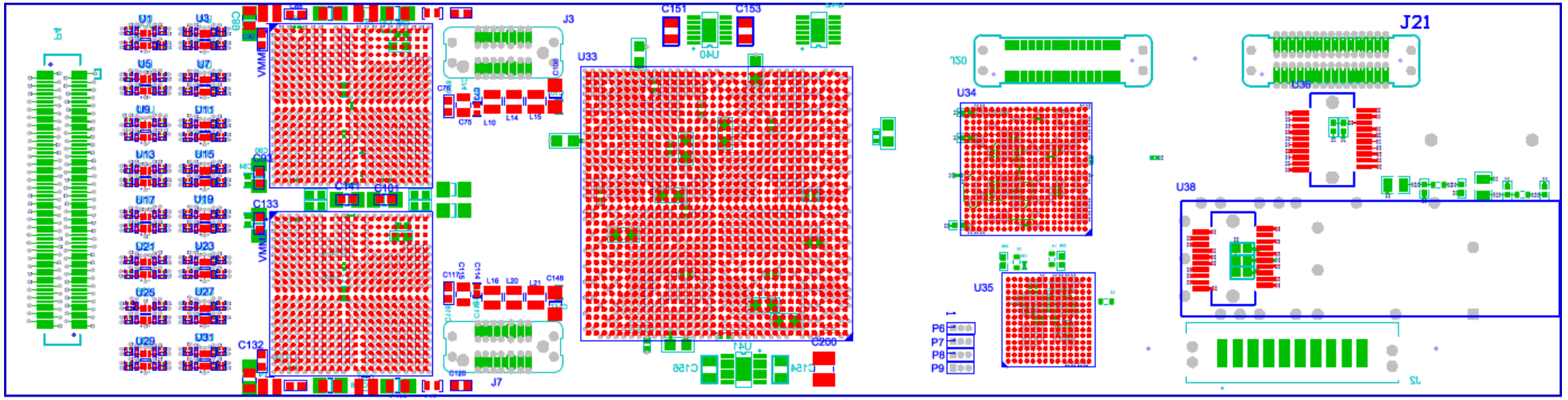
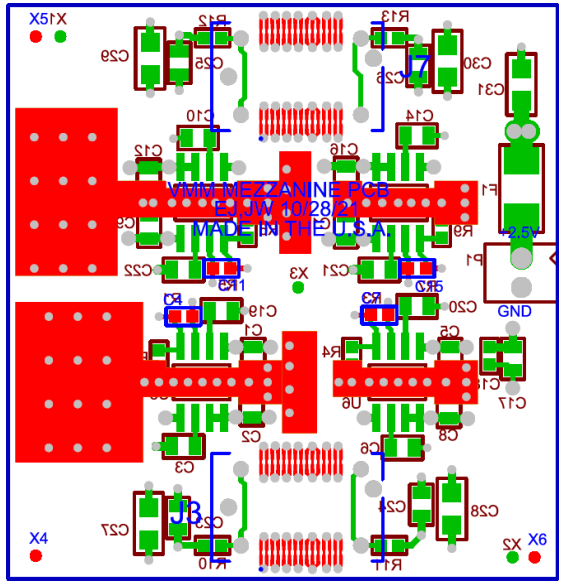
VMM prototype update – 11/11/21

- VMM power mezzanine card
  - PCB (6) shipped to JLab – due 11/12/21
  - Quote for assembly due today. Fast track assembly using credit card (no wait for requisitions).

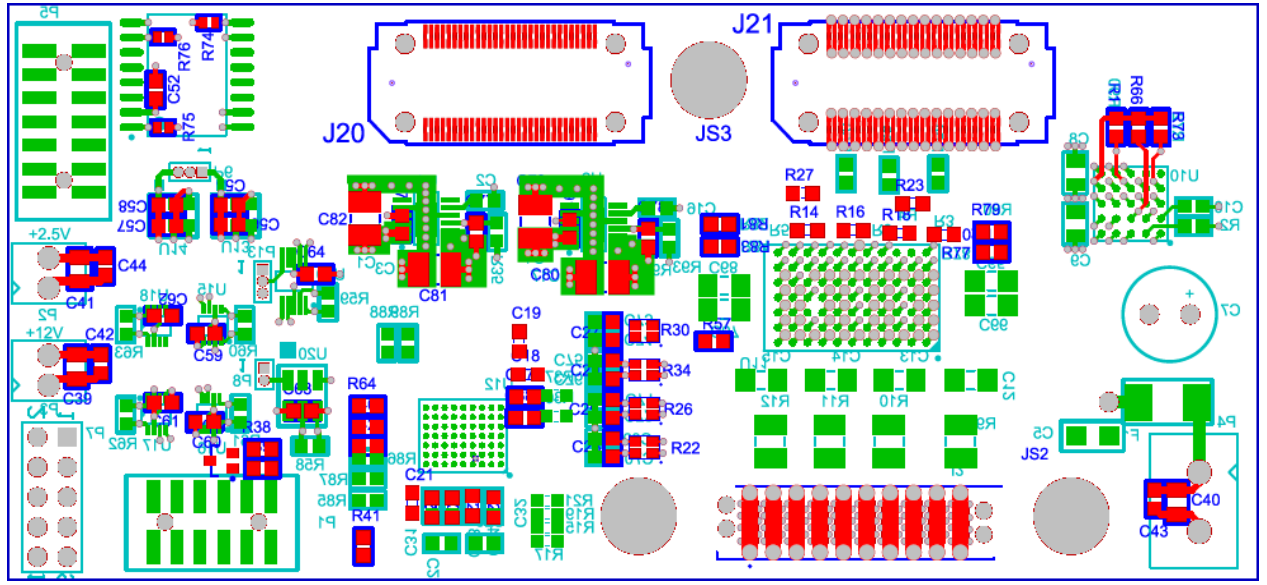
- FPGA power mezzanine card
  - Replaced ‘ultralow’ noise regulator (LT3045) with ‘low’ noise regulator (LT3065). Layout requirements of LT3045 were demanding and difficult to satisfy in our application. LT3065 is more than adequate.
  - Analyzed power dissipation in LTM4460 (4 x 4A supply). Efficiency is lower with +12V input. Small module package (15 x 9 x 5 mm) will dissipate ~6W at full load. To be able to handle future firmware changes we improved heat sinking capability of PCB (add copper on outside layers).
  - Finalizing and reviewing these changes now
  - Expect ready for PCB quote next week
  - If cost is low enough we can fast track using credit card

VMM base board





VMM power mezzanine



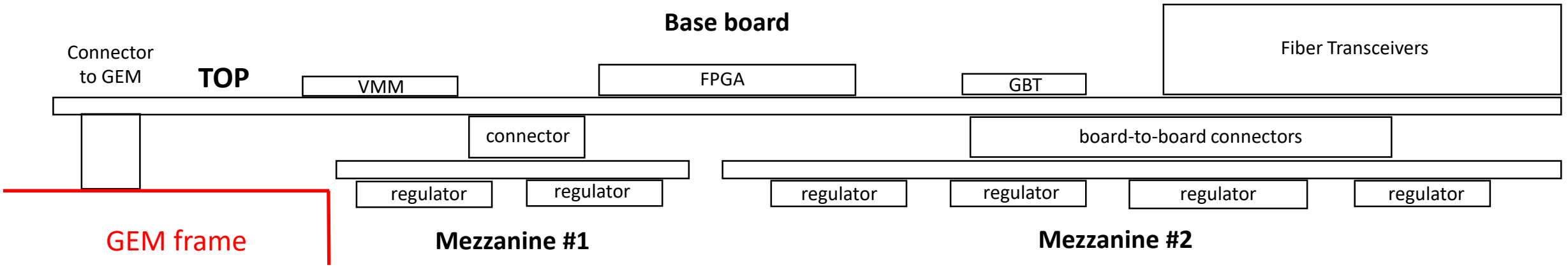
FPGA power mezzanine

- VMM base board
  - Base board to mezzanine connector update done
  - Focus will shift to finishing this board after FPGA mezzanine PCB out for fabrication

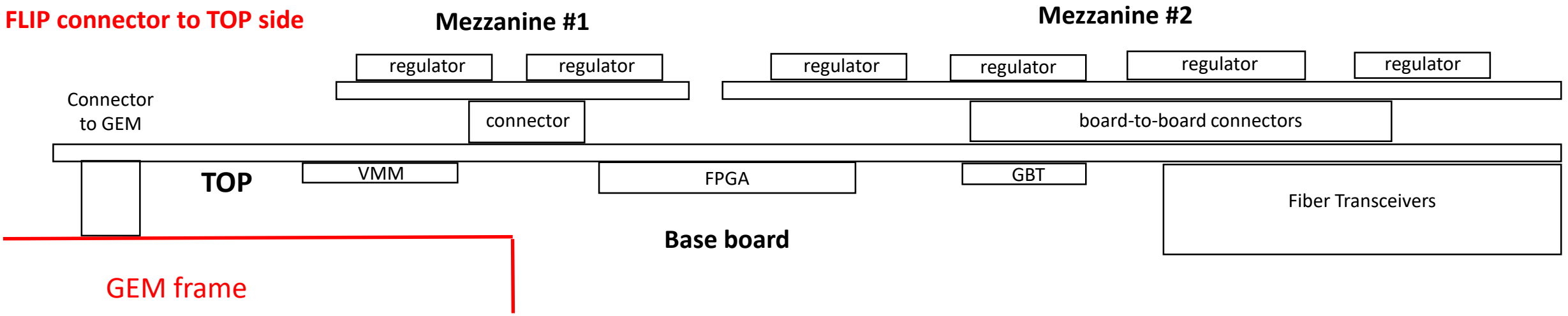
  - Measured two prototype GEMs at JLab and looked at design file of a UVA prototype GEM
  - **ALL** have different distances between connector on GEM and edge of GEM frame

  - To make prototype compatible with all prototype GEMs we moved GEM connector on base board to **TOP side** of board

Connector on BOTTOM side



FLIP connector to TOP side



- About a final scheme for SoLID
  - Most likely the final front-end cards for SoLID will support 4, 8, or more VMM chips
  - Makes sense – point of load power system can be scaled up efficiently for more VMMs and more (or bigger) FPGAs
  - How do we connect the GEM with a front-end card that supports many more channels?
  - What we learned about tight connector alignment tolerances between base and mezzanine boards joined with multiple connectors **also applies to the GEM – front end card interface**
  - To avoid difficulties we should join the GEM and front-end card with a single high-pin count connector if possible