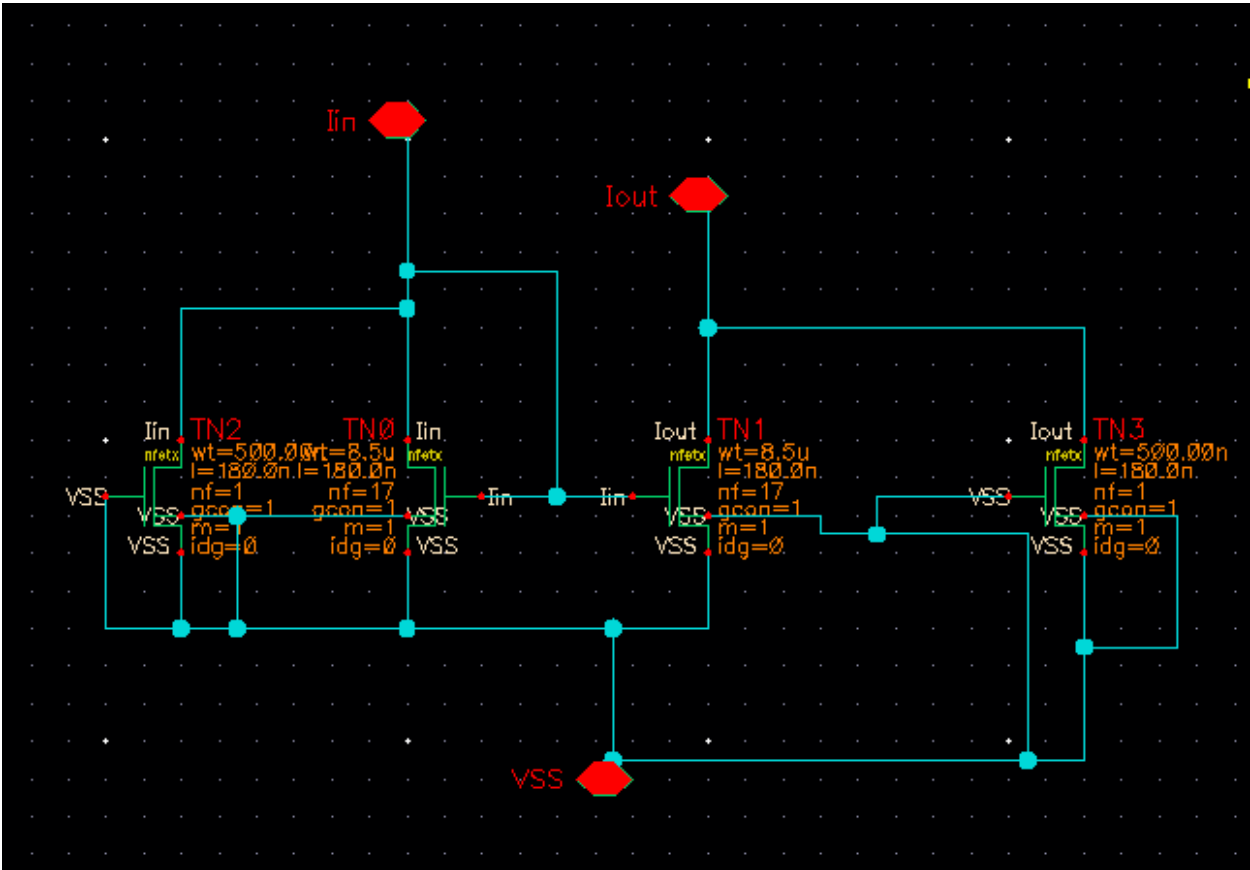


Matthew Loden

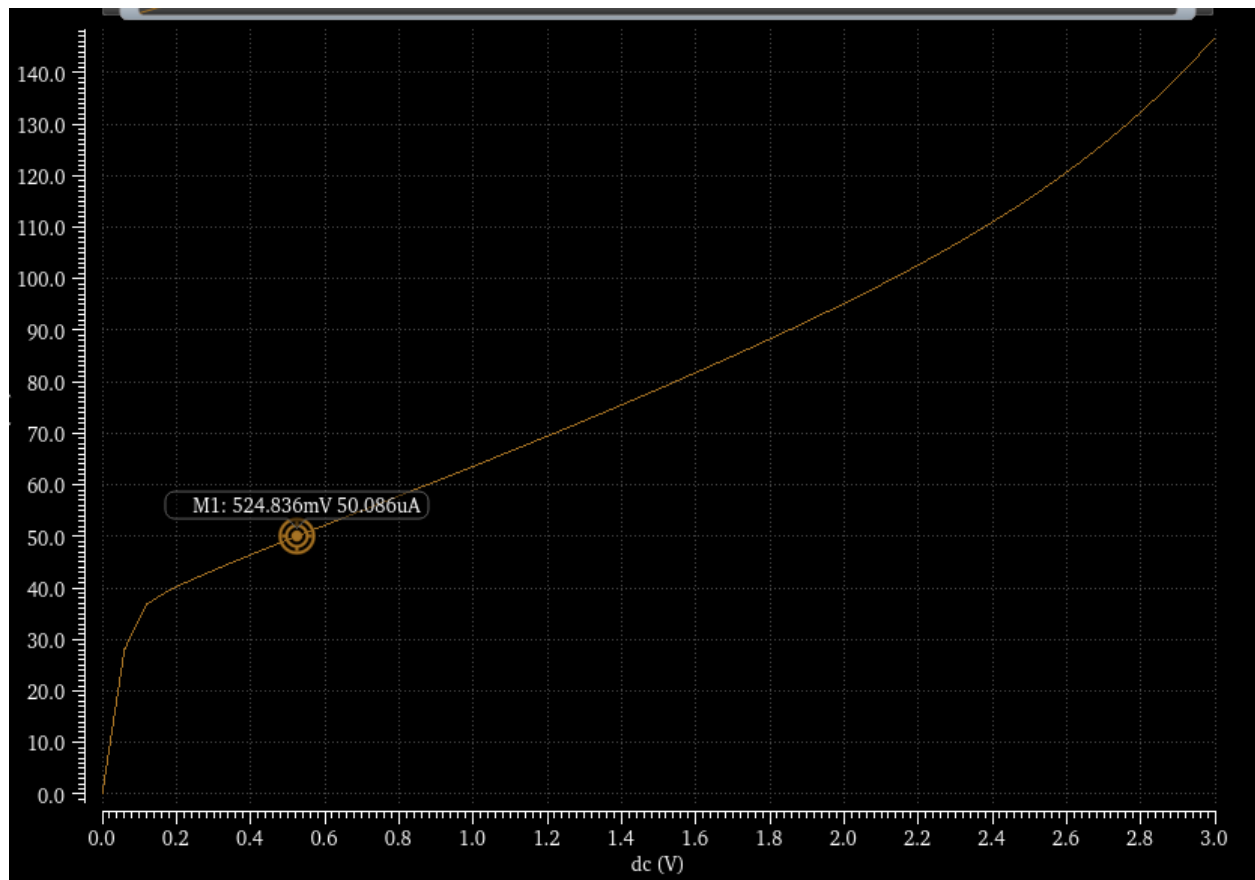
ECEN 474

Lab 05 - Current Mirrors

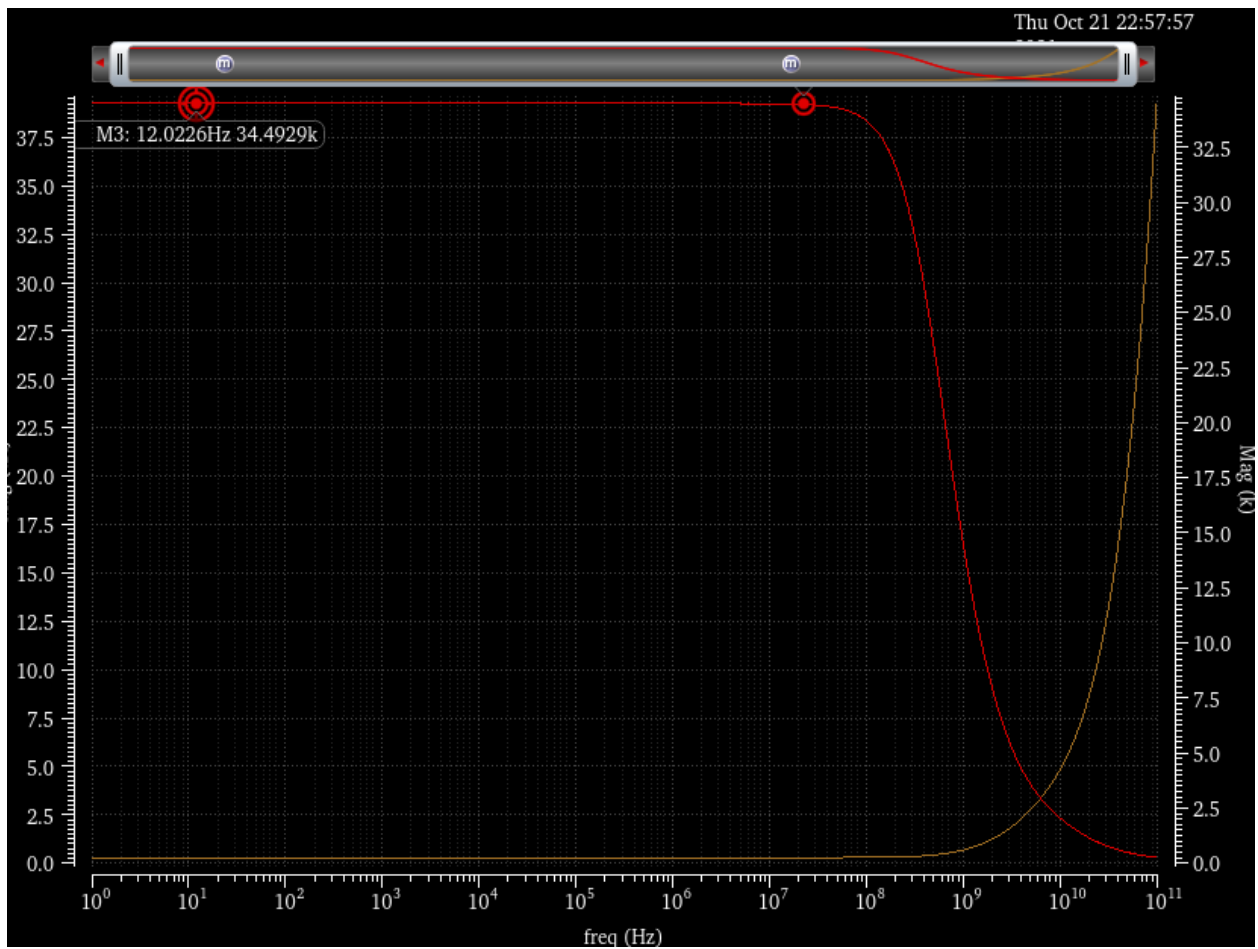
Simple Current Mirror Schematic Based on Prelab Information:



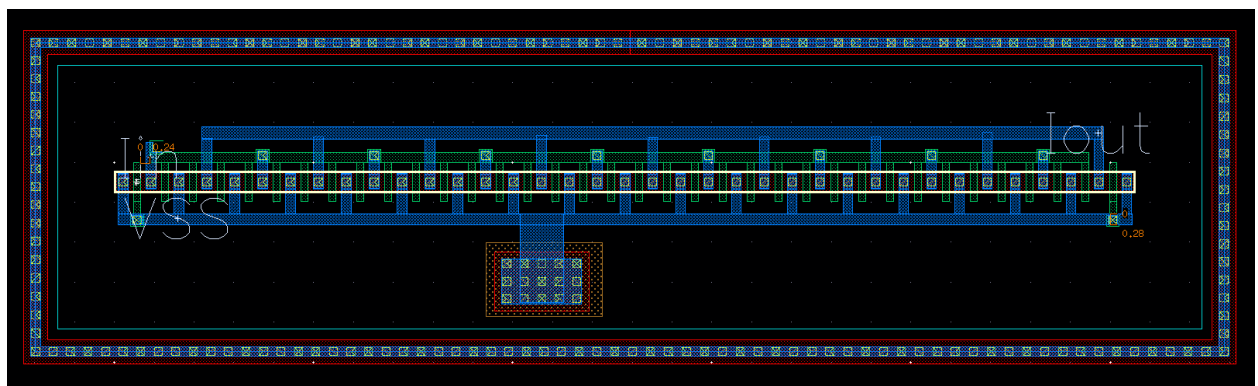
SCM Data Points:



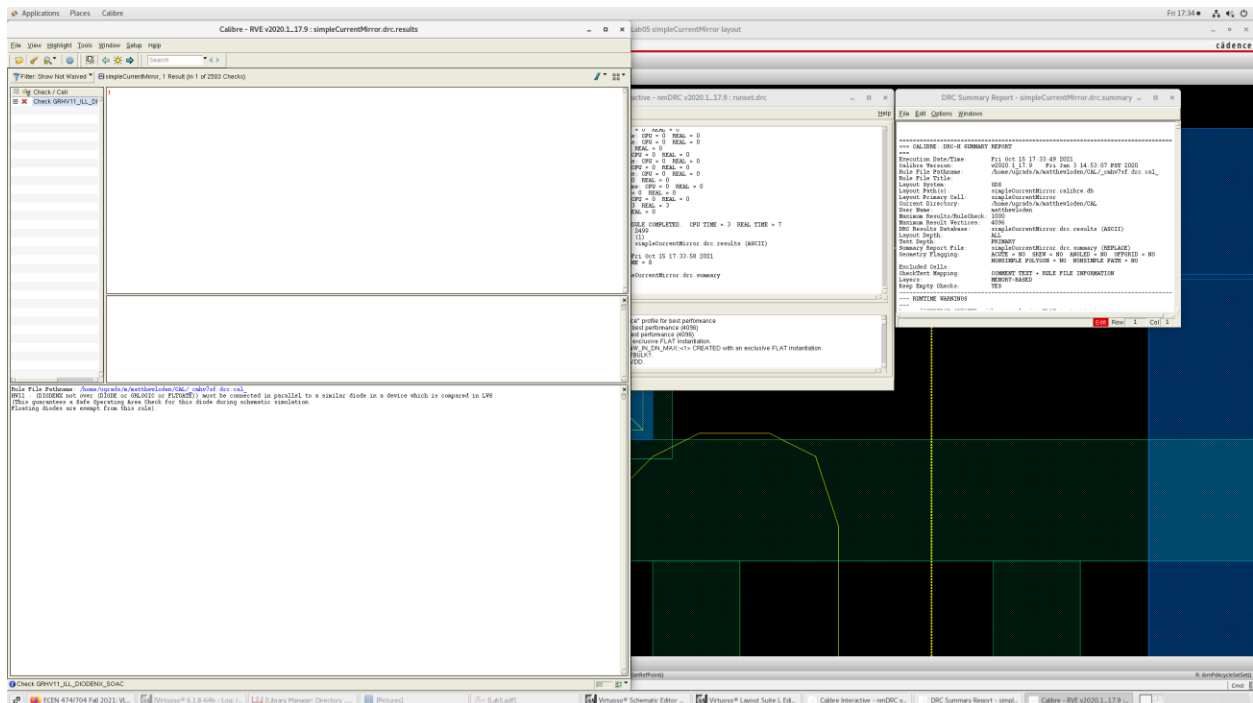
Output Impedance



Layout:



DRC:



```
Rule File Pathname: /home/ugrads/m/matthewloden/CAL/cmhv7sf.drc.cal
HV11 : (DIODENX not over (DIODE or GRLOGIC or FLTGATE)) must be connected in parallel to a similar diode in a device which is compared in LVS
(This guarantees a Safe Operating Area Check for this diode during schematic simulation.
Floating diodes are exempt from this rule).
```

The only Error for the DRC seemed very strange so I don't think it was particularly applicable.

LVS:

```
simpleCurrentMirror.lvs.report
/home/ugrads/m/matthewloden/CAL/simpleCurrentMirror.sp ('simpleCurrentMirror')
/home/ugrads/m/matthewloden/LVS/simpleCurrentMirror.netlist.lvs ('simpleCurrentMirror')
/home/ugrads/m/matthewloden/CAL/_cmhv7sf.lvs.cal_
Fri Oct 15 17:28:20 2021
/home/ugrads/m/matthewloden/CAL
matthewloden
v2020.1_17.9    Fri Jan 3 14:53:07 PST 2020
```

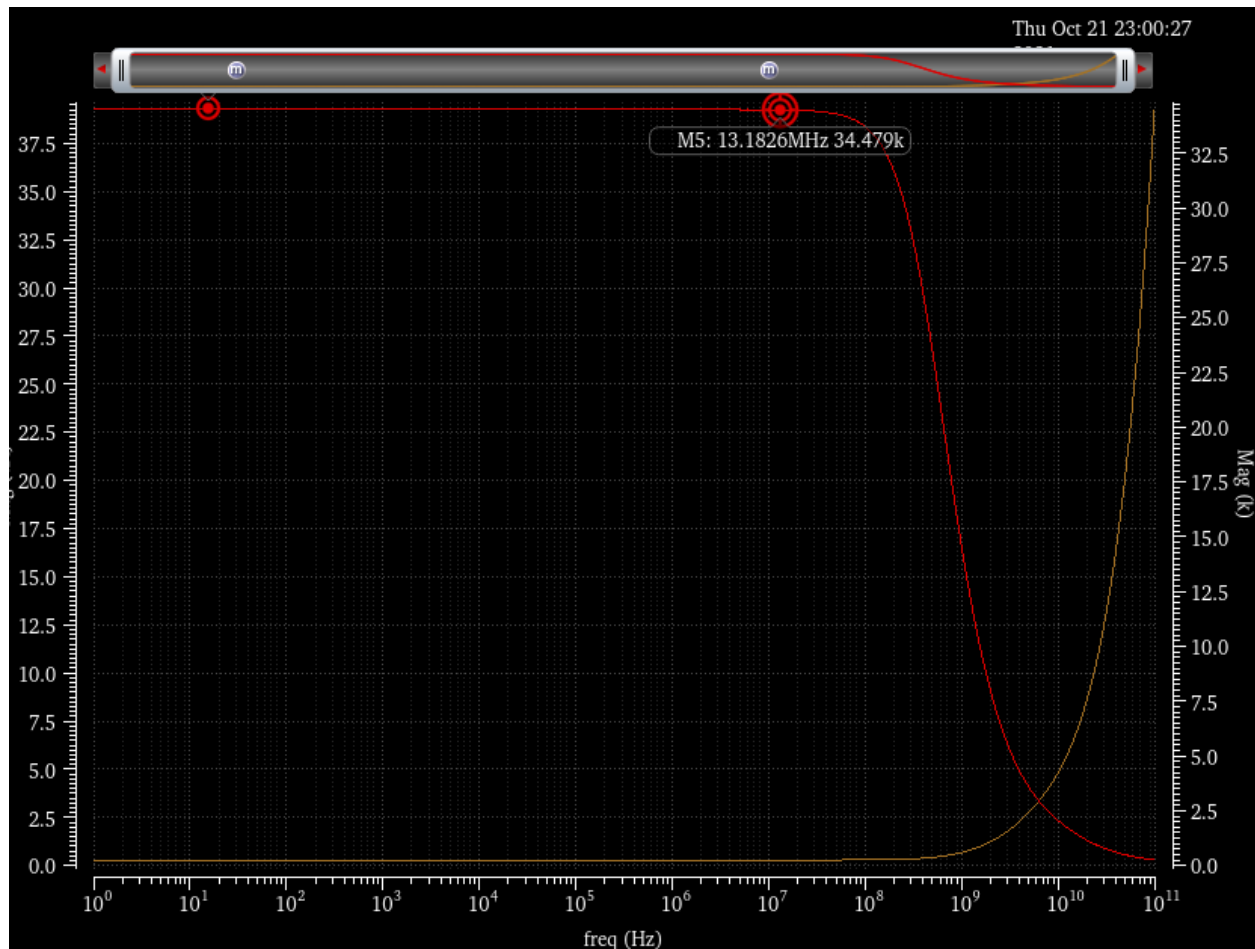
OVERALL COMPARISON RESULTS

```
#
#
#
#
#
#
#
```

```
#####
#
#  CORRECT
#
#
#####
```



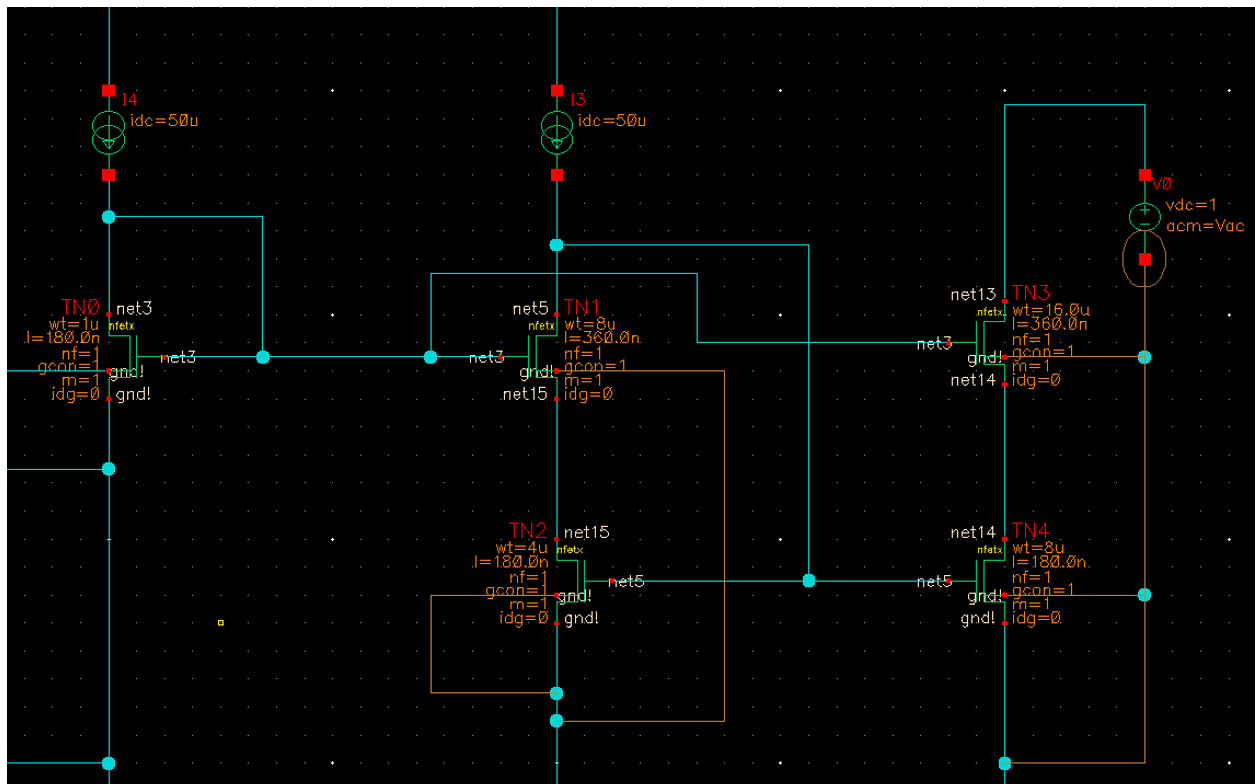
Output Impedance:



The prelab calculations for the compliance voltage were almost identical in magnitude. In addition, the output impedance value was almost identical from the two different simulations. This implies that the layout was very nearly identical to the idea transistors. The only point of difference was in the roll off frequency that either met with the simulated data rolling off a couple of Mohms later.

Wide Swing Cascode Current Mirror:

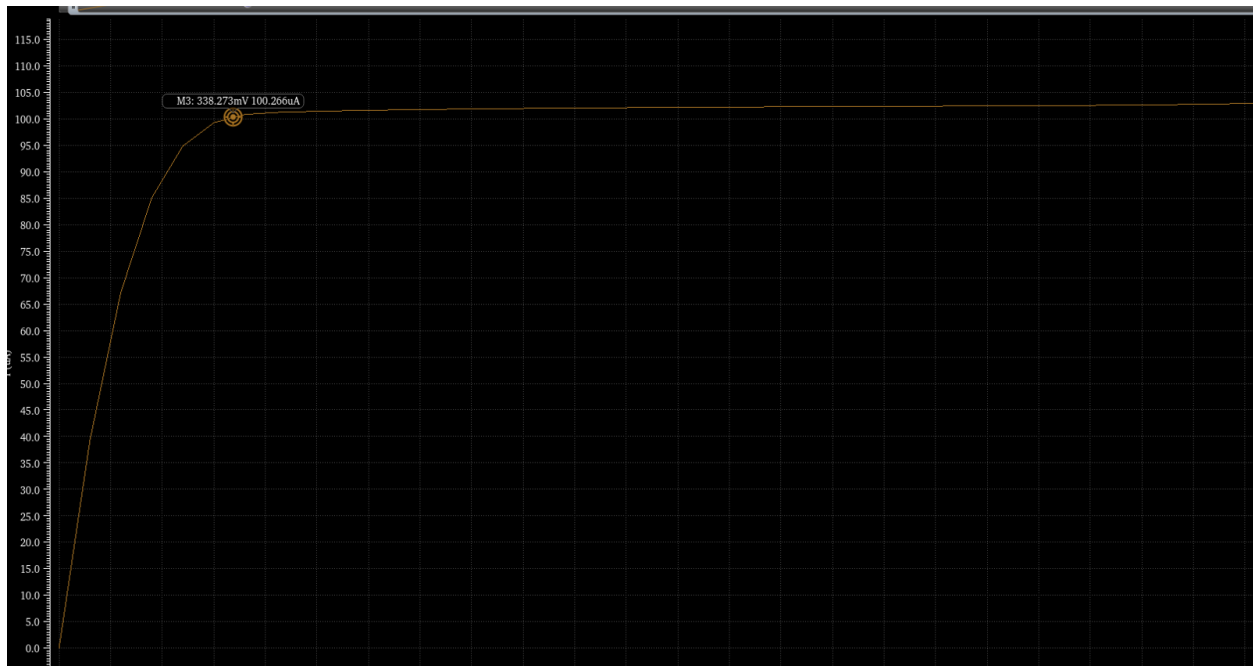
Schematic:



Test Points of Data:

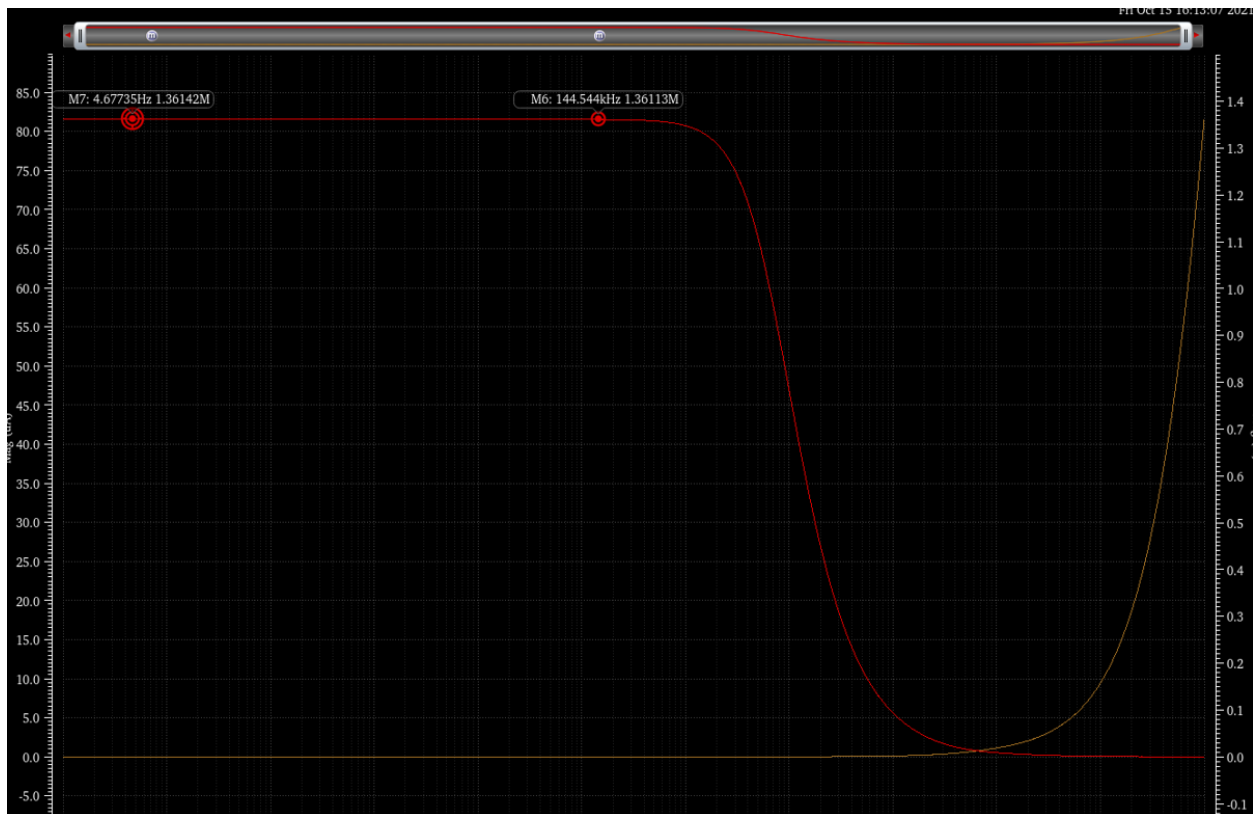
Compliance Voltage



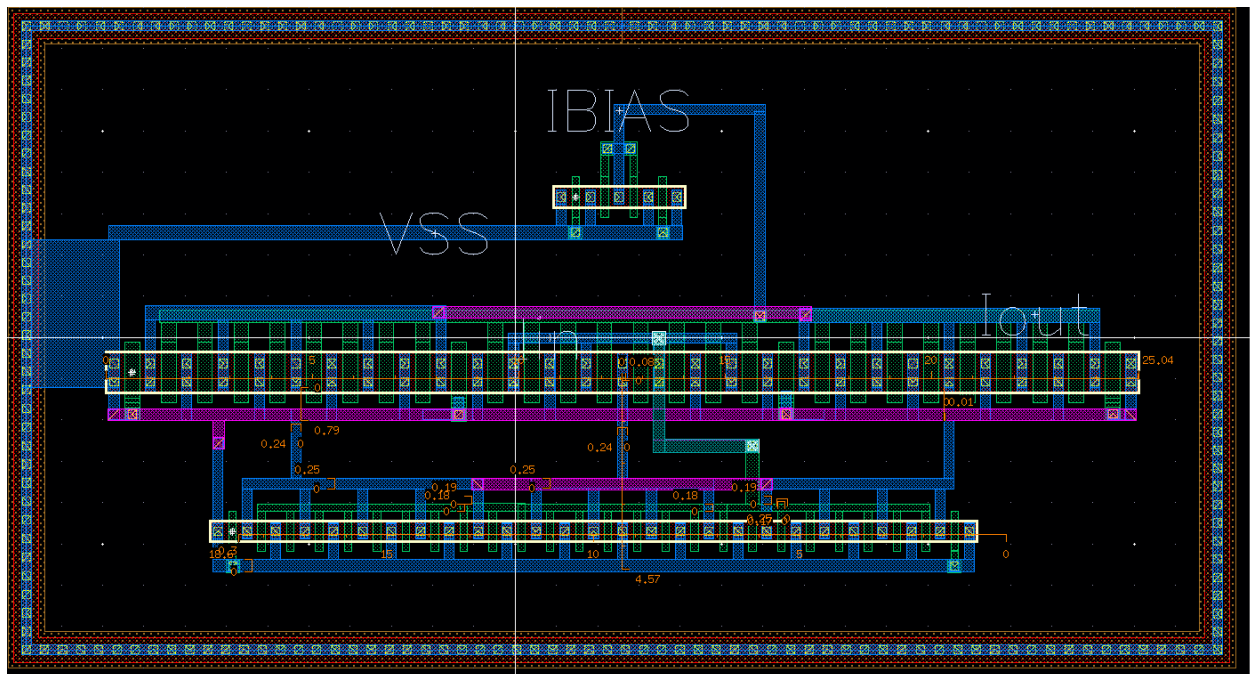


=338.27mV

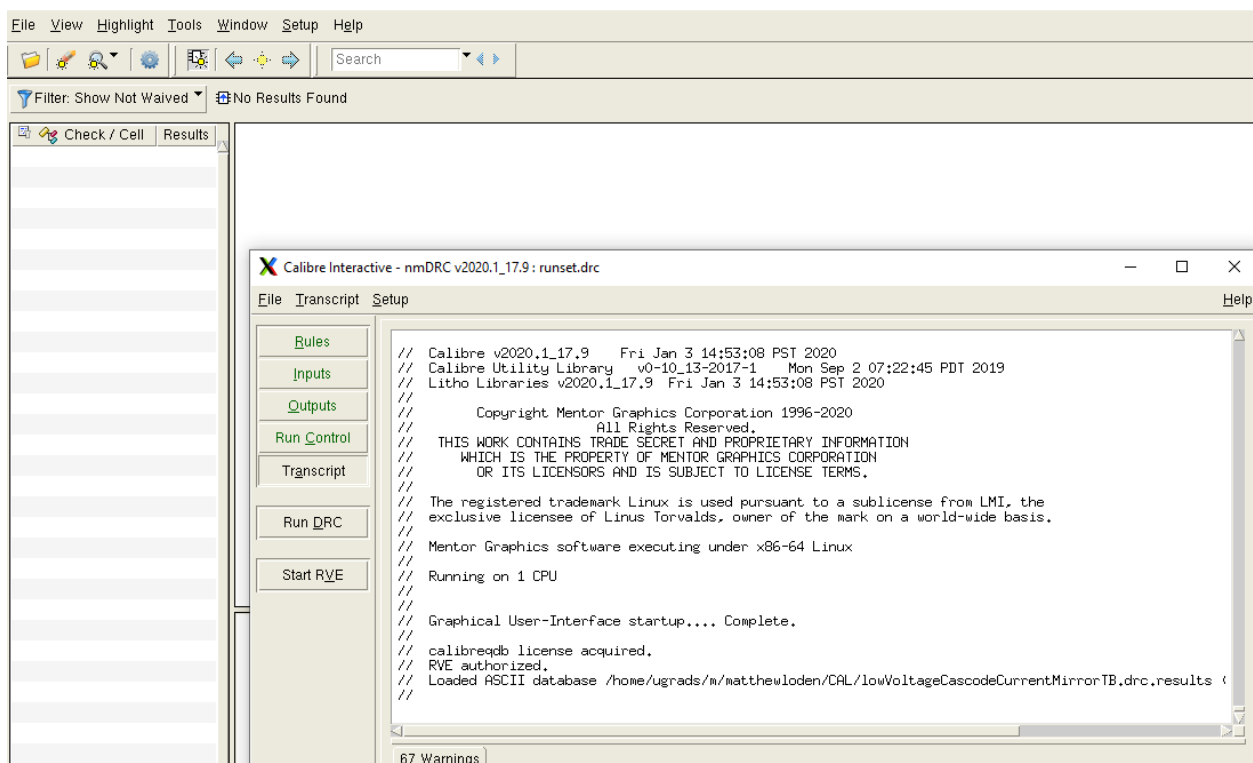
Output Impedance



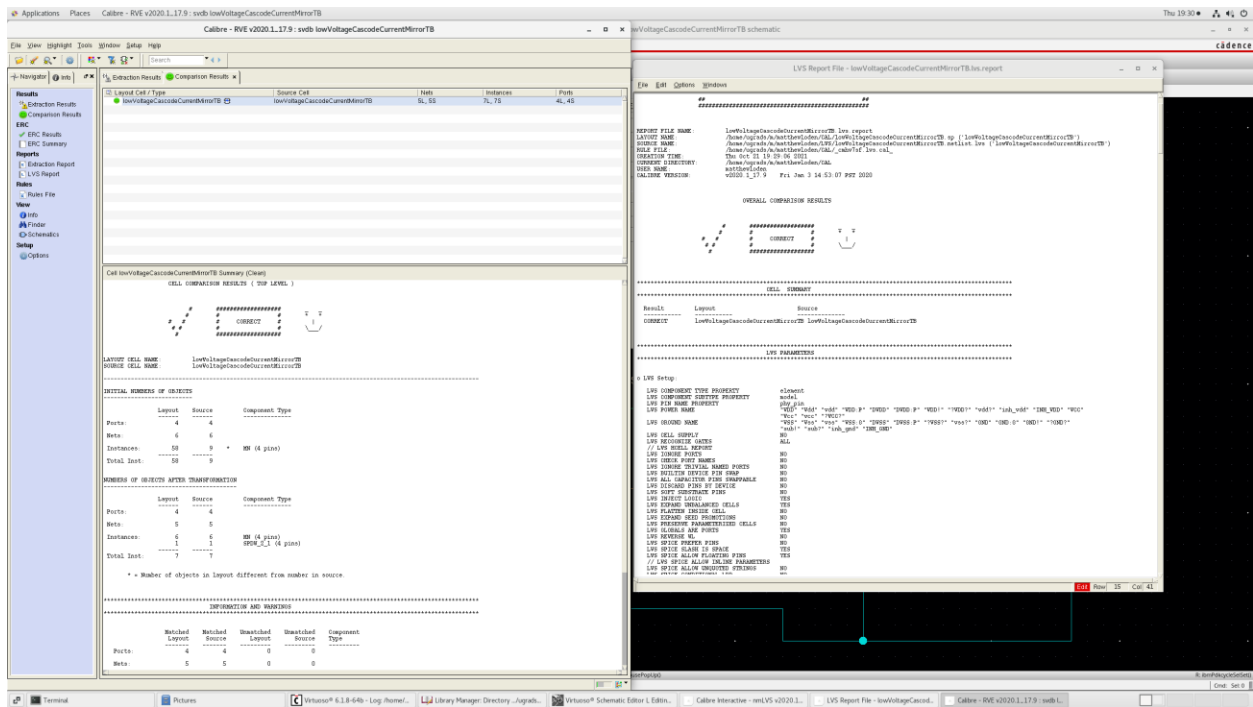
Layout:



DRC:

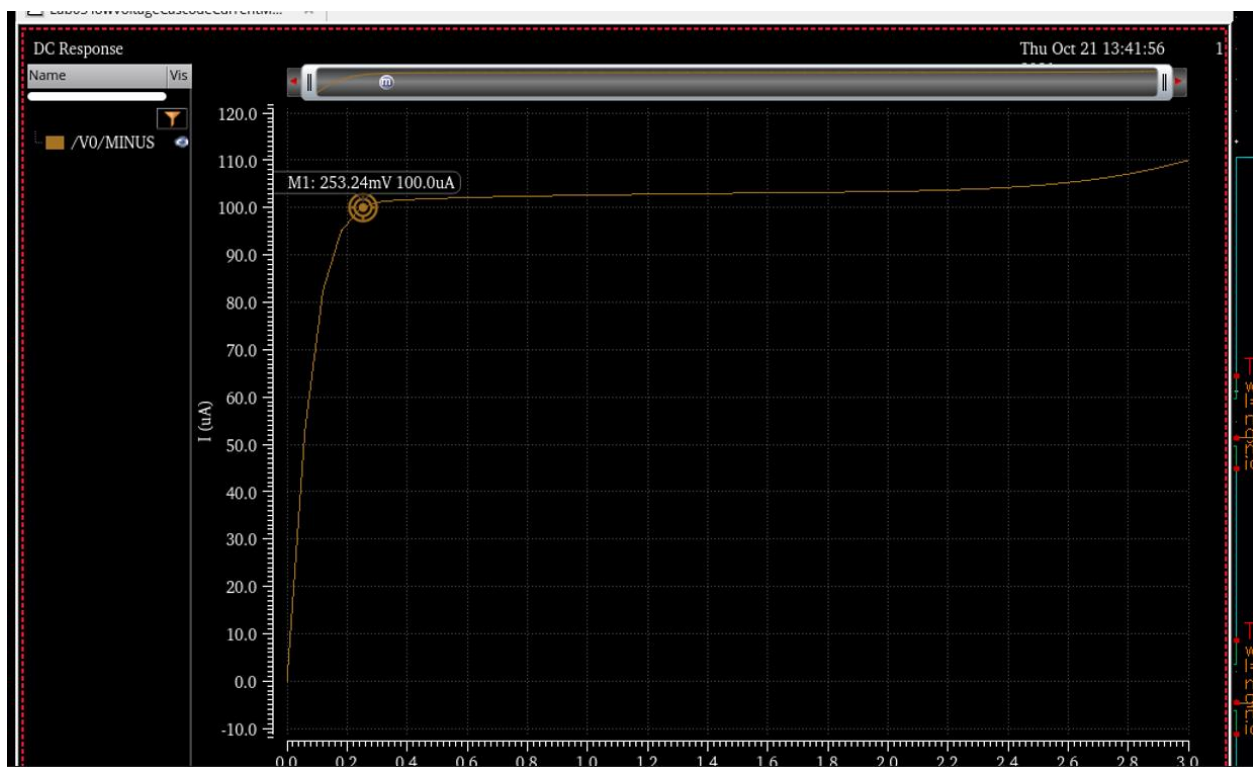


LVS:

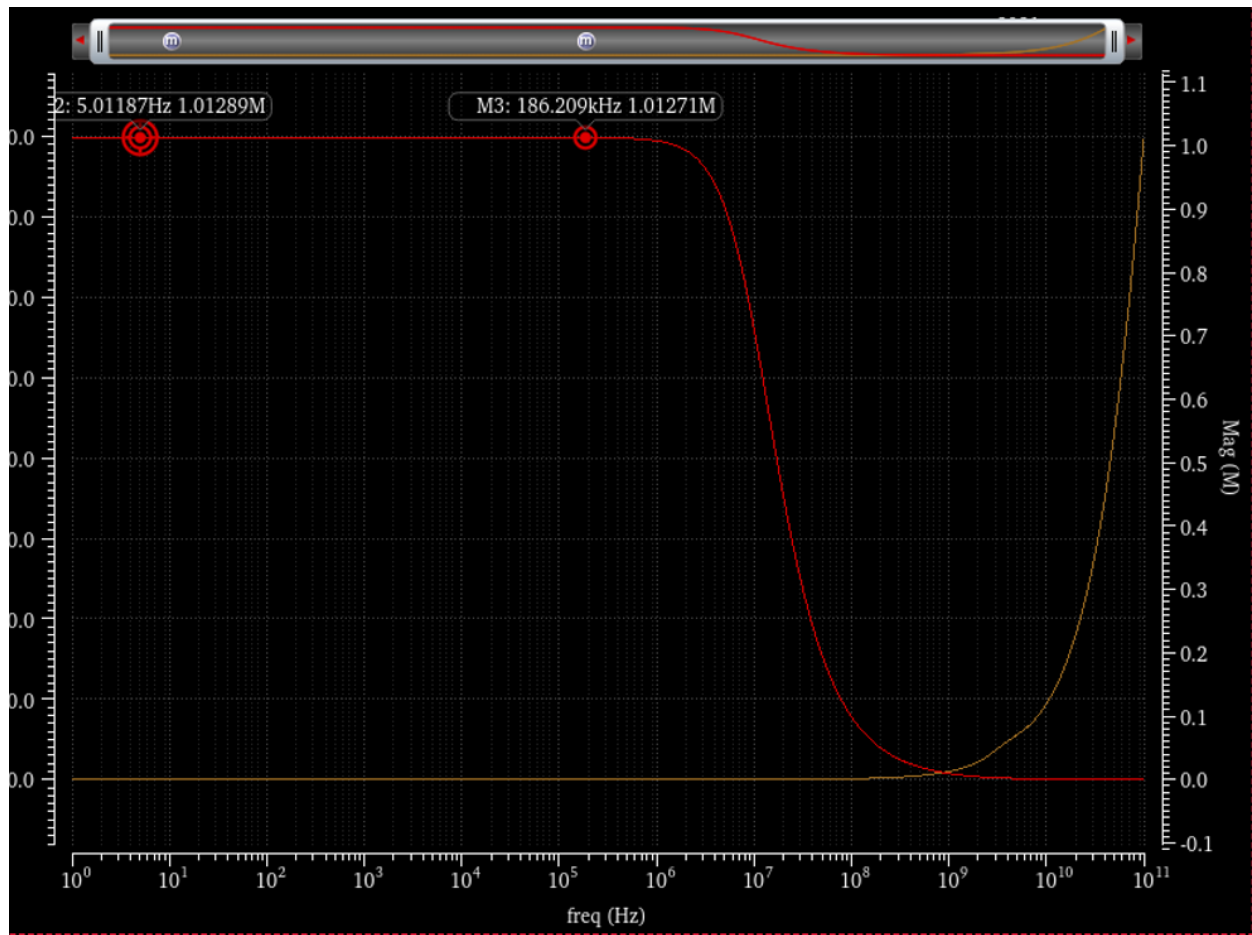


Post Layout Calculations:

Compliance Voltage



Output Impedance



The output impedance was slightly lower than the value calculated from the prelab data and corresponding schematic however it still met the required $>1\text{Mohm}$ value. In addition, the compliance voltage was noticeably lower for the post lab simulations by almost a full 100mV.