

# ETROC2 with XEM8320 Development Kit



## Specifications:

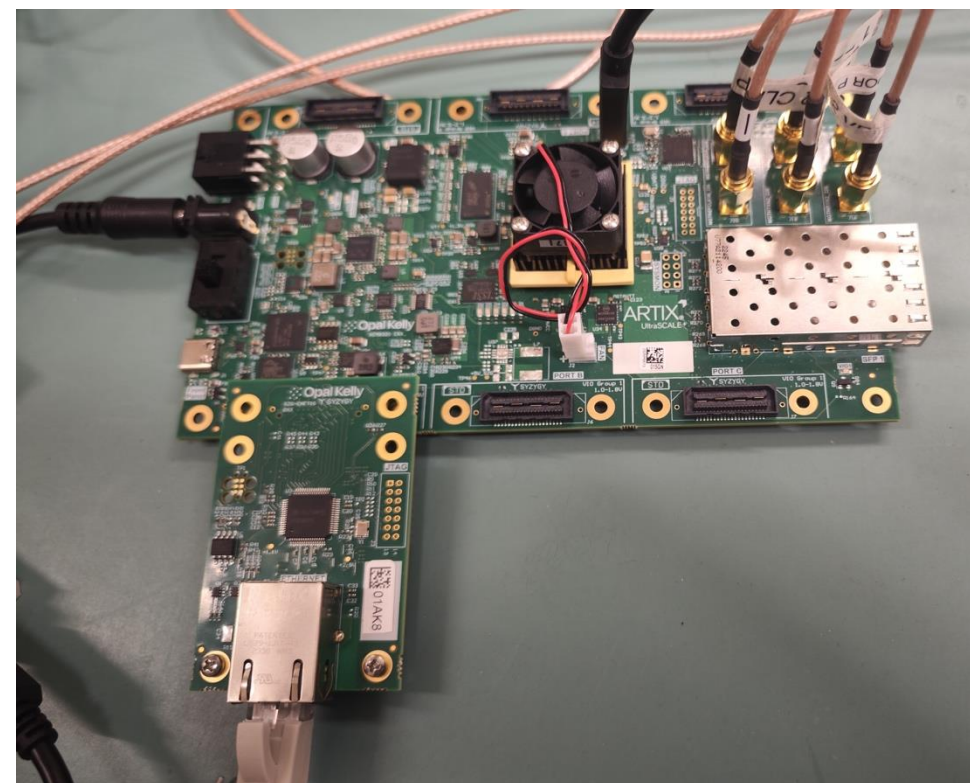
- XEM8320 (UltraScale+ XCAU25P)
- ETROC2+LGAD test board

## Functions in firmware:

- Between FPGA and ETROC: fast command and data by GTY @1.28Gbps
- Between PC and ETROC: I2C by USB-ISS @100kbps
- Between PC and FPGA: control and data by Ethernet @~1Gbps

## Status

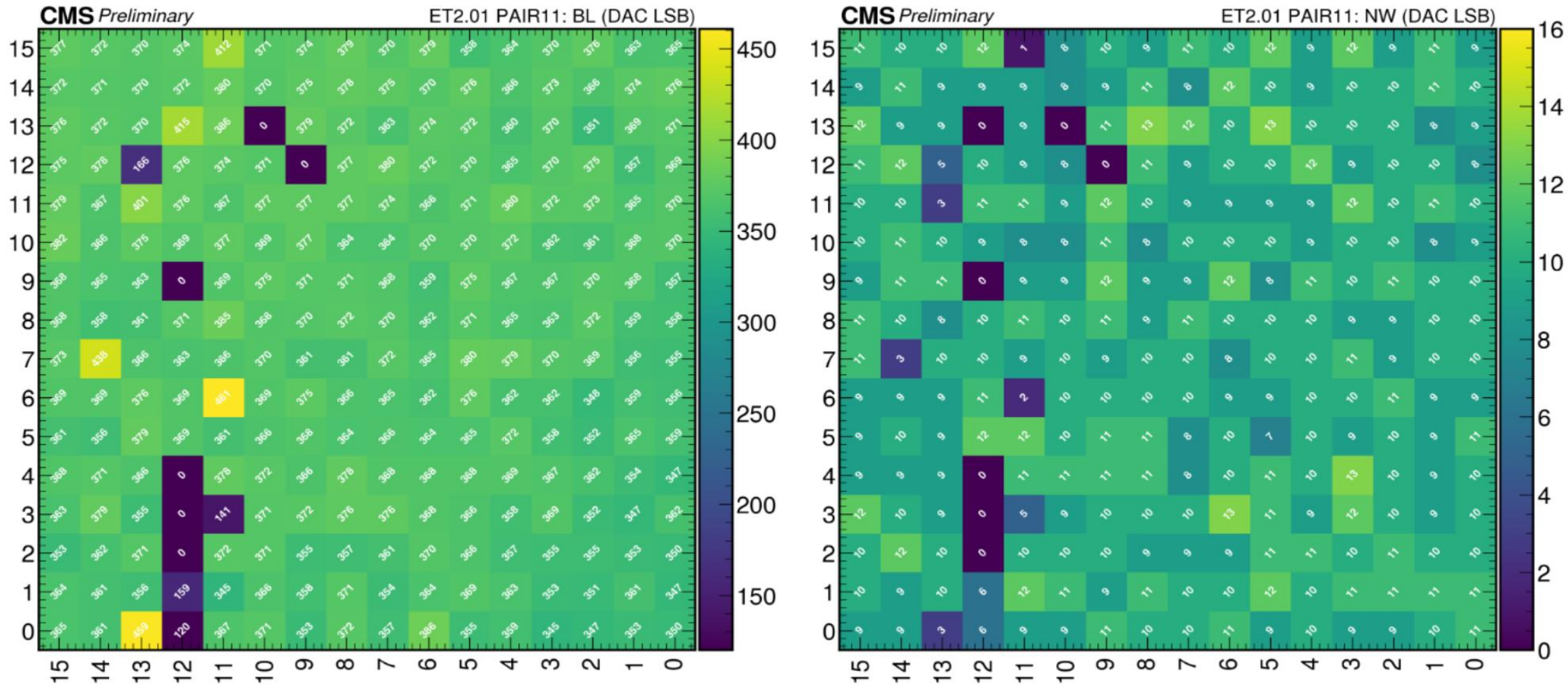
- ✓ I2C
- ✓ Fast Command
- ✓ Data R/O
  - ✓ Charge injection: inject charge to selected pixel, receive trigger from ETROC, send L1A to ETROC, read data from ETROC
  - (Integrate up to 4 ETROC2s for beam test)



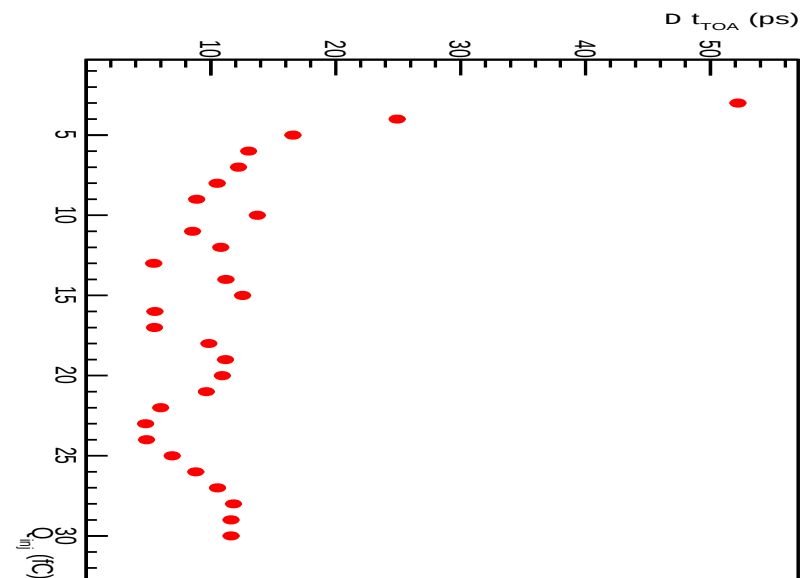
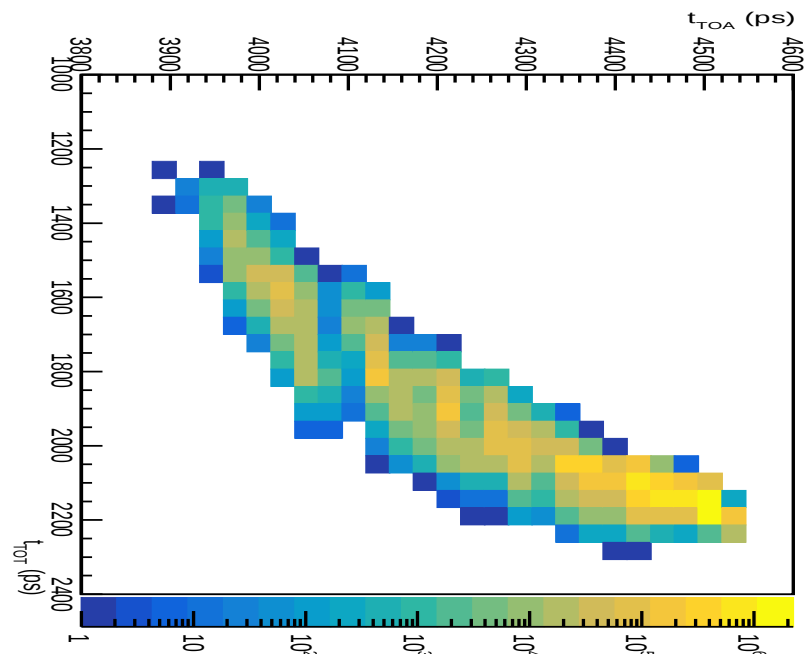
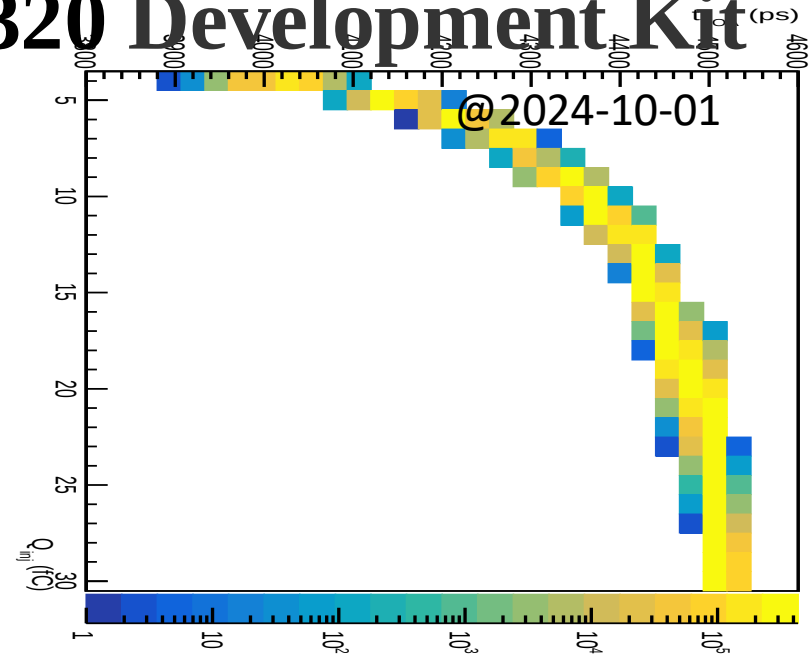
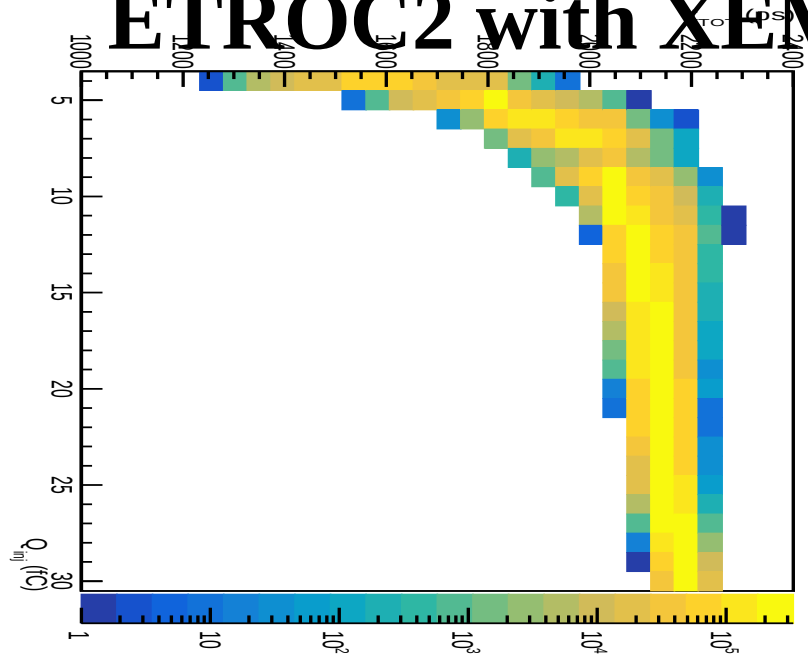


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@2024-09-24

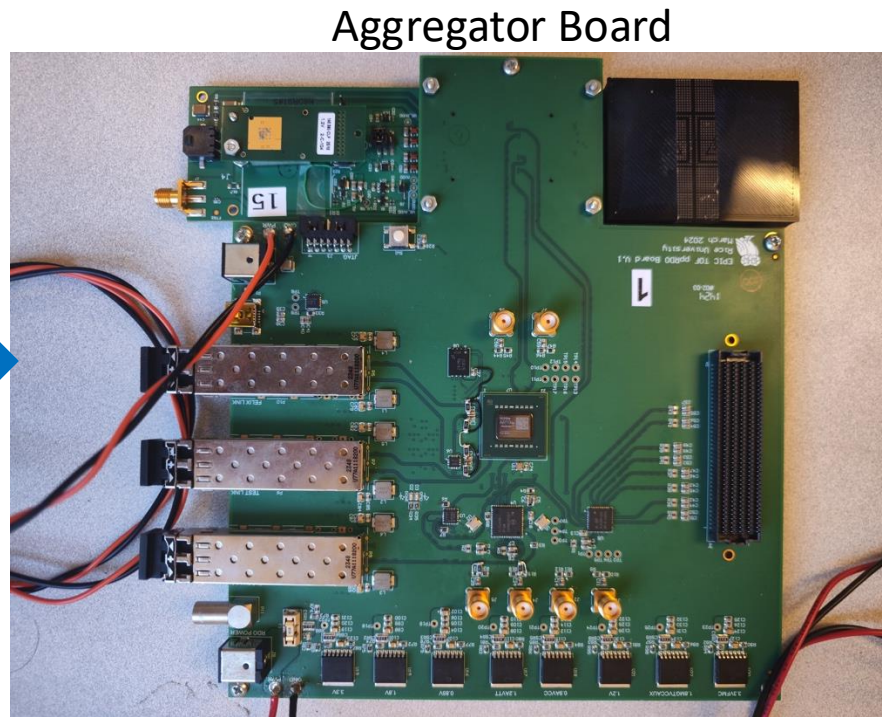
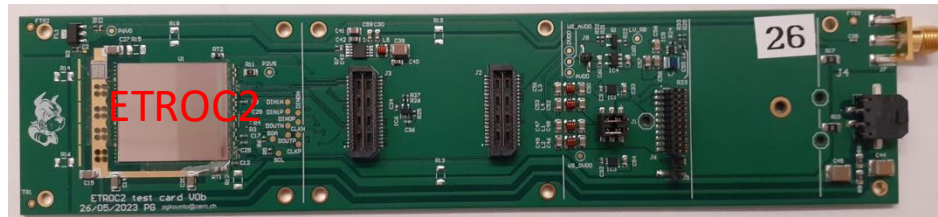


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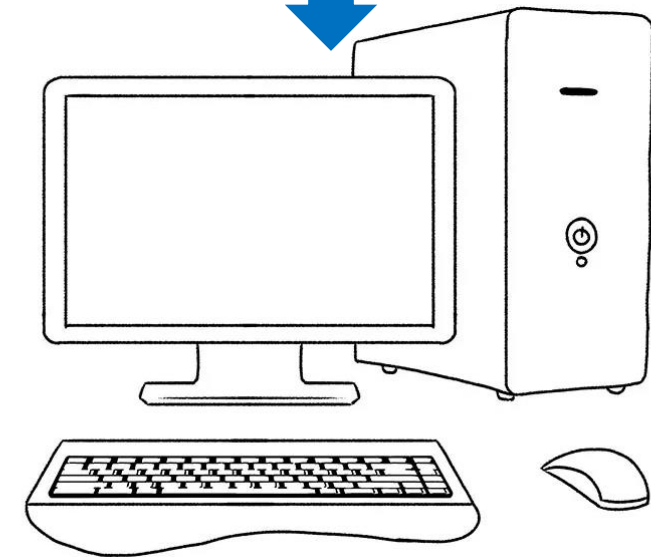
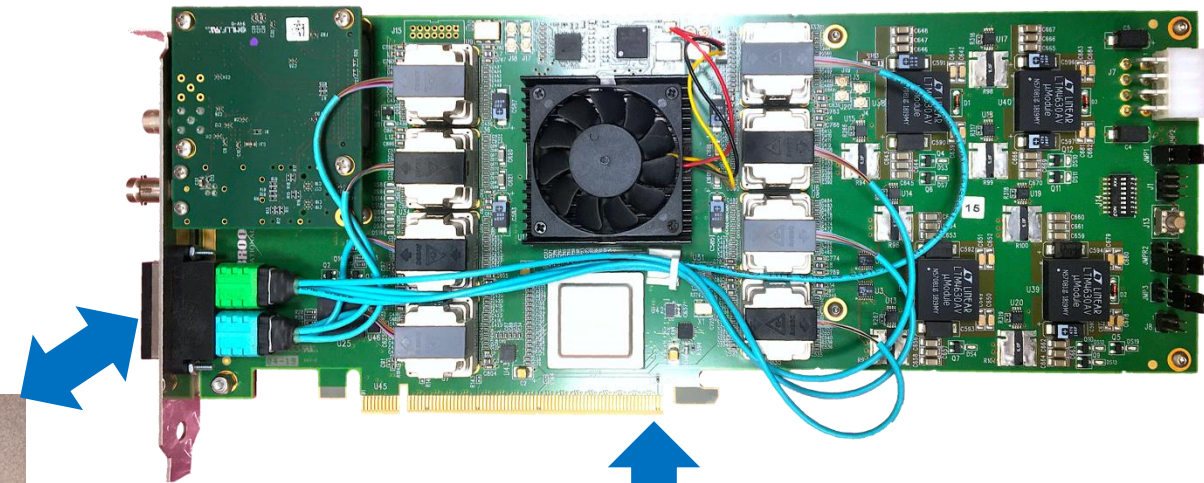


# TOF Readout Chain

TOF Module/Stave



FELIX

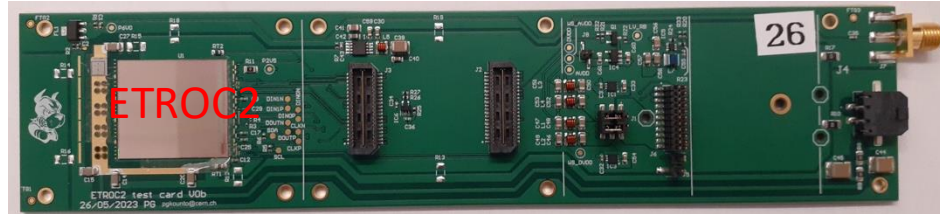


# LBL Plan

- Use ETROC2 as proxy for TOF ASIC to contribute to RDO & aggregator design
- Work with FCFD designer to define and implement slow control and data format and protocols in FPGA as emulator for FCFDv2 before the actual chip is available

# Next Step

TOF Module

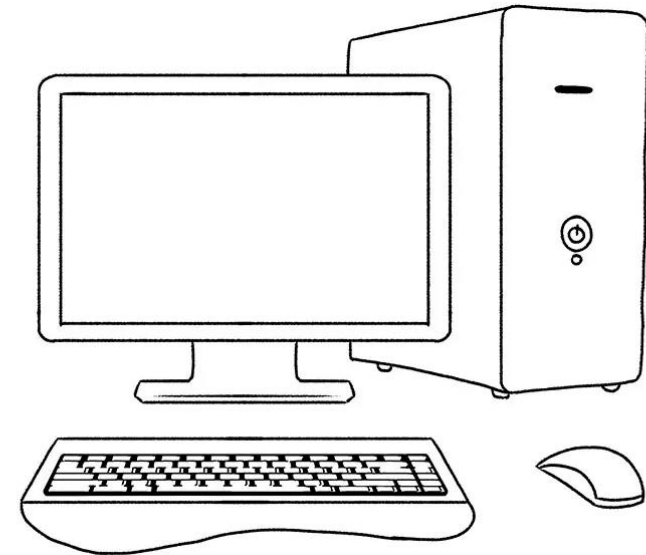
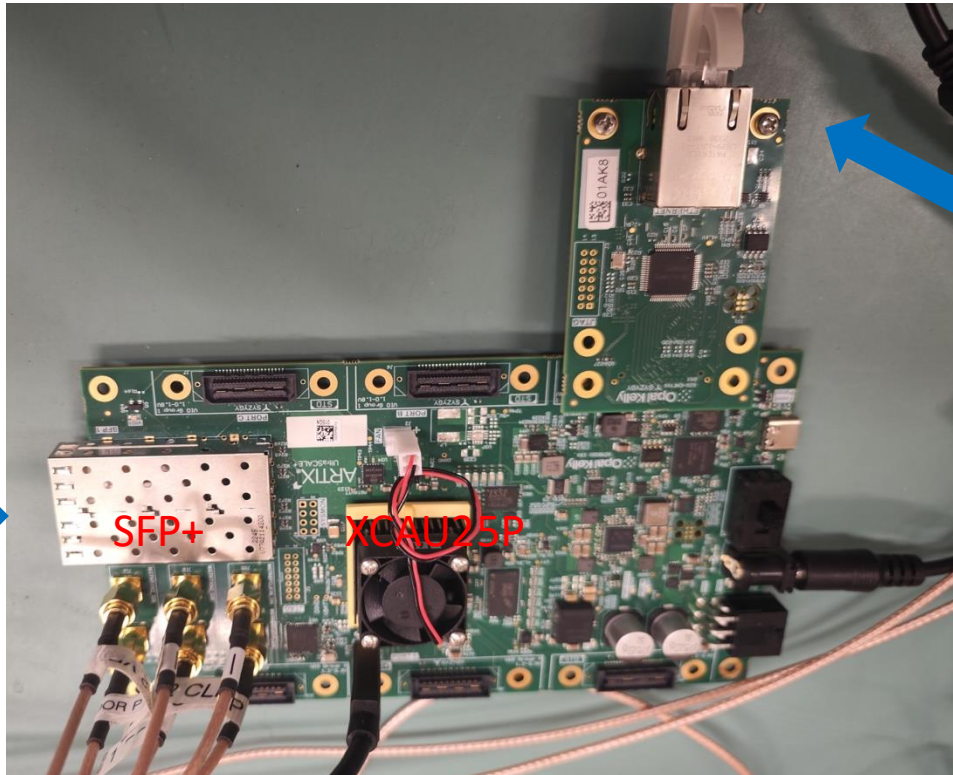


1. Transfer ETL firmware from KCU105 to XEM8320

RDO

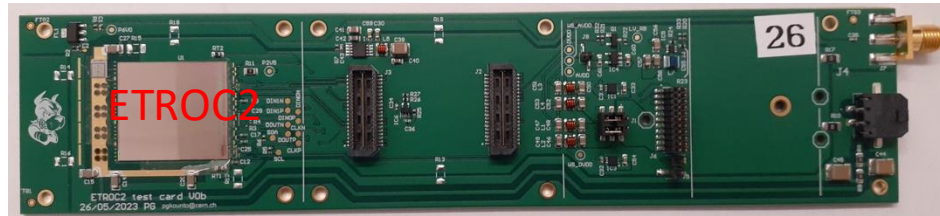


XEM8320



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TOF Module/Stave

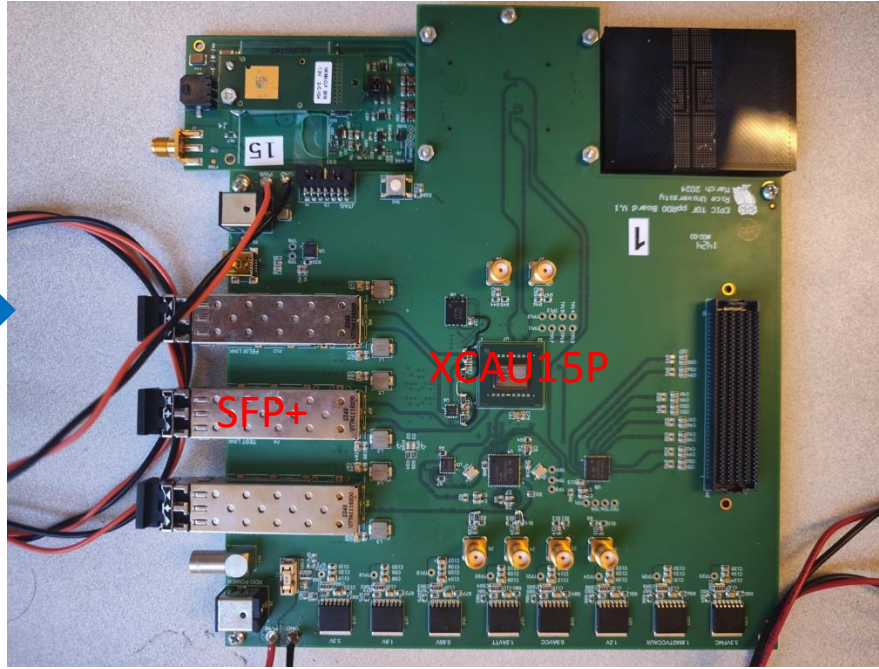


RDO

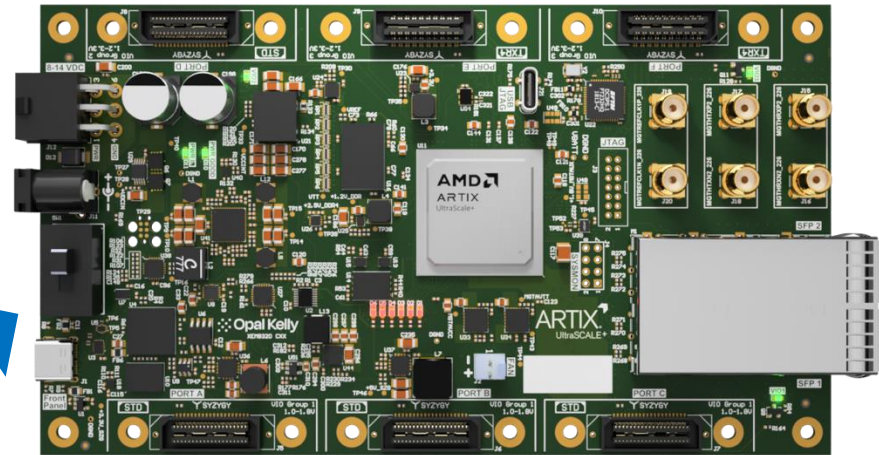


2. repurpose ppRDO as an aggregator

Aggregator Board

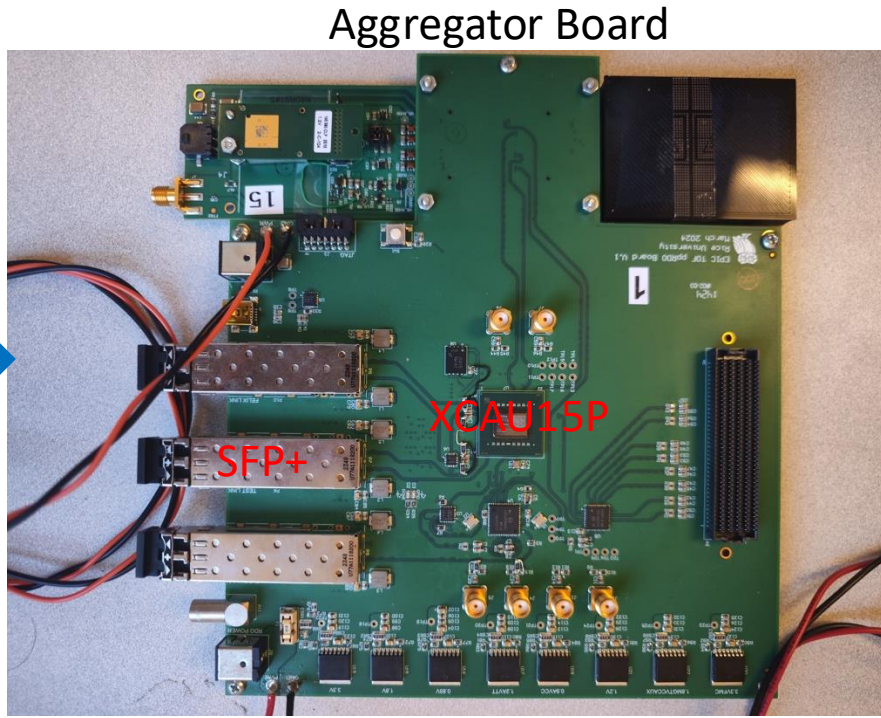
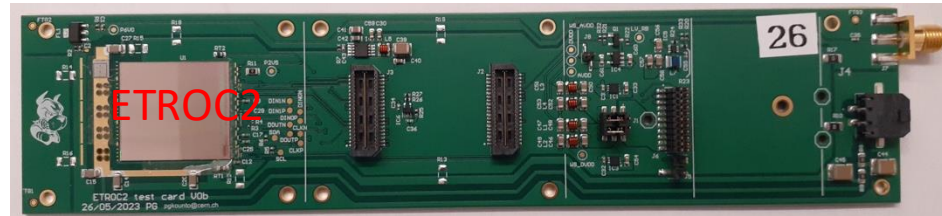


XEM8320



# RDO+ppRDO Plan

TOF Module/Stave



FELIX

