

Flex 10489 gluing glass tests at LPNHE ITk Pix qualification block 7.2

P. Chabrillat¹, T. Carcone¹ F. Crescioli¹ and M. Bomben²

¹ LPNHE Paris ² APC Paris

Flex Attach, 25/04/2023

Chabrillat, Carcone Crescioli (LPNHE)

Si Dummy metrology summary

Dummy	X (mm)	Y (mm)	Z (mm)	Mass (g)
nominal values	42.188	41.100	0.300	
1	42.235	41.135	0.313	1.242
2	42.235	41.137	0.307	1.244
3	42.238	41.136	0.307	1.242
4	42.237	41.138	0.315	1.244
5	42.239	41.138	0.314	1.244
6	42.240	41.137	0.317	1.243
7	42.240	41.138	0.323	1.250
8	42.240	41.137	0.315	1.249
9	42.235	41.137	0.320	1.248
10	42.234	41.139	0.320	1.247

We noticed that the X dimension is near or slightly out of the upper limit.

- Kapton tape measured at 50 $\mu {
 m m}$
- HV hole covered before calibration
- ullet Tool calibrated at 35 $\mu{
 m m}$
- We noticed that after calibration lowering the silicon jig and going back to contact position yield to a different height, usually 5 µm higher
- \bullet This procedure is wrong, see later. We should calibrate before applying kapton tape. Our effective calibration is around 80 μm

Glue thickness and mass reproducibility without glass

Operator	Weight (mg)		
Marco	68		
Francesco	66		
Marco	62		
Thibaud	68		
Paul	61		
Thibaud	68		
Paul	53		

Notes

Glue mixed with a mixer for 2 min at 2000 rpm. Two series (Marco-Francesco, Thibaud-Paul). A series of attempts were done within 1 hr from glue mixing.



Figure 1: Glue deposition pattern after 20 min

First glue deposition after application on glass dummy and 20 min curing





Figure 2: Glue deposition after glass

Estimated coverage from 1 bit map is 80%

After the photo the module is placed glass down on the CMT to measure pickup area heights.

Total height is 681.5 μm . Glue thickness is 76.5 μm . Glue mass 65 mg.

Glue on flex anf glass after >8 hours curing





Figure 3: Glue distribution after full curing

Estimated coverage from 1 bit map is 57% After the photo the module is placed glass down on the CMT to measure pickup area heights. Total height is 687 μ m. Glue thickness is 82 μ m. Glue mass 66 mg.