Mechanical Design Integration Issues Regarding EMI Sealing Options

- **Structural implications of using Nickel plating at the CAL-Grid joint**
  - The CAL-Grid joint still relies on friction to carry LAT loads
  - Friction testing has been done using bare aluminum and alodined surfaces
  - Nickel plated features have not been tested to establish friction allowables → this would need to be done if nickel were proposed as the baseline for both sides of this joint
- **Thermal design**
  - Grid perimeter and BEA inside surfaces
    - These surfaces transfer heat radiatively from the BEA to the Grid
    - High-emissivity coating are needed on these surfaces to assure that they are thermally coupled
    - These should be anodized, not nickel-plated
  - E-Boxes
    - Nickel plating is low emissivity, thereby reducing radiative coupling between boxes
    - Preferred thermal solution is a high emissivity coating, which tends to increase radiative coupling, flatten out temperature peaks, and buy 1-2 degC margin
  - X-LAT Plate
    - One option for auxiliary cooling of E-Boxes during thermal and other testing is to add a chill plate under the X-LAT Plate. This cools the E-Boxes by radiative heat transfer
    - For this to work, the bottom (-Z) side of the X-LAT Plate needs to be a high emissivity surface
    - The alternative to this is to add auxiliary water/glycol cooling lines to the X-LAT Plate, that are blown dry and disconnected when not needed, and for flight

Mechanical Design Integration Issues Regarding EMI Sealing Options

- **Venting**
  - **A simplified venting scheme is used for the LAT, to avoid analyses/testing of venting a the LAT level**
  - **This requires venting of the large air volume around the E-Boxes through the EMI Skirt, not up past the CAL and TKR**
  - **Louvered venting holes are needed in the EMI Skirt to facilitate this**