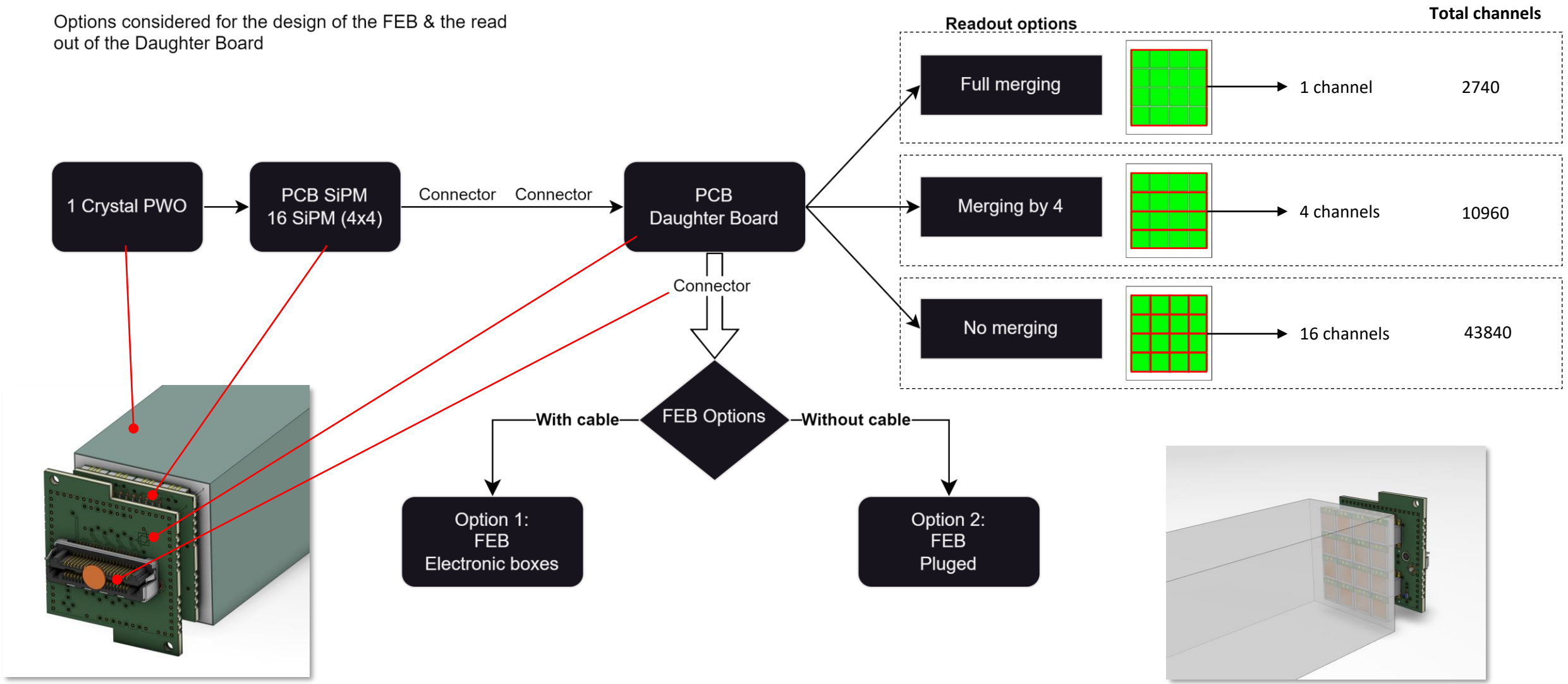
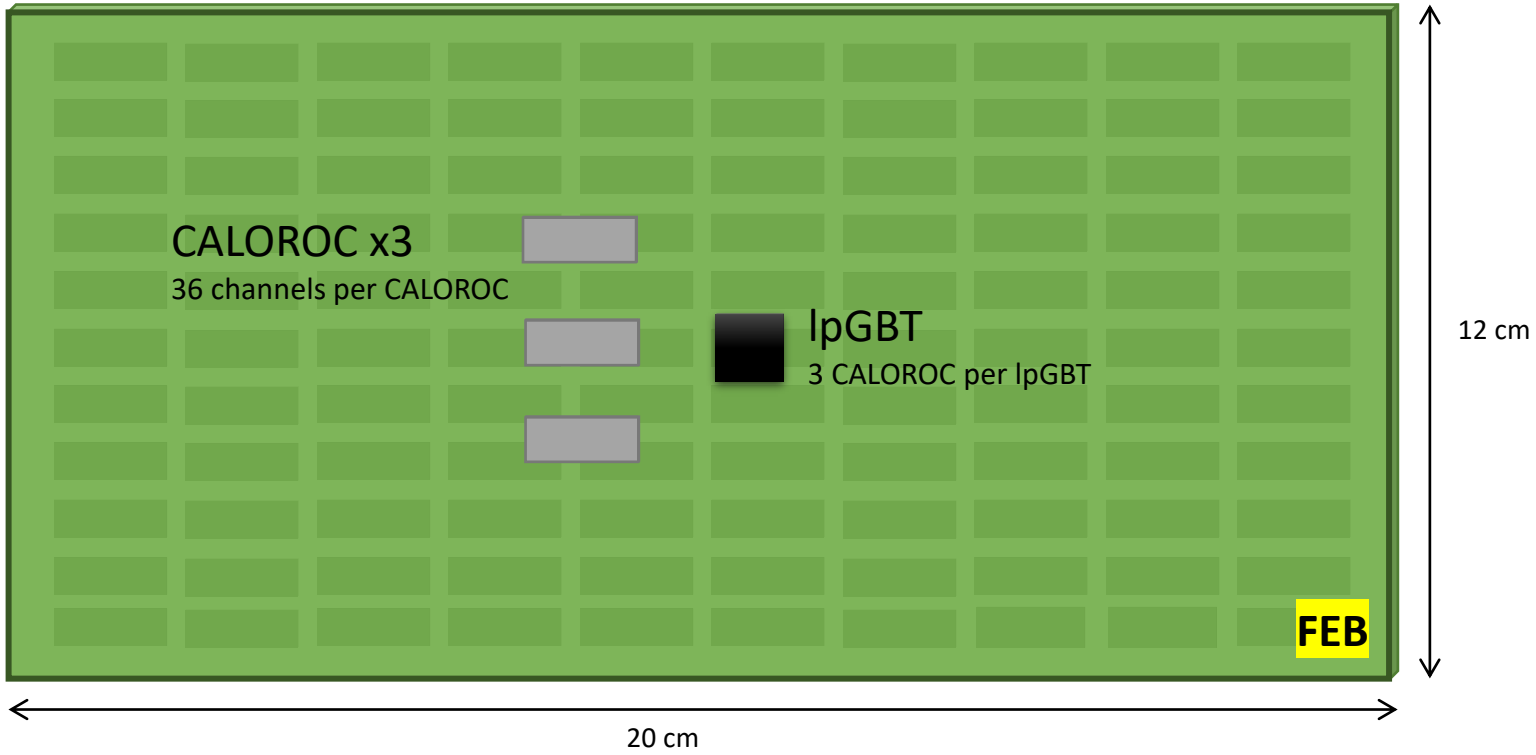
FEB & READ OUT

Options considered for the design of the FEB & the read out of the Daughter Board



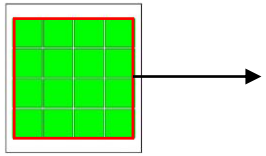
16 SiPM per crystal



Per FEB:
108 crystals
3 CALOROC (108)
1 lpGBT

Total:
26 FEB (2740/108)
78 CALOROC
26 lpGBT

1 crystal = 1 connector



1 channel → Total= 2740 channels → 77 Caloroc mini

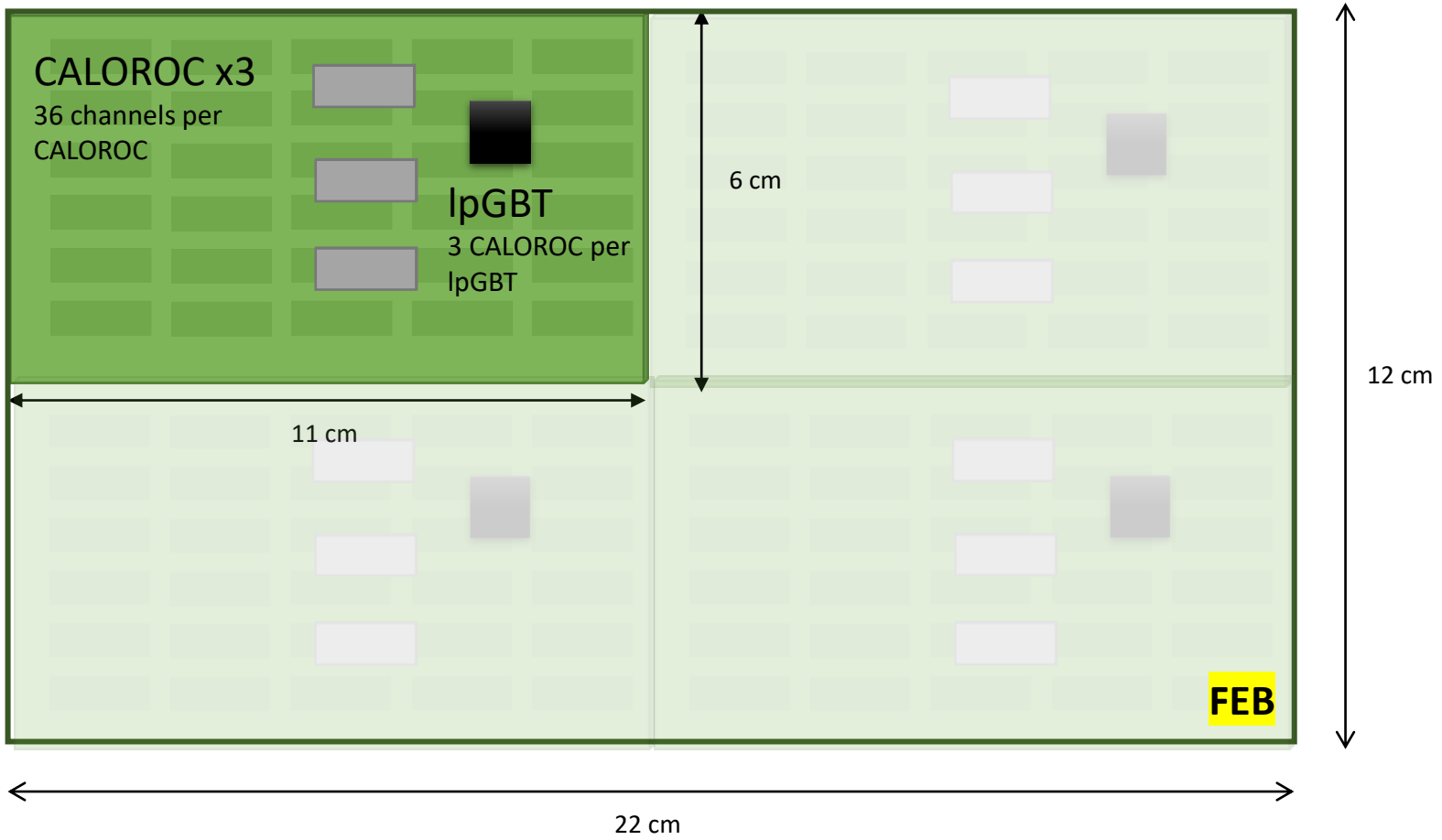
Connector | 15mm x 5mm

lpGBT | 9mm x 9mm

CALOROC | 15mm x 6mm

FULL MERGING

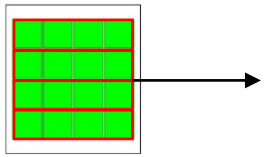
3x36 channels= 108 channels= 108/1= 108 connectors



Per FEB:
108 crystals
12 CALOROC (432)
4 lpGBT

Total:
26 FEB (2740/108)
312 CALOROC
104 lpGBT

1 crystal = 1 connector



4 channels → Total= 4x2740= 10960 channels → 305 Caloroc mini

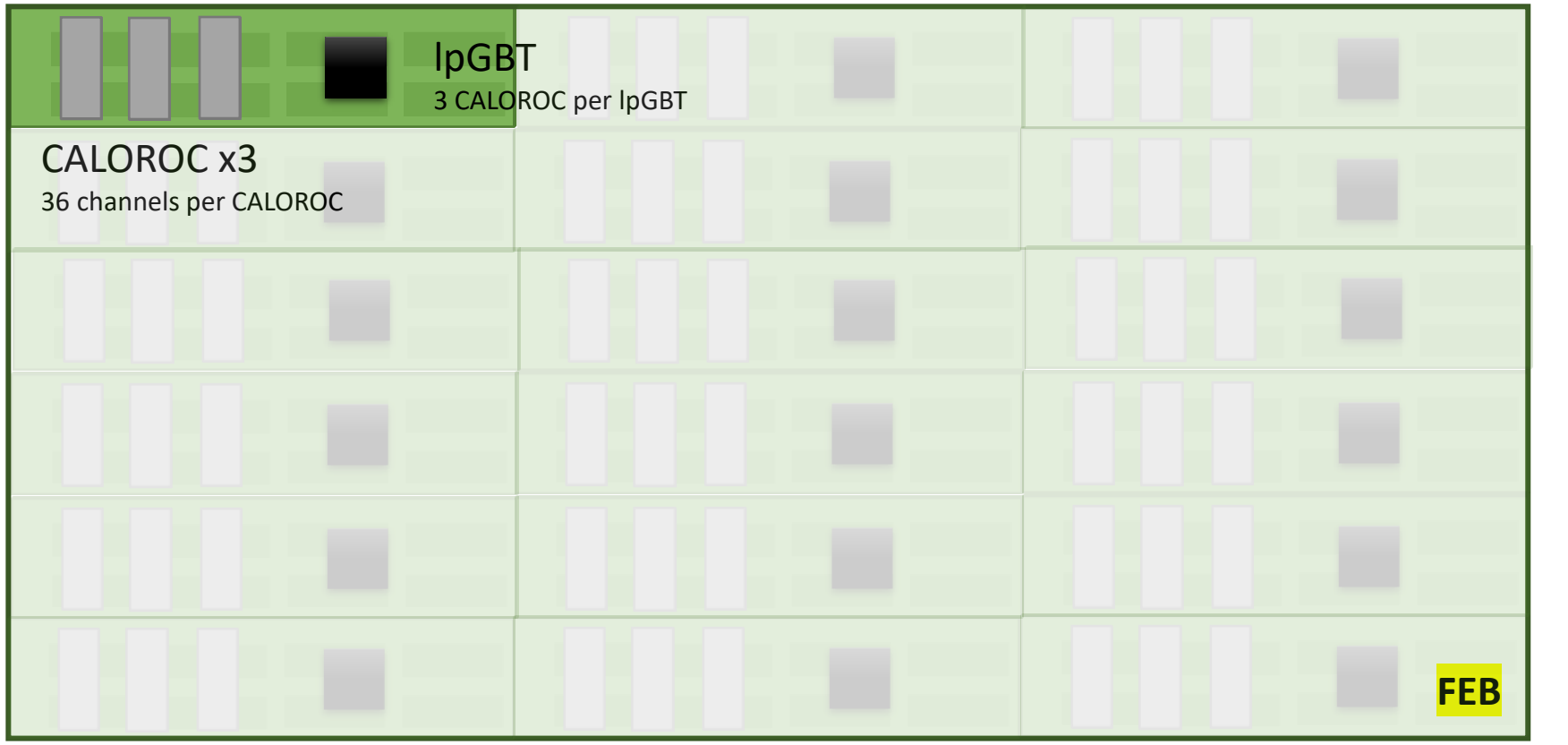
Connector | 15mm x 5mm

lpGBT | 9mm x 9mm

CALOROC | 15mm x 6mm

MERGING By 4

3x36 channels= 108 channels= 108/4= 27 connectors



Per FEB:
108 crystals
48 CALOROC
16 lpGBT

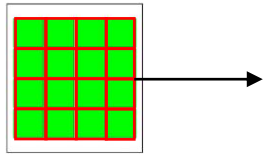
Total:
26 FEB (2740/108)
1248 CALOROC
416 lpGBT

Connector | 15mm x 5mm

lpGBT | 9mm x 9mm

CALOROC | 15mm x 6mm

1 crystal = 1 connector



16 channels → Total= 16x2740= 43840 channels → 1218 Caloroc mini

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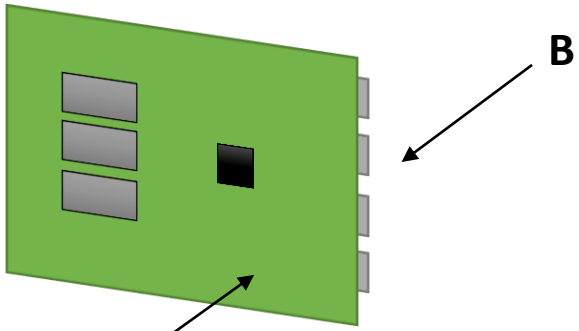
NO MERGING

3x36 channels= 108 channels= 108/16= 7 connectors



QUESTIONS:

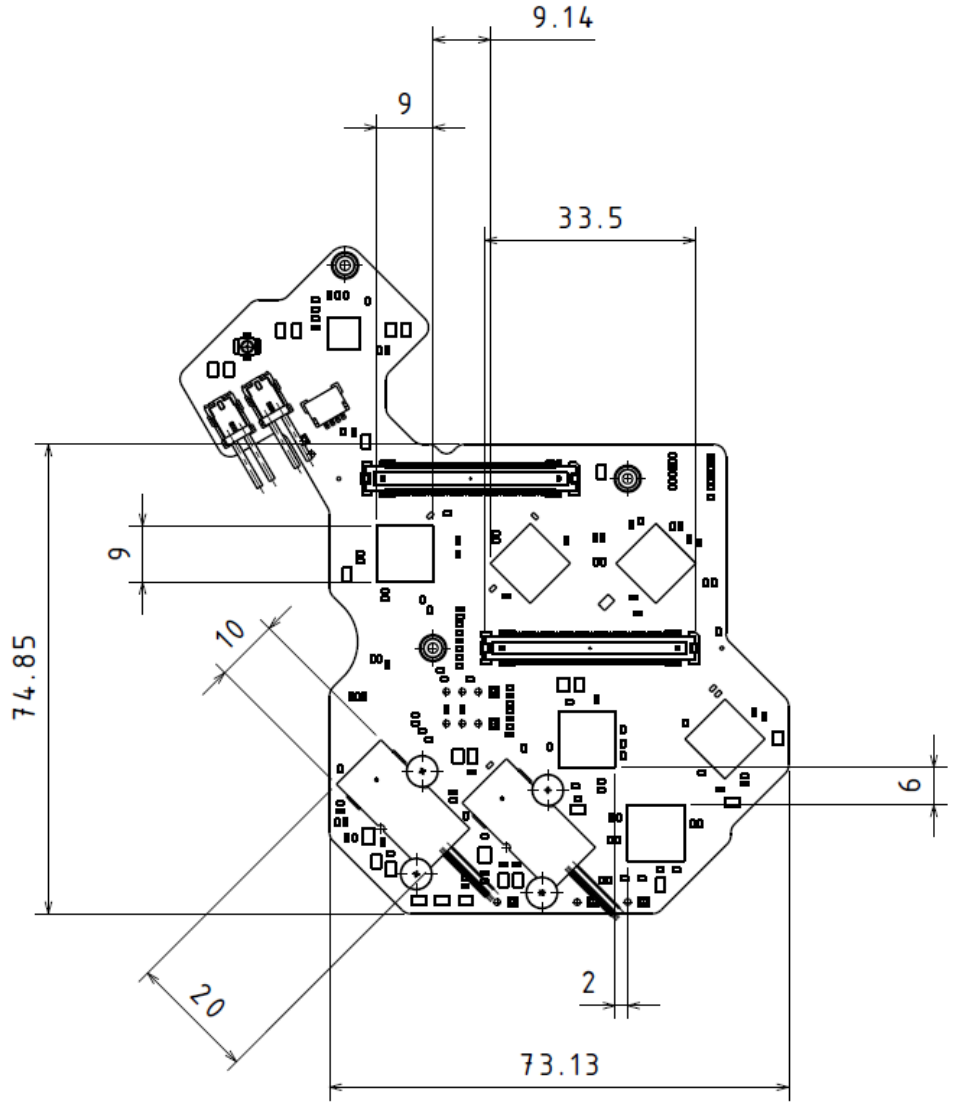
1) FACE A

→ Density of CALOROC (+lpGBT) per cm^2

2) FACE B

→ Kind of connector « Crystal → FEB » ? Flat cable ?

→ Density of connectors per cm^2 (PCB routing)



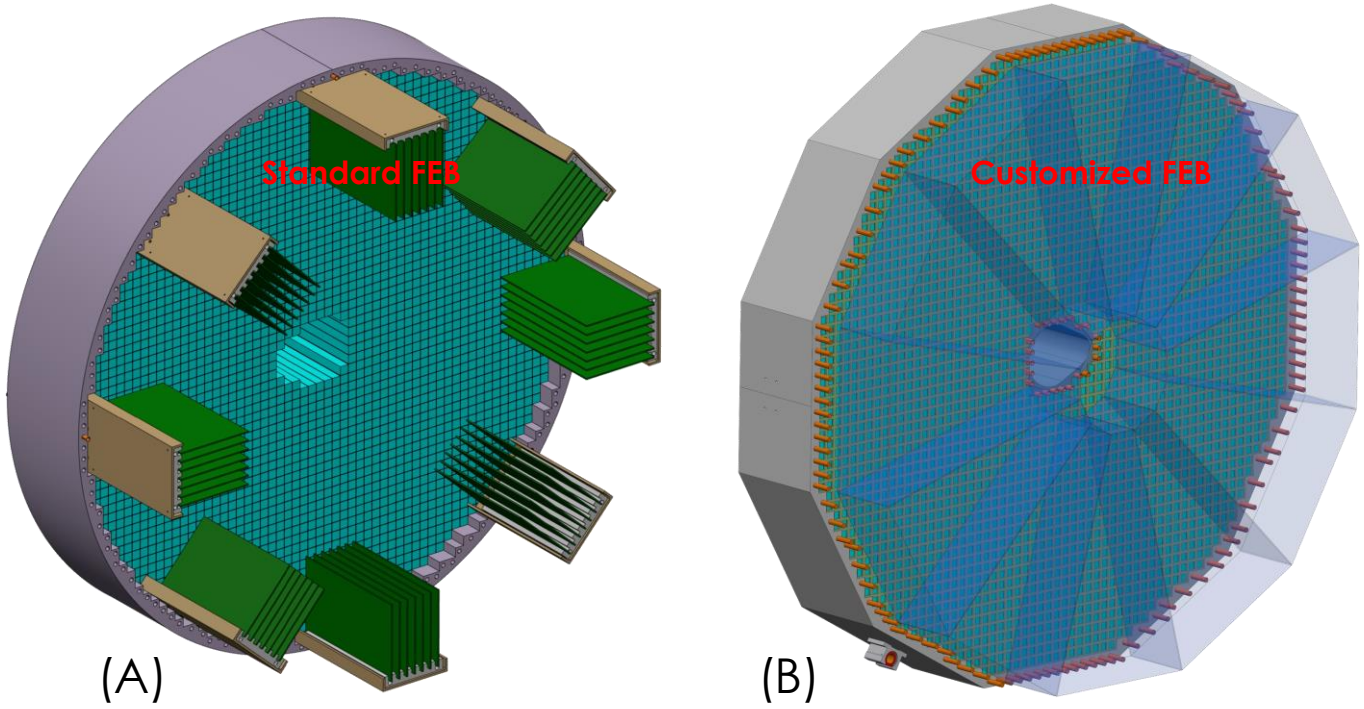
Exemple of FEB:

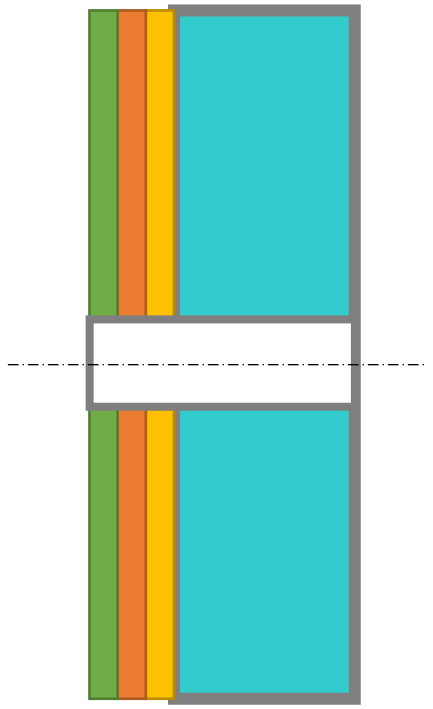
6 lpGBT → 18 CALOROC ??

S= 56 cm^2

FEB & READ OUT

Options considered for the design of the FEB & the read out of the Daughter Board





(1) FEB Electronic boxes (with cables)

- On the external diameter (A)
  - A1 → Cooling: fan + exchanger
  - A2 → Cooling: racks with cold plates
- In front of the SiPM (B)

(2) FEB pluged

- In front of the SiPM
- Cooling: Cold plates (+ fan & exchanger if needed)