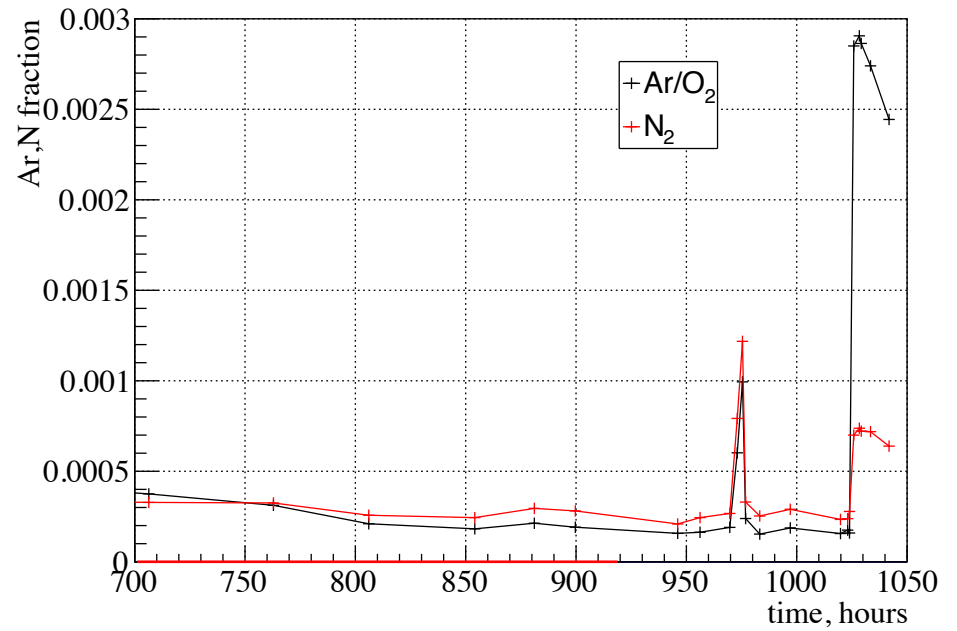
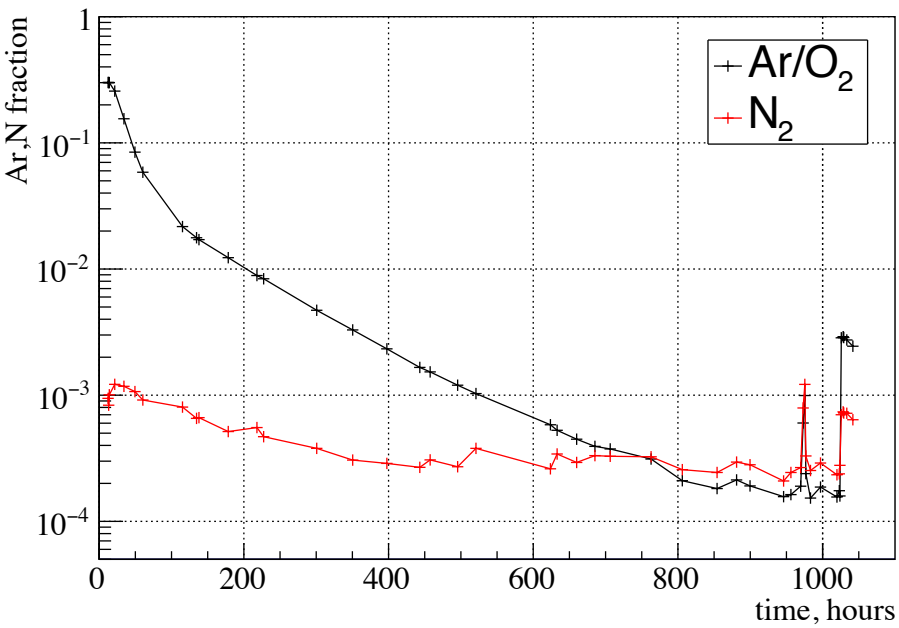
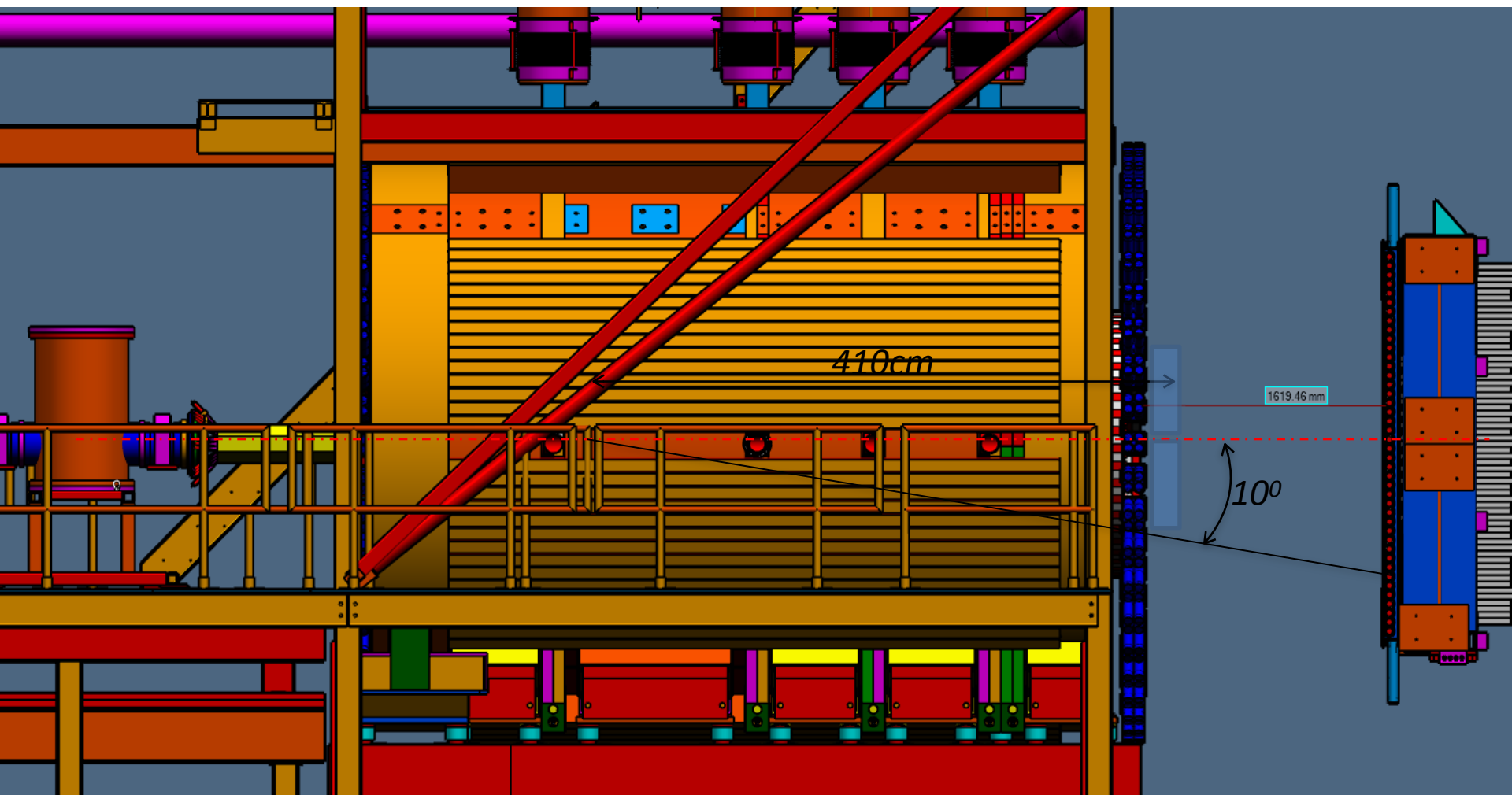


Gas tests with FDC

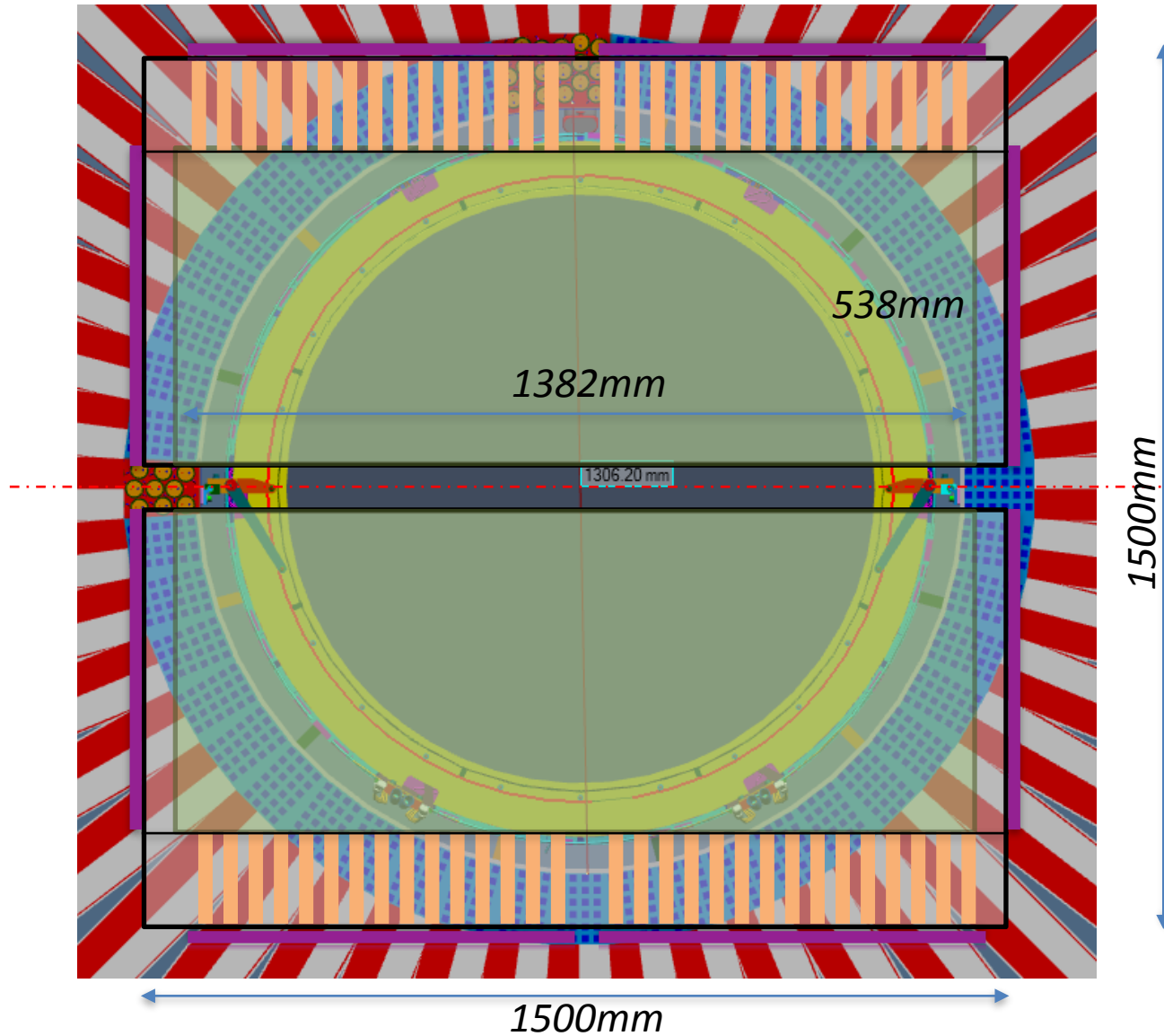


GEM-TRD large-scale prototype



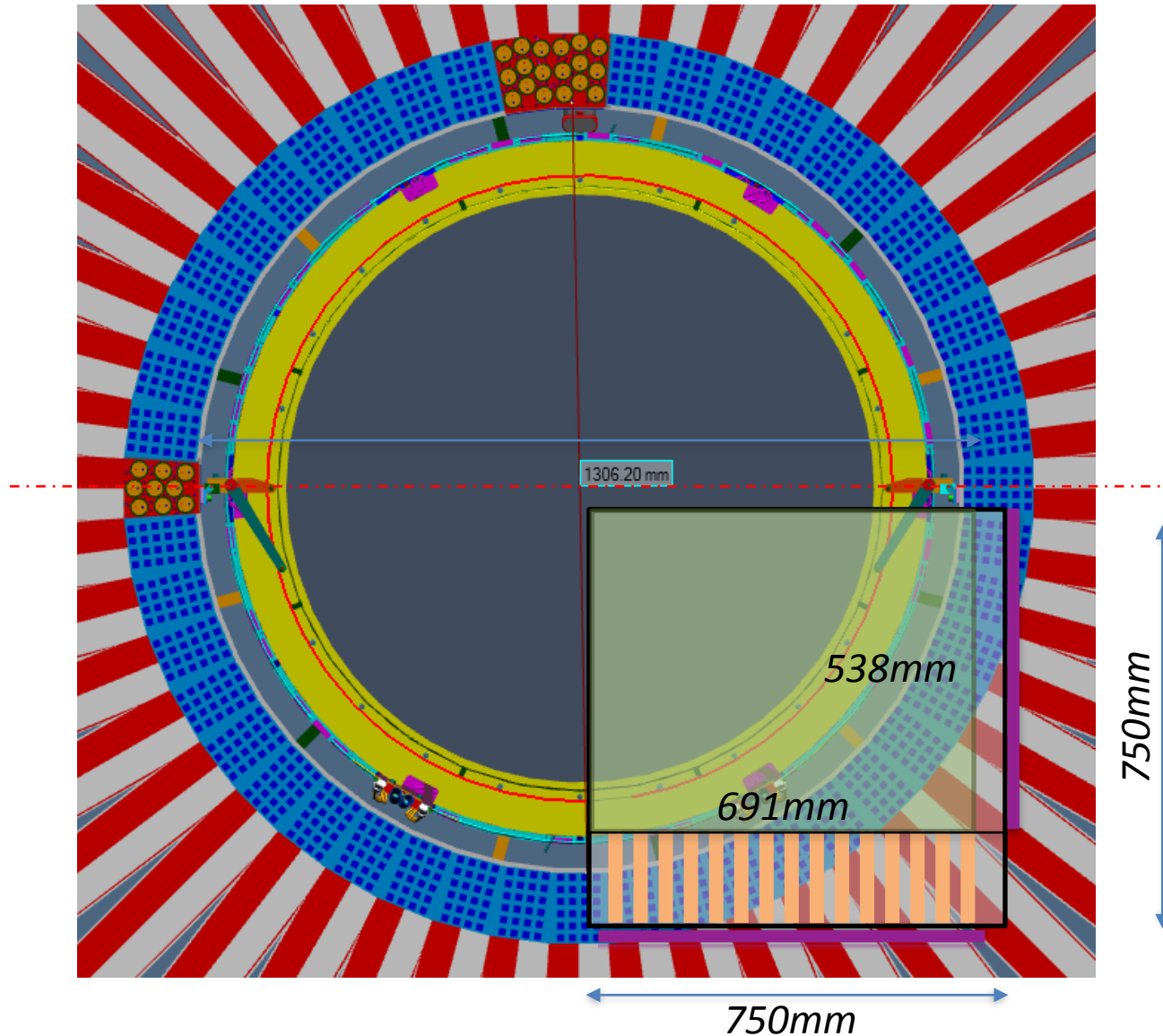
Option 3

547x 1368 mm² sensitive area



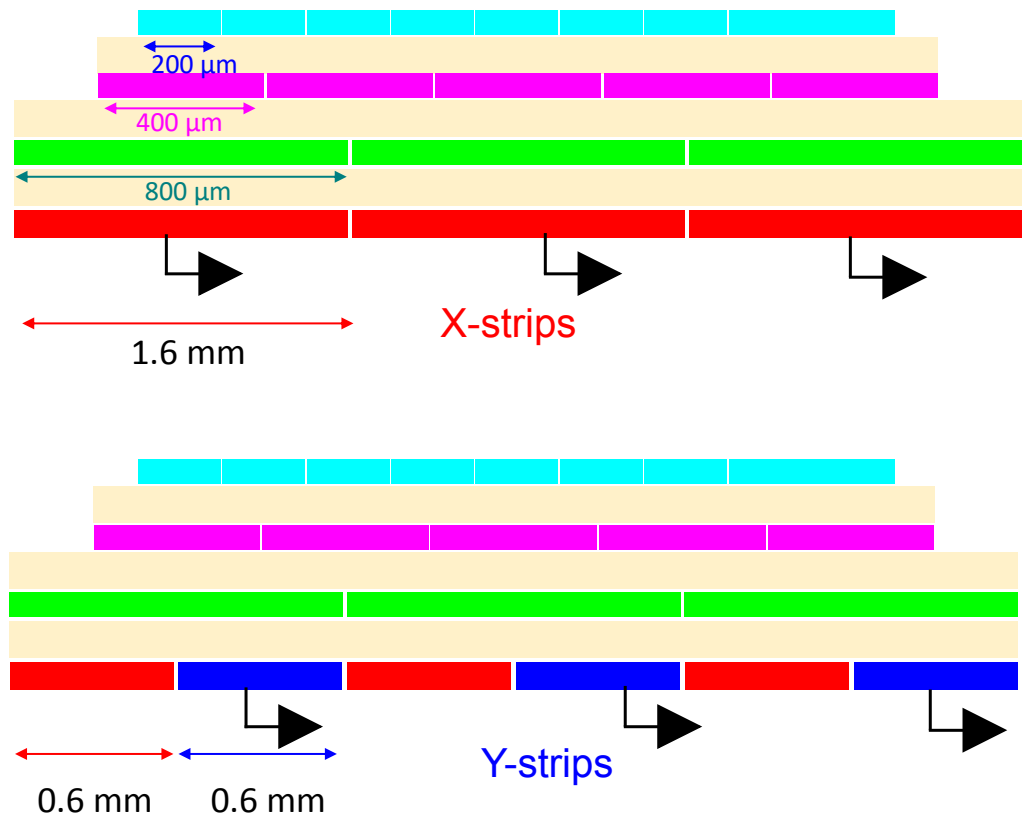
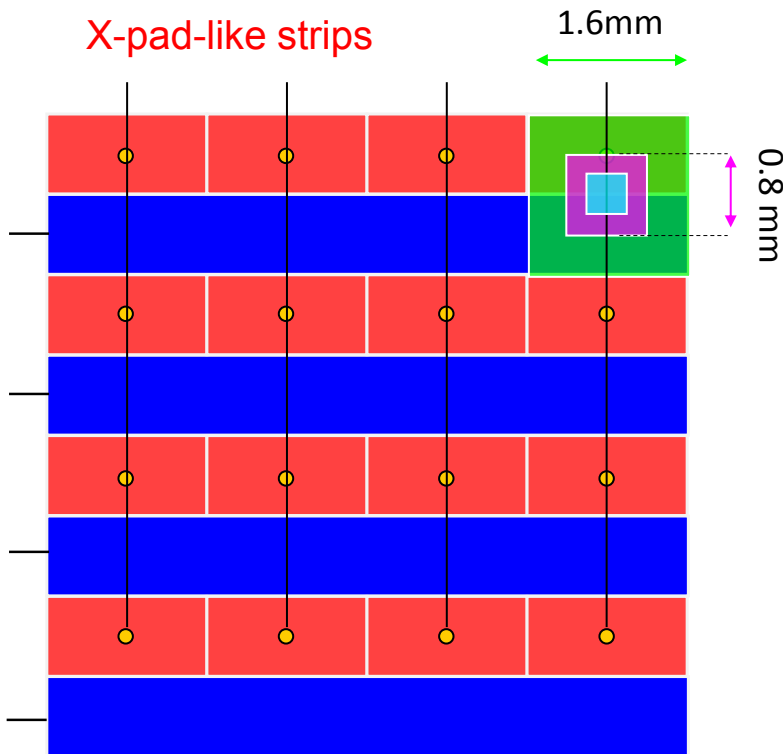
Proposed prototype - option 3

547x 684 mm² sensitive area



Readout

Capacitive-Sharing Large-Strip Readout: Low channel count X-Y strip readout



Readout

The above example has strip pitch of 0.8mm, starting with $0.2 \times 0.2 \text{mm}^2$ pads and two stages of capacitive coupling.

The pitch can be scaled depending on the resolution requirement and budget.

We can start with $0.475 \times 0.475 \text{mm}^2$ pads and after two stages will have 1.9mm strip pitch.

With 1.9mm pitch, for one readout block (half chamber):

- vertical strips: 5 fADCs x 3 pre-amps x 24 chan. x 1.9mm = 360 chan. x 1.9mm = 684 mm
- horizontal strips: 4 fADCs x 3 pre-amps x 24 chan. x 1.9mm = 288 chan. x 1.9mm = 547 mm

In total: 648 chan. per readout block, or 2,592 chan. for the whole project.

With 1.6mm pitch, for one readout block (half chamber):

- vertical strips: 6 fADCs x 3 pre-amps x 24 chan. x 1.6mm = 432 chan. x 1.6mm = 691 mm
- horizontal strips: 4.67 fADCs x 3 pre-amps x 24 chan. x 1.6mm = 336 chan. x 1.6mm = 538 mm

In total: 11 fADCs, 768 chan. per readout block, or 44 fADCs, 3072 chan. for the whole project.