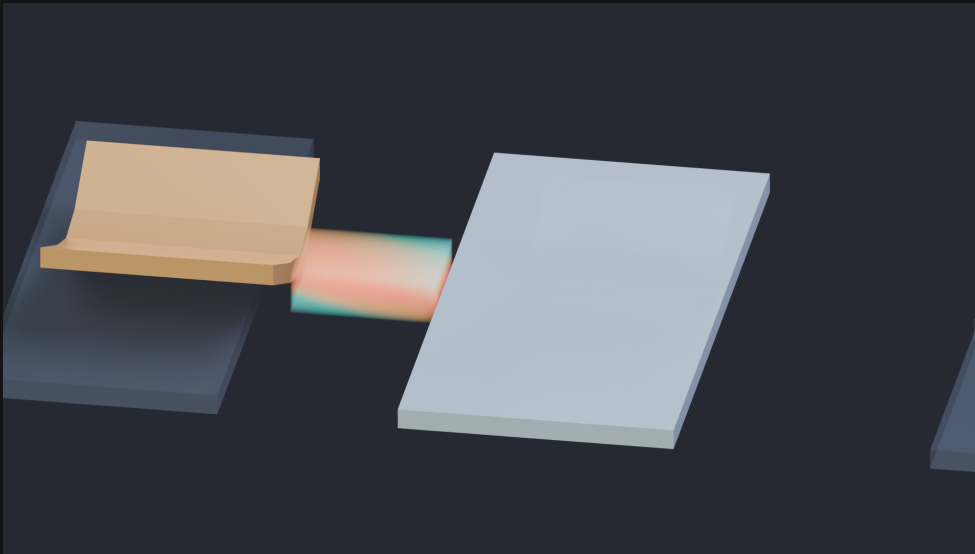


# The fit goes deeper.

Clearance from plug A6 to neighboring receptacle A7 falls from 275 to 152.5  $\mu\text{m}$  as width and position vary. Refining the position target recovers 40  $\mu\text{m}$  at the same maximum widths.

## ADVERSE

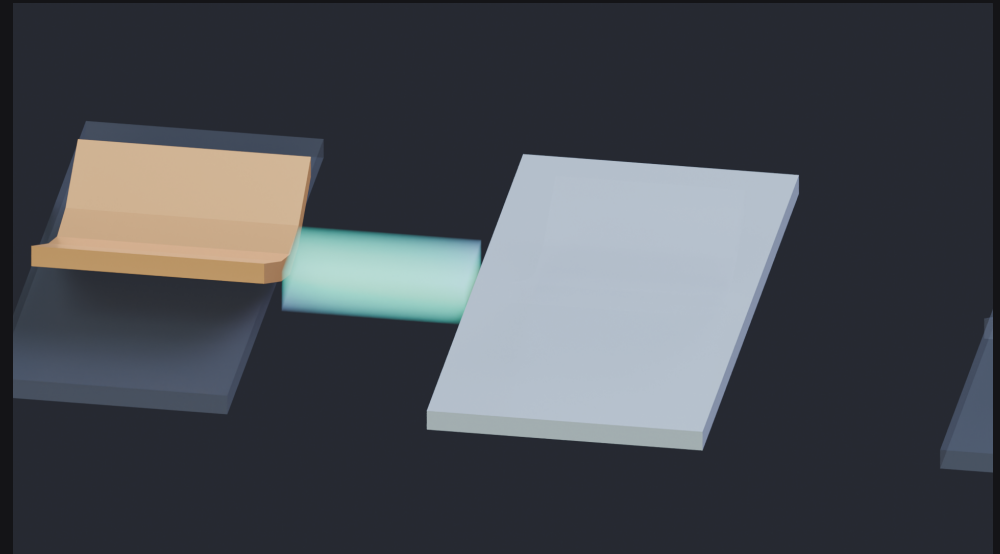


152.5  $\mu\text{m}$

40  $\mu\text{m}$  opposing shift per contact

-22.5  $\mu\text{m}$  criterion margin

## REFINED TARGET



192.5  $\mu\text{m}$

20  $\mu\text{m}$  opposing shift per contact

+17.5  $\mu\text{m}$  criterion margin

+40  $\mu\text{m}$  recovered

175  $\mu\text{m}$  is an authored example minimum. All selected-envelope gaps remain positive. X geometry is enlarged 3x in the images; values are actual physical units.

## SELECTED INPUTS

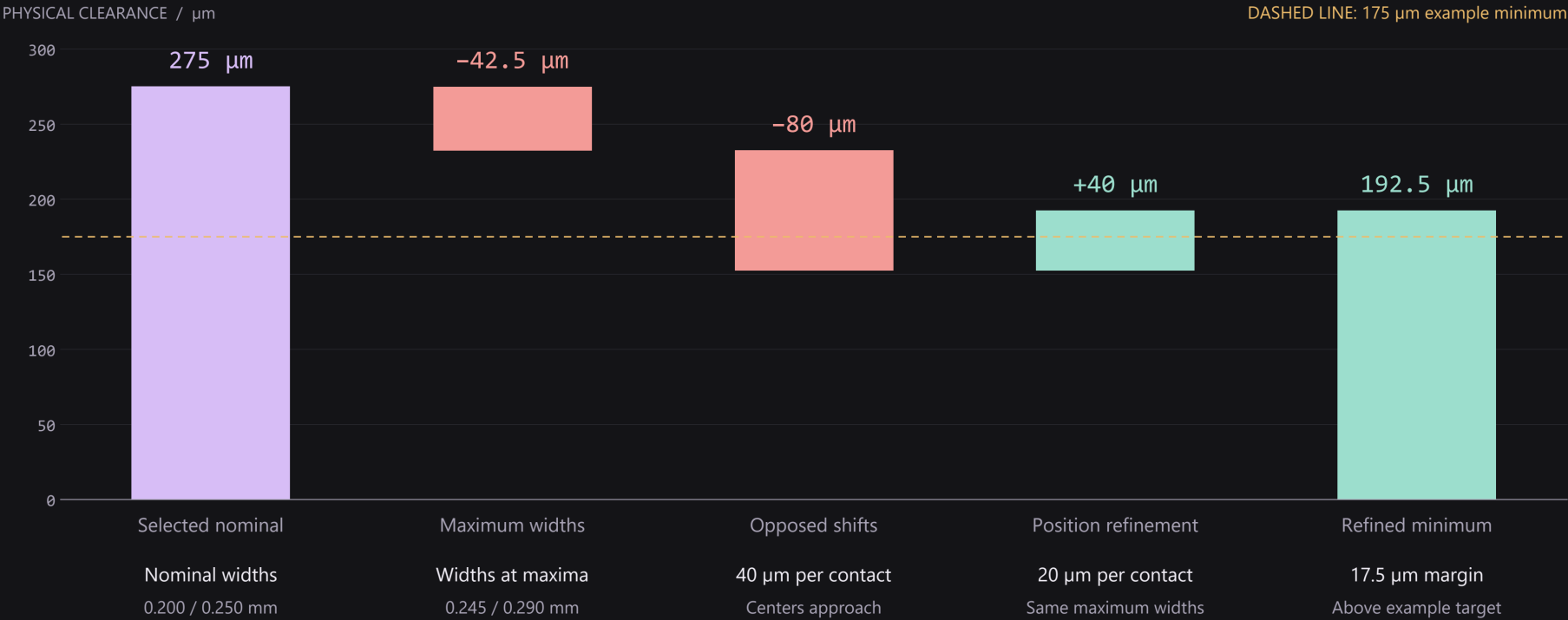
Plug width: 0.140-0.245 mm; selected nominal 0.200 mm. Receptacle width: 0.250  $\pm$ 0.040 mm.

Basic pitch: 0.500 mm. Baseline total position zone 0.080 mm; proposed internal target 0.040 mm.

STACKUP 3D / USB-C CONTACT STUDY

# Where the clearance goes.

A selected linear budget gives the design change a measurable purpose.



Declared linear model:  $\text{gap} = 0.500 - \text{plug width}/2 - \text{receptacle width}/2 + \text{receiver shift} - \text{plug shift}$ .

Fixed remaining pose. Position refinement and 175  $\mu\text{m}$  target are authored choices. Native endpoint distances independently agree.

**NATIVE EVIDENCE** StackUp3D point-distance results and independent STEP readback agree at 275, 152.5 and 192.5  $\mu\text{m}$ . The native fields use approximately 4.25-4.33  $\mu\text{m}$  grid spacing; denser display samples add no solver resolution.

**SCOPE** Selected formed plug bearing window and unbeveled neighboring receptacle land; aligned datum frames and remaining pose fixed. The lateral position bounds are an explicit one-direction model. No elastic mating, force, electrical performance, process yield or certification is inferred.

Source: USB Type-C Specification R2.0 (August 2019), Fig. 3-1 p. 42 and Fig. 3-3 p. 48. Shipped evidence: analysis/study-summary.json, geometry-contract.json, budget-results.json and mcp-evidence.zip.