Status of the Design of the 4-chip Cu Dummy flex

2nd General VTX workshop

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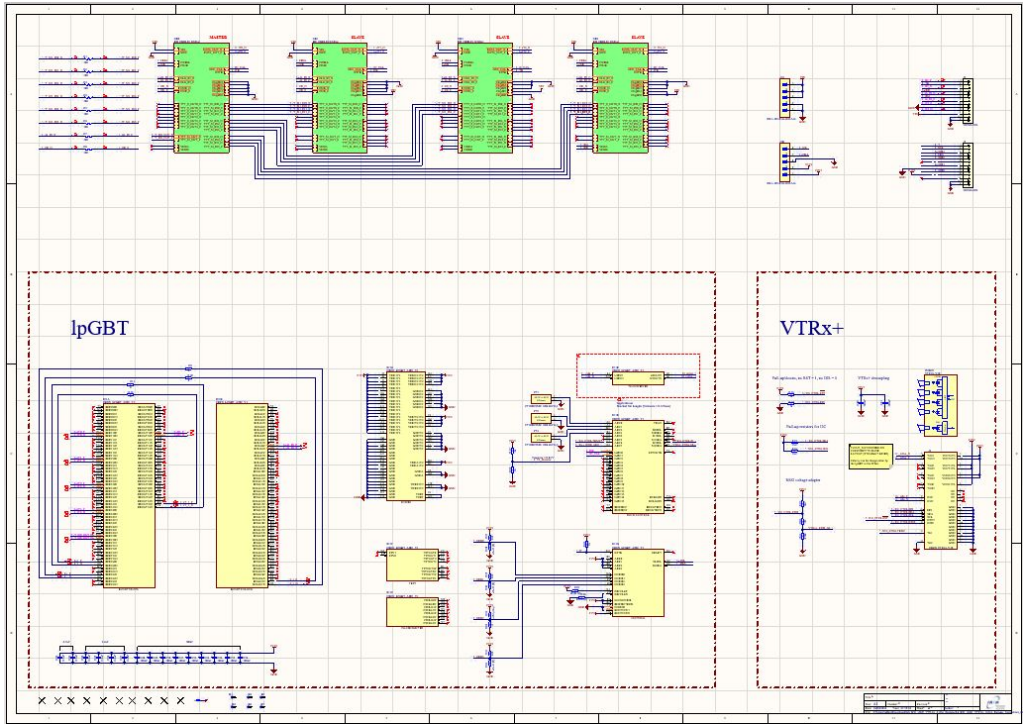
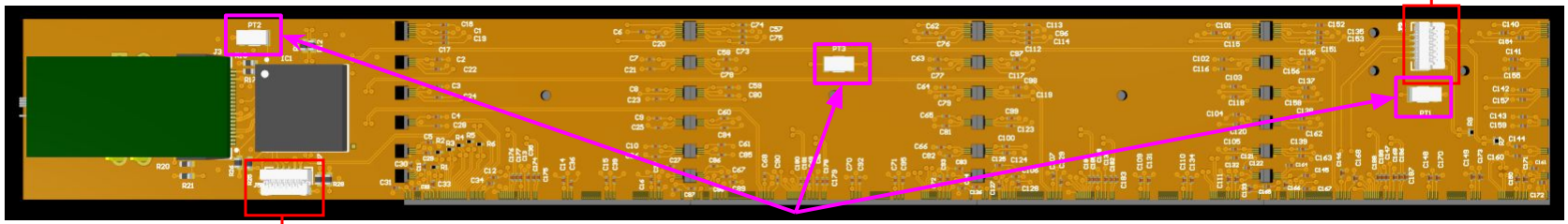
Status of the Design of the 4-chip Cu Dummy flex

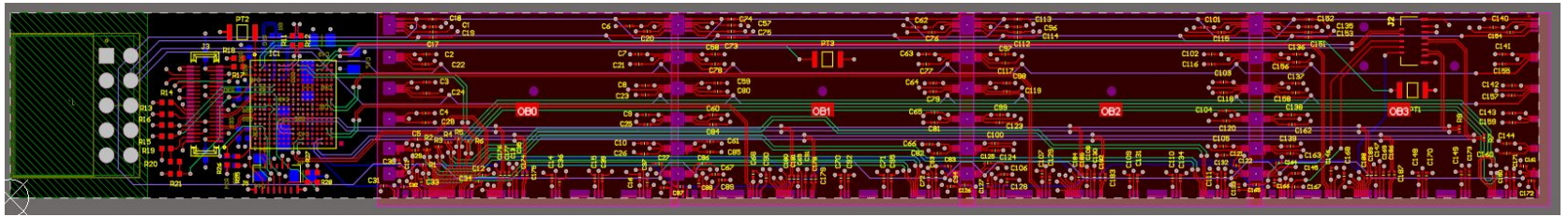


- 4 fully-functional obelix sensors
  AC-coupled CMD & CLK
- 2-macropixel TTT connection scheme (1 master, 3 slaves)
- LpGBT & VTRx+ data link
- temperature monitoring
- service connectors (LpGBt I2C, obelix emulator)

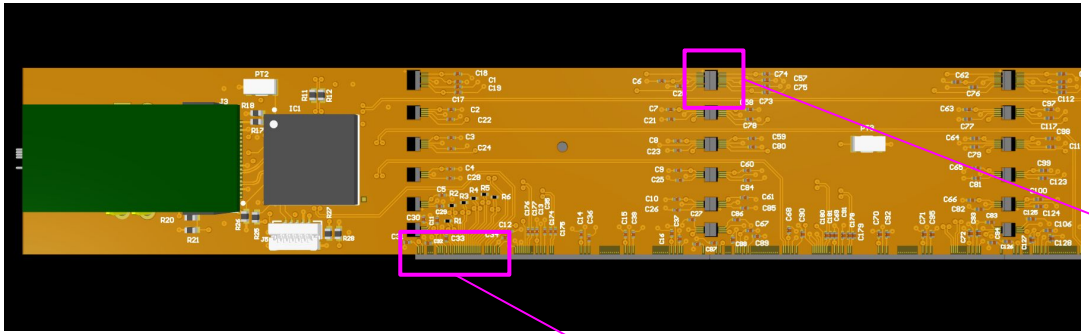
Status of the Design of the 4-chip Cu Dummy flex

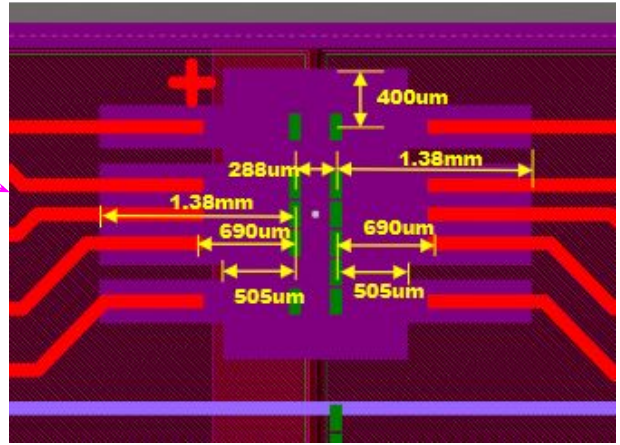


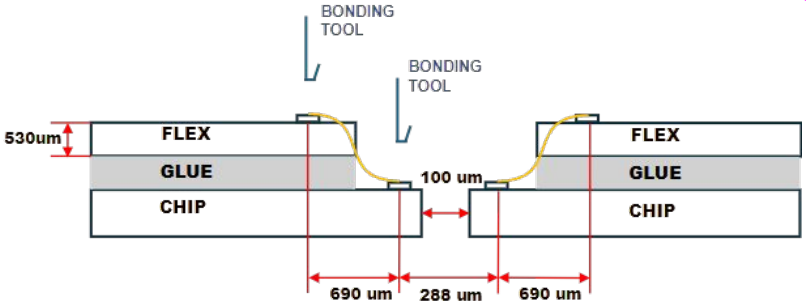
PT1000 temperature sensors

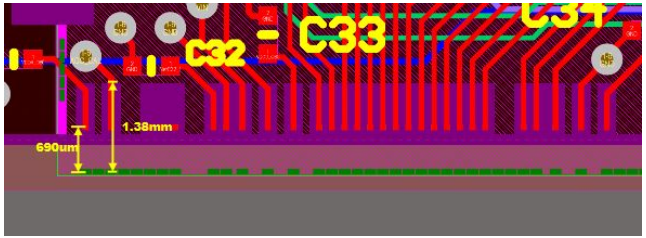


Checking Bonding clearance





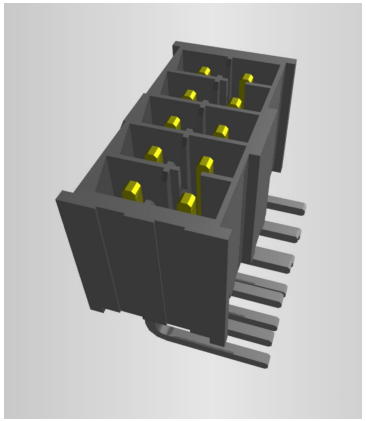


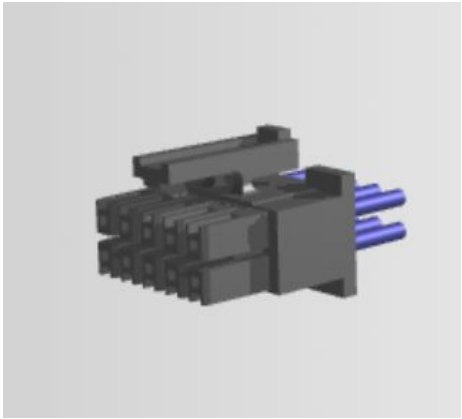


Power supply connector

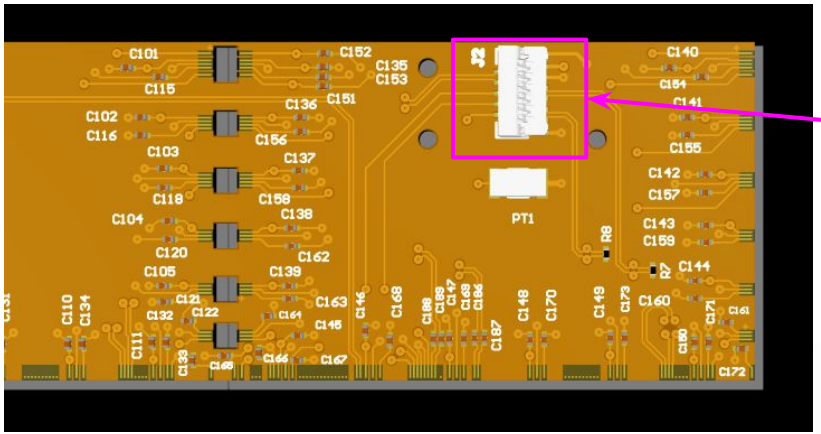
Provides power supplies and bias:

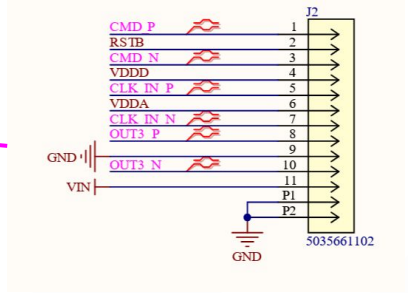
- 1.2V (LpGBT)
- 1.2V (VTRx+)
- 2.5V (VTRx+)
- 2-3V VIN (OBELIX)
- Pwell=0..-6V (OBELIX)
- Psub=Vwell+0..-14V = 0..-20V (OBELIX)



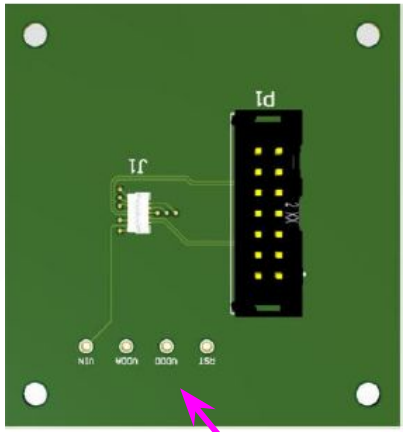


Obelix emulator connector





adapter board
towards the FPGA

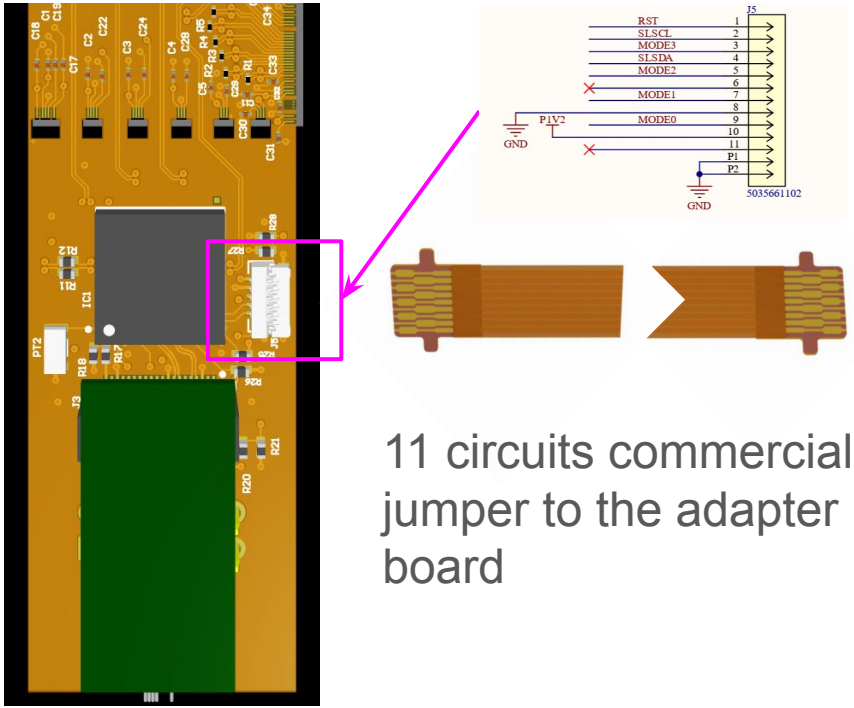


enables the functional verification of LpGBT & VTRX+
a fully operational obelix emulator implemented in the FPGA board can be attached here

11 circuits commercial jumper to the adapter board

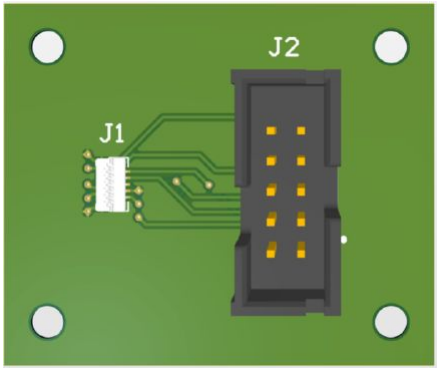
power supply and RESETB probes

LpGBT I2C connector



11 circuits commercial jumper to the adapter board

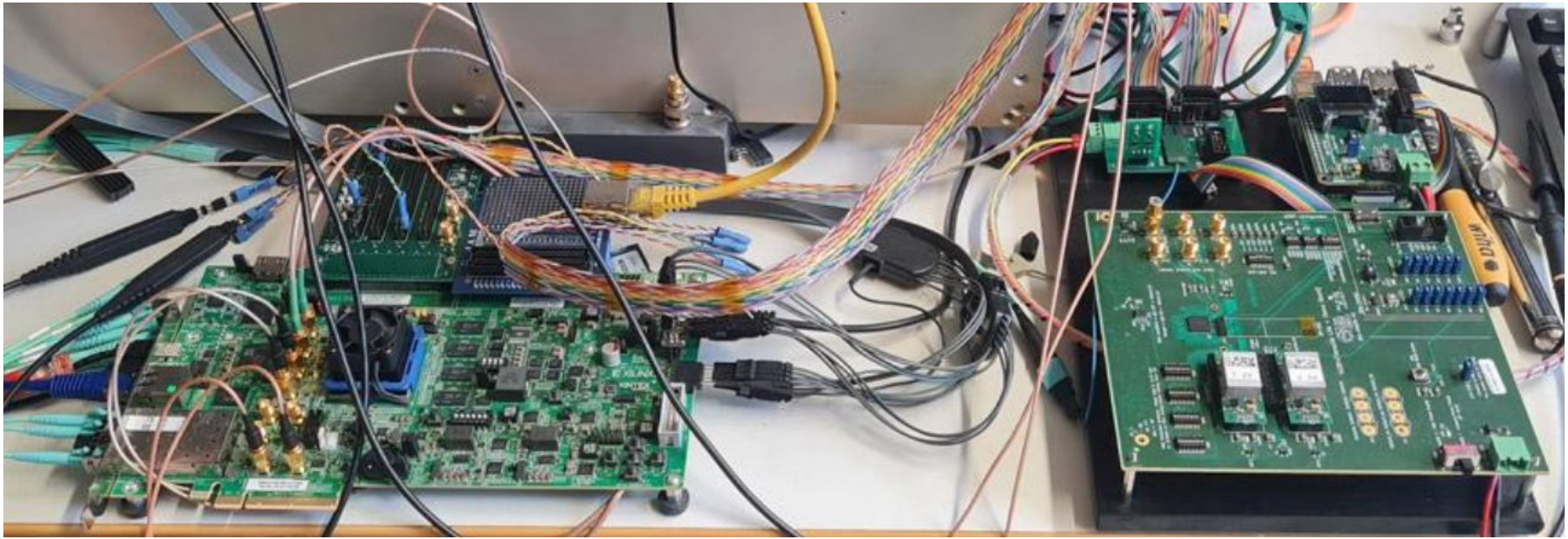
adapter board towards the The LpGBT control toolkit



connects the LpGBT I2C slow control interface for low level control

Dummy-Flex Testbed

AMD FMC breakout board (HW-FMC-XM105-G) → ribbon cable → LPGBT



Prototyping roadmap

Module name (Alias)	n.sensors	Data Connection	Material	lead time [months]	t0
DummyCu	4	LpGBT/VTRX+	Cu	2	now
DummyAl	4	LpGBT/VTRX+	Al	6-8	DummyCu validation (Sept. 26)
L6	12	LpGBT/VTRX+	Al	6-8	DummyAl validation

Dummy Cu flex should be available for testing in Vienna starting from July 2026

next moves

- Procurement Cu Dummy Flex + adapters
- Incoming and optical inspection in Pisa
- Testing in Vienna
- Update of the L6 design with new obelix pad-frame
- Integration of the LpGBT and VTRx+ the L6 flex design