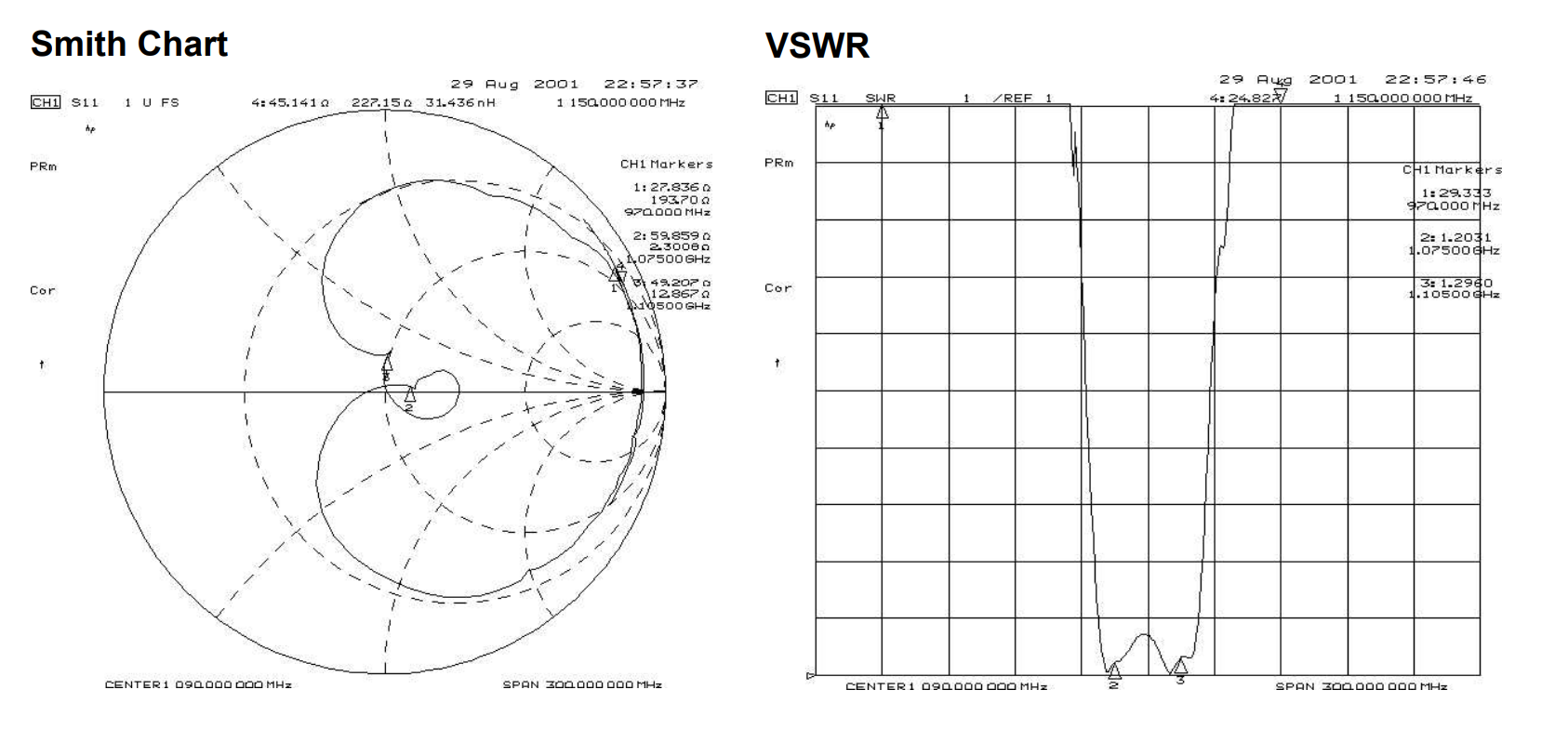
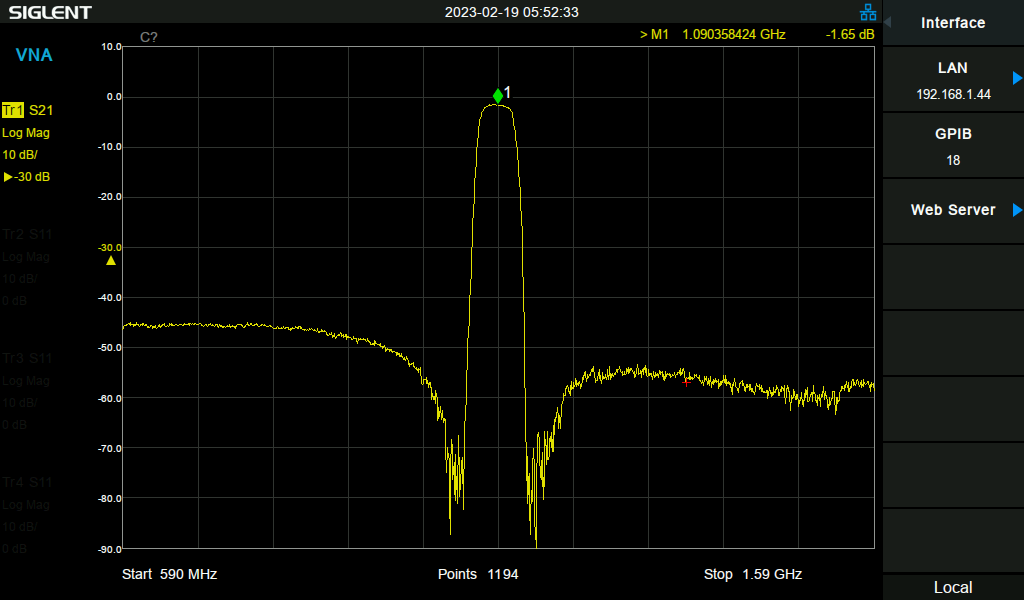
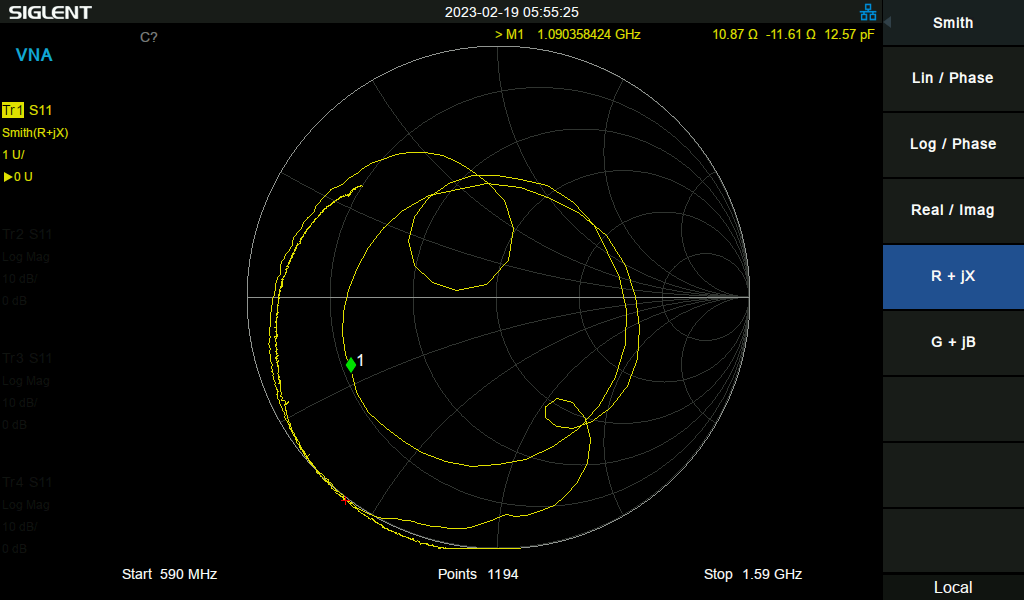
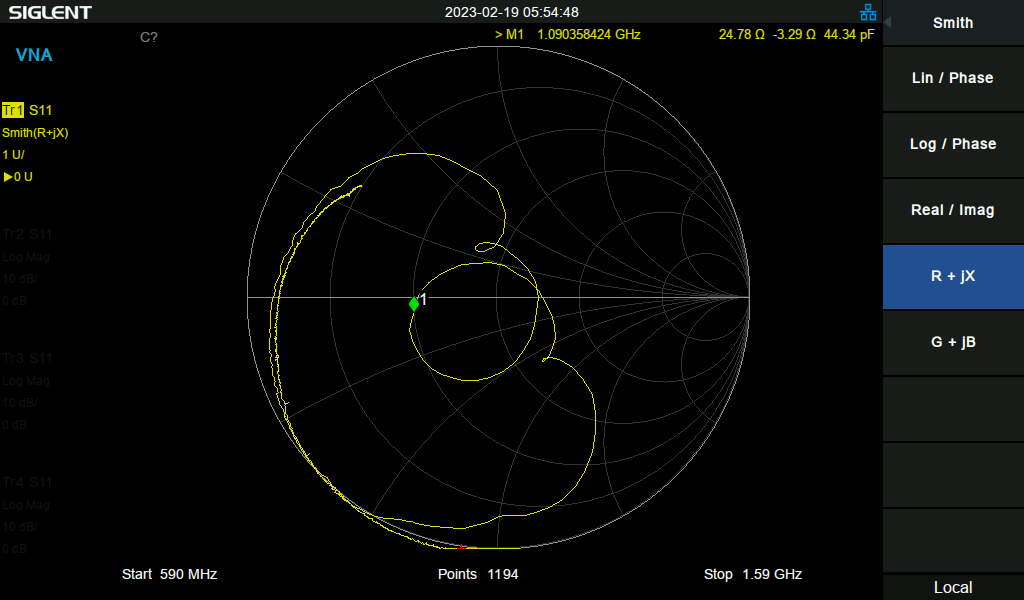
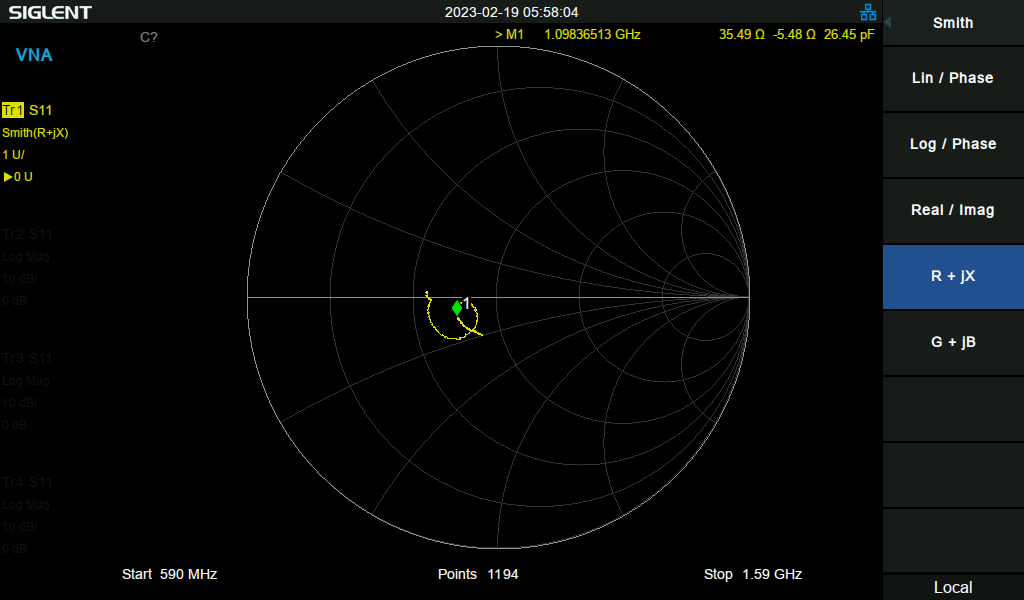
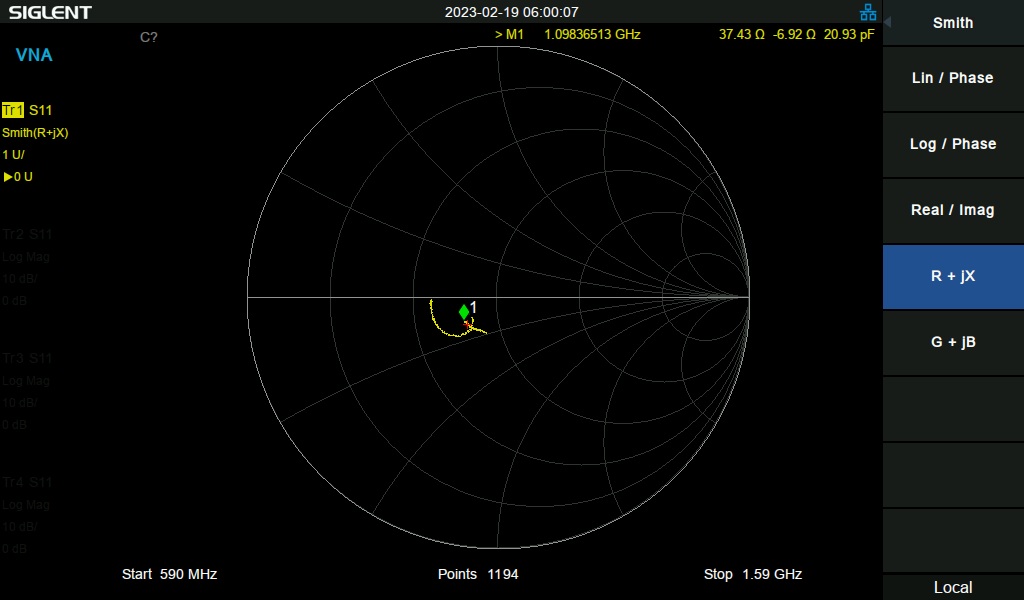
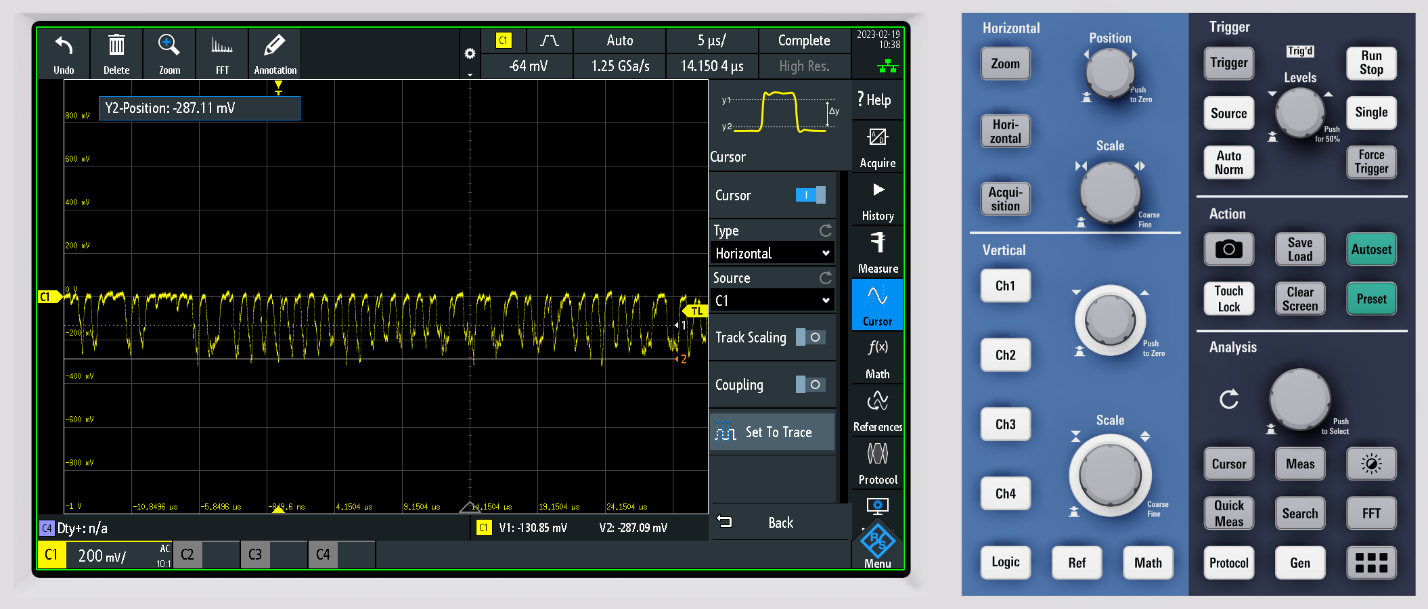
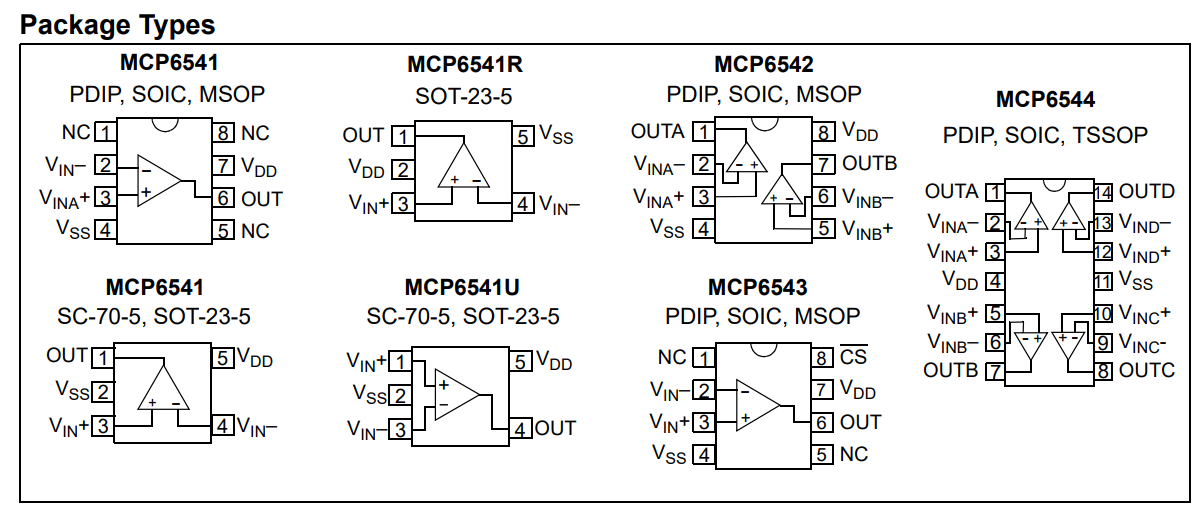
Design Notebook

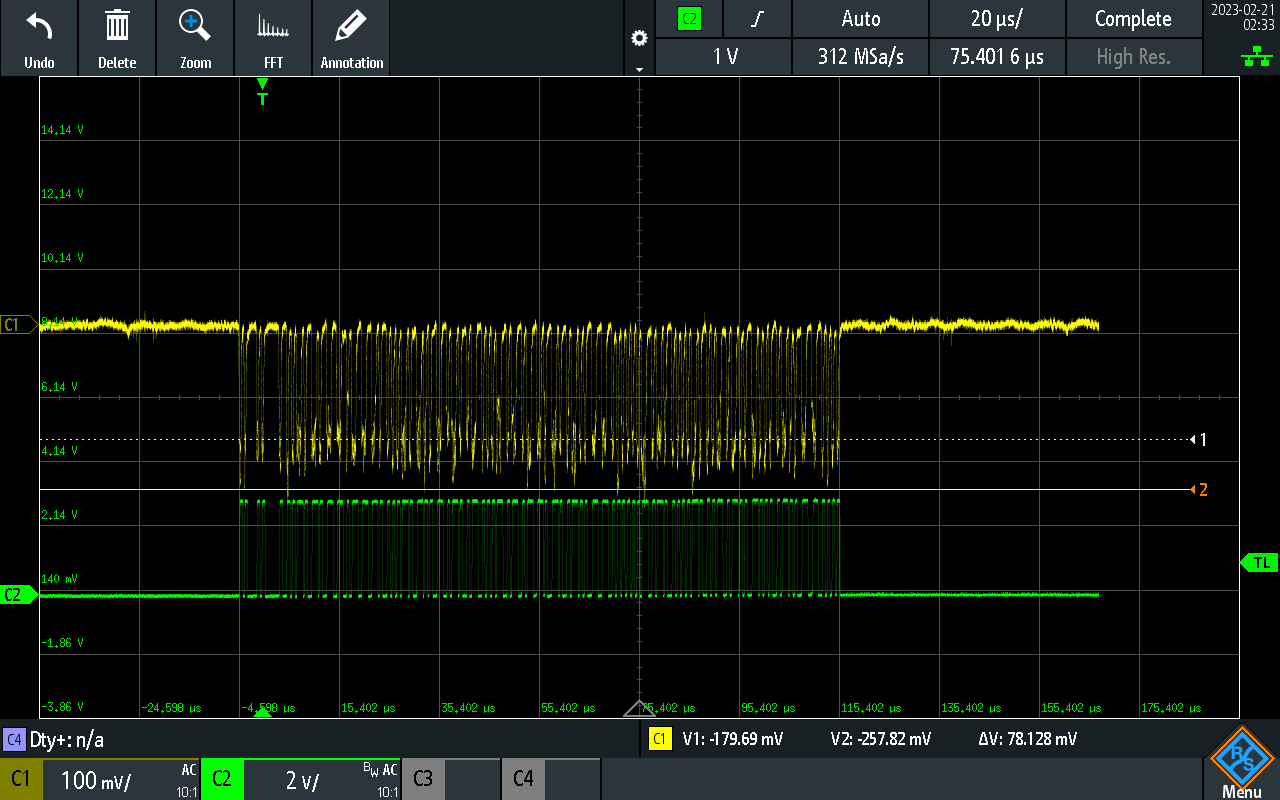
# 2023-02-18 RF Bringup

* Proto RF board bringup
  + SF2312D SAW Filter Datasheet
    - 
  + RF board S21 frequency response with 30dB attenuator on output
    - 
  + RF board S11 input match (powered off)
    - 
  + RF board S11 input match (powered on)
    - 
* Proto detector board bringup
  + Input match without power
    - 
  + Input match with power
    - 
* Decoding ADS-B Messages
  + 
* Notes for next PCB Rev
  + ADS8314 has internal coupling cap, can ditch 39pF cap on input to RF detector board.

## 2023-02-19 MCU Board Bringup

* Notes for next time
  + Remember to look for unconnected in the PCBNew DRC! Boy.
    - 2N7002 MOSFET gate was not connected.
    - Comparator output was not connected to Pi Pico.
  + MCP5941U is a DIFFERENT footprint than the MCP6541! I got the MCP6541U, which is pin compatible with the LMV331 but is different than the MCP6541.
    - 
  + MCP6541 is too slow to decode ADS-B at 1MHz. The propagation time is 4us! This results in only a partial slew out of the comparator when the input signal has made the full pulse. Not good.
  + Switched comparator to LMV331 (~400ns propagation time, slowish but maybe fast enough). Need to add an output pullup resistor since the output of the LMV331 is open collector.

## 2023-02-20 Decoding ADS-B?

* Replicating ADS-B waveform with arbitrary function generator.
  + 
    - Downsampled to 1:20 sample ratio. 312Msps/20 = 15.6Msps