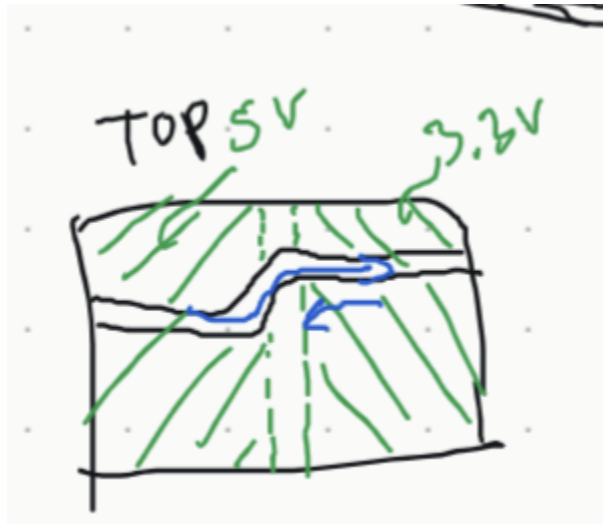


- Ordering logistics question
  - Send links directly to Chis
  - Confirm availability
    - Chips, evaluation modules, samples, ASAP first task
    - LNAs finalized already
    - Finalize chip selection, get those eval boards
- Coordination with Chis
- Help with RF circuits
  - (At this point) Select PCB material
  - Microstrip transition line on PCB (char impedance, 50 ohms)
    - Proportionality of width of strip, height of substrate, and dielectric constant of PCB material
  - ADS: linecalc is application within it
    - MLIN
    - Yields known width for lines
    - "Controlled impedance line"
  - Stackup: another important consideration
    - RF
    - RF ground
      - RF doesn't see anything below the RF ground layer, fields confined there
      - Induced current density on ground plane
      - Just has to be a big chunk of metal, could be power, gnd, or split plane
      - What you don't want:



- It'll cause a lot of reflections and noise

- ① Refined stackup ( $H, \epsilon_r$ )
- ② Route lines with  $w$
- ③ Keep a clear RF GND

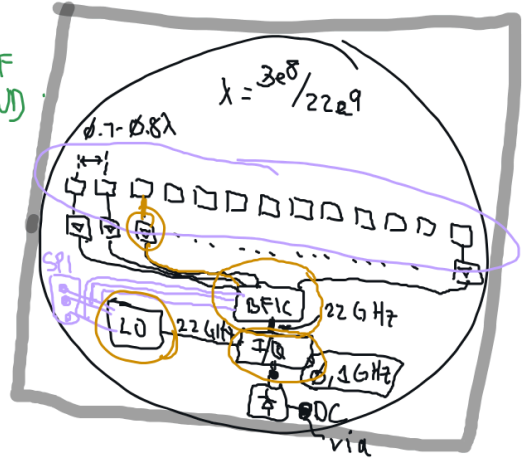
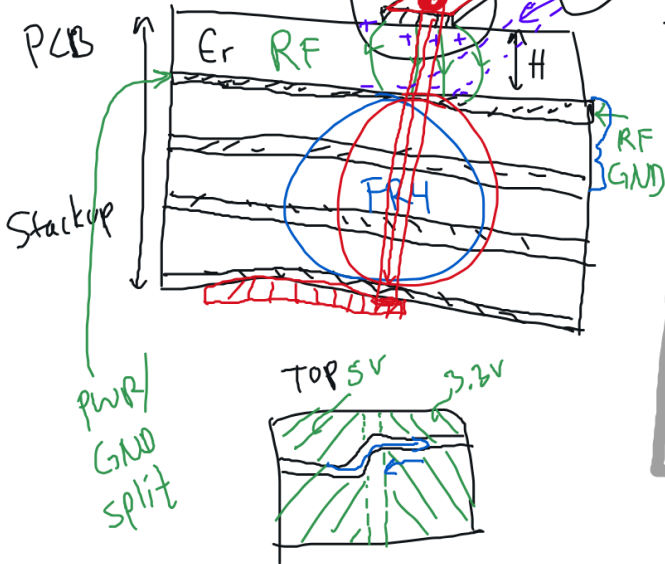
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- 3) keep a clear RF ground below it
- 4) Use a low loss epsilon R
  - No FR4 (can't go past a couple MHz)
  - Rogers 4350B, 4003C, etc.
  - Chisum will help us find board manufacturer
- Top layer has all RF circuit stuff (block diagram: BFIC, LNAs, etc). Then, via down
- SPI bus comes up to talk to BFIC and LO thru via
- Chisum's timeline
  - Finalize design late next week
  - Leaning toward: swept local oscillator, DC power for each 1 MHz
    - Question: what is bandwidth we want to sweep over? What is channel width?
  - Expl of circuit block diagram we talked about on Monday
- Eval board for chips we already know about (like LO, LNA, BFIC?)
  - Hook em up with coax & get code working with whole system pre-chip
  - Xmicrowave blocks that chis already has, probs for LO, IQ demod, BFIC
  - Finalizing process means picking chip & finding eval boards

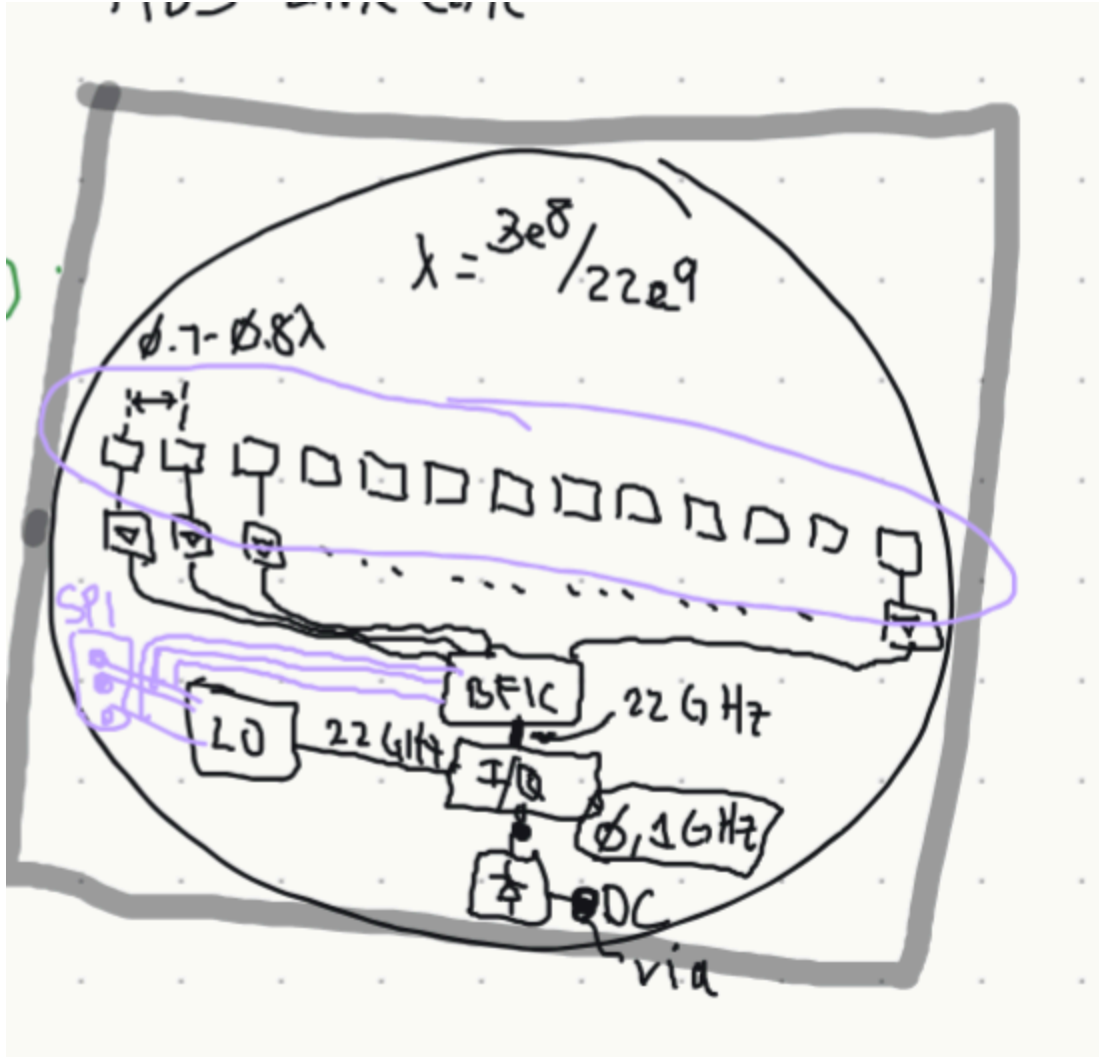
- ① Defined stackup (H, Er)
- ② Route lines with w
- ③ keep a clean RF GND
- ④ Use a low loss Er

No FR4  
Use Rogers 4350B, 4003C, etc.

$$Z_0 = 50 \Omega \text{ at } f(w, H, \epsilon_r)$$

→ ADS Line Calc





- 24GHz electronics that we're operating at 22GHz, final choice to operate at 24 would only be antenna layout stuff