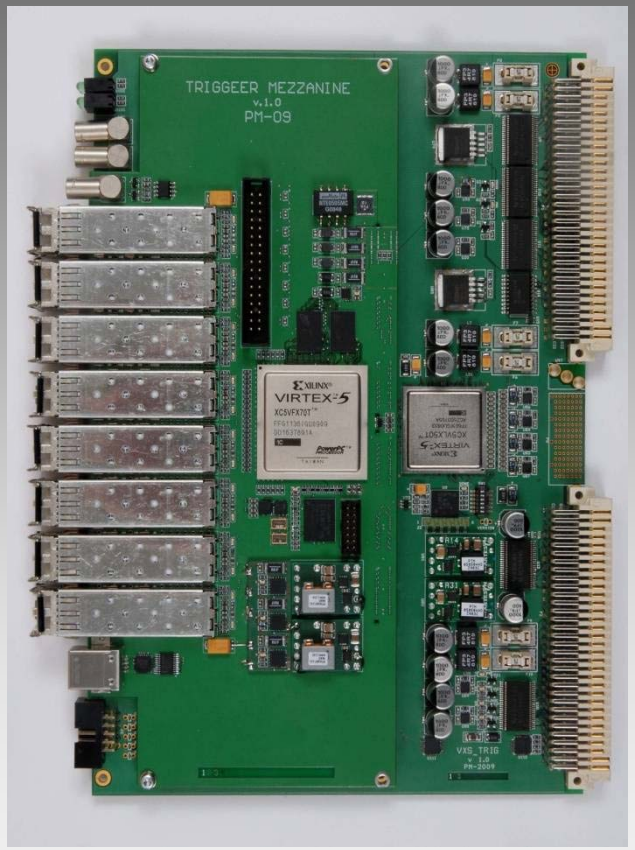
CGEM DAQ

- Data Concentrator Modules

ATLB

Advanced Trigger Logic Board



VME

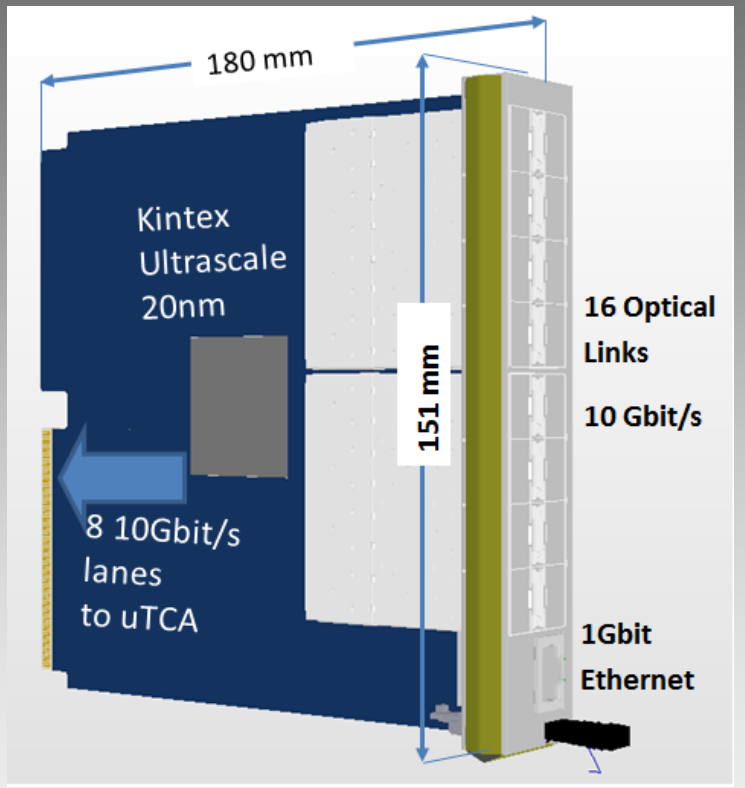
ZYNQ Board

Stand Alone

Gigabit ETH

EMC-DC

PANDA EMC Data Concentrator

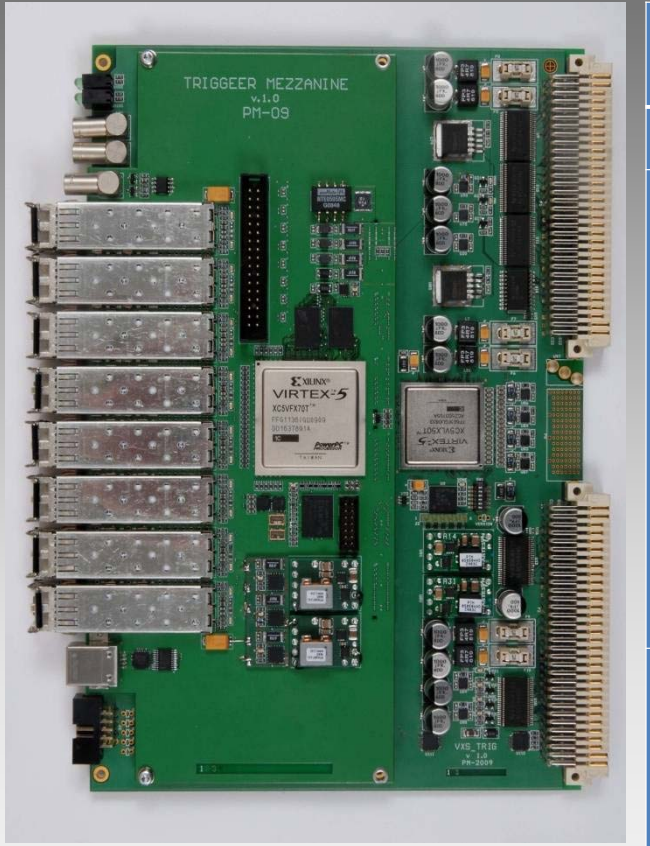


xTCA

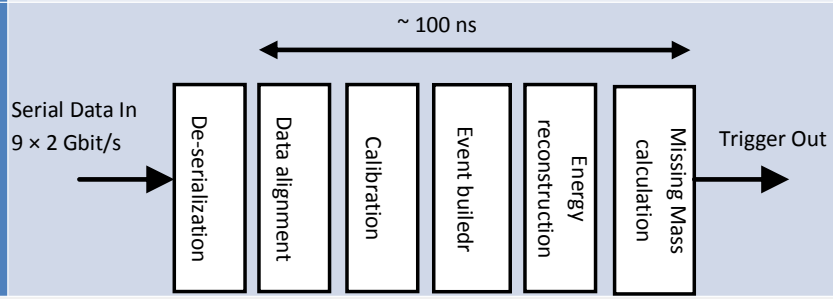
- Data Concentrator Modules

ATLB

Advanced Trigger Logic Board



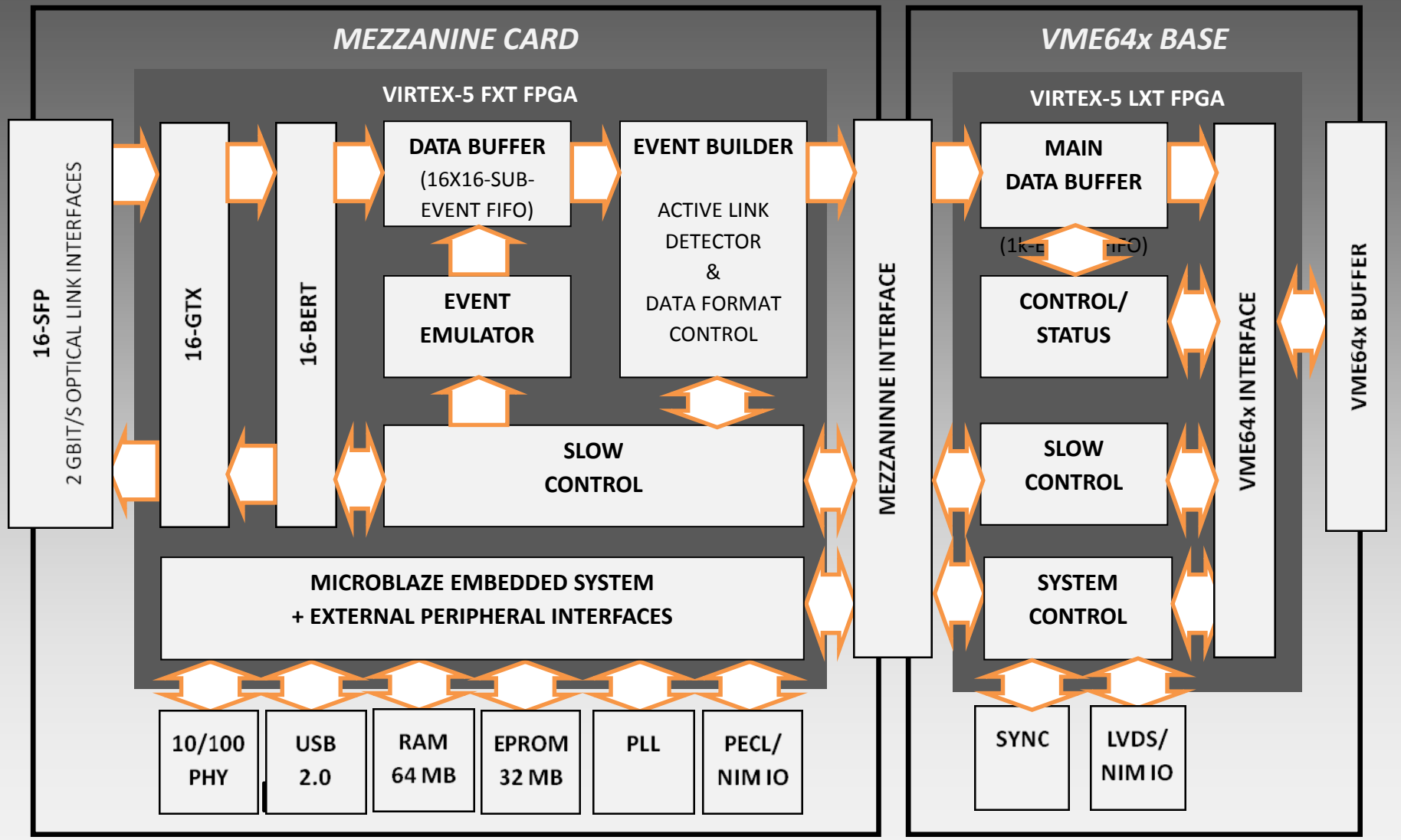
VME

ATLB Model	ATLB-V	ATLB-L
Interface	VME-64x /VXS	LVD-BUS(1)
Features	- 16 optical interfaces (SFP), 6.5 Gb/s each. - PowerPC based embedded system - 5 NIM Trigger In/Out, - 64 MB of DDR RAM, - 8 MB of Flash ROM, - USB - 10/100 Ethernet	
Trigger Data Flow		

CGEM DAQ

- ATLB as Data Collector for KLOE-2

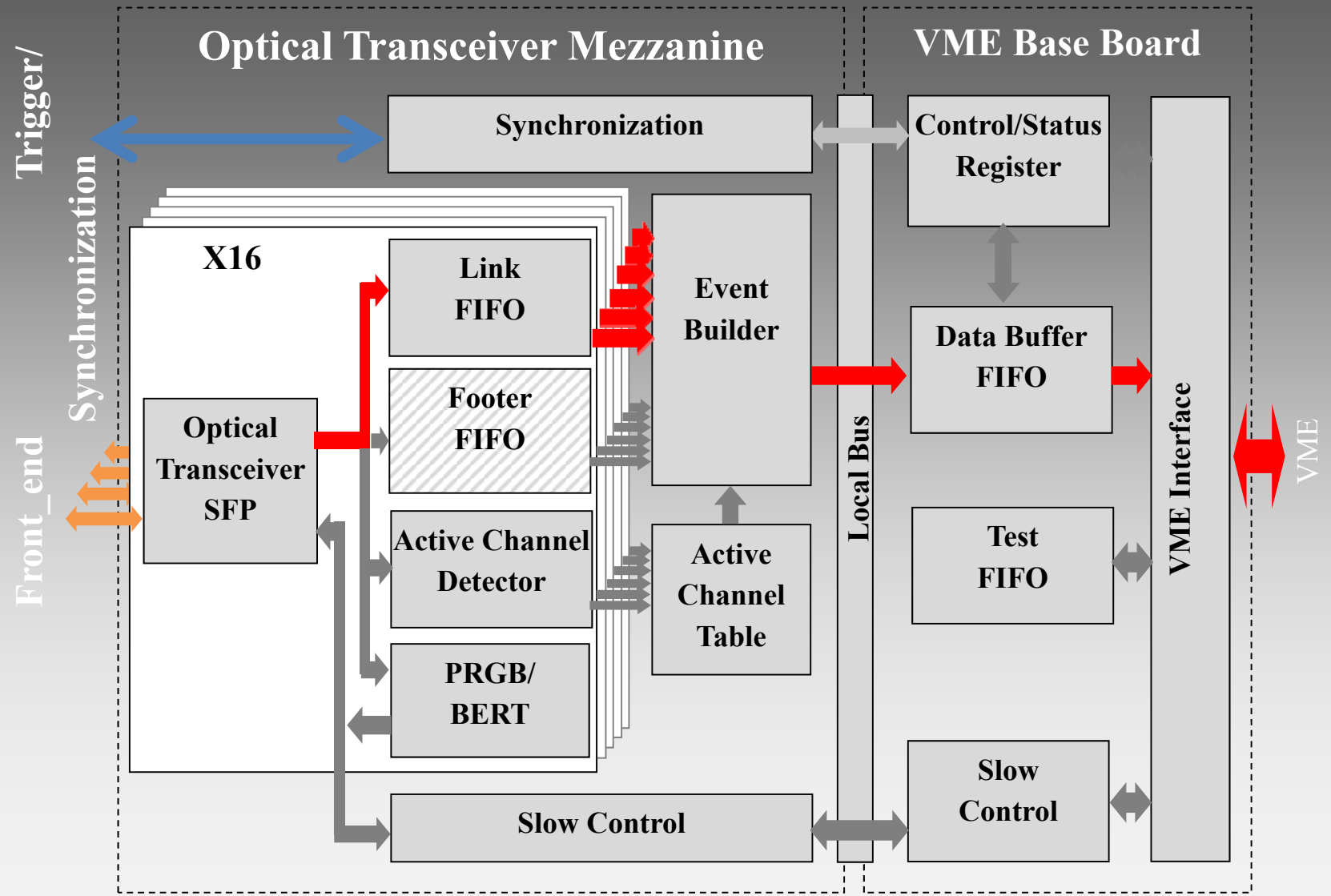
ATLB Hardware architecture



CGEM DAQ

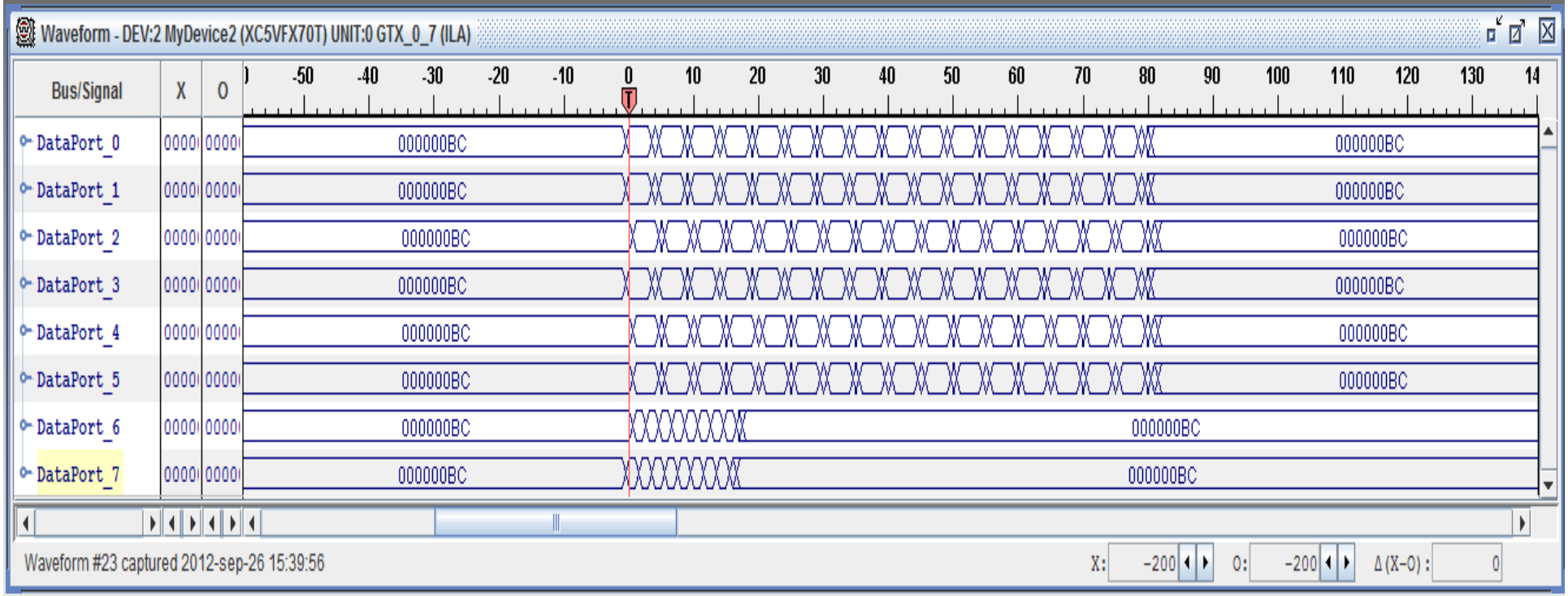
- ATLB as Data Collector for KLOE-2

ATLB Firmware



- ATLB as Data Collector for KLOE-2

Data Collection over Optical Links



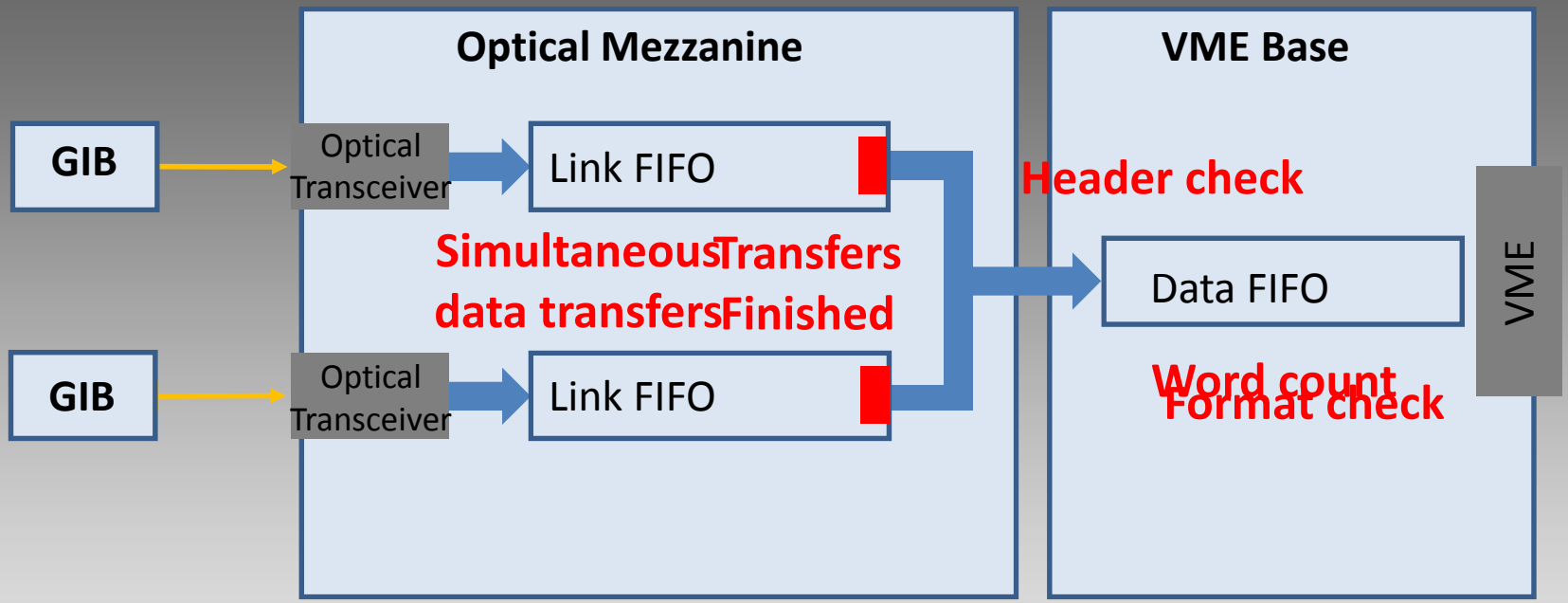
We have done an extensive use of chipscope to debug the front-end daq.
Here we show data flowing through the first 8 links to the data collection board.

CGEM DAQ

- ATLB as Data Collector for KLOE-2

Event building:

Simultaneous data transfers over optical links



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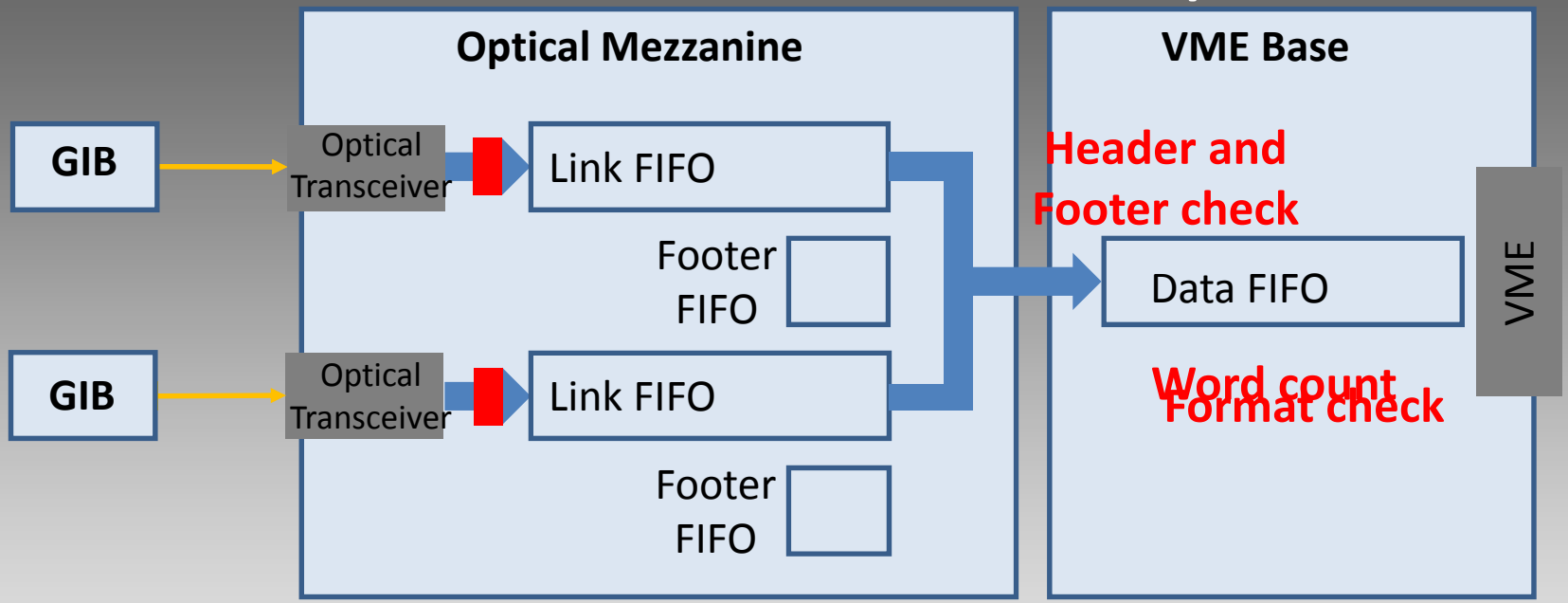
- ATLB as Data Collector for KLOE-2

Event building:

Non-coherent data transfers over optical links



Random data transfers

Transfers finished when all Footers match

- ATLB as Data Collector for KLOE-2

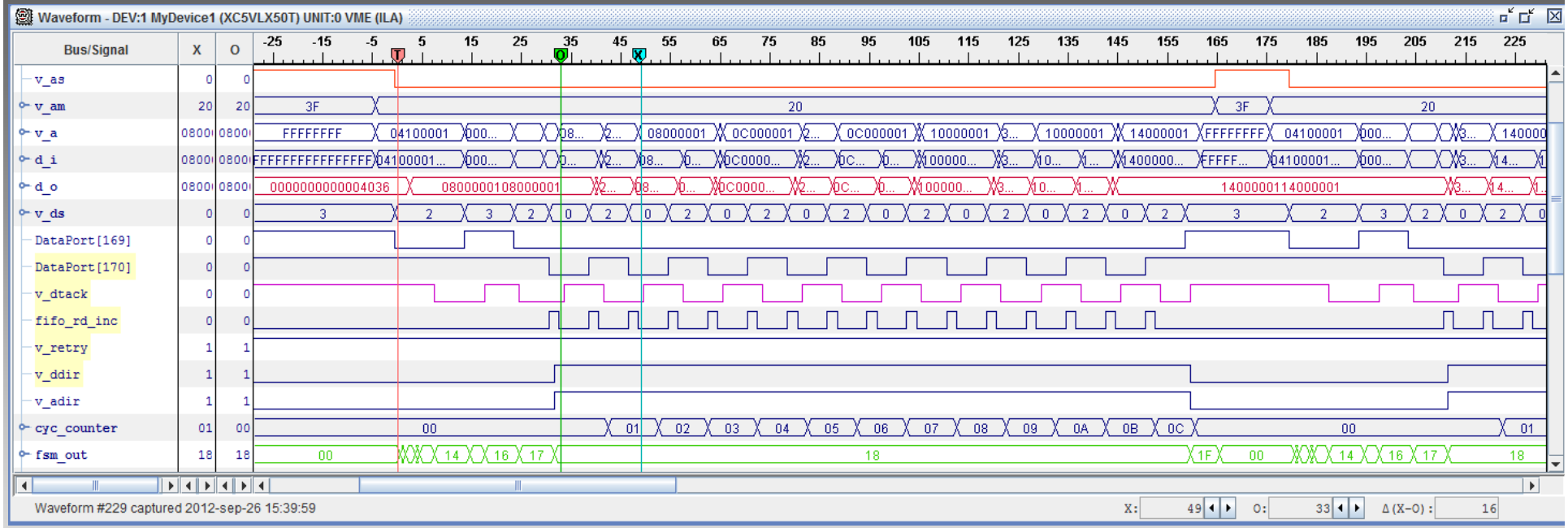
Link data structure

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Event Header (#EFFFFFFF)																															
Sub-Event Data Block (lowest active link)																						XXXXXXXX								X	1
……																															
Sub-Event Data Block (highest active link)																						XXXXXXXX								X	1
Event Footer 1 (#FE0)																Sub-event no.															
Event Footer 2 (#F7F8)																Word count															

CGEM DAQ

- ATLB as Data Collector for KLOE-2

VME Data traffic

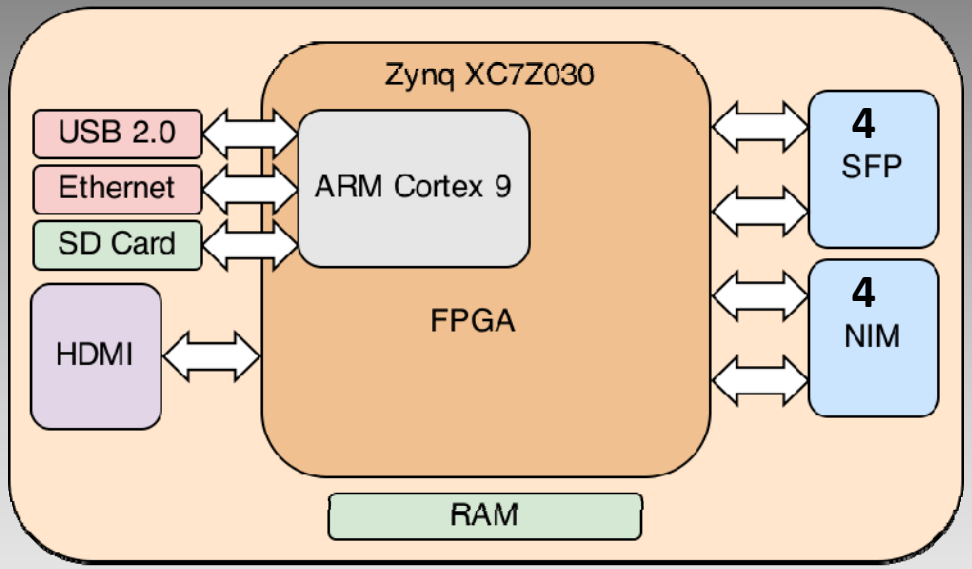


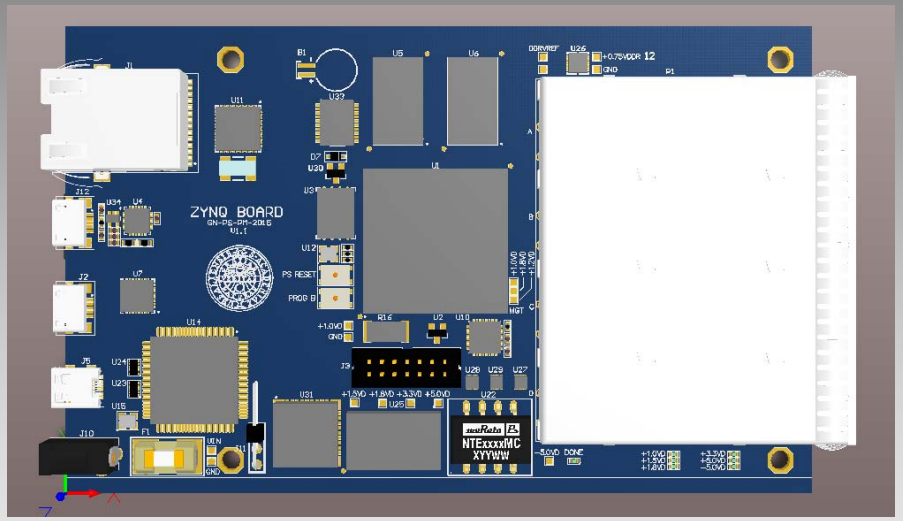
The VME interface supports

- **BLT**
- **MBLT**
- **2eVME**
- **2eSST**

- ZYNQ-Board

A Stand Alone Optical Concentrator Board





Based on ZED-board from Avnet

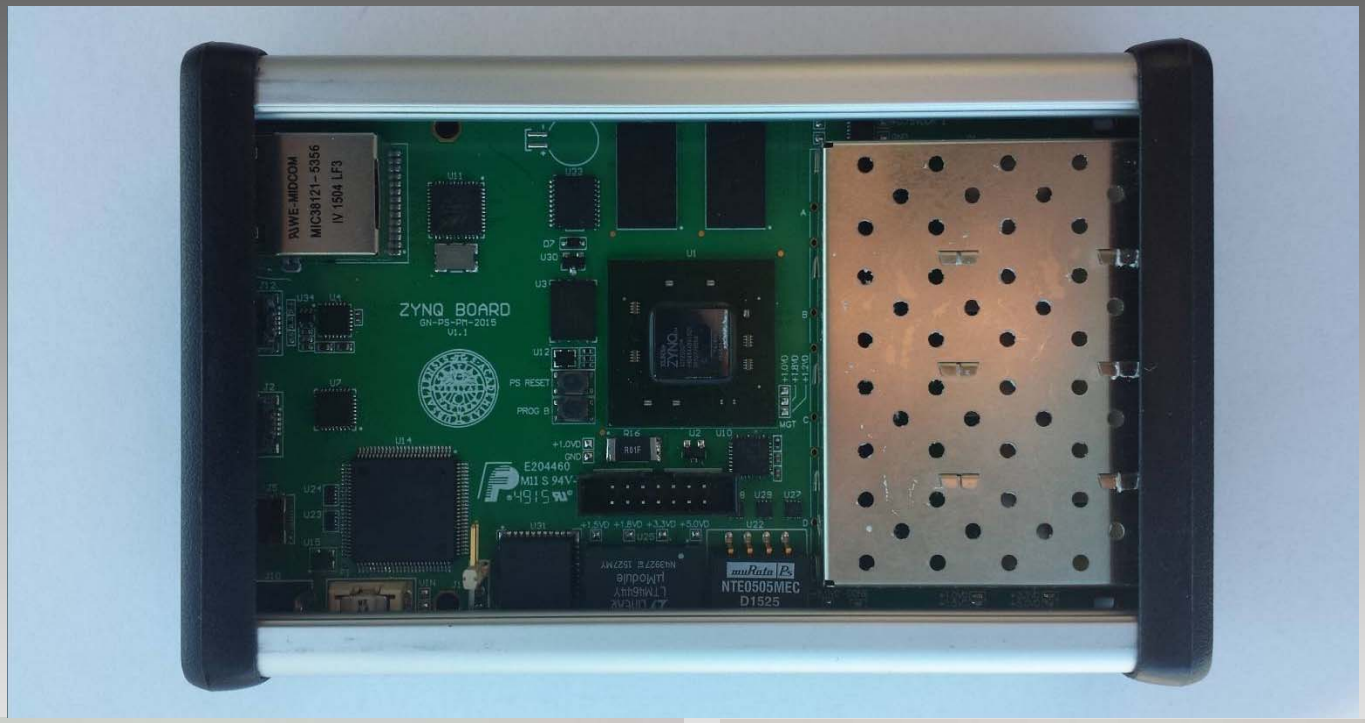
Diploma work of:

- Panagiotis Stamatakopoulos

- George Ntounas

- ZYNQ-Board

A Stand Alone Optical Concentrator Board



CGEM DAQ

- ZYNQ-Board

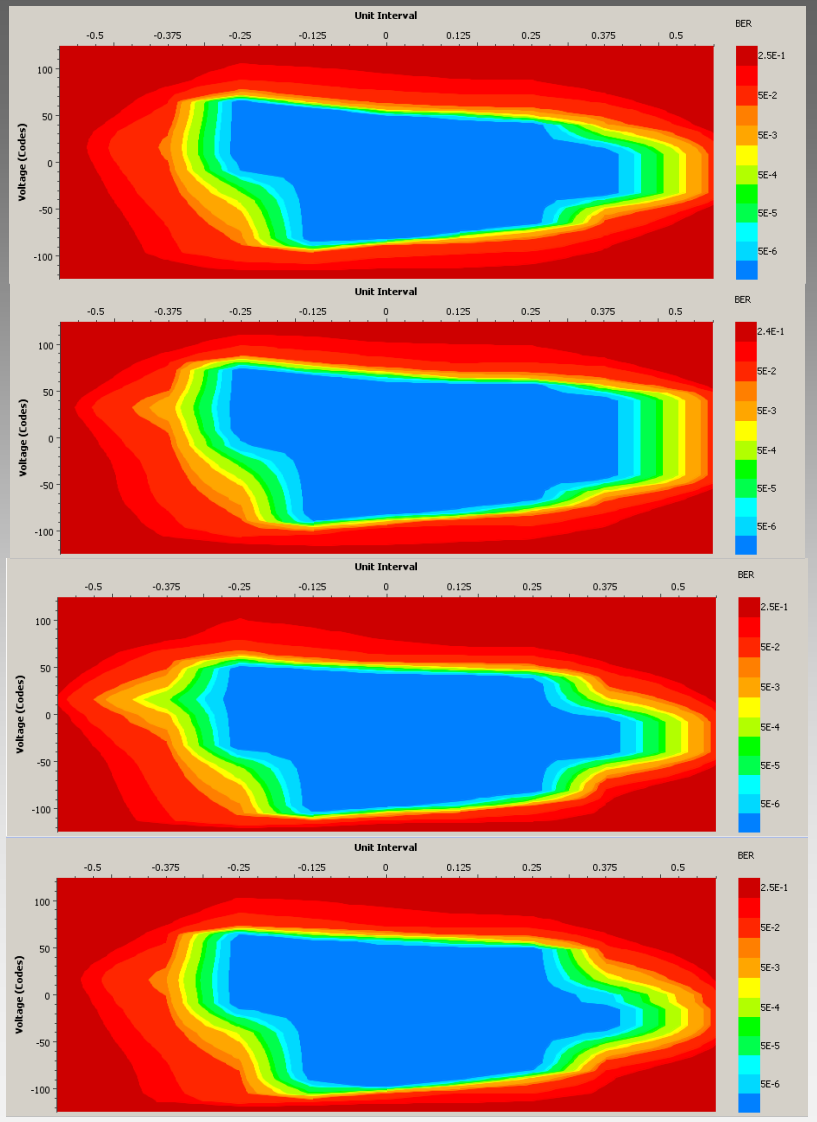
Hardware check:

DDR 1066	√
UART	√
Flash	√
SDHC	√
PLL	√
SFP+	√
USB 2.0	?
HDMI	X

Firmware & software

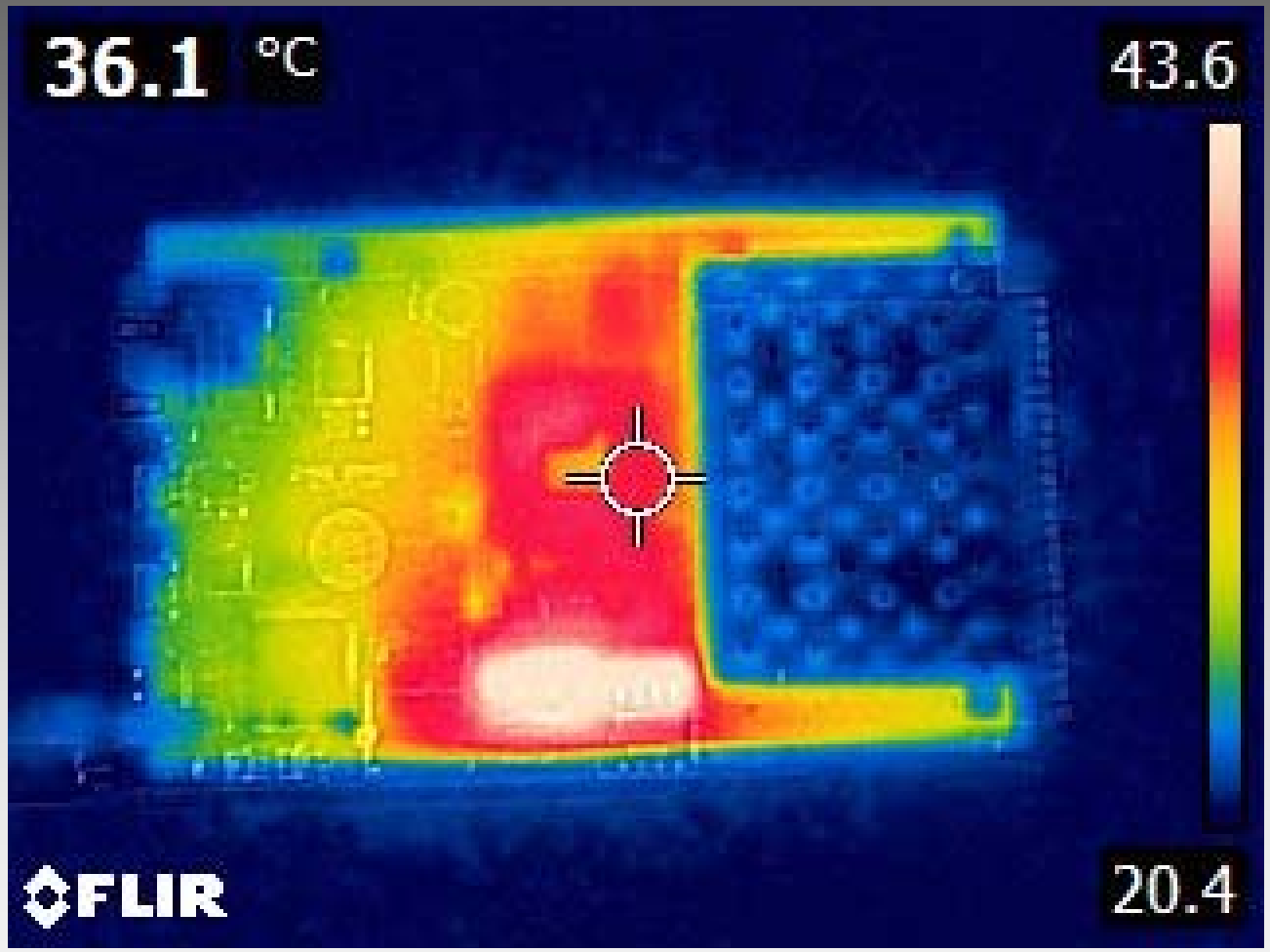
Basic Configuration	√
Hello world test	√
DDR test	√
Hardware test	√
LINUX	X

SFP+ optical loopback test @ 6.25 Gbps



CGEM DAQ

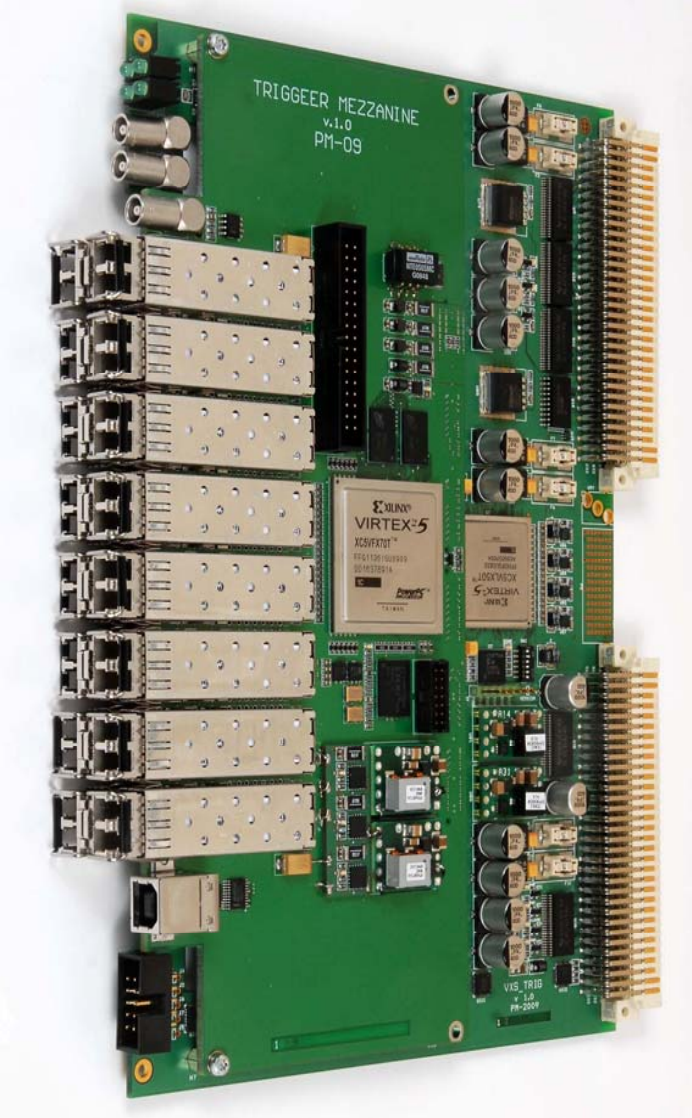
- 6.25 Gbps



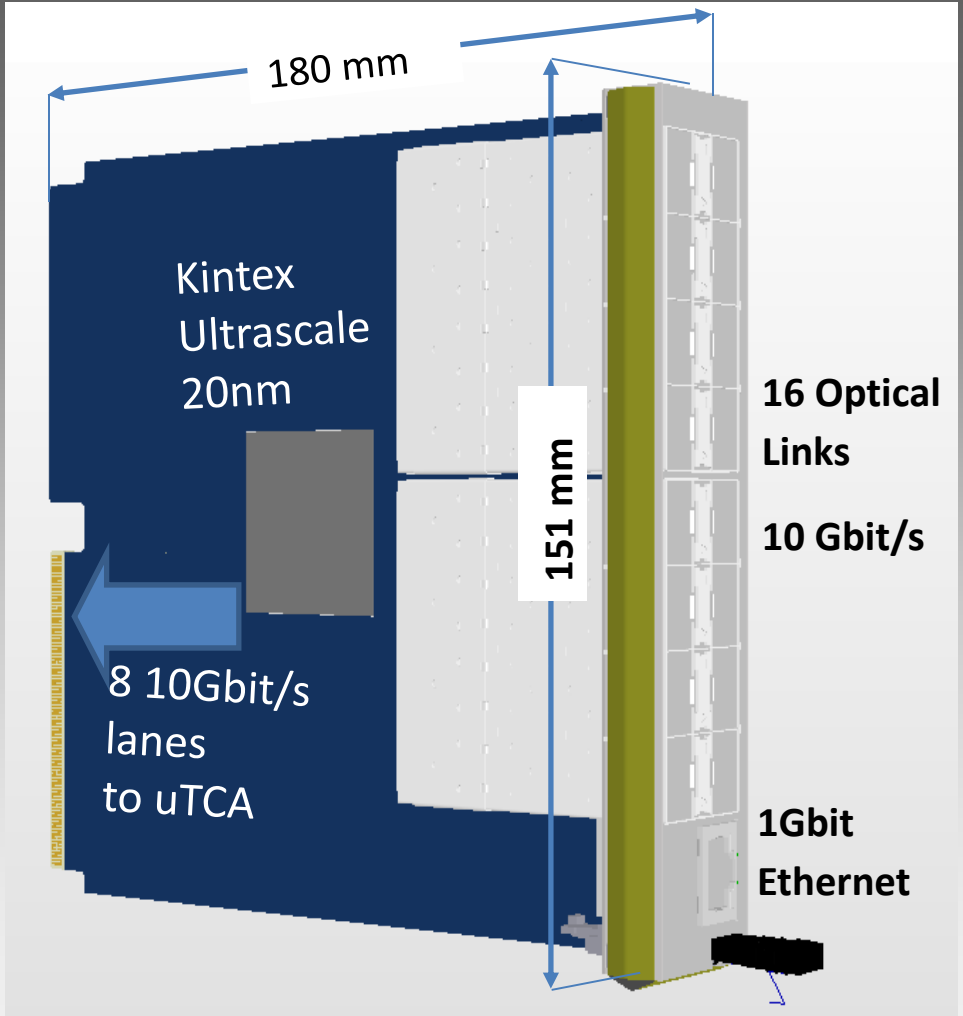
CGEM DAQ

- xTCA Data Concentrator

VME64x



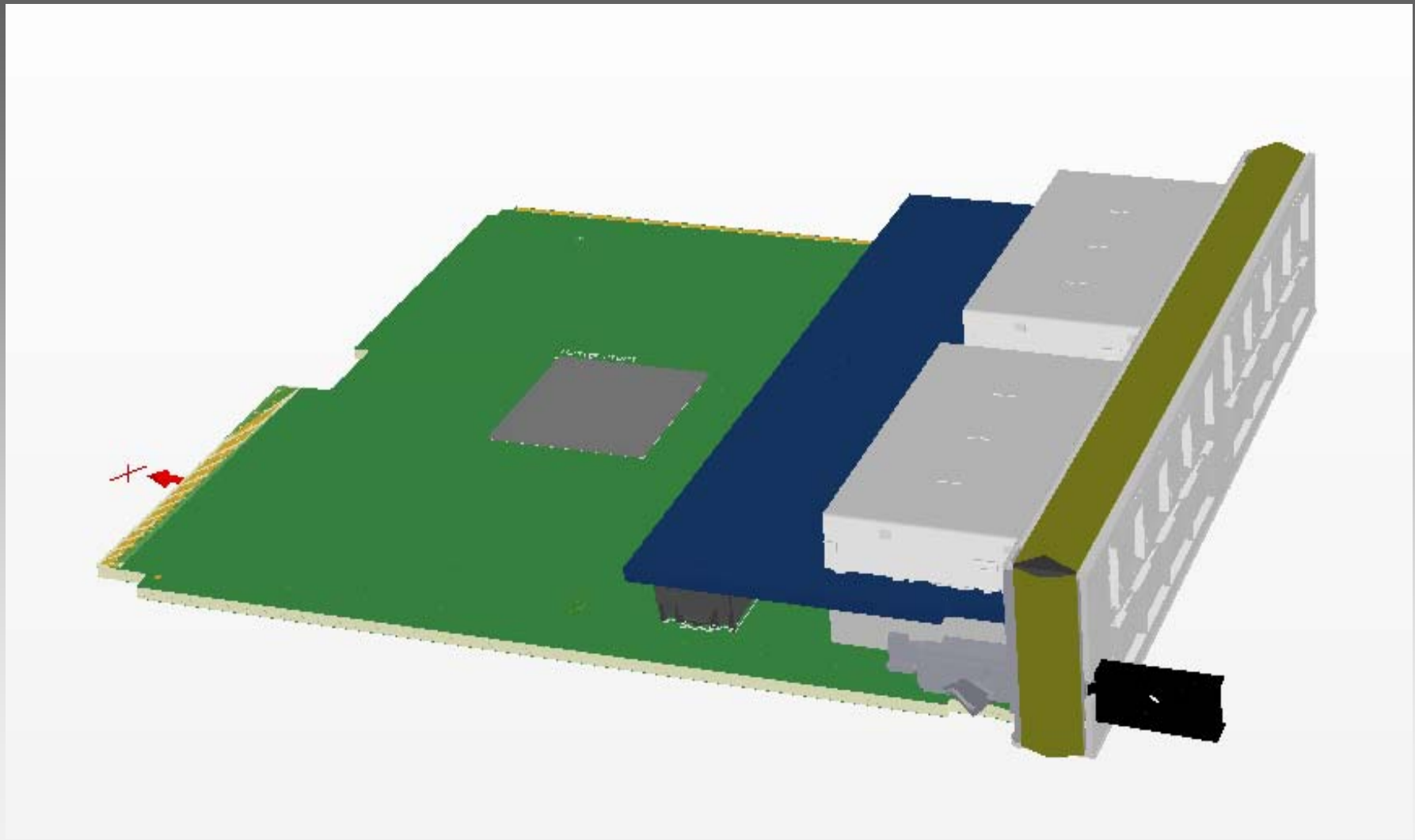
AMC (uTCA)



CGEM DAQ

- xTCA Data Concentrator

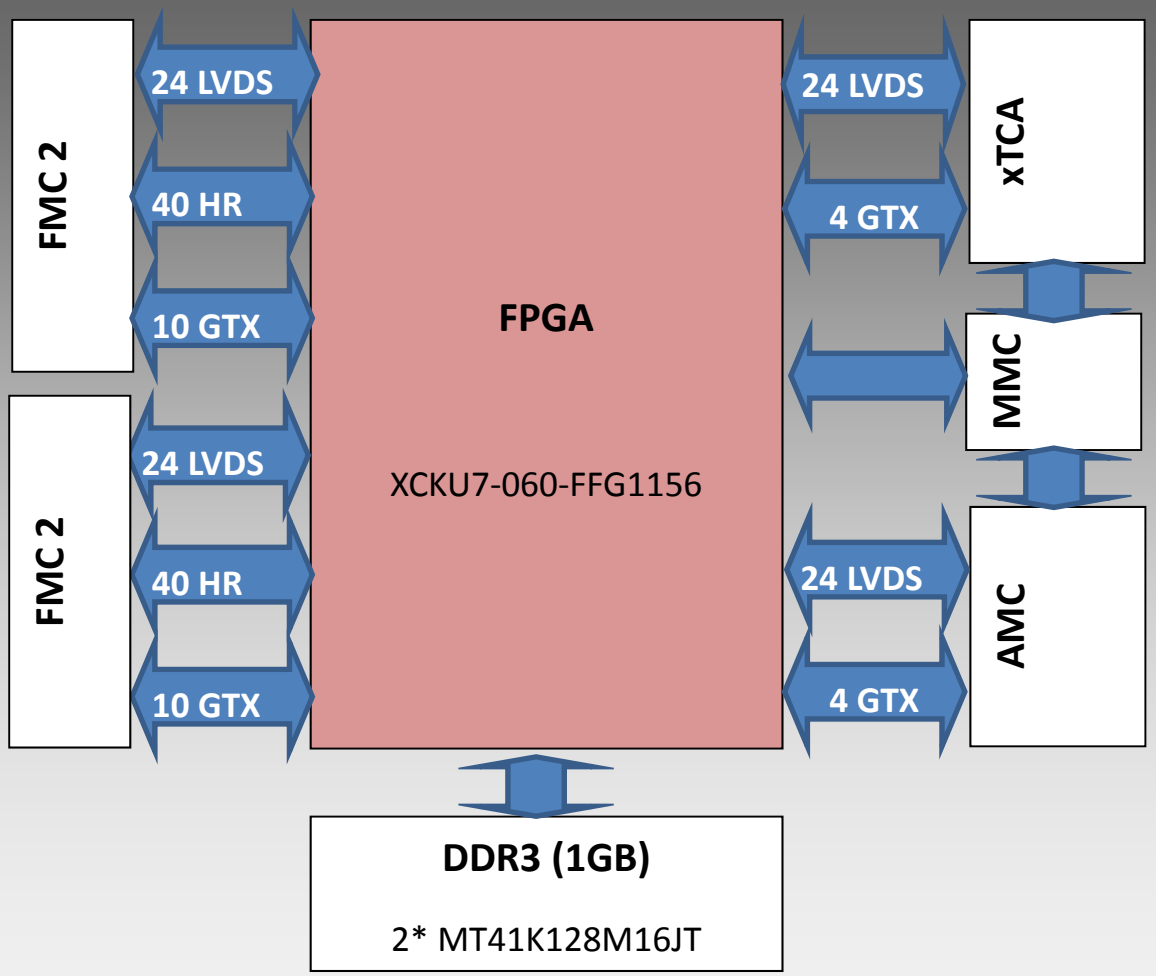
AMC (uTCA)



CGEM DAQ

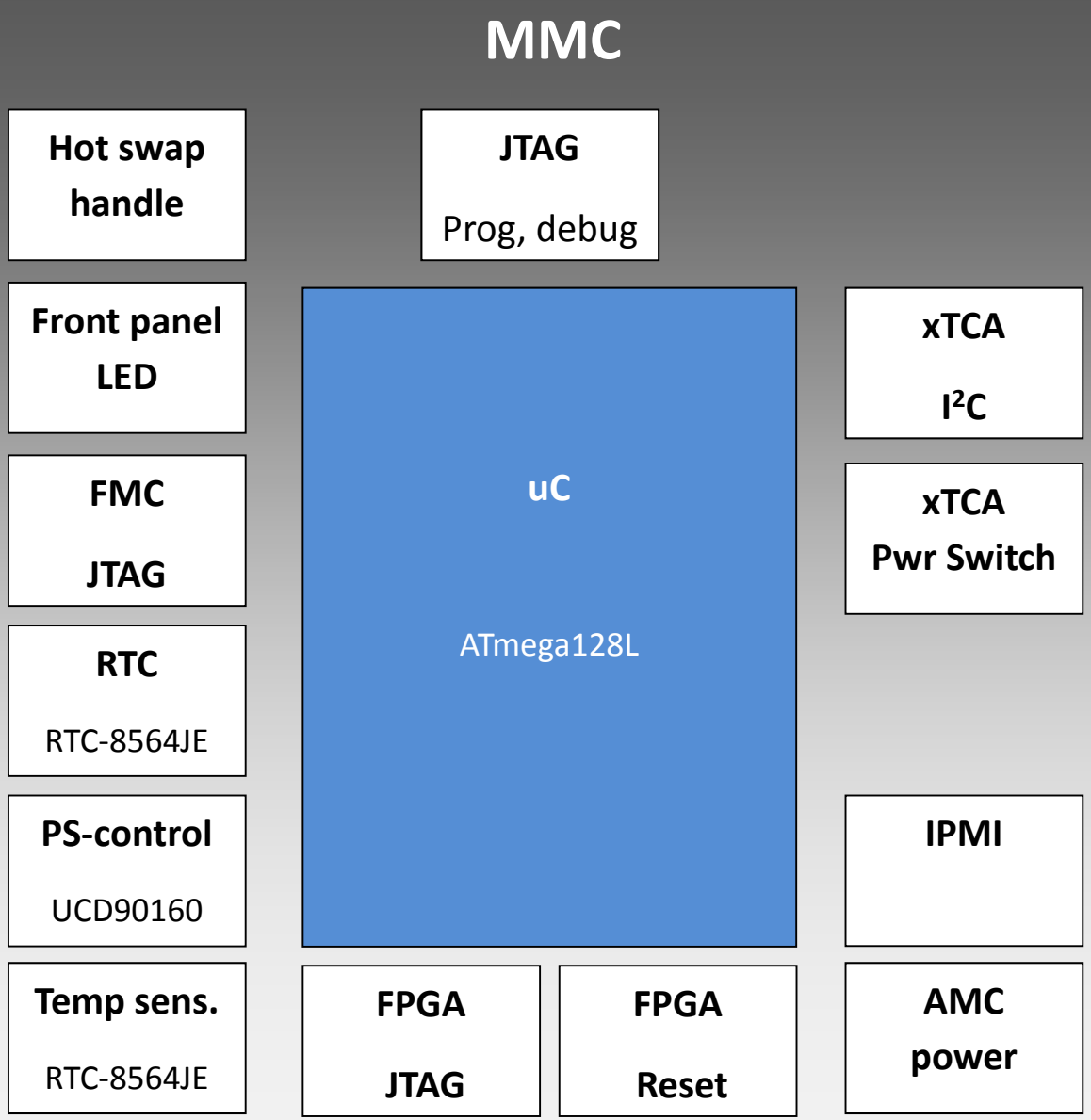
- xTCA Data Concentrator

AMC (uTCA)



CGEM DAQ

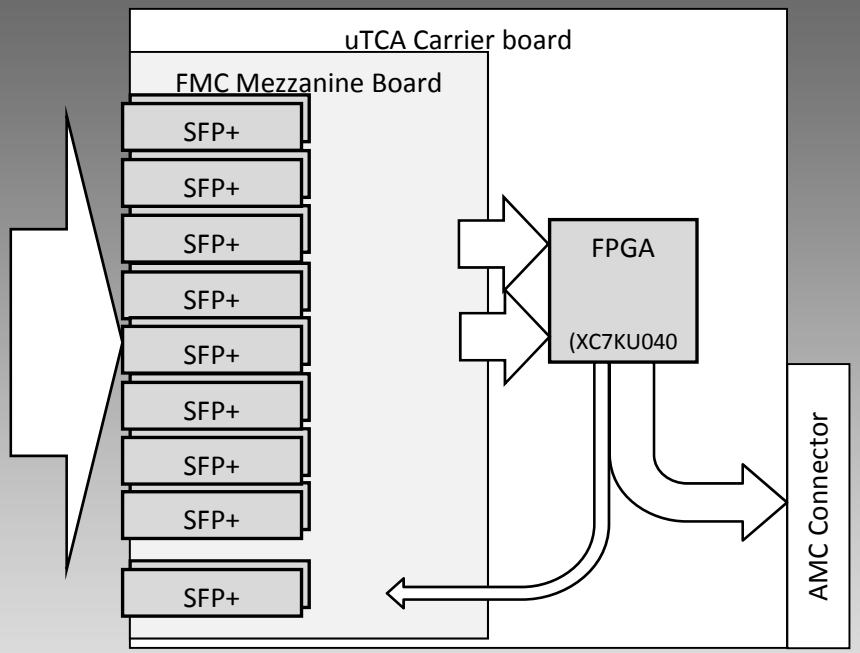
- xTCA Data Concentrator

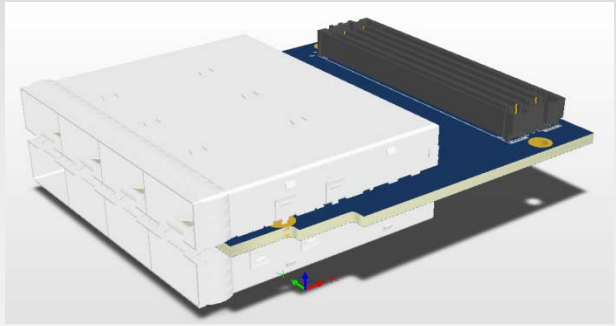


CGEM DAQ

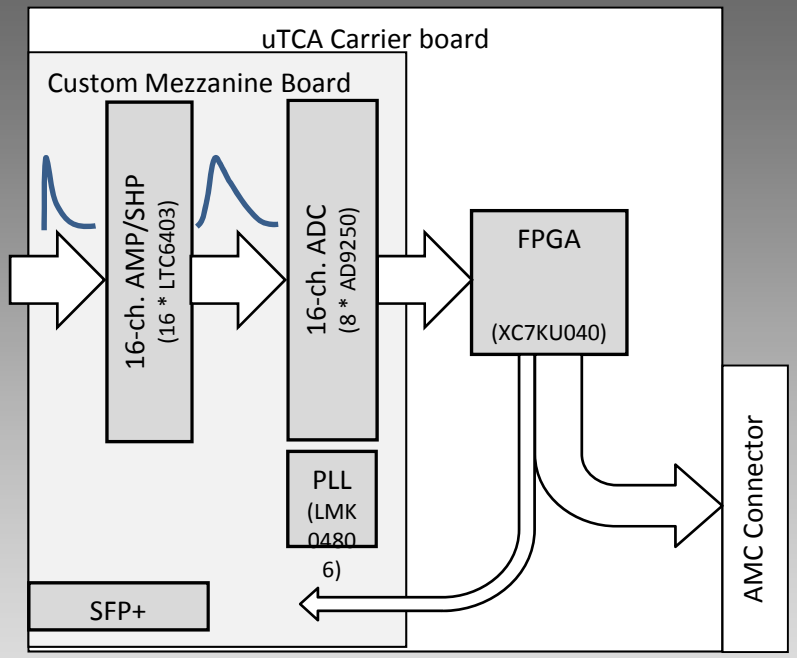
- xTCA Data Concentrator as a generic platform

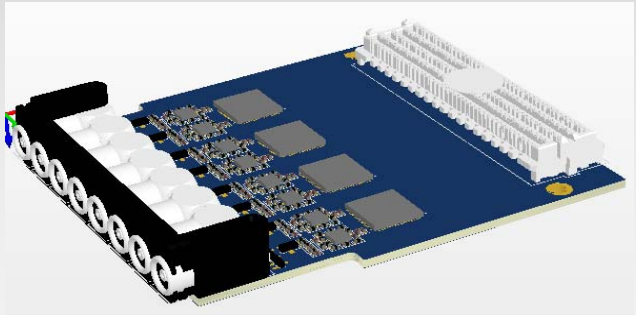
Optical Data Concentrator





Shashlyk 250 MSPS 14-bit ADC





Thank You !