

DUNE-FD1.  
FBK-SiPMs boards.  
*Ciemat mechanical measurements:  
Preliminary results*

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- 2.- Measurement on the Top SIDE.
- 3.- Measurement on the Bottom SIDE

1.- Configuration on the 3D vision machine: (Model: Mitutoyo QUICK VISION Active 404)

Measurement performed following the drawing supplied from Zach Rautio, produced in 24-7-24.



Setup design for 60 PCBs.

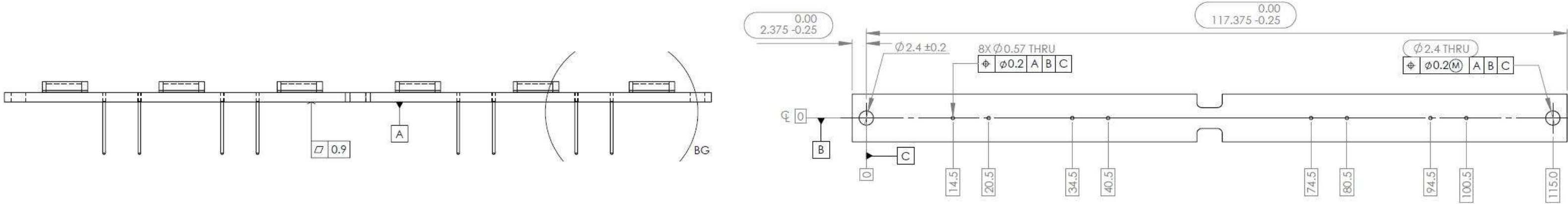
Measured on two different programs. 'Top side' measure PCB from the point of view of the SiPM side and 'Bottom side' measure from the pins side.



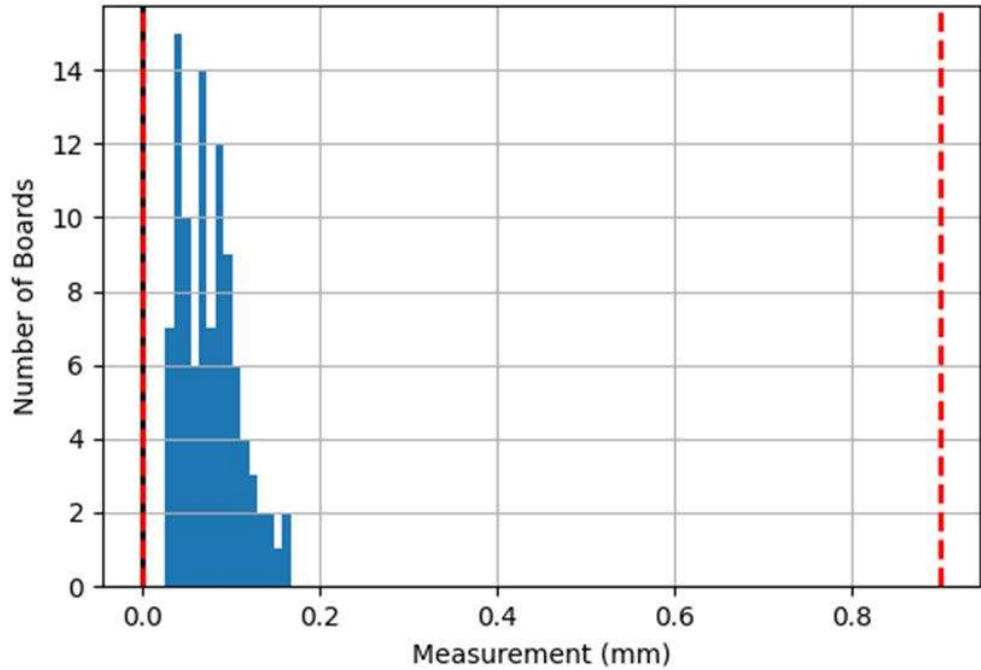
We have produced tools to positioning the PCBs on the machine for top and bottom side of the PCBs. We have automatized the output of the result and to produced the plots directly from the machine result.

# 1.- Measurement on the Top SIDE.

100 PCBs verified

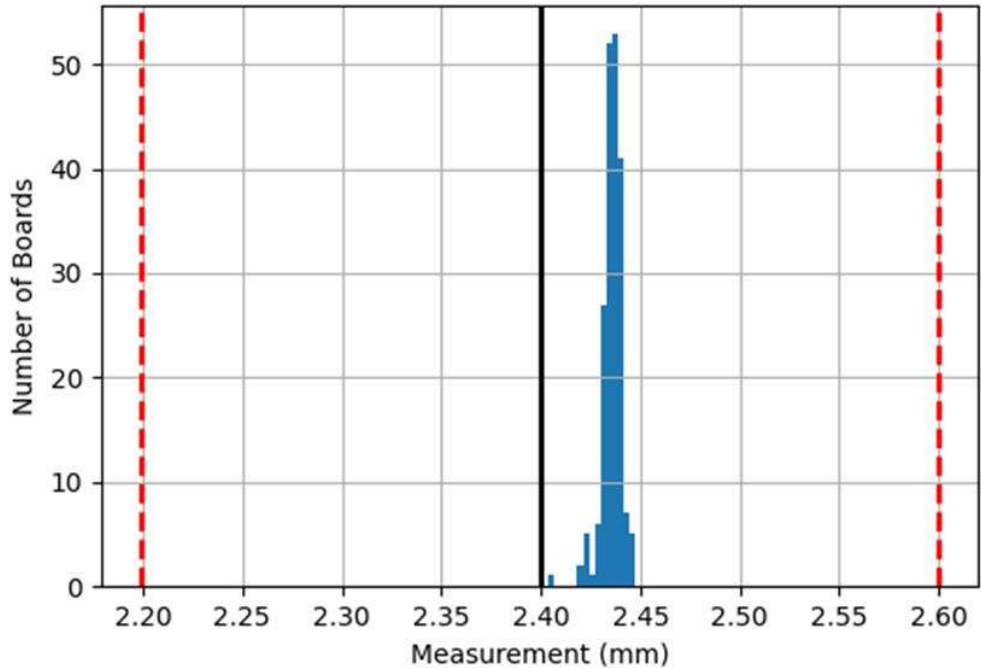


FLATNESS TOP



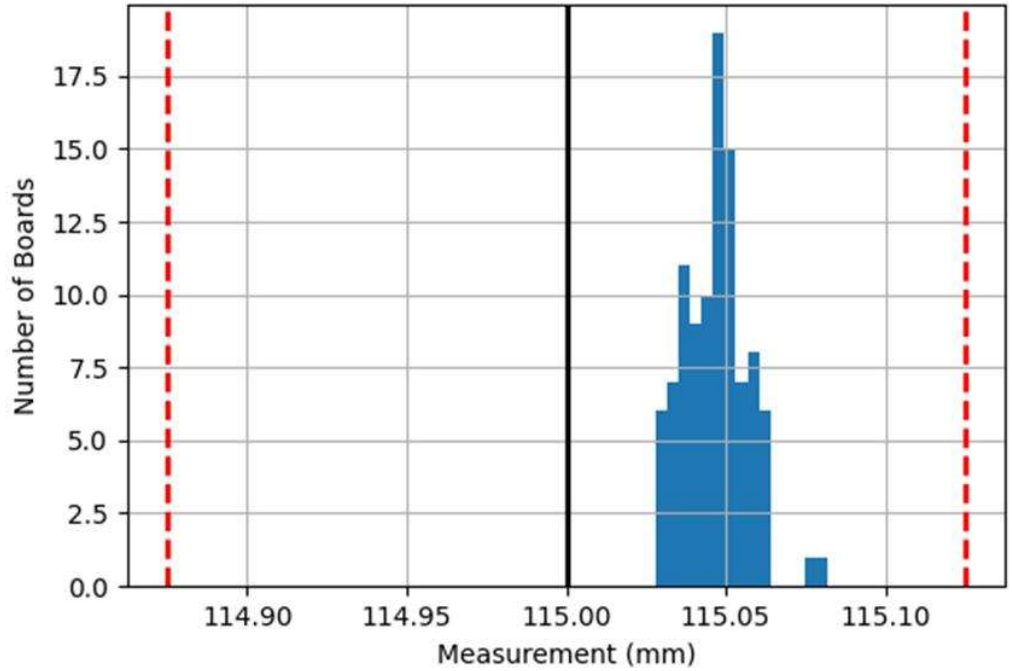
Flatness of the top side

DRILL DIAMETER



Diameter of the fixation holes

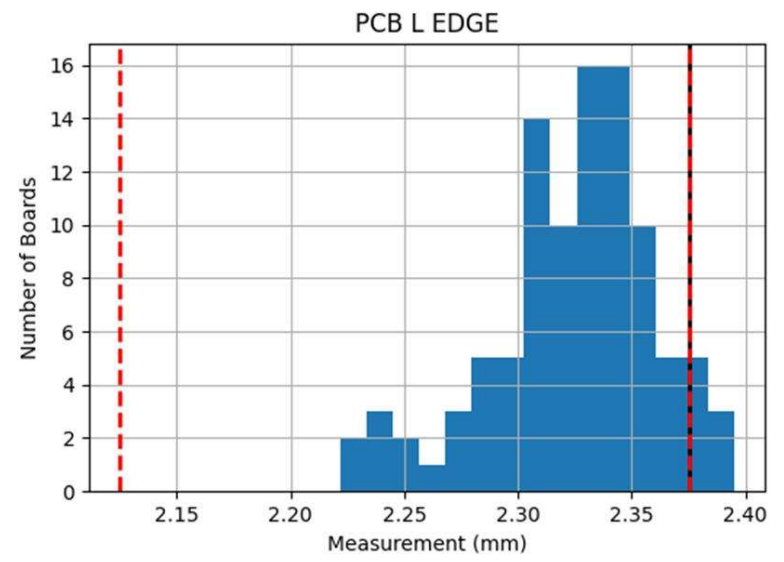
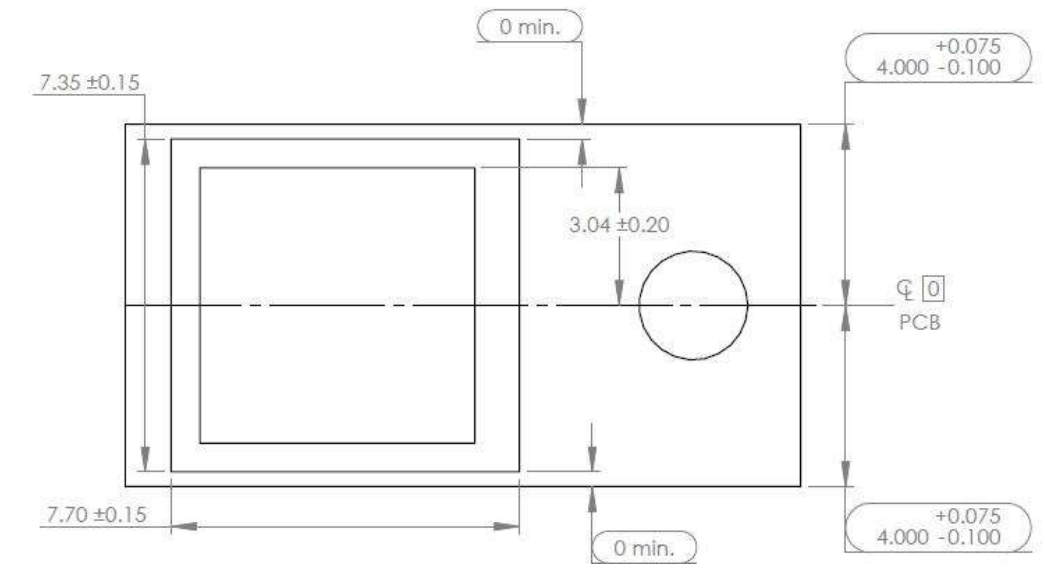
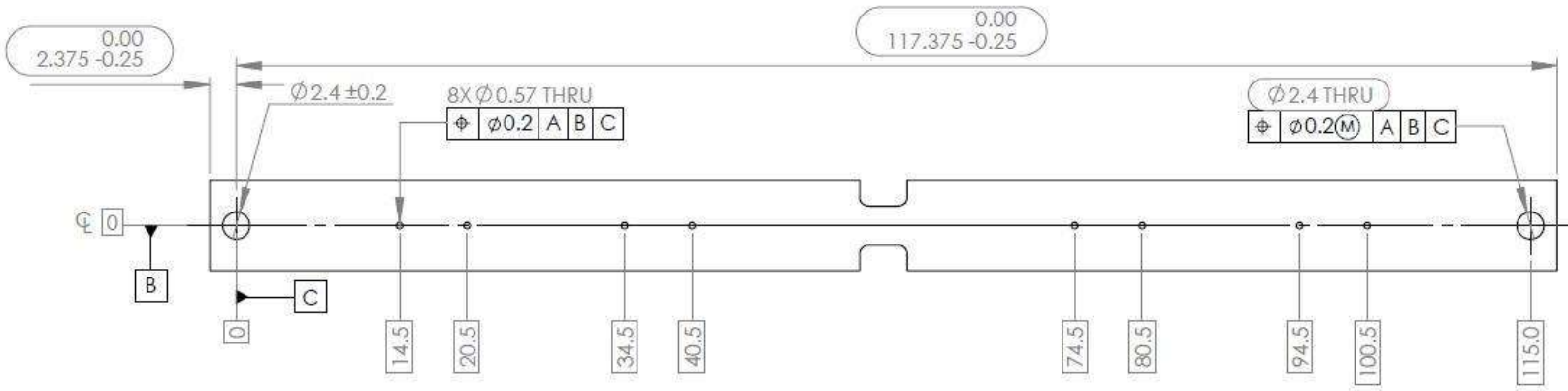
DISTANCE BETWEEN DRILLS



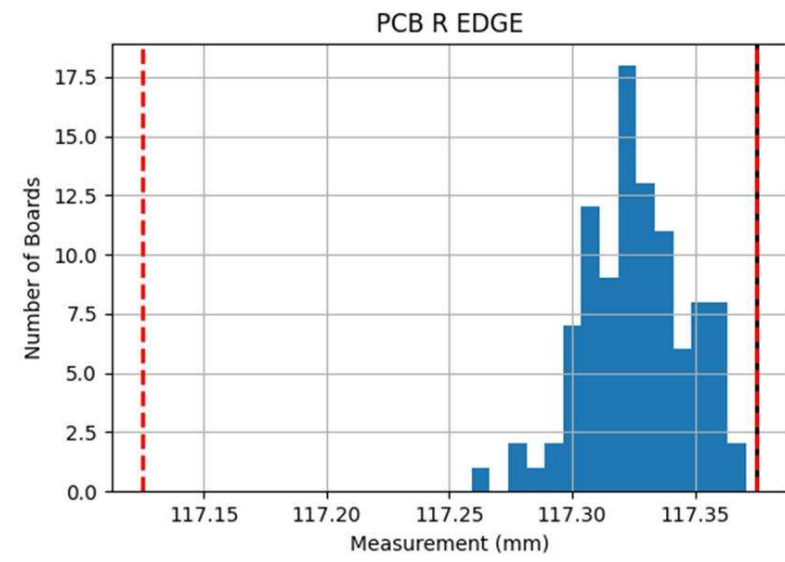
Distance between fixation holes

# 1.- Measurement on the Top SIDE.

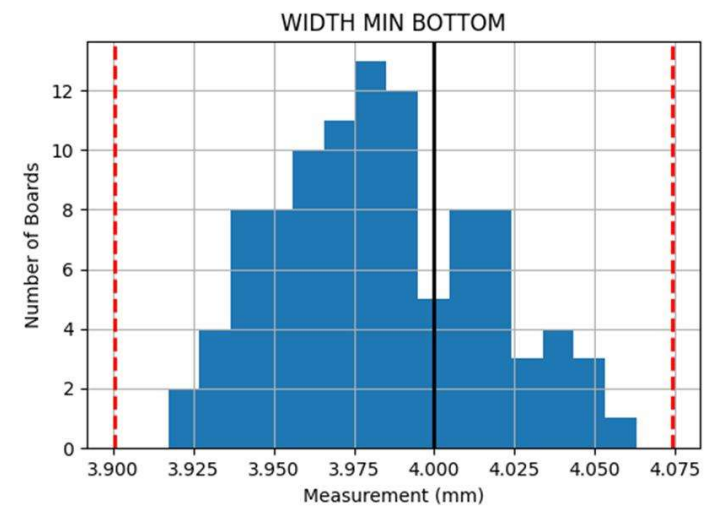
100 PCBs verified



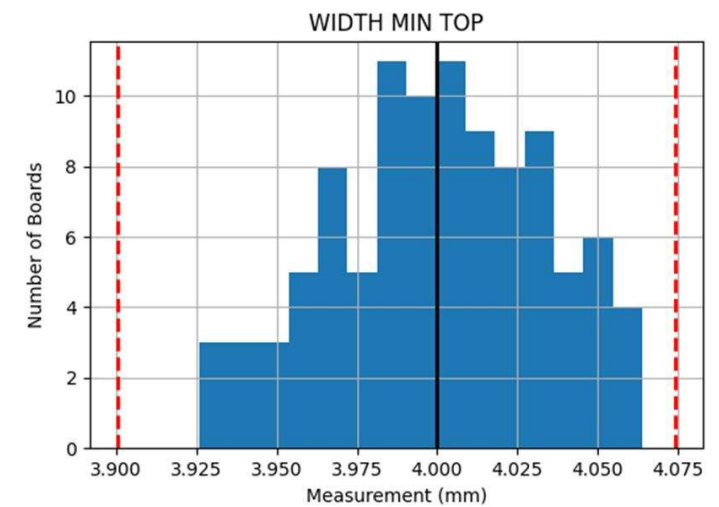
PCB Left edge to centre of fixation hole



PCB Right edge to centre of fixation hole



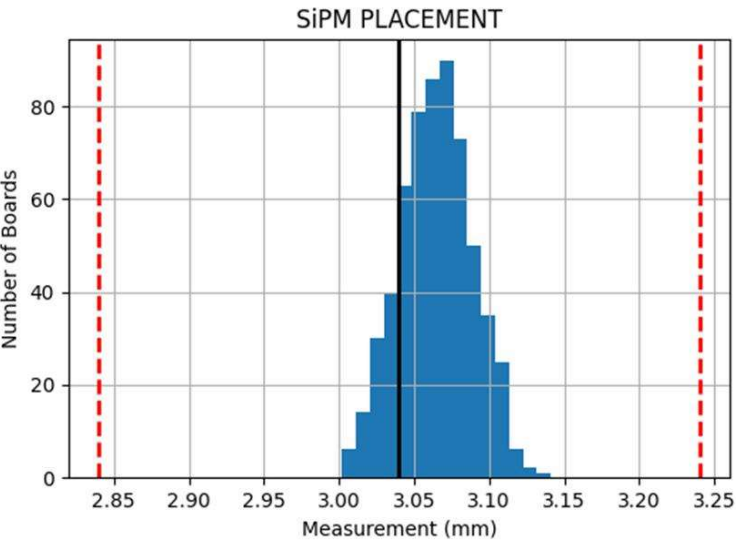
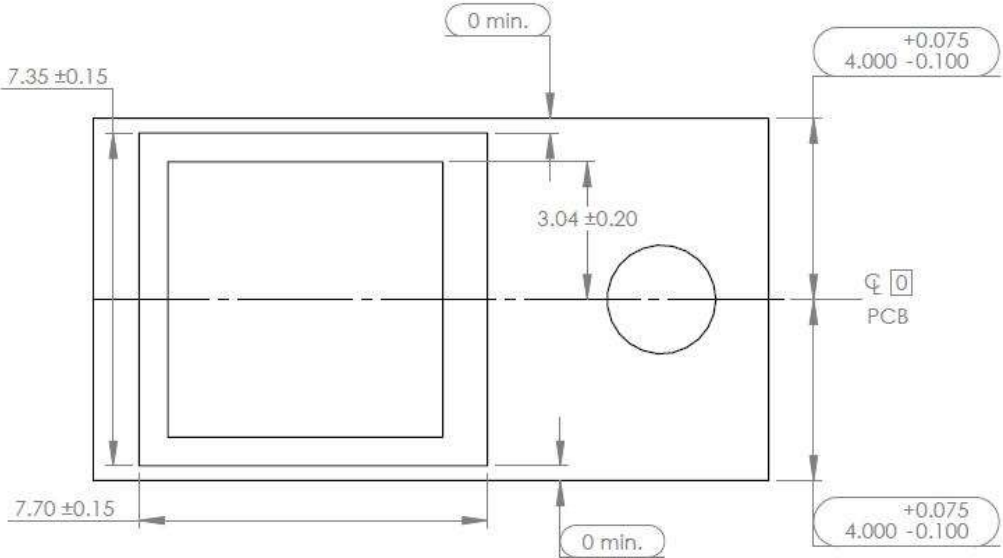
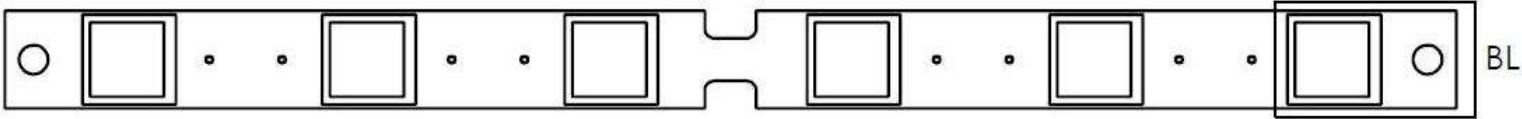
Width centre to Bottom PCB



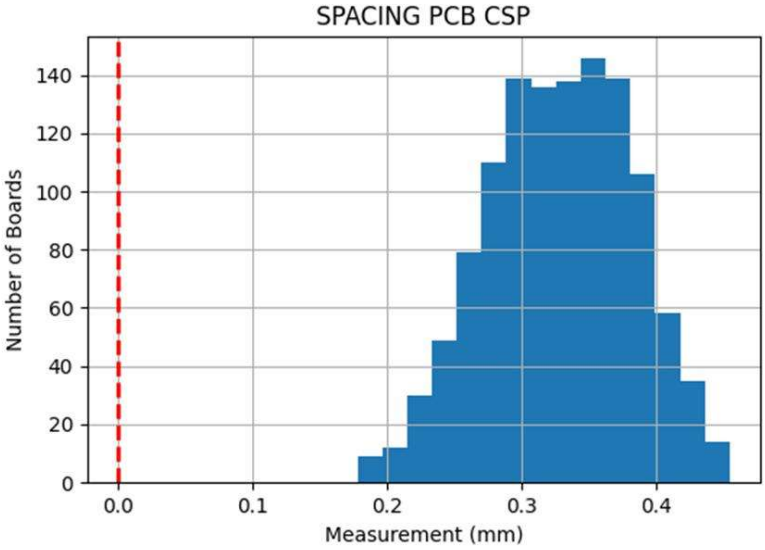
Width centre to Top PCB

1.- Measurement on the Top SIDE.

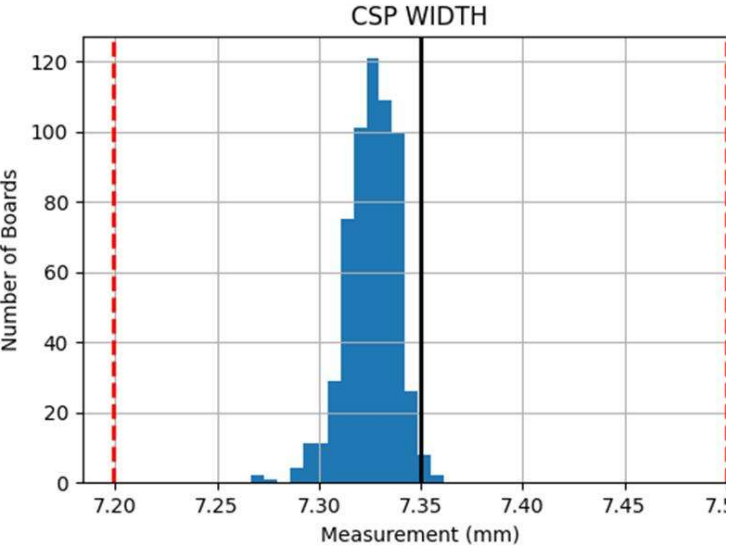
100 PCBs verified



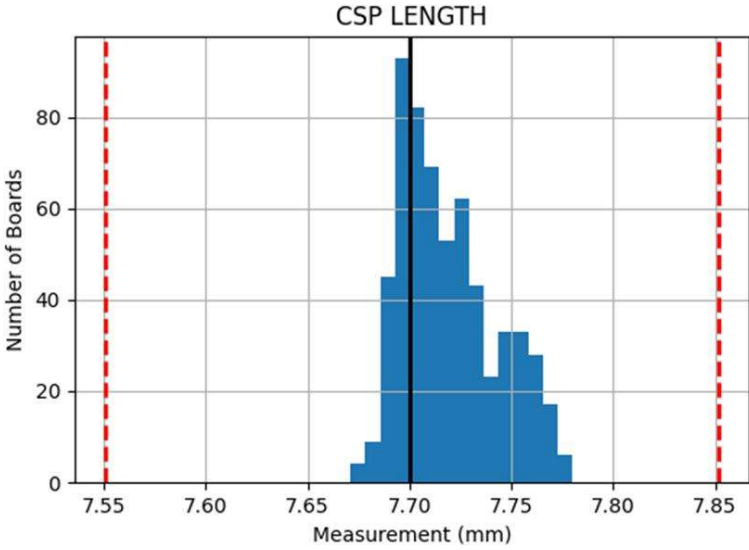
Top edge of SiPM to centre line between fixation holes



Distance between Horizontal PCB edge to horizontal CSP edge



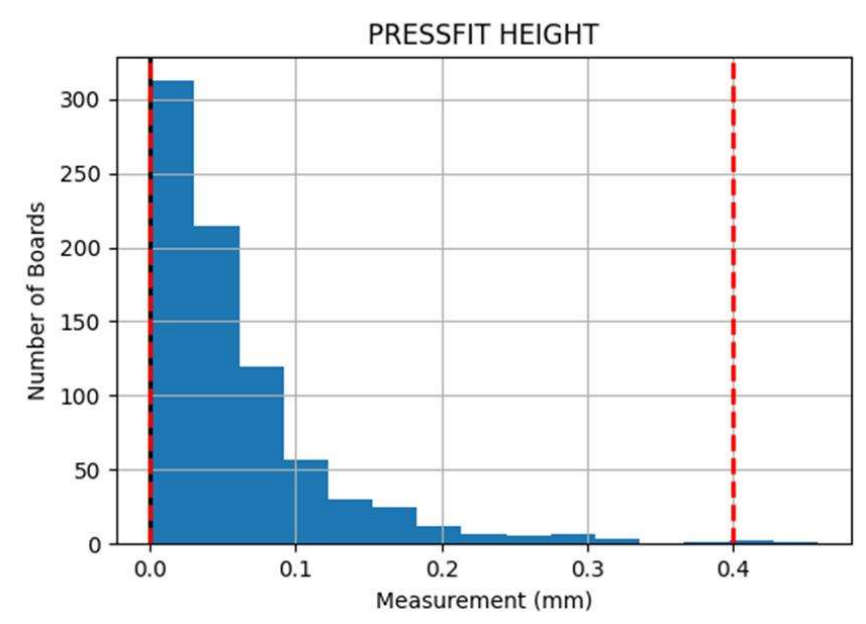
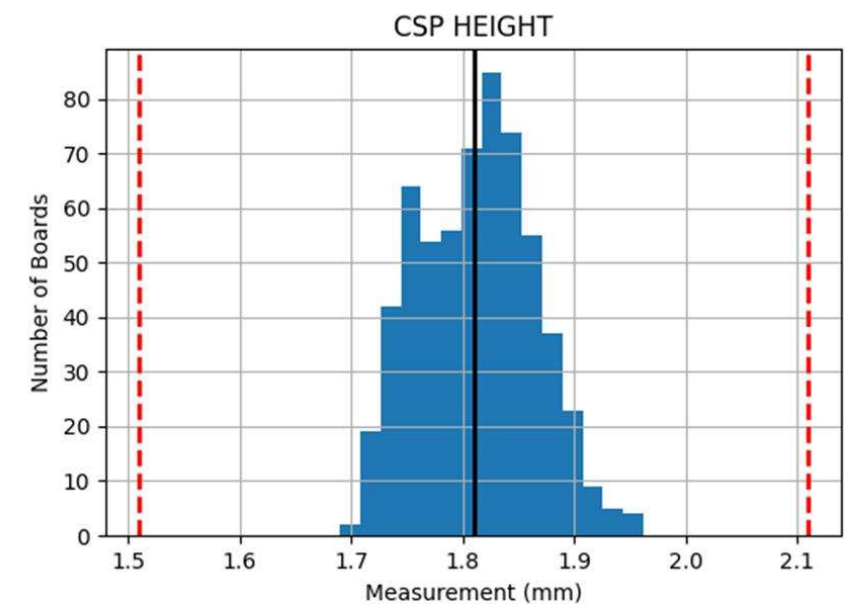
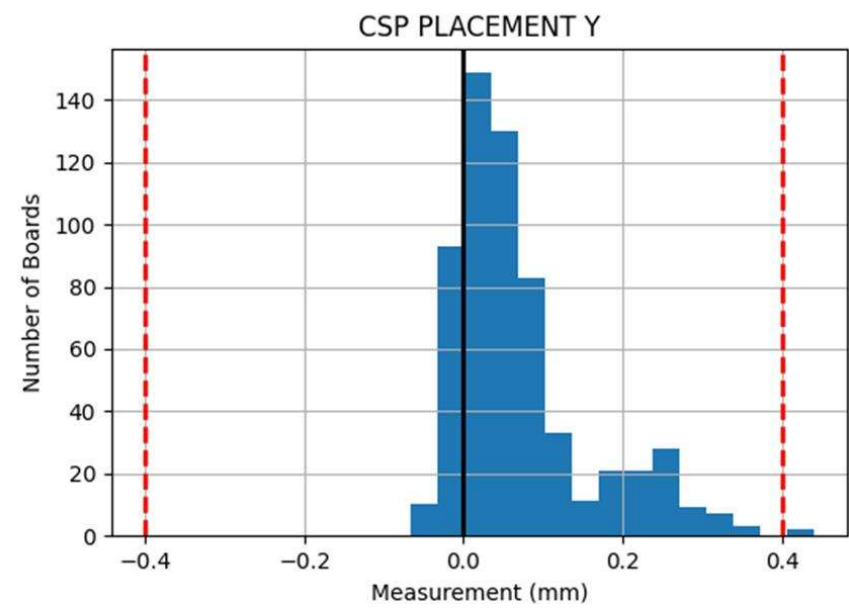
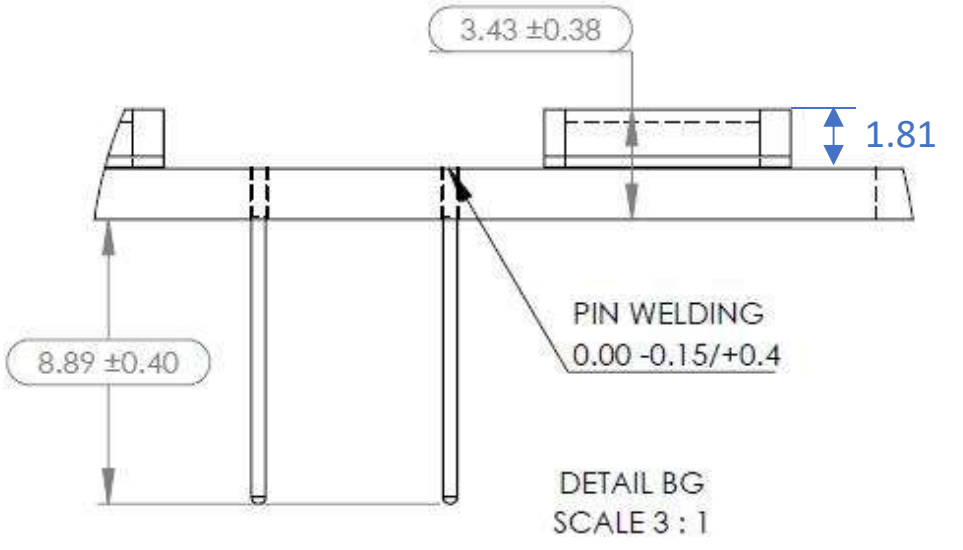
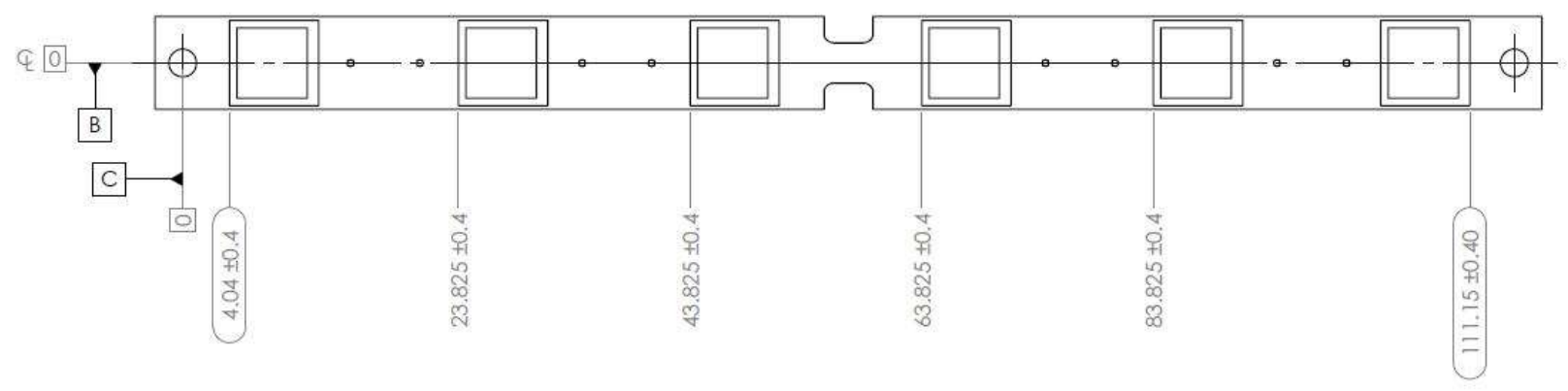
CSP width



CSP length

1.- Measurement on the Top SIDE.

100 PCBs verified



CSP placement to horizontal line between fixation holes

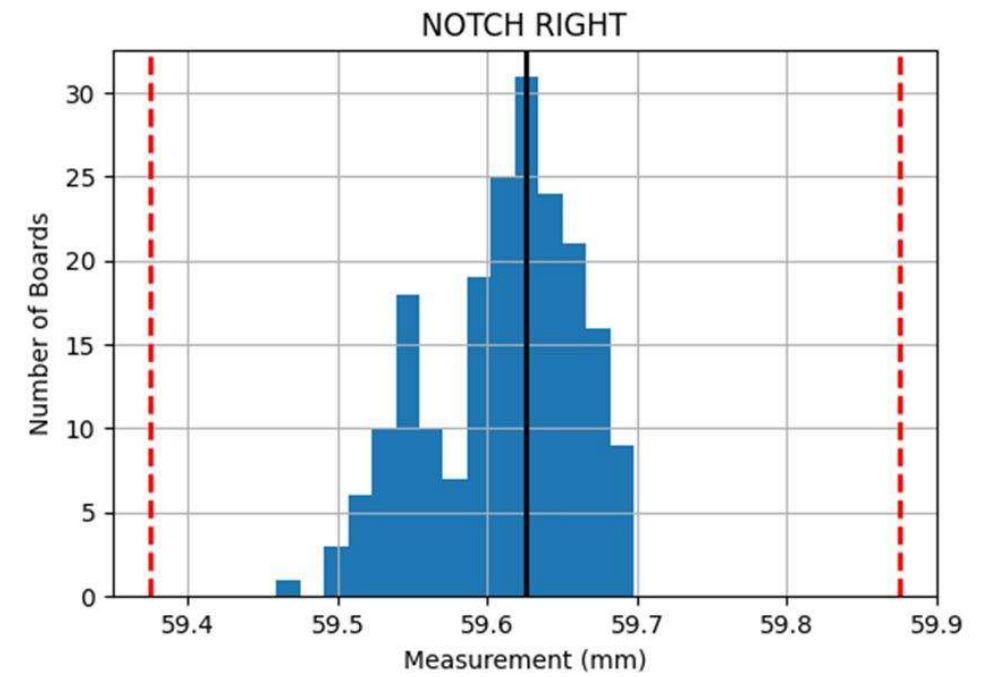
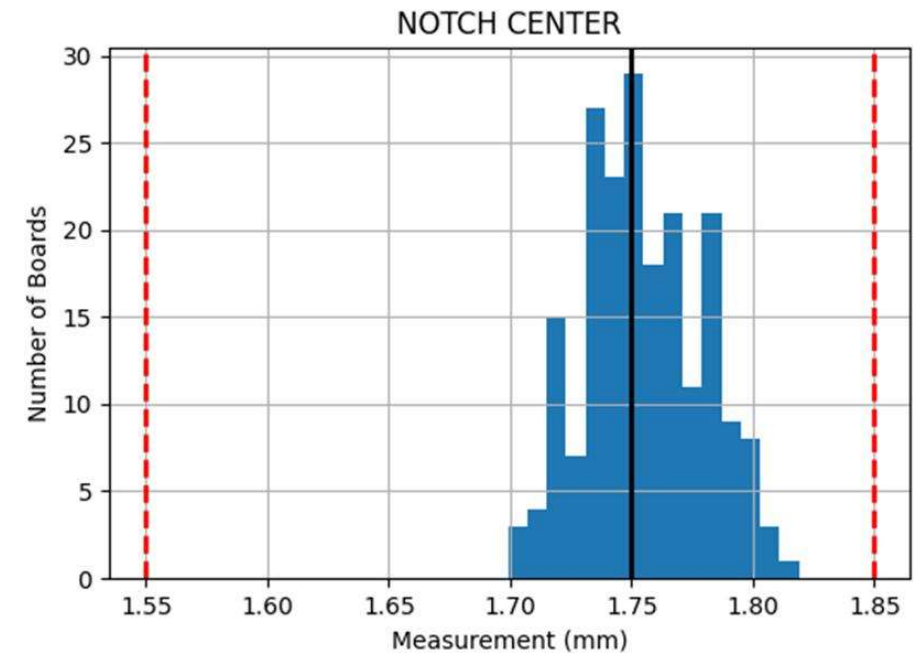
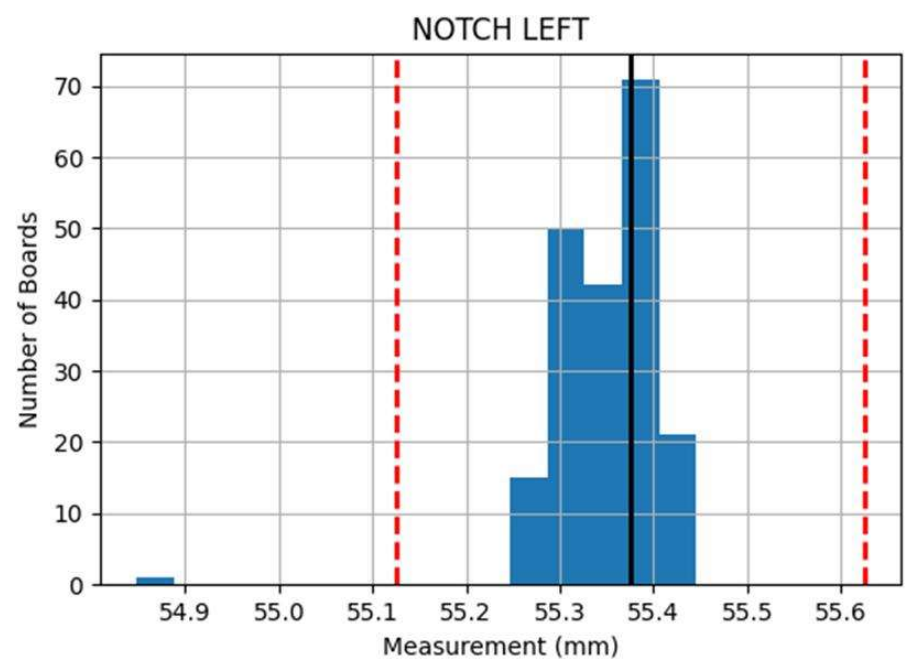
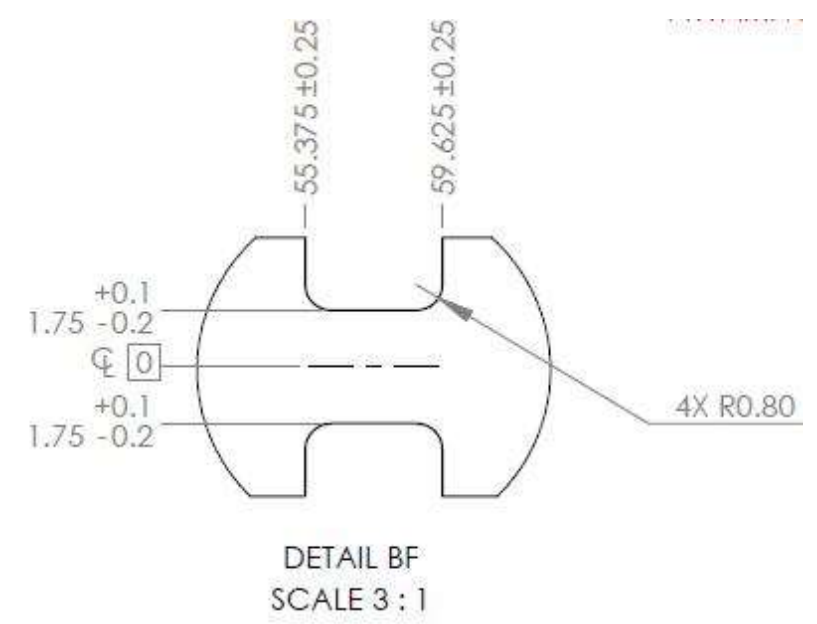
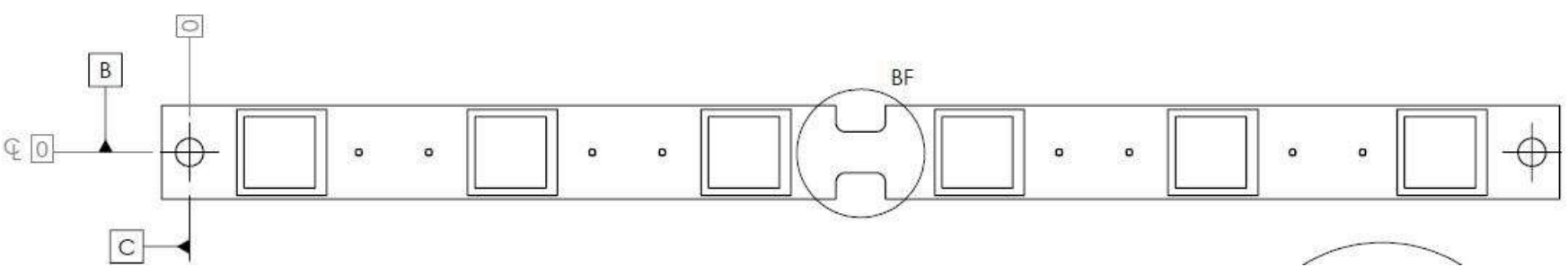
CSP height on PCB.

Top of the Pin Welding to PCB

(Average value of the PCBs thickness measured by FBK is 1.62 mm)

1.- Measurement on the Top SIDE.

100 PCBs verified



Notch left side to reference fixation hole

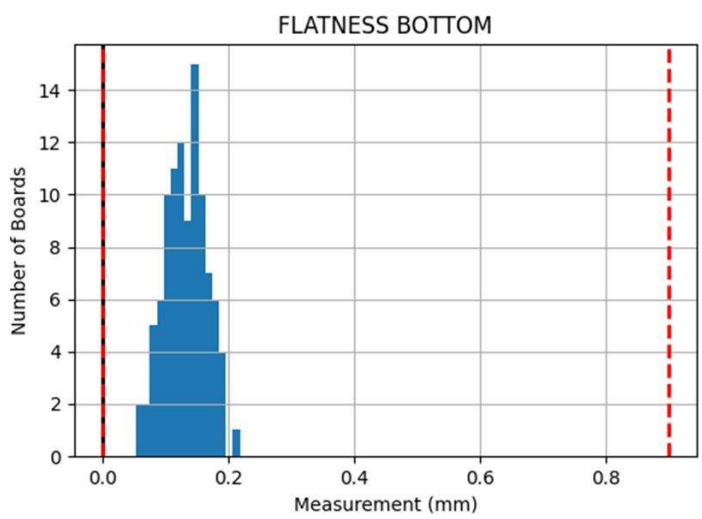
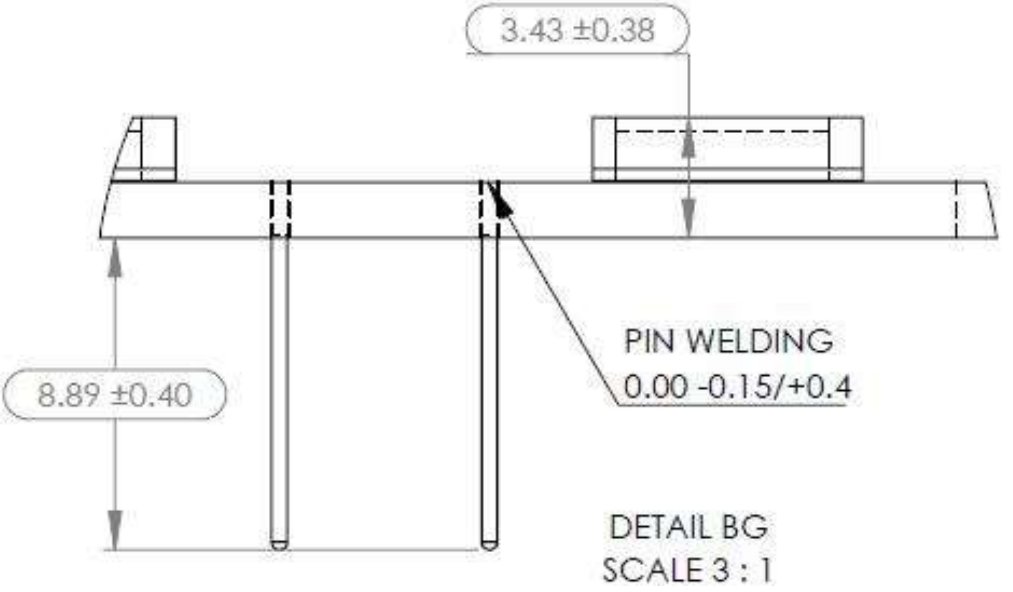
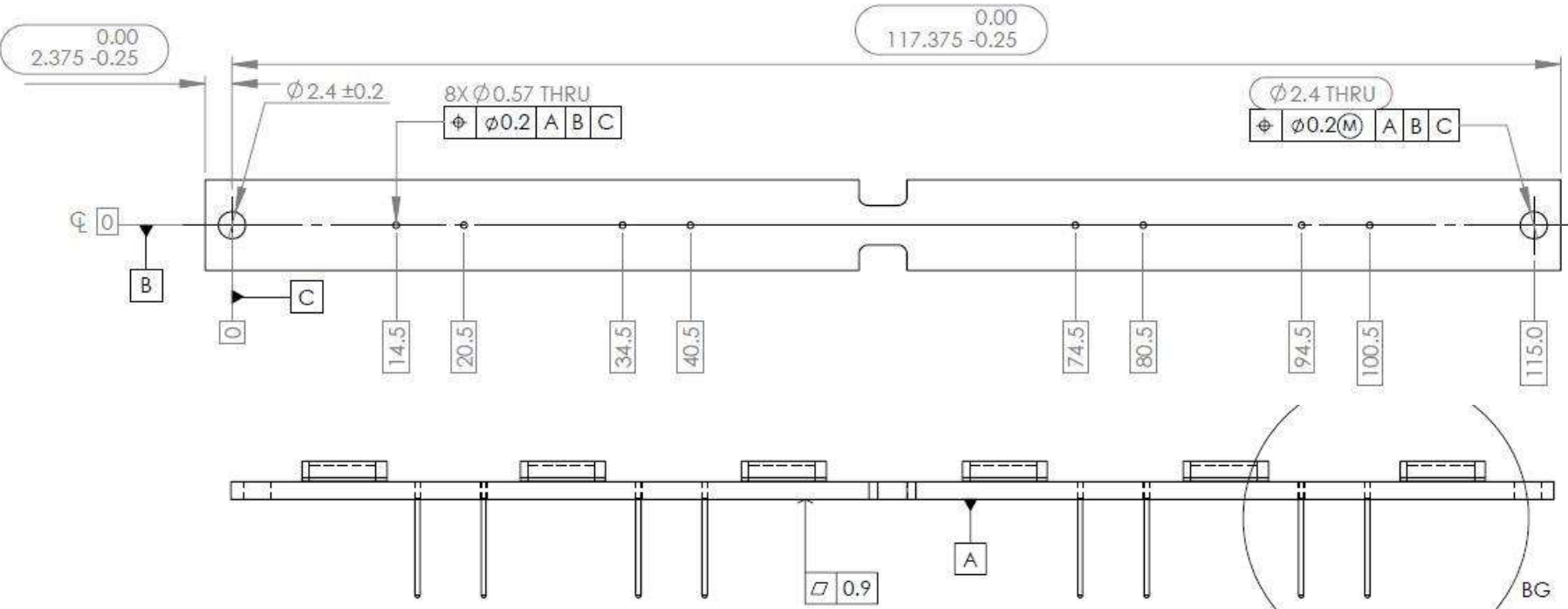
Notch height to PCB horizontal side

Notch right side to reference fixation hole

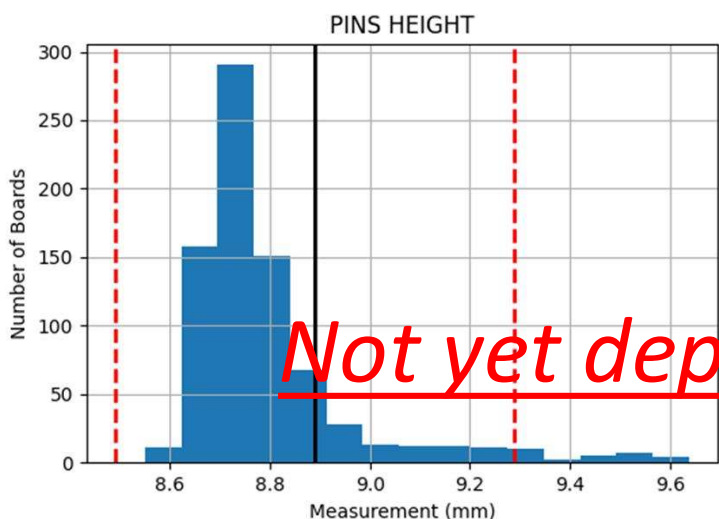


## 2.- Measurement on the Bottom SIDE.

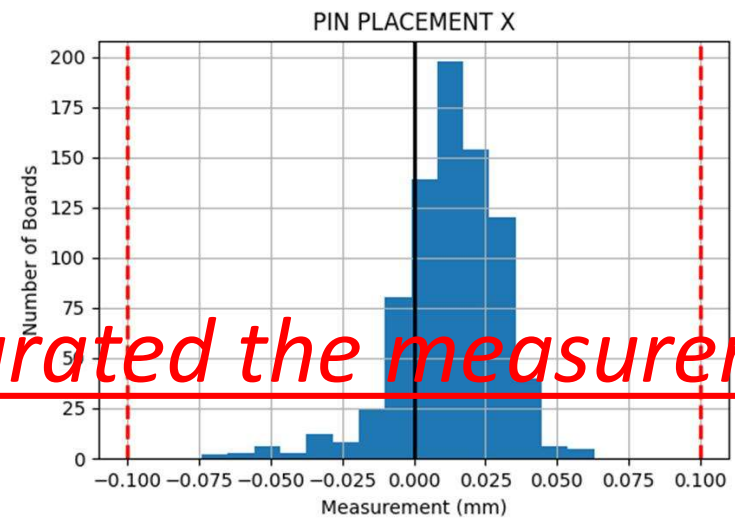
100 PCBs verified



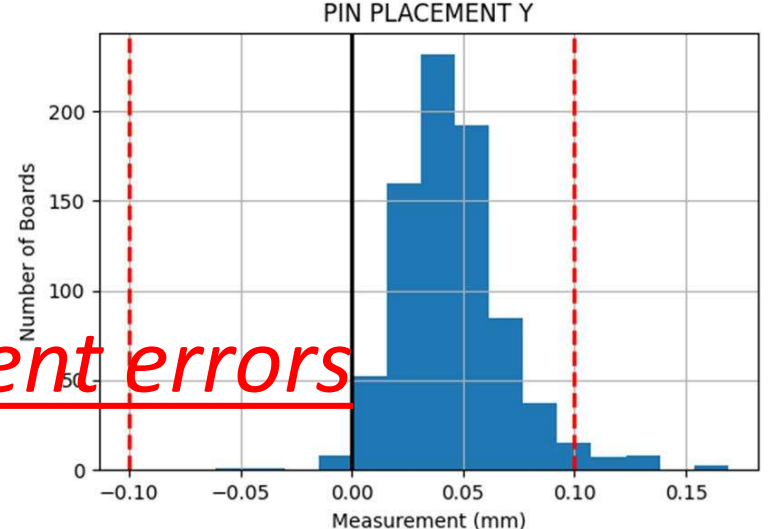
PCB Flatness of the bottom side



Pin height



Pin X coordinate



Pin Y coordinate

*Not yet depurated the measurement errors*