

# Preproduction requests



## Request for January/February

**CuW LD Full** – 18 | **CuW HD Full** – 63

- Available ~30(25) cut metal plates, ~10 has been processed
- Will need ~50(65) more from workshop
- At production rate of **8/day**, we can complete these request ~Jan.24

**Ti LD Full** – 20 (!)

- We have 14 cut metal plates, ~12 has been processed.
- KIT metal purchase arrival time?
- India metal arrival time?

11 + (8) plates laminated this week!

# Special (partial) requests



Purpose	Plate Type	Quantity	Cut-metal	Kapton	Transfer tape
Rad. Campaign (NTU)	CuW HD-Bottom	5	Yes	Yes	Yes
	CuW LD-Left (!!)	5	Yes	Yes	No
Cassette qualification (NTU)	CuW LD Top	1	No	Yes	Yes(*)
	CuW LD Bottom	3	No	Yes	Yes(*)
	CuW LD-Left	1	Yes	Yes	Yes(*)
	CuW LD-Right	1	Yes	Yes	Yes(*)
	CuW LD-Five	2	No	Yes	Yes(*)
	CuW HD-Left	1	No	Yes	Yes(*)
	CuW HD-Right	1	No	Yes	Yes(*)
Cassette qualification (UCSB)	Ti LD-Top	4	No	Yes	Yes(*)
	Ti LD-Bottom	2	No	Yes	Yes(*)
	Ti LD-Left	1	No	No	No
	Ti LD-Five	1	No	No	No
	HD LD-Top	1	Yes	No	No

- **In order (~30+spares)**
- Dimension tolerance needs to be finalized
- Can use old version if needed.
- No Kapton design was in flux (Oct 2024.)
  - Should we order Kapton+tape assembly directly?
- **Are mechanical changes finalized?**  
(Who do we contact/where will it be announced?)

Looking like earliest being a March delivery ...

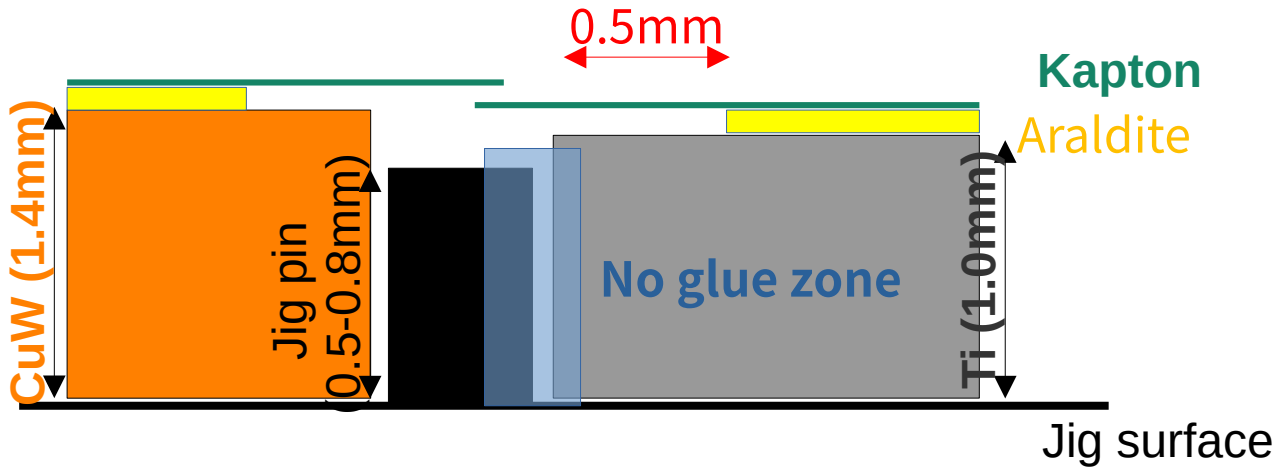
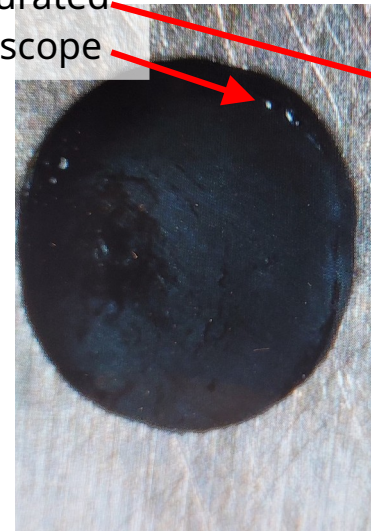
# Protocol changes - hole/slot cleaning

## New procedure:

- Clear ~5mm of glue from the alignment slots after *dispensing glue*. (Adds less than 1min/board)
- After lamination, do *not* clean with isoproponal (it pulls araldite out with capillary force)
- No additional cleaning is typically needed



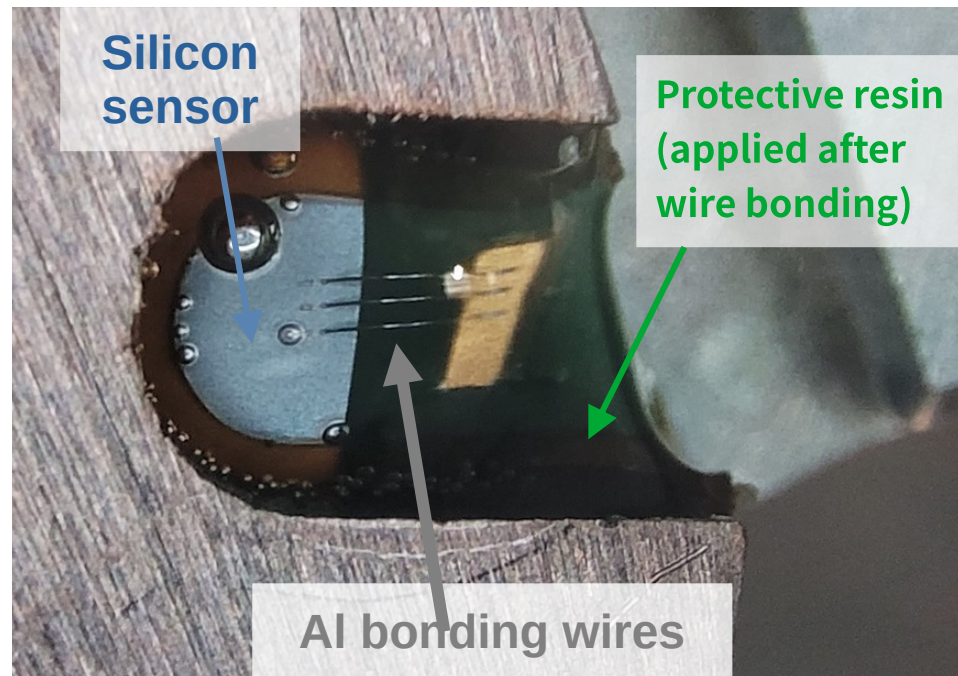
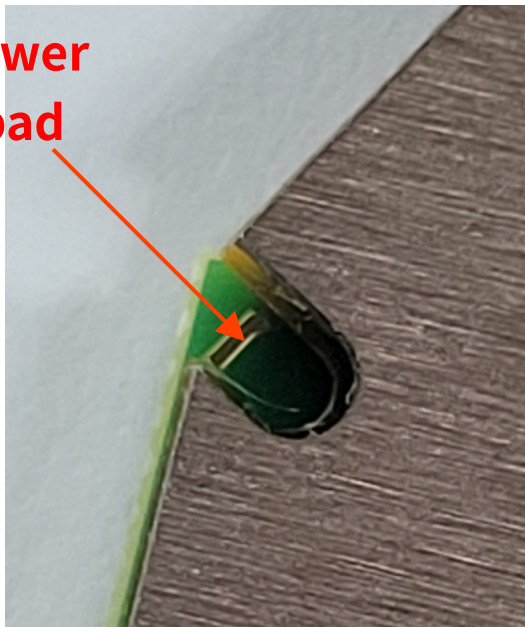
Amount of glue looks exaggerated under microscope



# Protocol change - notch/edge cleaning

Edges notches houses the PCB power plane-Si wire bonding area. **As long as no glue overflows beyond the kapton we should be fine.** Cleaning is now massively reduced in time scale! (**20-30min**/board → **<3min/board!**)

**PCB power plane pad**



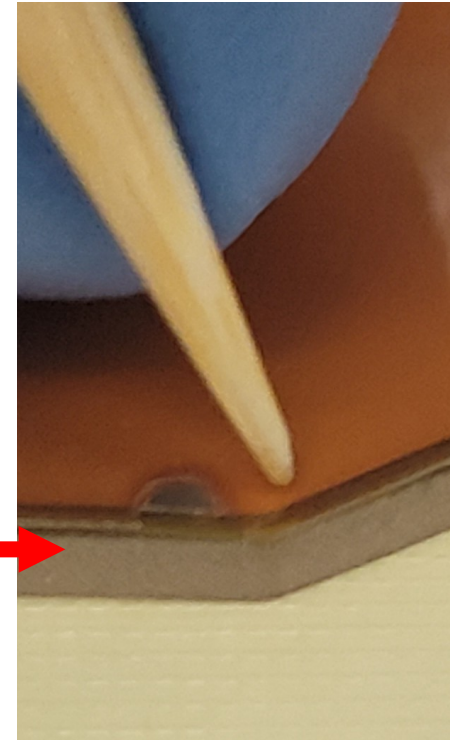
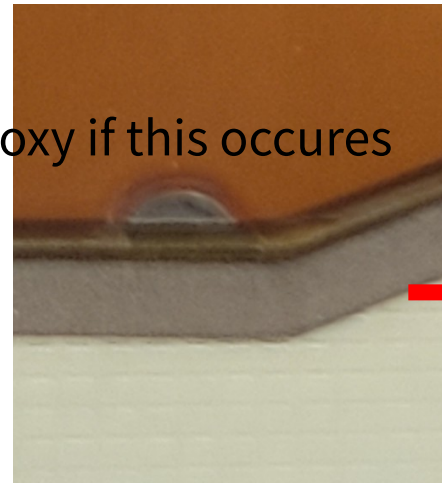
# Protocol change – delamination recovery

There are cases of edges being delaminated by ~1-2mm. For MACs, this is only a problem if the bonding pads are left unsupported (difficult for bonding machine operation)

- The movement might be small (~10-50µm)
- Cause is currently not obvious (no statistics...)

Leading hypothesis is that **Kapton/metal** curvatures are anti-aligned.

- Prevention?
- Experimenting with additional filling epoxy if this occurs (not sure if this break flatness... again, no stats. : ( )



# Shipping requests



- **Nothing to complain for packaging quality** (KIT is currently providing the best packaging, and that is including the critical and delicate silicon sensors...)
- They request that “tax forms always be filled out”. Even if the final shipment is not taxed, not doing this will require NTU people to receive the package with an extra deposit to be returned later. “More paper work”.
- **December** shipment had this problem, **Summer** shipment did not.  
Has our procedure changed?
- *Would this be automatically solved with everything going through CERN?*

# Shipping return requests



On hearing the request for boxes to be sent back to KIT when I was at NTU...

- **NTU TIDC Secretary:** (Alarmed), I have not heard any request of this type? When was this requested?
- **Rong Shang:** So [Markus] was serious with that request?

Me:



We definitely need to follow up on this with the other MAC managers...

# Accelerating production



Full production rate will be something like **1000 plates/month**, (**50 plates/day**)

- Advances, full glue: **2/day** → **8/day**, **4hr x 2ppl /day** (end-of-year protocol)
- After updating the procedure, the bottleneck is now strictly “working space limit”. If we have better shelving, we can trivially get a 2-3x rate increase (**8/day** → **16/day**), **3-4hr x 2ppl /day**

Some procedures are still in the testing phase, I hope to optimize this further with next weeks batch

- At this rate, the limiting factor is more the measuring/indexing processes  
... Assuming this will measuring is fully automated ...
- Right now, the clean room space is further taken up by unused/to-be-depreciated equipment, if we reclaim the space, we can double the throughput with a second station (**16/day** → **32/day**), **3-4hr x 4ppl/day** (*personel availability??*)

Target rate is not “infeasible”,  
but further optimization is required



# Tasks for next week



- **Preproduction/production requests**
  - I hope to get back to 40/week (probably limited by metal cutting?)
  - **CuW HD Bottom** production (some steps requires re-aligning jigs)
  - Finalizing request for shelf
  - Think about jig 2.0 and space allocating
- **Logistics and automation**
  - Keyence device (Monday?)
  - Parts/order tracking in KIT local data base
    - We do have a tally of everything, just in scattered spreadsheets
  - Additional parts ordering. Regarding Kapton/partial situation?