HRPPD Meeting #9 Update

2026-02-10

Raymond Dawson

Jefferson Lab

U.S. DEPARTMENT of ENERGY

Current Status

Ceramic Tasks:

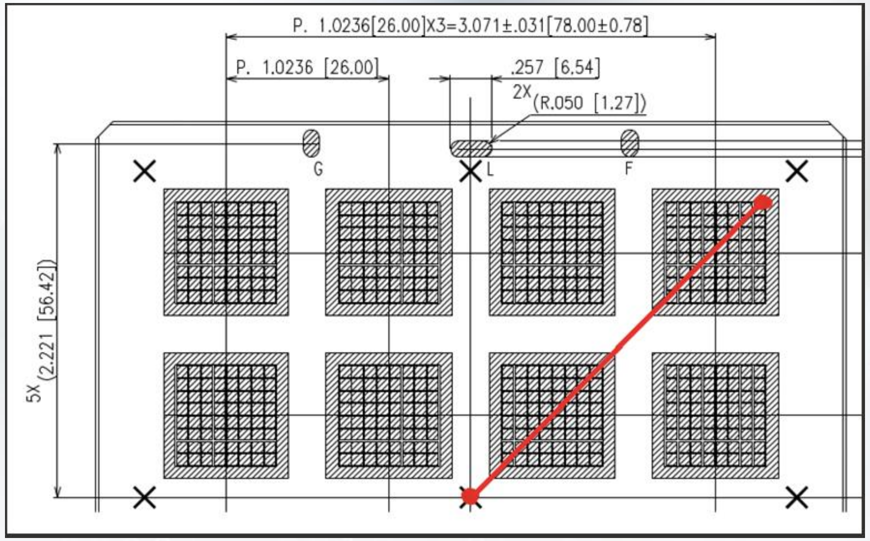
- Priority tasks:
  - Design files sent to group for review 2/9
    - Will send to Kyocera after approval for quote
  - Interposer tolerance stackup
    - Mark update
    - Additional updates from Neoconix
    - Ray will perform RSS on dimensions gathered

Non-Ceramic Tasks: Due after

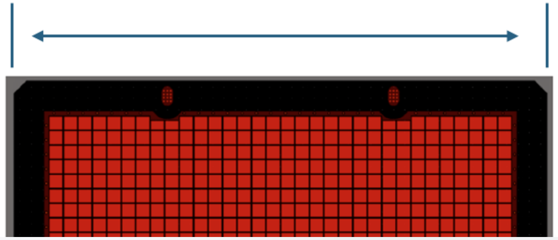
- Spacer thickness
  - TBD Will send ceramic and PCB 3D models to Alex once complete for spacer mockup
  - Need to update HRPPD STEP with locating feature
- Backplane Changes
  - Cables
  - Safety resistors
  - Bypass capacitors + ringing resistors
  - Connectors for HV connections – which model, plastic
  - Pogo pins vs interposer for HV connections
- FCFD Test Board
  - Waiting for update from vendor

Update from Kyocera

- Tolerance from the center of the substrate to furthest pad
  - Tolerance of +/-0.6mm is our best for now. It is possible to consider tighter tolerances in the future by collecting data and evaluating them with prototypes.
- Sorting process based on tolerance variations
  - If the quantity of the order is less than 100 pieces, the sorting process is possible. The sorting process affects the price.
- Tolerance of outline
  - Outline tolerance of +/-0.15mm is possible if machining process is used. The machining process affects the price.

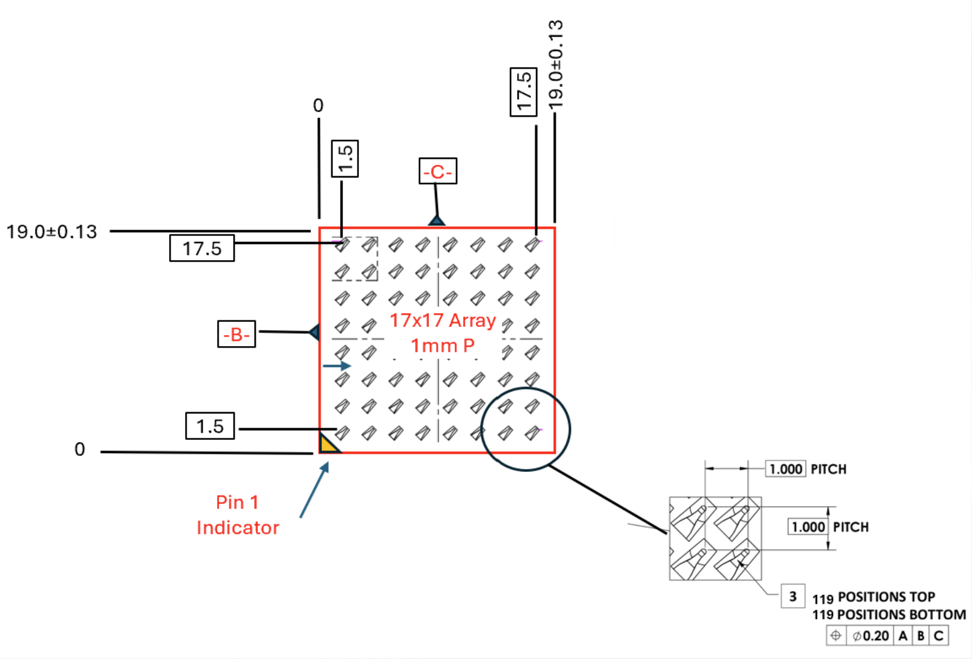


119.63 +/-1.2mm(standard process)
119.63 +/-0.15mm(special process : machining process)



Updates from Neoconix

- Received 3D model of interposer in compressed state
- Received pin location tolerances
  - Adjoining edges are set up as Datums B & C
  - Contacts centers are located 1.5mm Basic from the datums
  - Positioning of those contact centers are located within a theoretical Ø0.20 circle (or ±0.10)



Archive

Ceramic Pad Location Tolerance

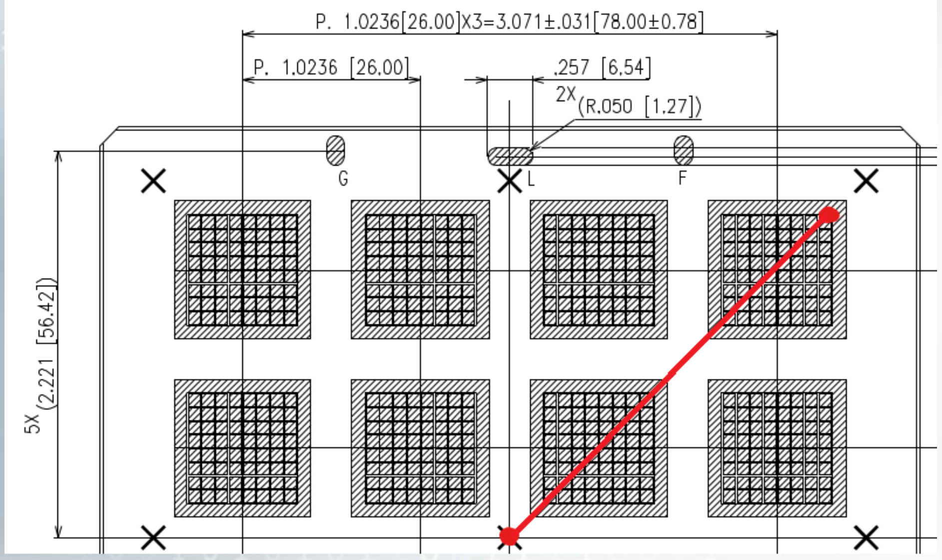
From Kyocera:

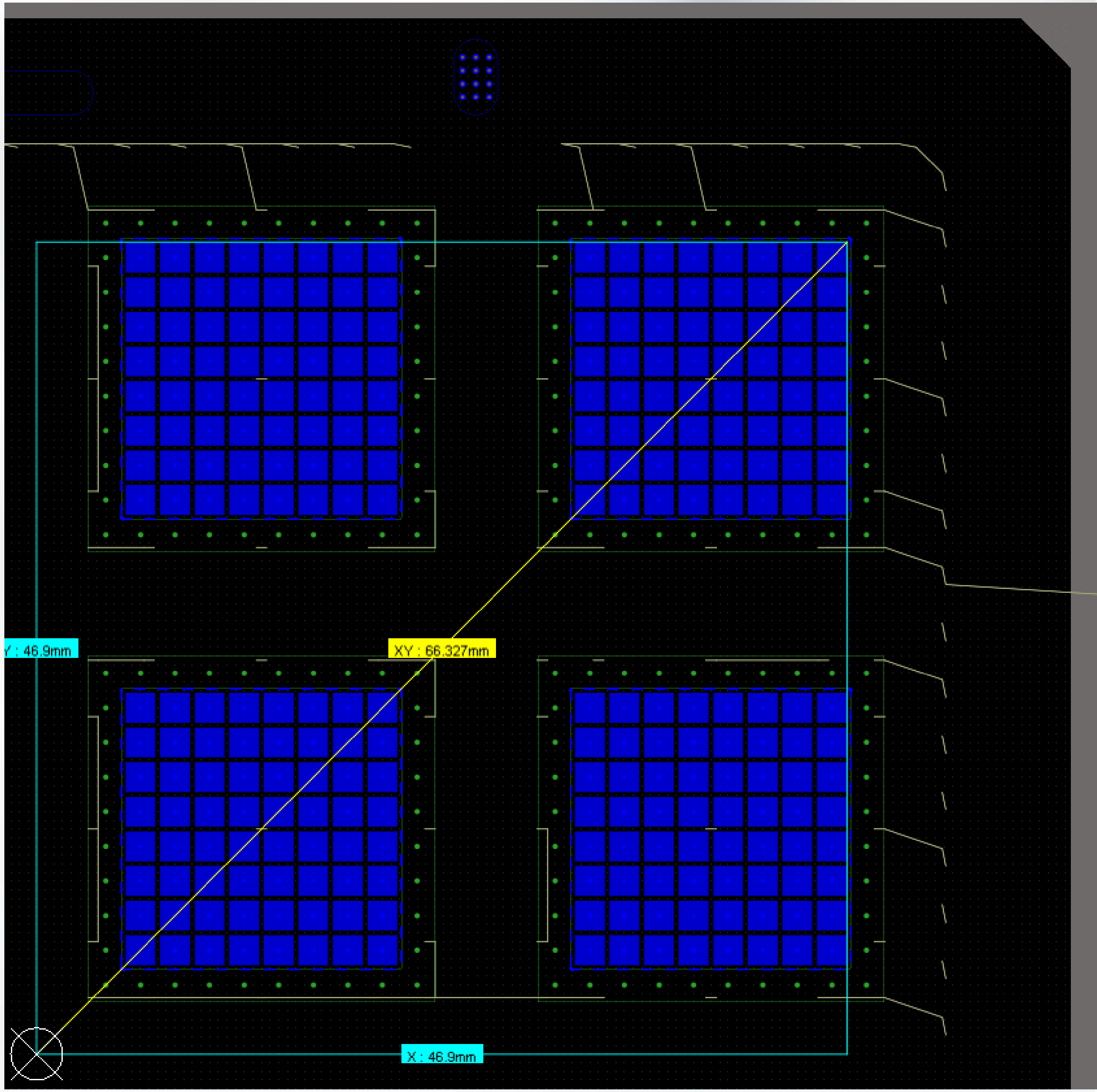
- “We can support +/-0.6mm for the dimension from the center of the board to the edge of the furthest pad.”

From Neoconix:

- Typical tolerance per side is

  18.5 ±0.13 x 18.5 ± 0.13 mm





Record of Design Decisions

- Amount of stitching vias will be increased
- Vacuum pad size will be 2.75mm square
- Interposer footprint will fit either “by2” or “by4” configuration

- Preliminary
  - Air side pads will be 1.2mm round with ground pour with 8mil clearance
  - If needed, HV pads will fit both pogo pins and interposers so either can be used with the ceramic
  - 1mm vs 3mm interposer will be independent of ceramic design

Completed Tasks

- Simulations
  - Complete - stitching vias, air side interposer pad reduction, GND planes
  - Complete 12/16 - Vacuum side pad size selection
  - Complete 12/23 – air side pad size, interposer ground pour
  - Complete 1/6 – Max air pad size + ground pour
  - TBD – Hi-Z input simulations
- High Voltage (HV) Design
  - Complete - preliminary pogo pins selected, HV spacing determined
  - Complete 1/6 – determined pad size for 2 pogos or 1 4x4 interposer, if needed
- Other
  - Complete - Break in ground ring placed
  - Test file import with Kyocera
    - Update 12/23 Kyocera confirmed successful import of ODB++