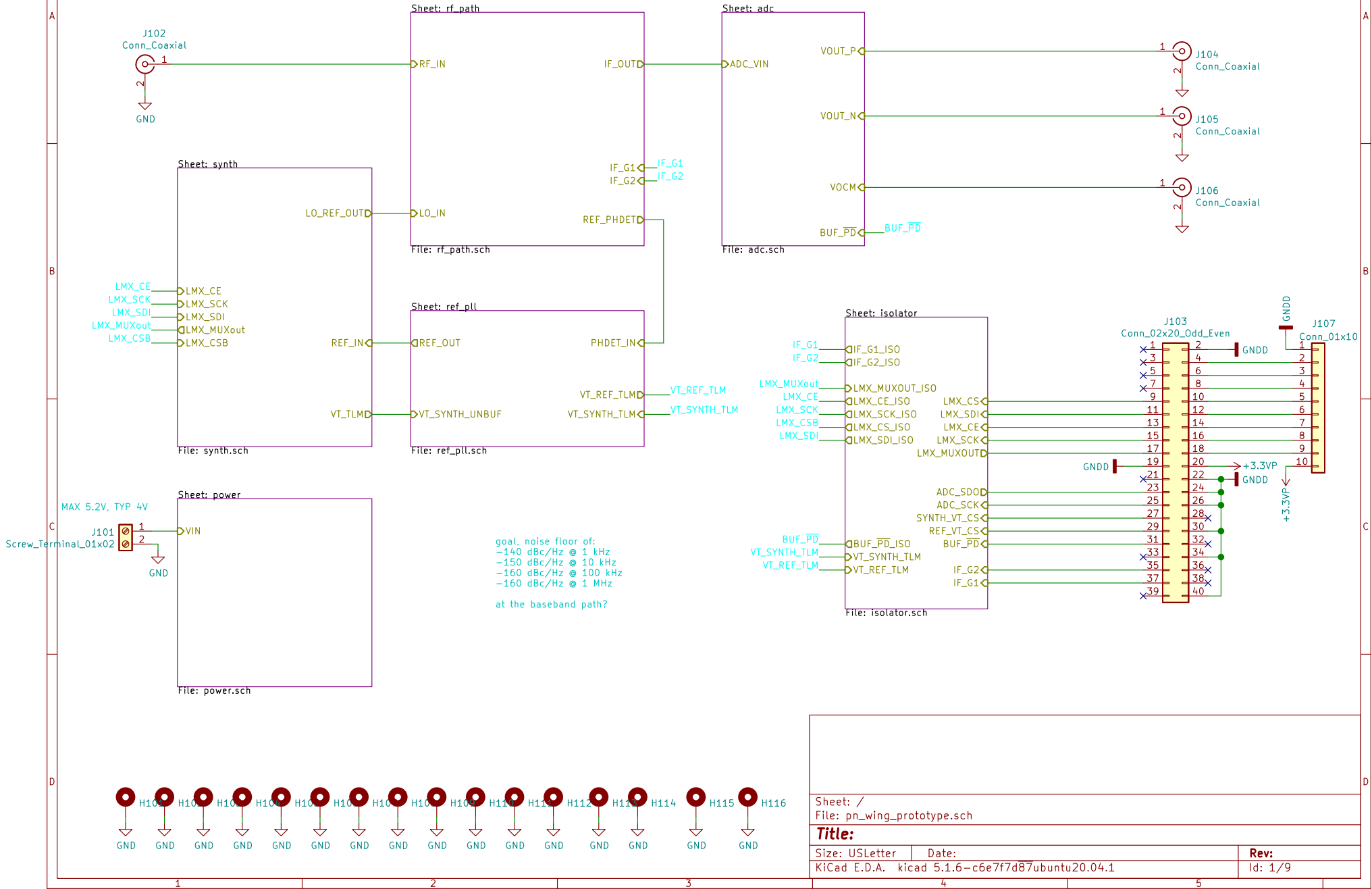
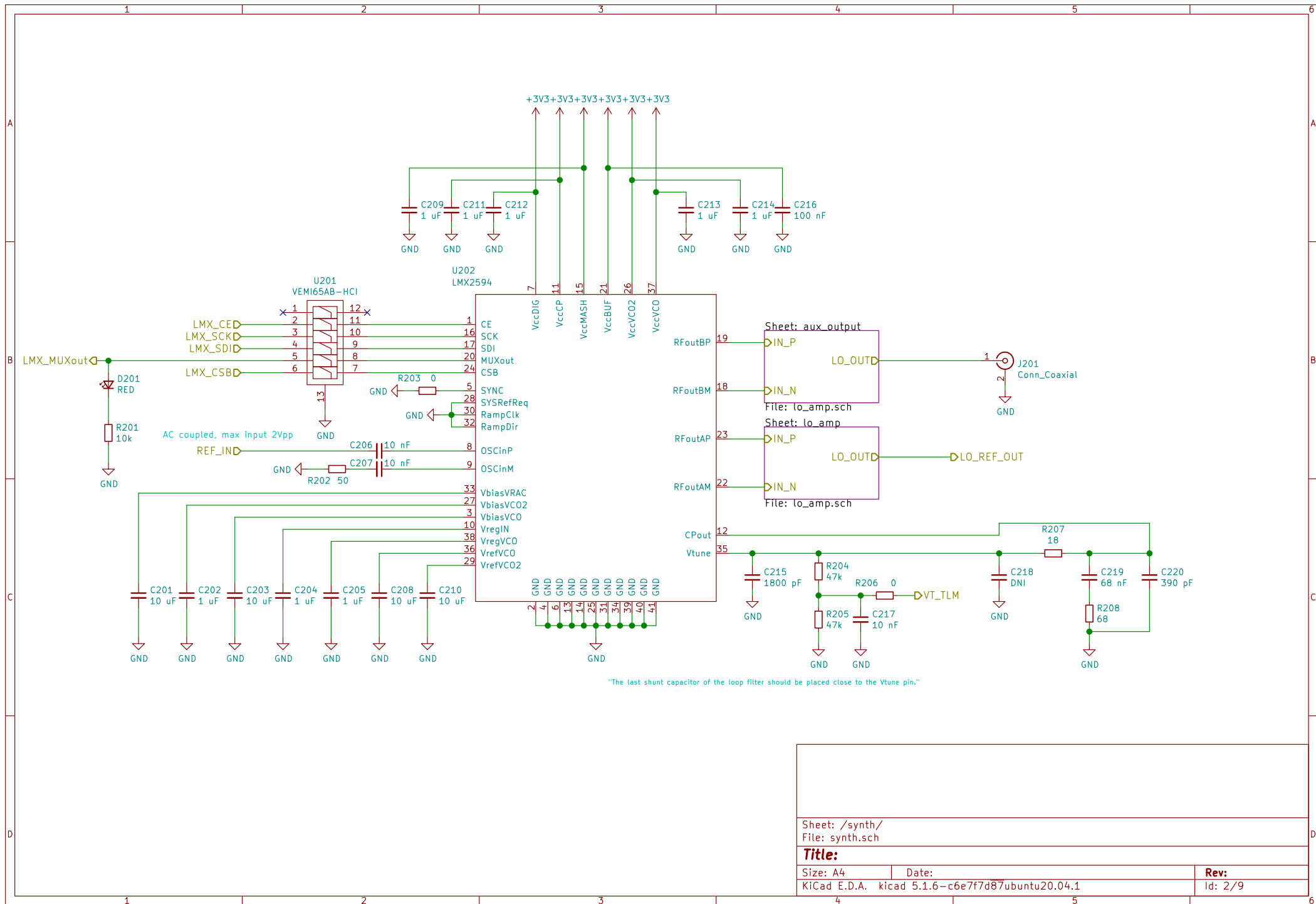
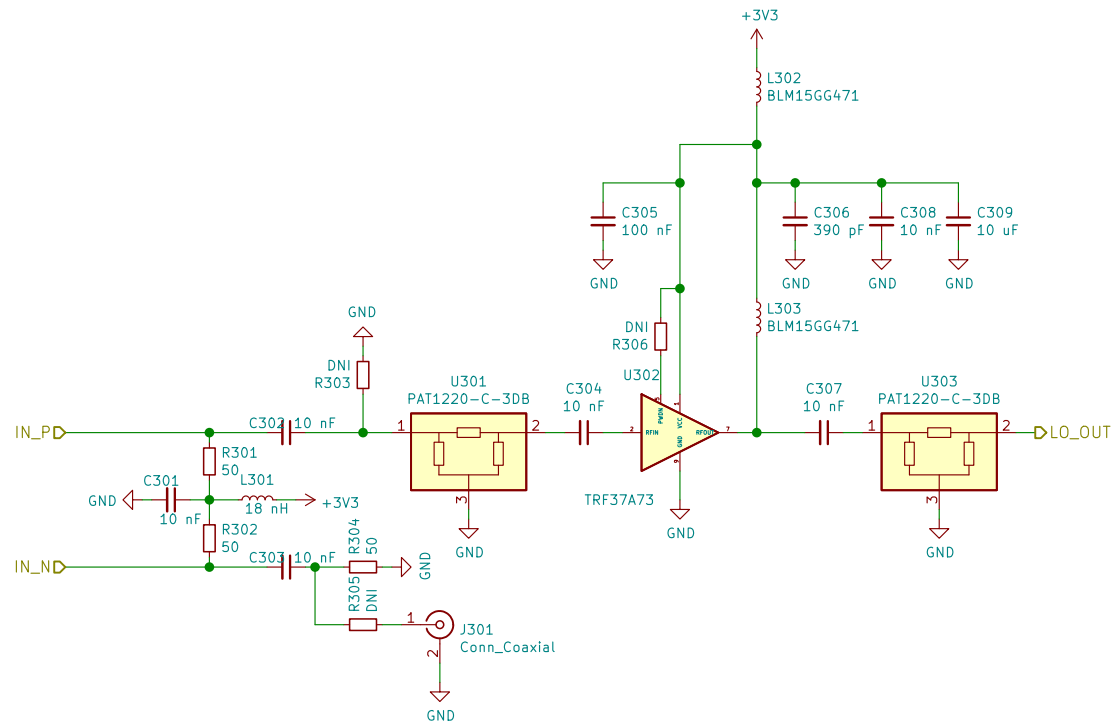


low phase noise down converter (UNTESTED!)
10–6000 MHz RF
DC–1 MHz IF
internal LO generation, frequency locked to RF input







Sheet: /synth/lo_amp/
File: lo_amp.sch

Title:

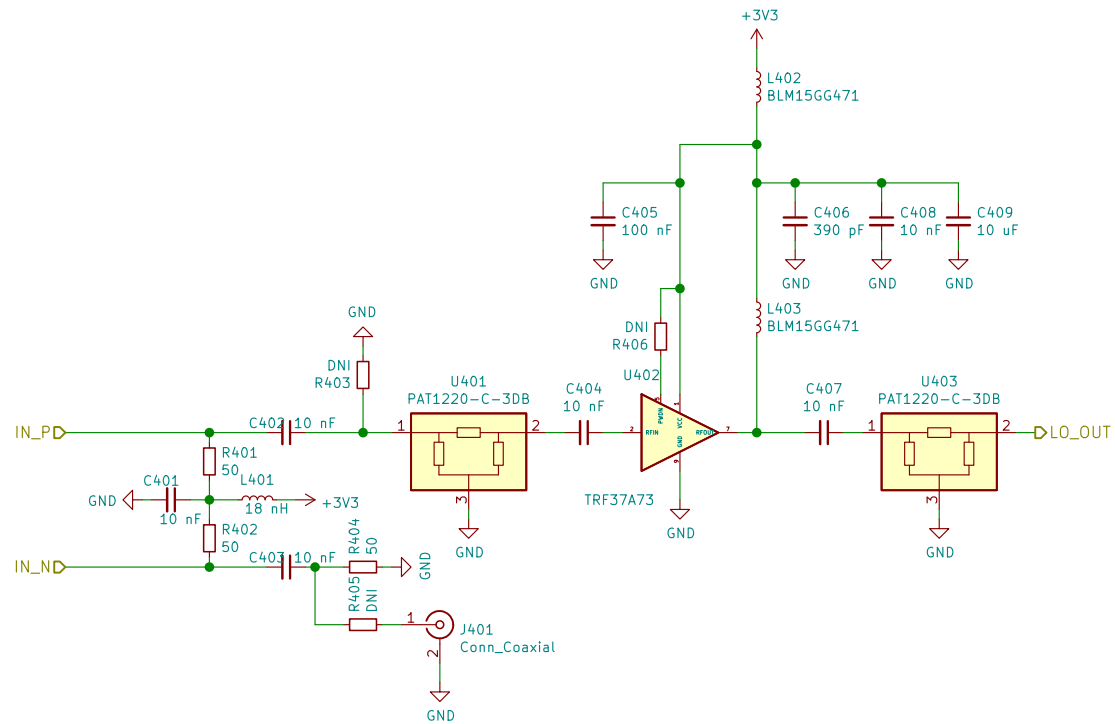
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Date:

KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu20.04.1

Rev:

Id: 3/9



Sheet: /synth/aux_output/
File: lo_amp.sch

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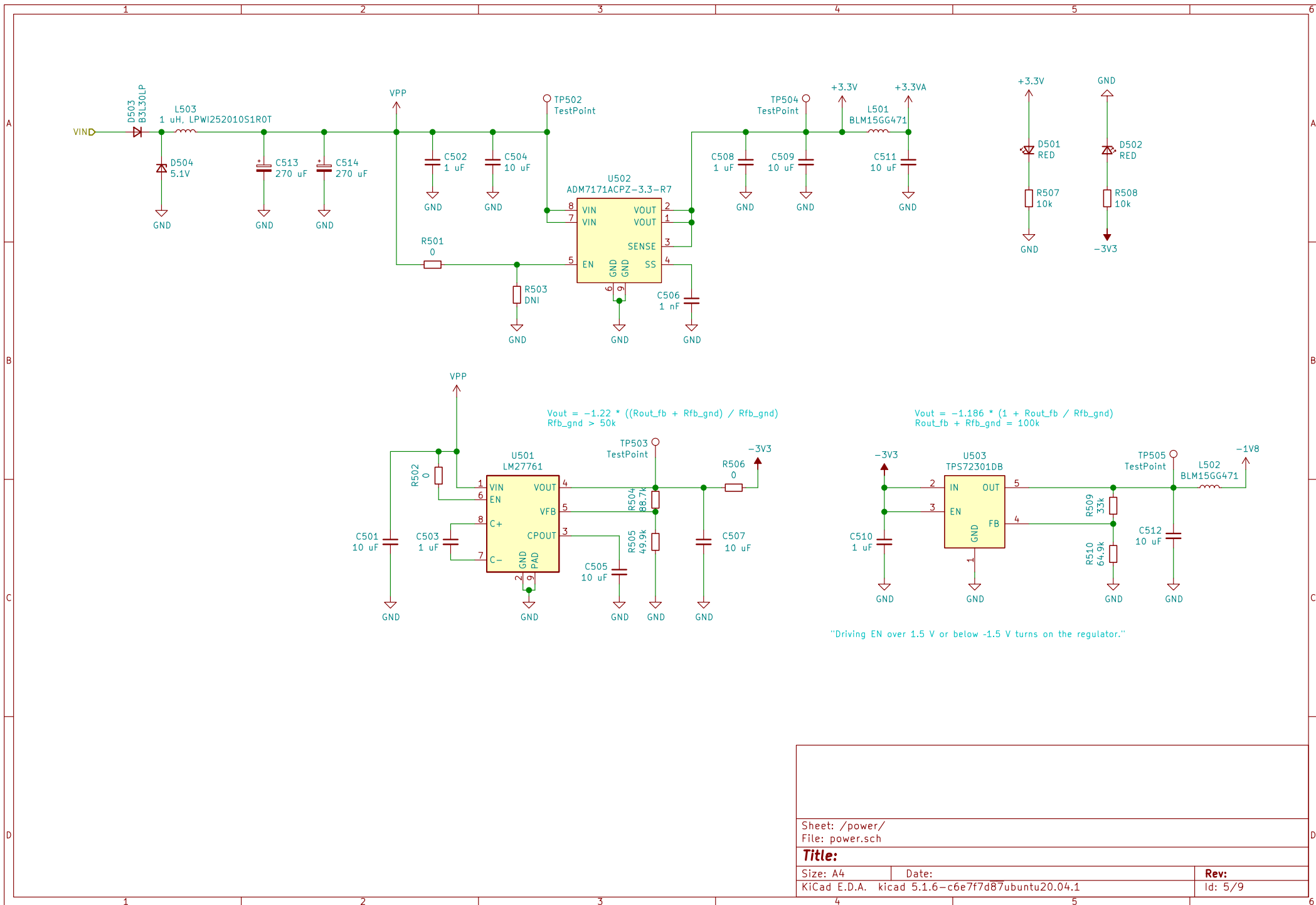
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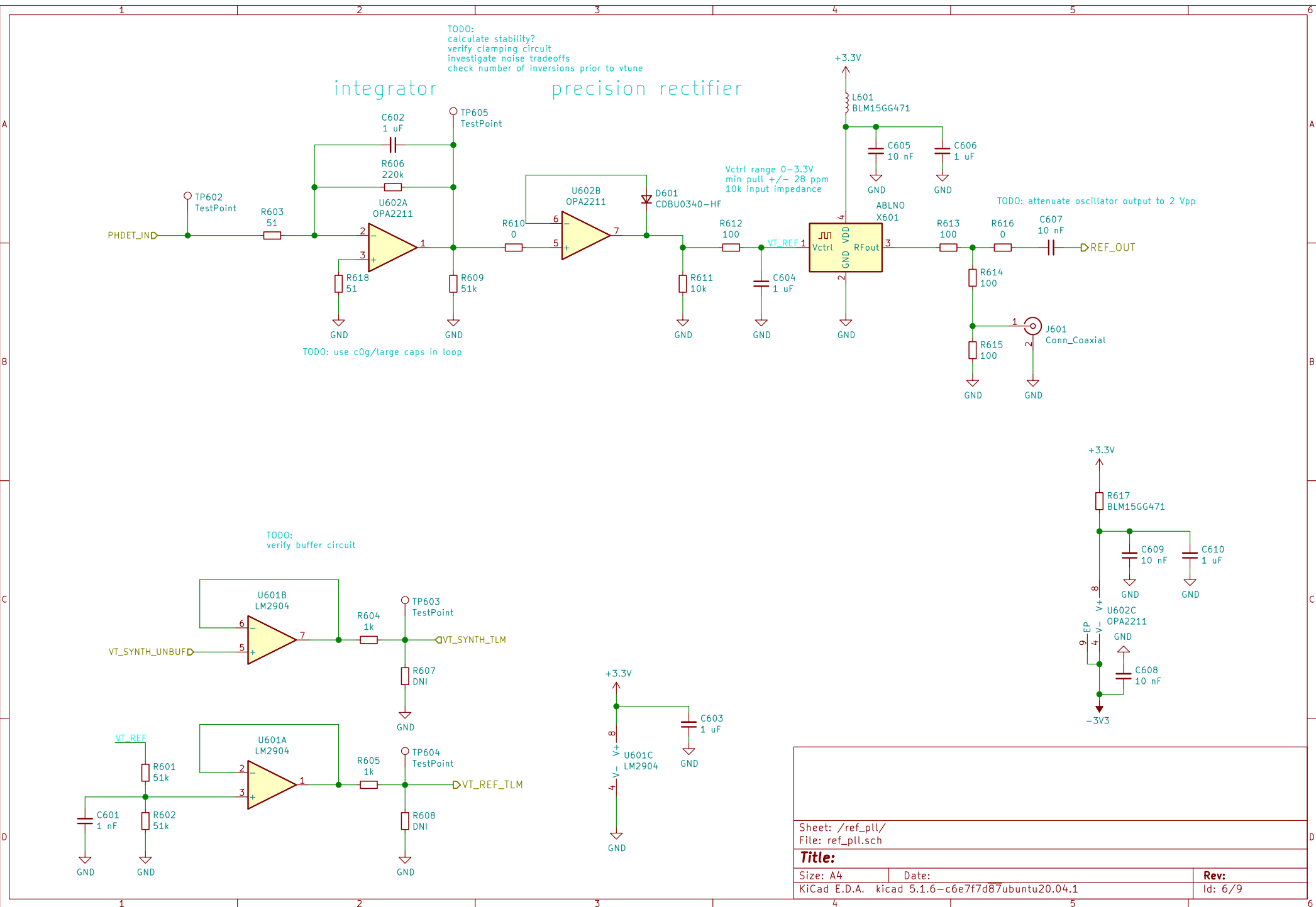
Date:

KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu20.04.1

Rev:

Id: 4/9





Use absorptive filter if possible:
<https://www.markimicrowave.com/blog/dc-offset-and-mixers-as-microwave-phase-detectors/>
<https://www.analog.com/en/technical-articles/improving-linearity-by-using-absorptive-filters.html>

TODO: check noise levels,
<http://www.wenzel.com/documents/measuringphasenoise.htm>

Use TBD Sallen-Key low pass filter

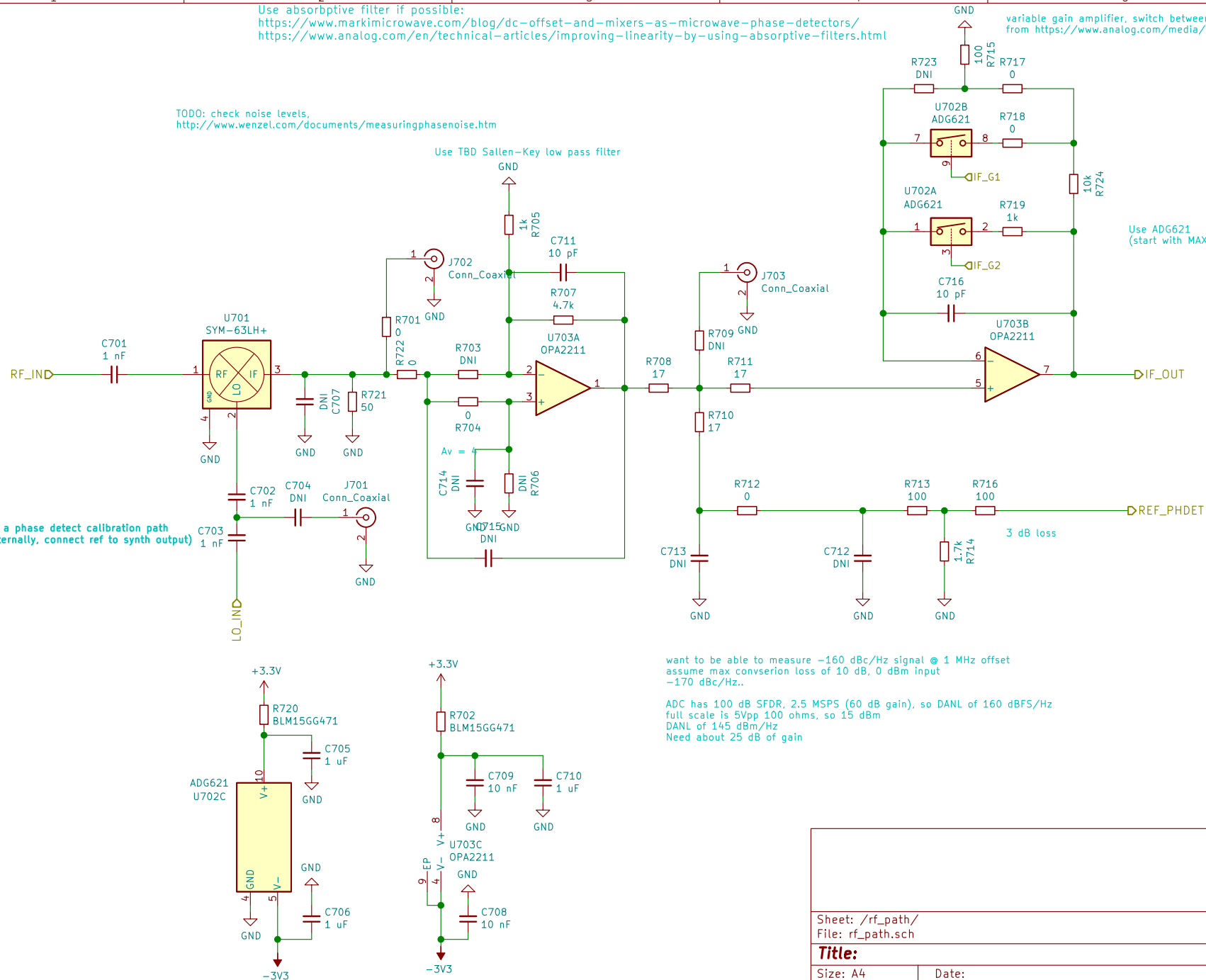
variable gain amplifier, switch between 10 v/v and 1 v/v
from <https://www.analog.com/media/en/training-seminars/tutorials/MT-072.pdf>

Use ADG621
(start with MAX323 symbol)

TODO: add a phase detect calibration path
(or, do externally, connect ref to synth output)

want to be able to measure -160 dBc/Hz signal @ 1 MHz offset
assume max conversion loss of 10 dB, 0 dBm input
-170 dBc/Hz..

ADC has 100 dB SFDR, 2.5 MSPS (60 dB gain), so DANL of 160 dBFS/Hz
full scale is 5Vpp 100 ohms, so 15 dBm
DANL of 145 dBm/Hz
Need about 25 dB of gain



Sheet: /rf_path/
File: rf_path.sch

Title:

Size: A4

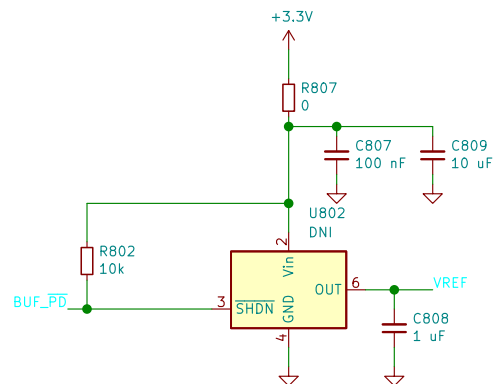
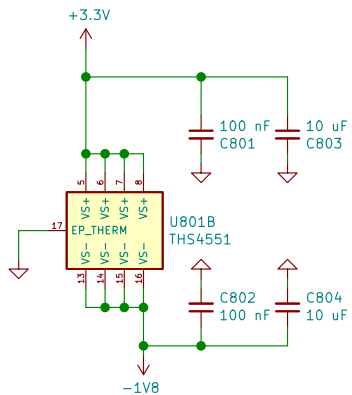
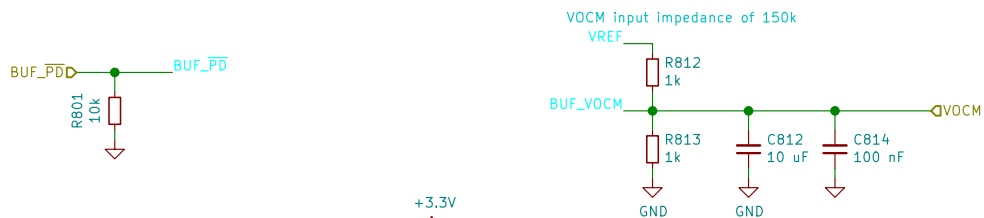
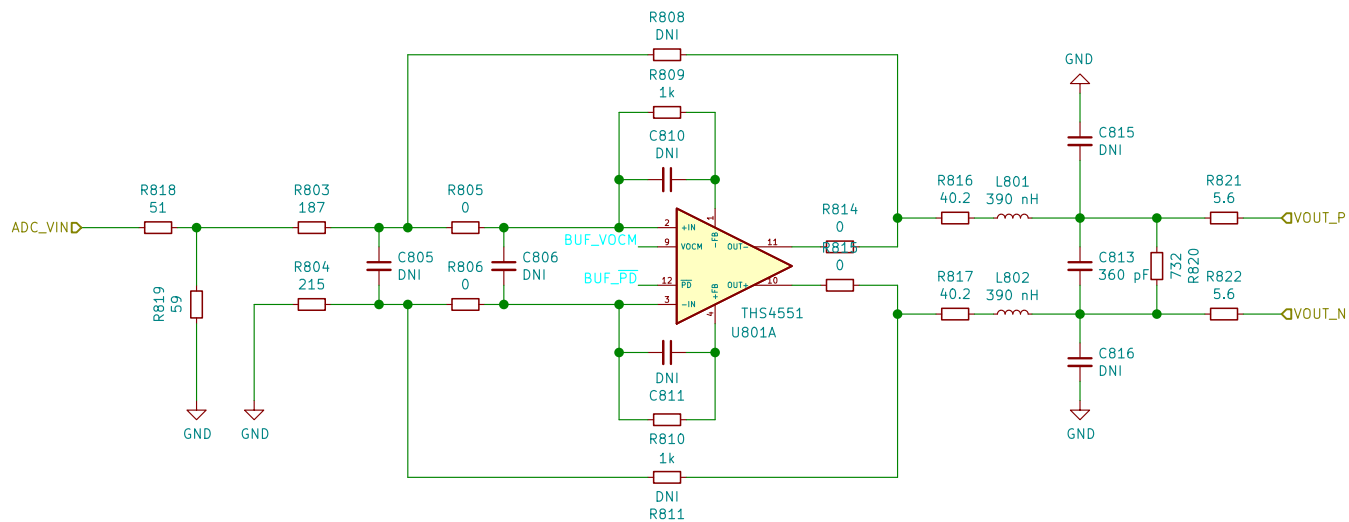
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TODO: simulate stability and frequency response



Sheet: /adc/
File: adc.sch

Title:

Size: A4

Date:

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Rev:

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