8th Belle II VXD Workshop
9 – 11 September 2015, Trieste

L4 Ladder Assembly Status

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10 September 2015

Outline

- CMM results of C1 and C2
- CMM results of B-
- Ladder assembly procedure
- Pull test results
- Wirebonding
- Gluing
- Electrical quality assurance
- Milestones and issues at hand
- Ladder production start
- Schedule

CMM Results

C1 review - Feb 2015

C2 review - June 2015

X – Y orientation used for C1 and C2

C1 CMM results

Translational Parameters

Sensor	Δx (μm)	Δy (μm)	Δz (μm)
FW	218	166	96
CE	7	-28	-164
BW	75	-318	-89

Rotational Parameters

Sensor	Slant (degrees)	Tilt (degrees)	Gamma (degrees)
FW	-11.942 ± 0.003	0.264 ± 0.007	-0.05
CE	-0.046 ± 0.008	-0.057 ± 0.017	-0.016
BW	-0.014 ± 0.001	0.027 ± 0.005	0.036

C2 CMM results

Translational Parameters

Sensor	Δx (μm)	Δy (μm)	Δz (μm)
FW	-313	844 (!!)	101
CE	29	23	100
BW	33	-115	57

Rotational Parameters

Sensor	Slant (degrees)	Tilt (degrees)	Gamma (degrees)
FW	-11.917 ± 0.006	-0.025 ± 0.013	0.081
CE	-0.042 ± 0.002	-0.072 ± 0.005	0.012
BW	0.046 ± 0.001	0.004 ± 0.008	0.007

Note : With respect to P1 and P2 on the assembly bench

B- CMM Results

Translational Parameters

Sensor	Δ X (µm)	Δ Y (µm)	Δ Z (µm)
FW	-1358	-164	250
CE	1	74	1057
BW	-81	-25	48

Rotational Parameters

sensor	Slant (degrees)	Tilt (degrees)	Gamma (degrees)
FW	-11.937	-0.137	0.058
CE	-0.057	0.002	0.012
BW	-0.010	0.081	-0.004

Note : With respect to BW and FW Kokeshi pin

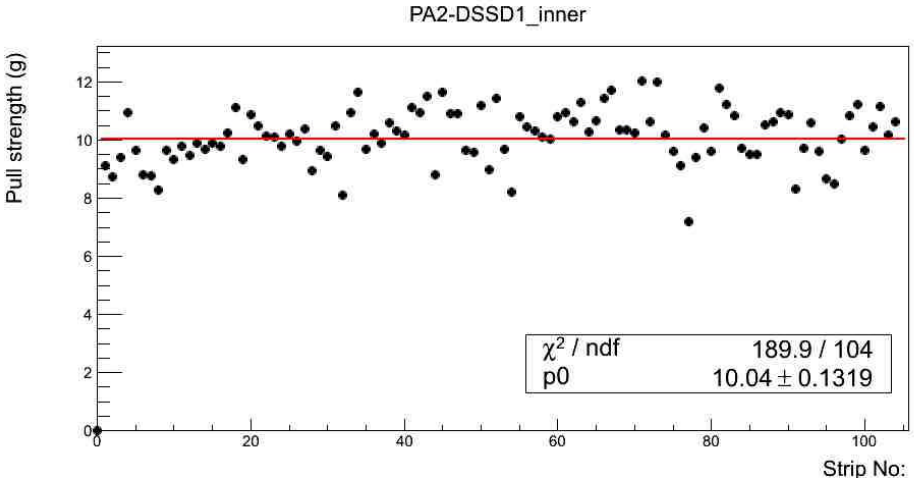
L4 Ladder Assembly Procedure in Twiki :

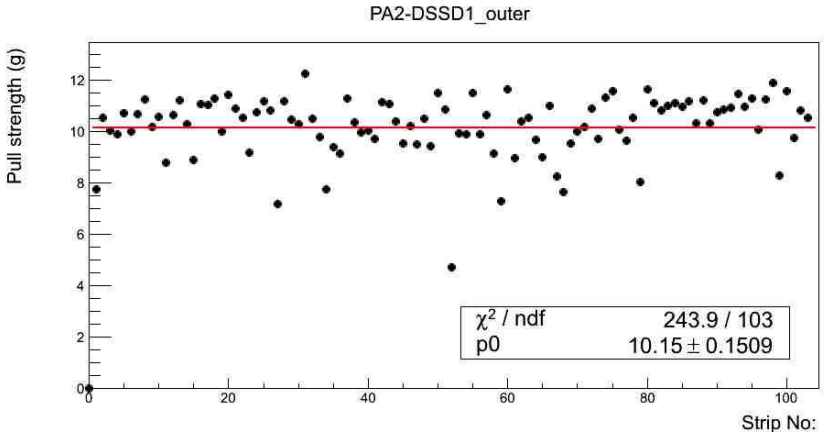
The L4 ladder assembly procedure is described in the following documents, consists of process flow chart and work instructions for each assembly step

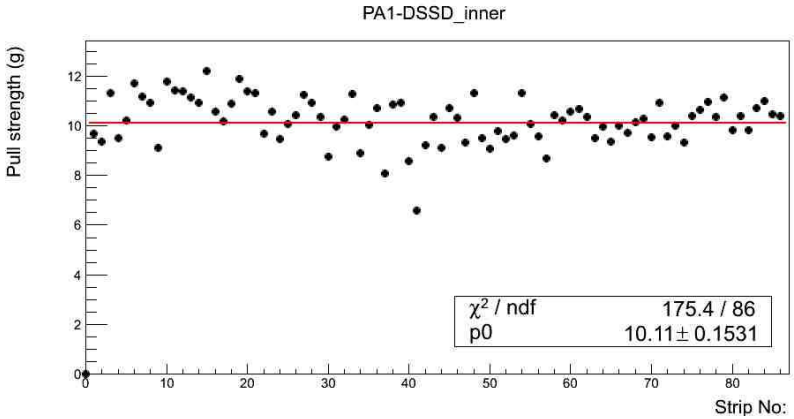
Ladder Assembly Process flow flowchart_for_ladder_4_Assembly.pdf
L4.1 Sensor + PA Assembly L4.1_Sensor__PA_Assembly.pdf
L4.2 Rib Assembly L4.2_Rib_Assembly.pdf
L4.3 Origami Assembly Part 1 L4.3_origami_assembly_part_1.pdf
L4.4 Ladder Assembly Part 1 L4.4_ladder_assembly_part_1.pdf
L4.5 Origami Assembly Part 2 L4.5_origami_assembly_part_2.pdf
L4.6 Ladder Assembly Part 2 L4.6_ladder_assembly_part_2.pdf

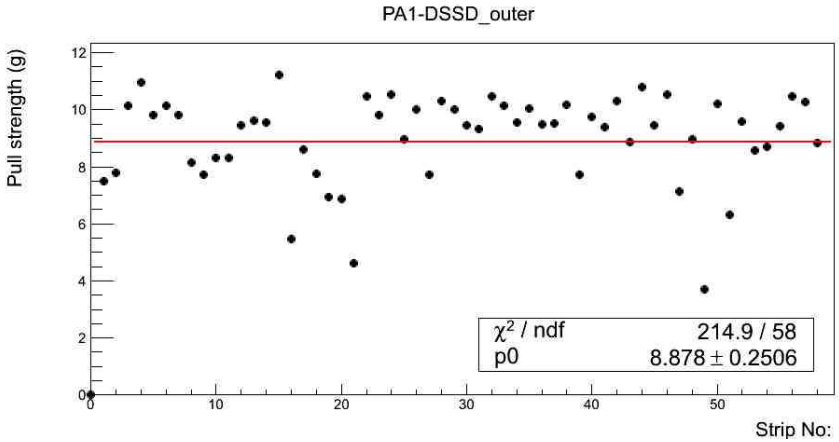
https://belle2.cc.kek.jp/~twiki/bin/view/Detector/SVD/TIFRPage

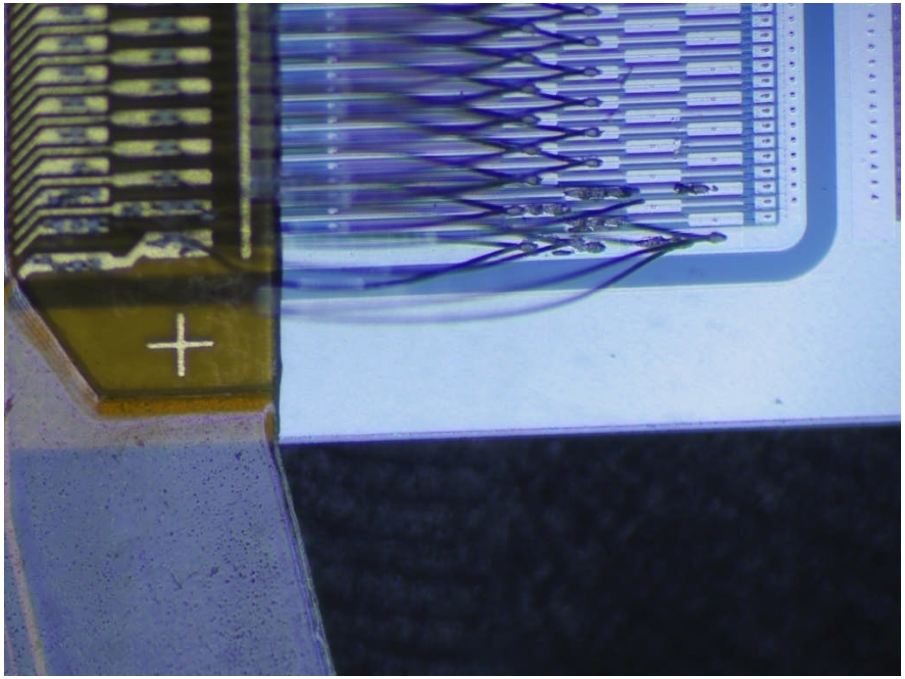
Pull test results - PA1, PA2 with DSSD





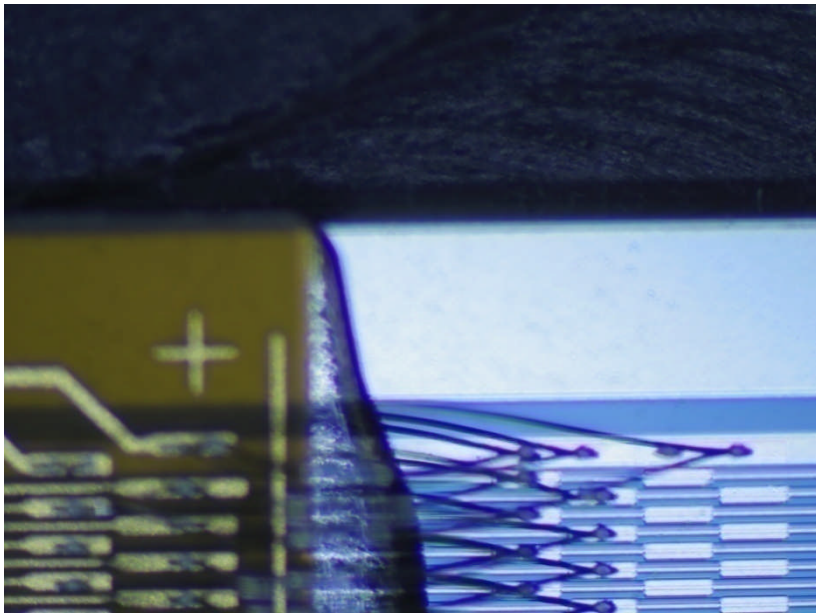




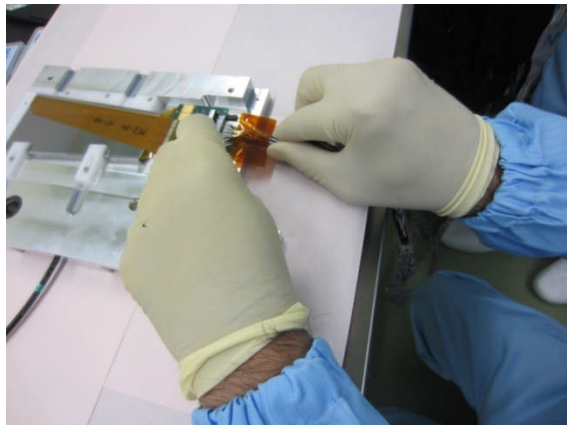


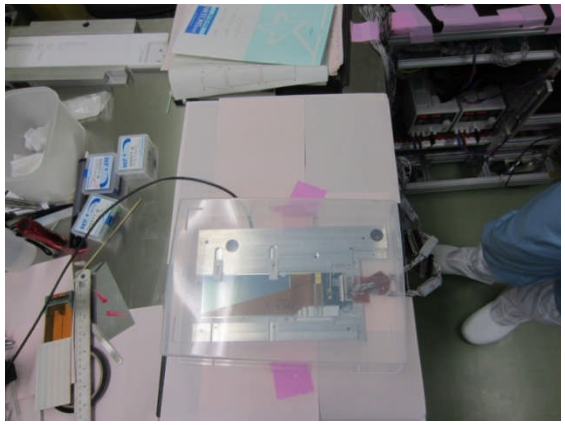
PA1 to DSSD wirebonding:
one inner and one outer pad not bonded

PA2 to DSSD wirebonding:
100% bonding efficiency



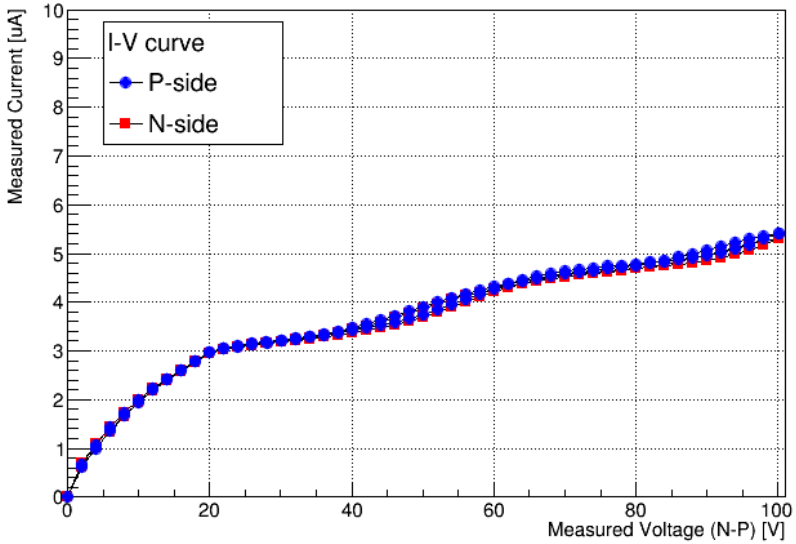
Testing FW and BW subassemblies with APVDAQ system



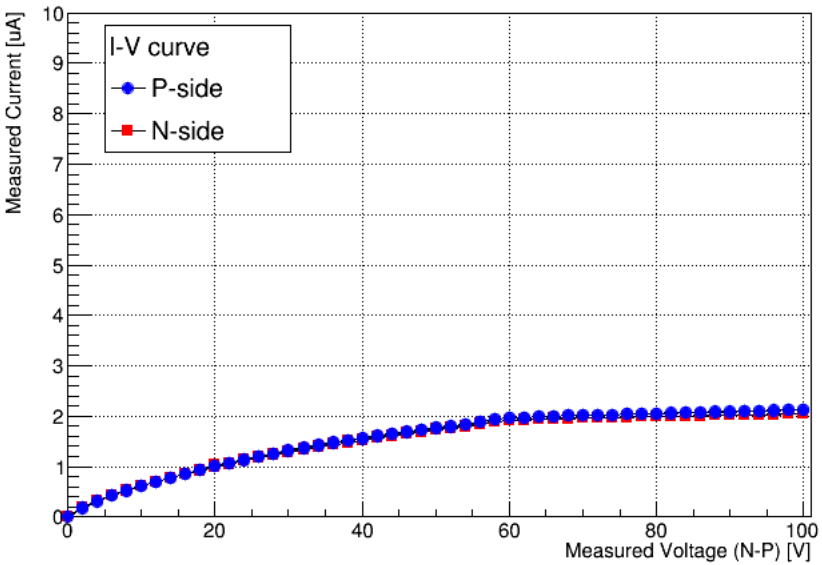


Before assembly

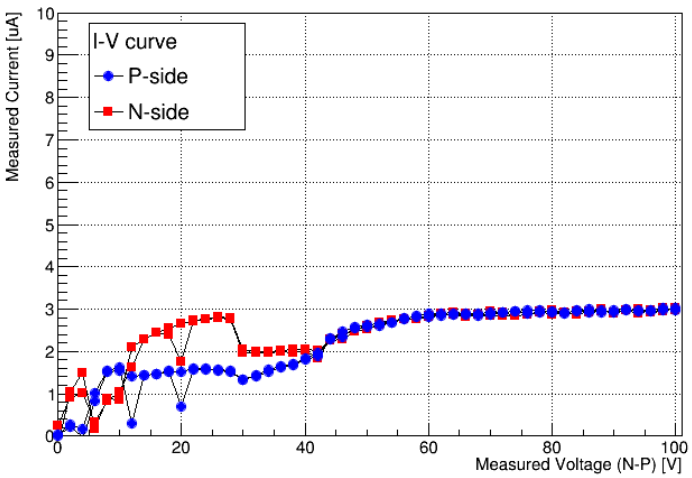
SFW 988



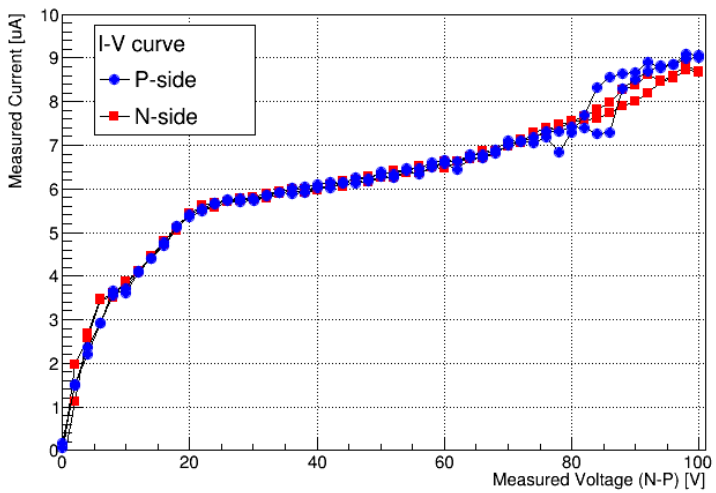
SBW 991



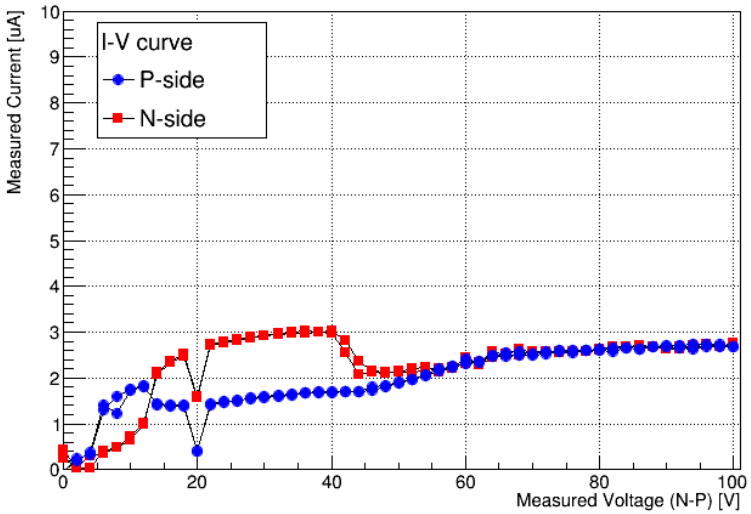
I–V curves after Ladder assembly



CE sensor

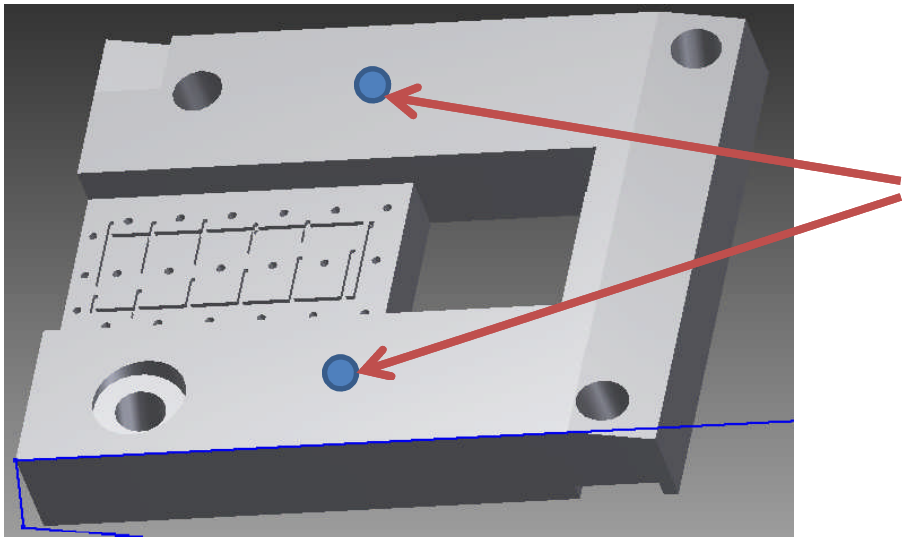


FW sensor



BW sensor

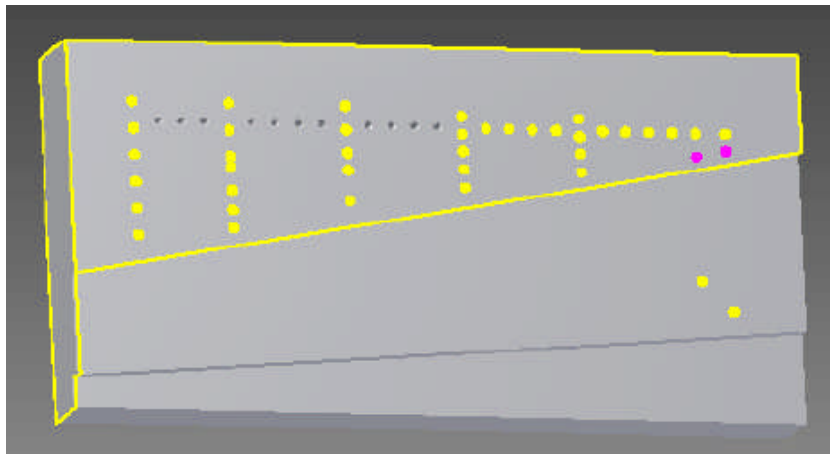
Modified slant jig – only Delrin part (FW jig)

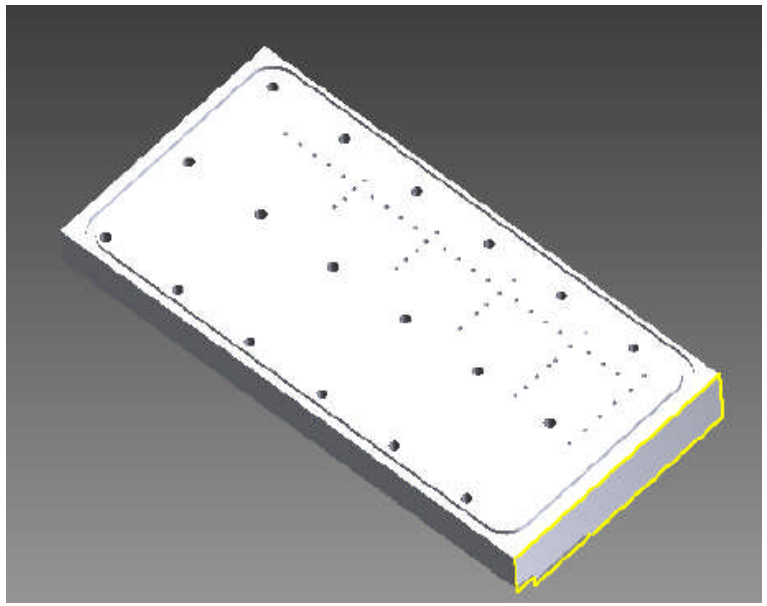


Slant jig

Two extra holes as reference to measure the F marks from this holes
It will be done after pickup of FW sensor and also after adjusting the hybrid board under the CMM

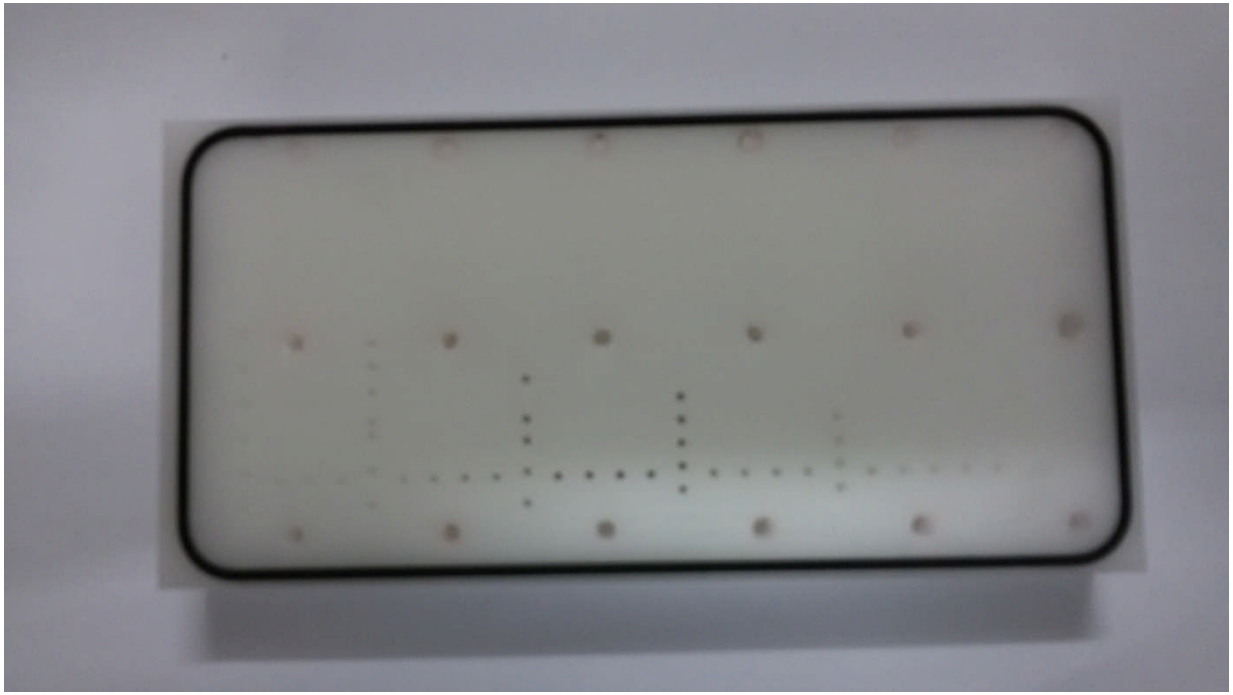
Will be used in next ladder assembly





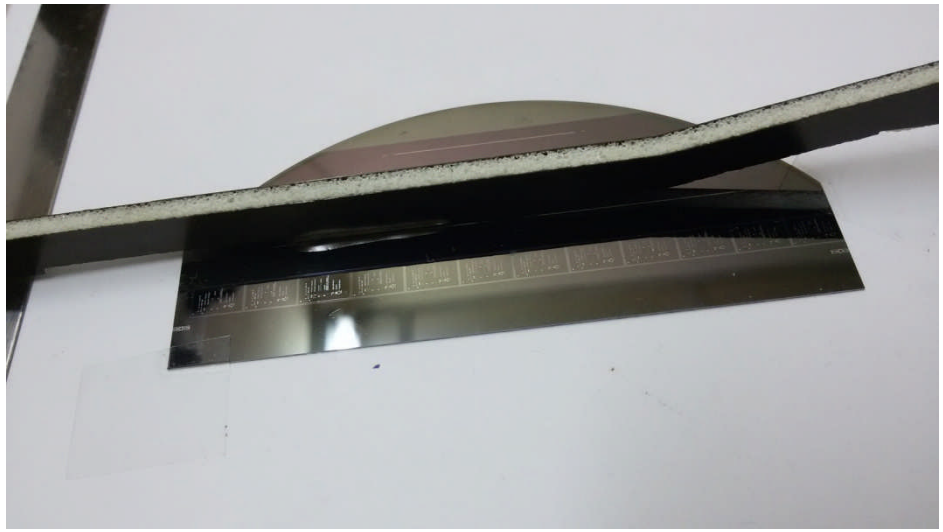
Delrin part

Delrin part for the slant jig is ready



Delrin with O-ring

Removing the Glue from the dummy sample



Initial stage

Middle stage

Final stage

- Keep putting two drops of Chloroform on the glue for one hour
- Apply heat gun for few minutes
- Remove the glue with soft tissue using Isopropanol

➢ Results looks fine – we are doing more trials

Milestones

C1 - February 2015

C2 - May 2015

B- - July 2015

Issues at L4 ladder assembly

- Shift of the FW sensor
- Understanding the problem of CE origami –Z in class B-
- Plan to do one more class C (C3) during September – October 2015 with final components
- Present results of C3 at the one of SVD meeting / B2GM / 27 October 2015

Schedule

- Start class B ladder assembly - 16 November 2015
- Review of class B - 15th December 2015
- Start class A production - 11th January 2016

Thank you