MiniAMchip05 & MiniLAMBslp

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Summary

1 – Presentation of MiniAMchip05 and MiniLAMBslp board.

2 – Idea to test and to validate the LAMB board in stand-alone mode.

Little Story

***AMChip04*:**
- Package: PQ208
- Parallel I/O interface

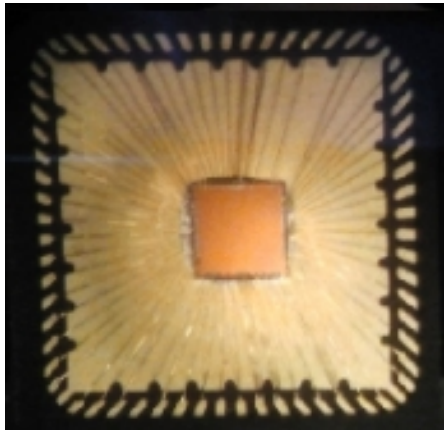We need to increase the number of pads for future versions:
- To use a BGA package.
- Simplify the routing of board.

Idea: **serial link** to transmit the data

Family 05

- We have bought a *IP-CORE* to provide the *chip* with serialisers and deserialisers.
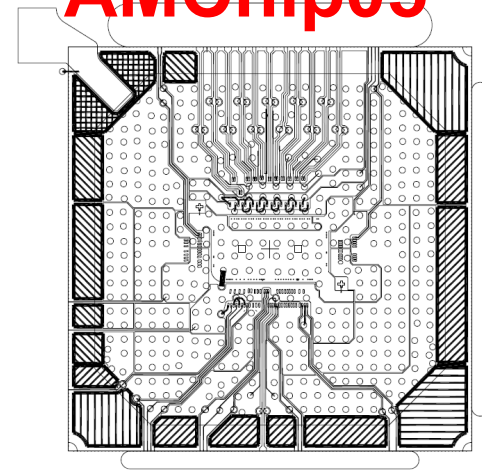
MiniAMChip05

Package: QFN 64
Die: 3.7 mm^2
Board: MiniLAMB-SLP
Status: under test

AMChip05
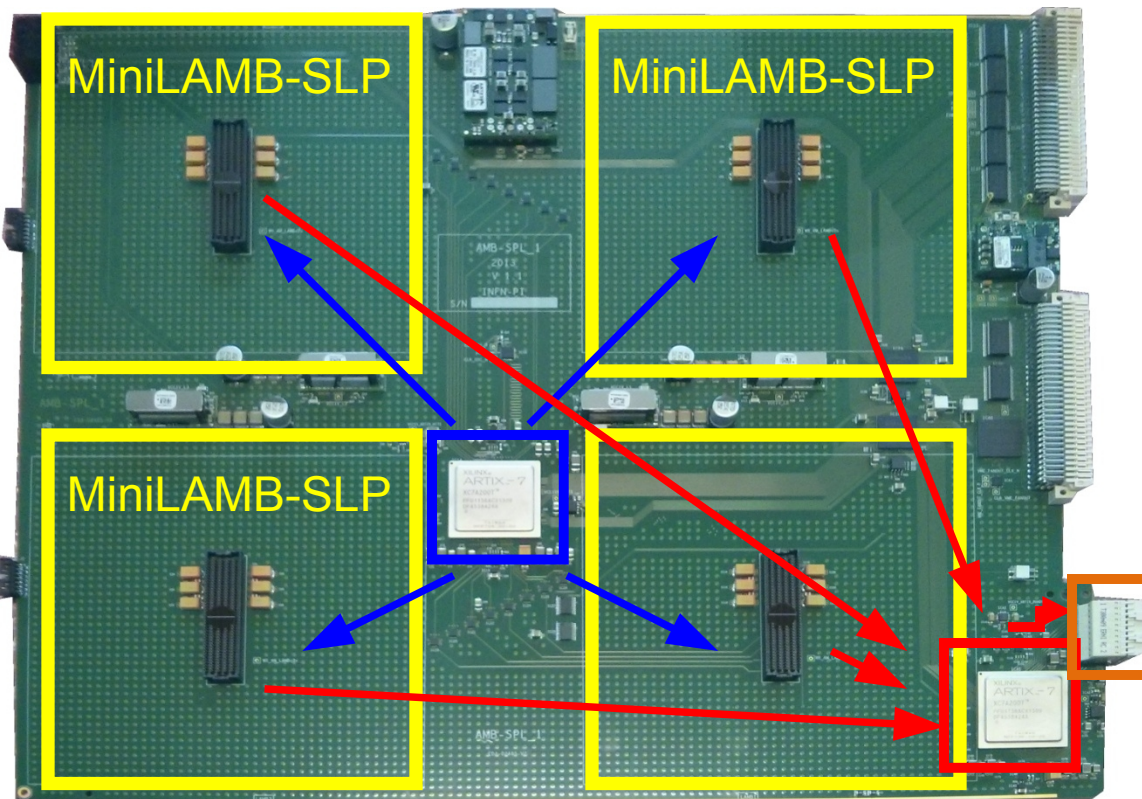

Package: BGA 23 x 23 mm
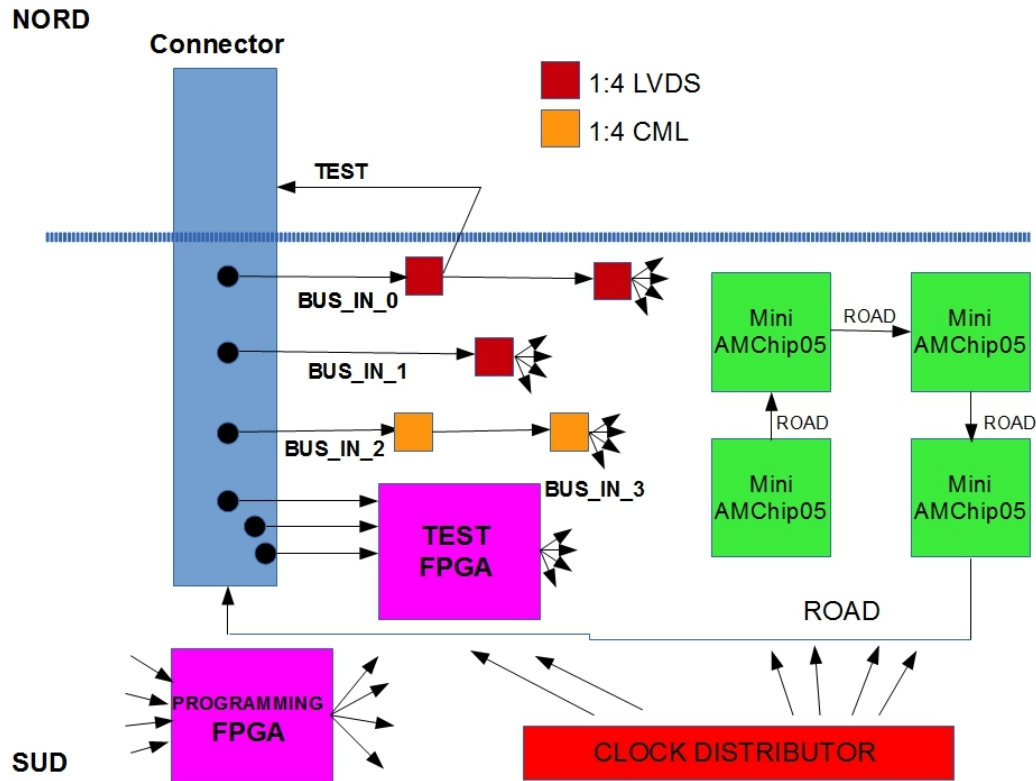Die: 12 mm^2
Board: LAMB-SLP
Status: submit

AMB-SLP

The MiniLAMB-SLP board is mounted on the AMB-SLP board.

AMB-SLP Board

- The *FPGA* receives the *cluster's list* from the P3 connector and distributes to 4 *MiniLAMB-SLP* boards.
- *The FPGA receives the roads from MiniLAMB-SLP board* and sends them to the rest of the system through the P3 connector.
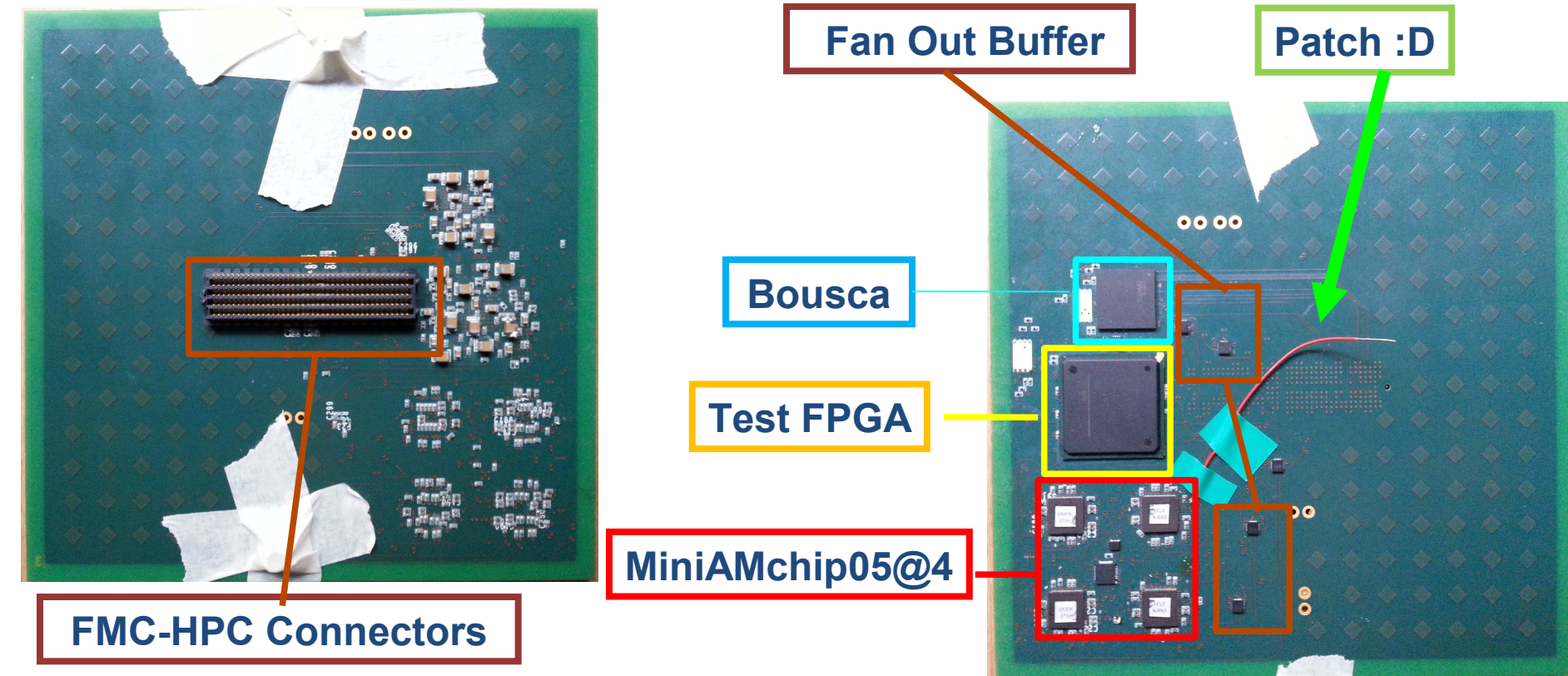
Block Diagram

What can we do?

- *Test* the *chips.*

- *Test* the *serials link.*

- *Simulate* the *Pattern Matching's algorithm.*

MiniLAMB Board

This is the MiniLAMB prototype.

140 mm x 140 mm, 10 layers, two different supply voltages and many serial links.

FMC-HPC Connectors

Fan Out Buffer

Patch :D

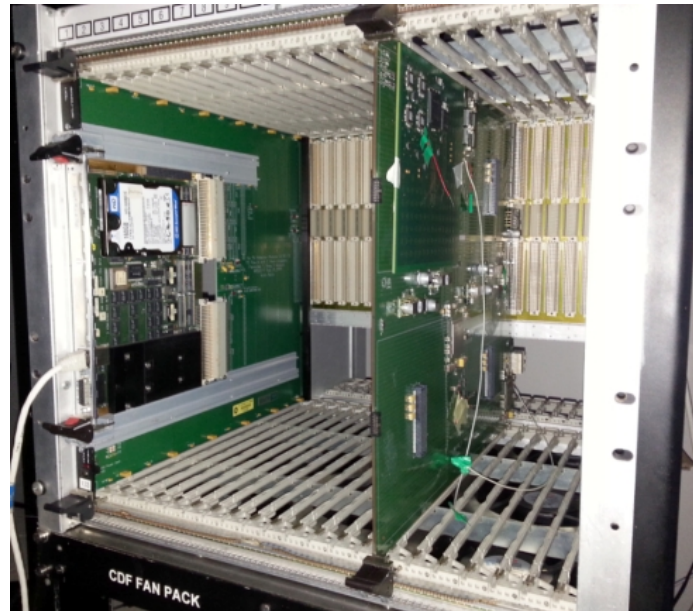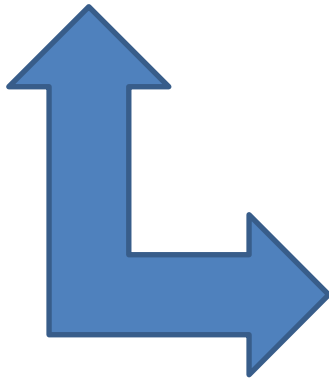**Bousca**

Test FPGA

MiniAMchip05@4

Test Stand: Online

Complete Test with:
- AMB-SLP Board.
- MiniLAMB-SLP Board.
- Crate VME.
- CPU TDAQ4.

Strategy: Offline

Mini LAMB

- Stand-alone test of each MiniLAMB board.
- Perform Pattern Matching's algorithm without VME.
- Useful for production @ To validate a single MiniLAMB board.

What we need

The Evaltuation Board and the MiniLAMB are not compatible (mechanical and electrical problem).

We have designed a board to be able to connect the Evaluation Board to the MiniLAMB board.
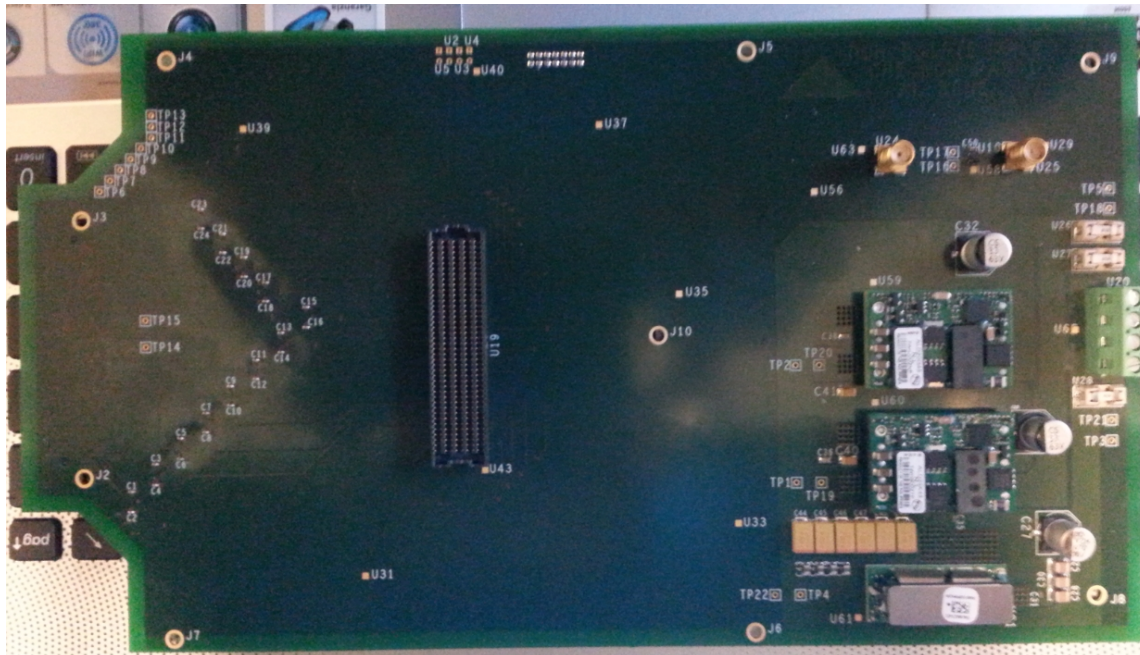
- 6 layers.
- 12V, 48V Input Voltage
- DC-DC generate 2.5V, 1.2V, 1V.
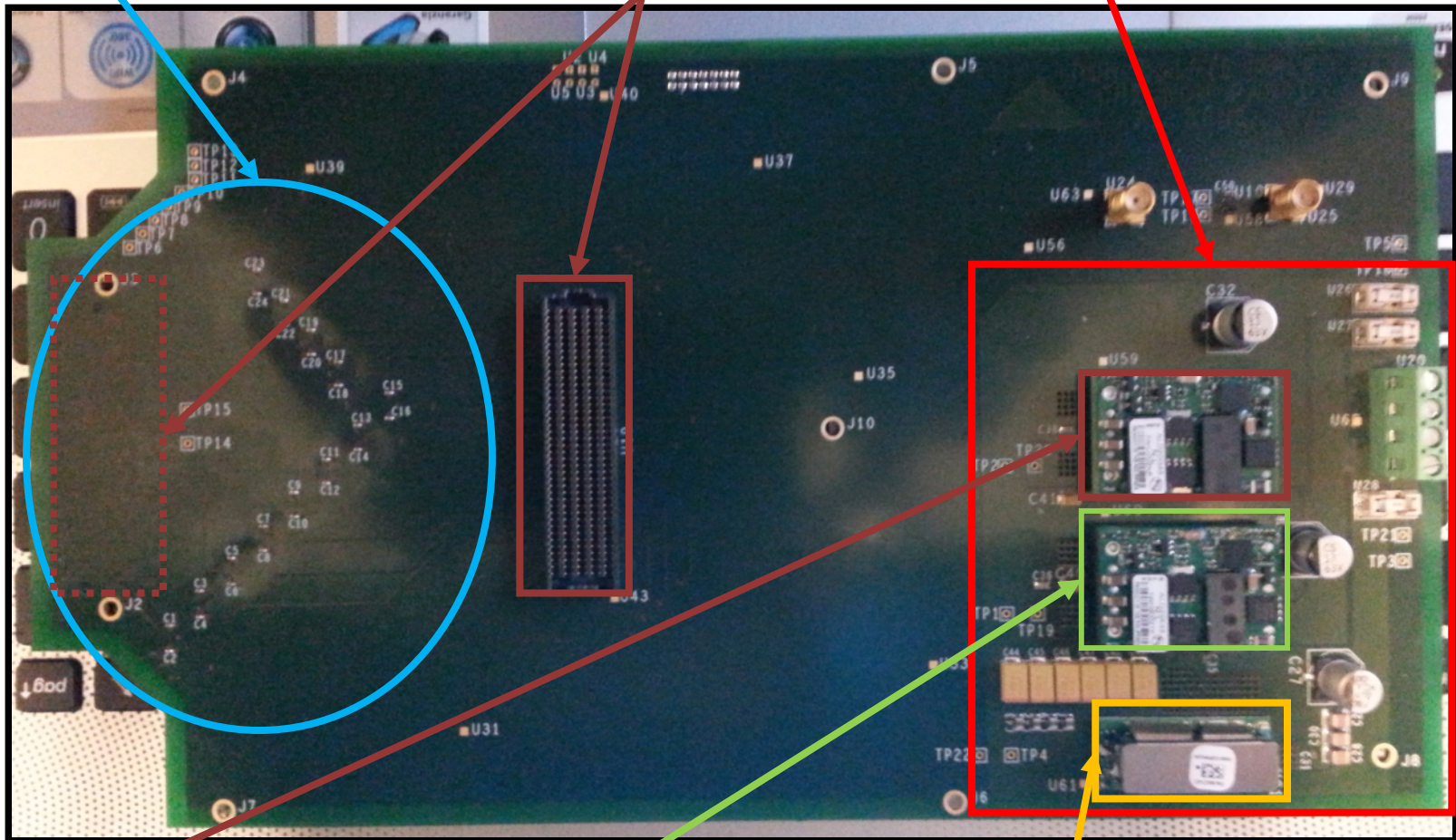- Serial links between FPGA and LAMB board.

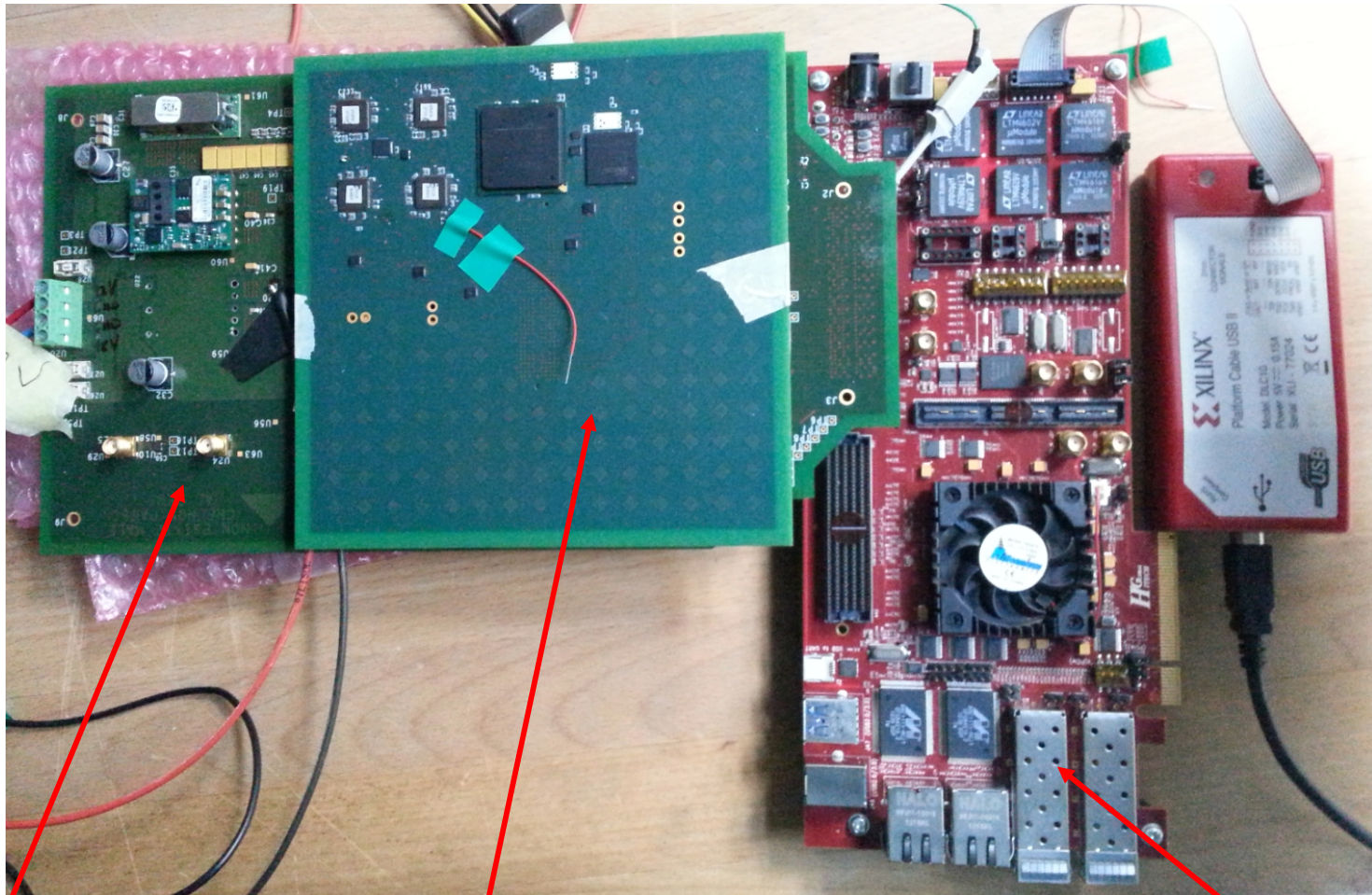# Mezzanine Board

Fanout Repeater

FMC-HPC Connectors

Power Supply

DC-DC@48 V – 2.5 V

DC-DC@48 V – 1.2 V

DC-DC@12 V – 1 V

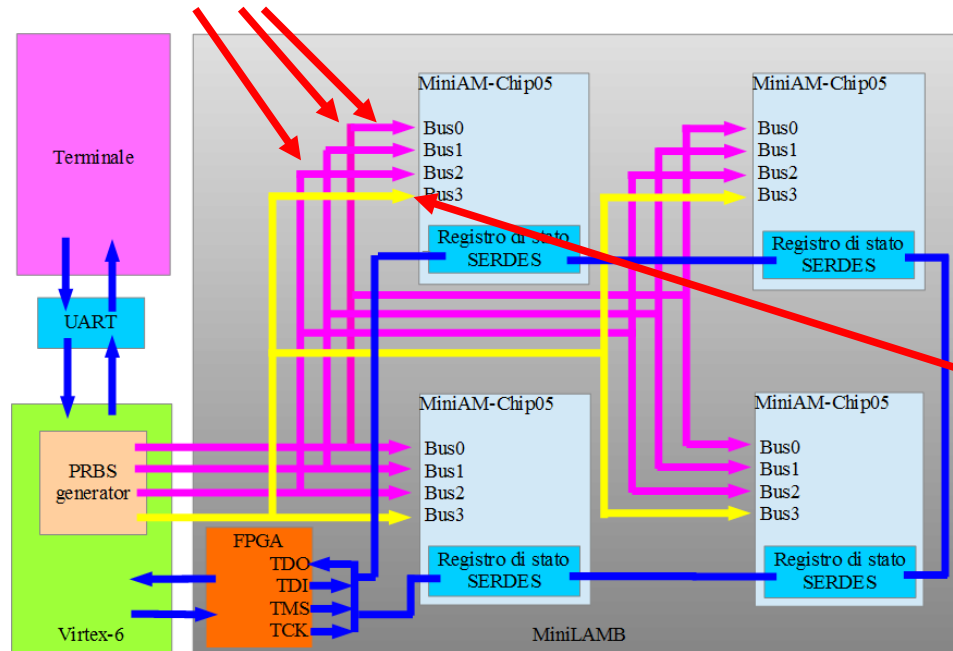# Test Stand: Offline

Mezzanine

MiniLAMB Board

Evaluation Board

First Test

Link LVDS

Link CML
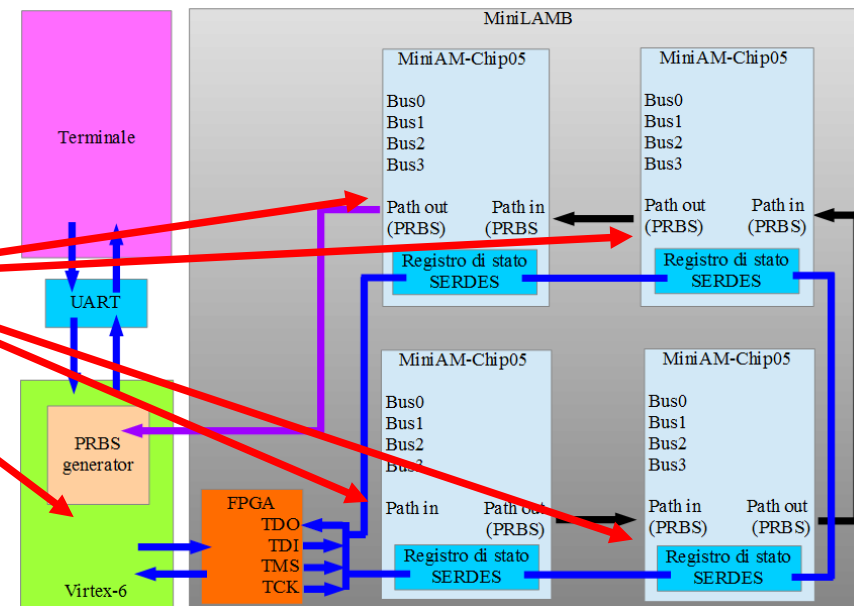
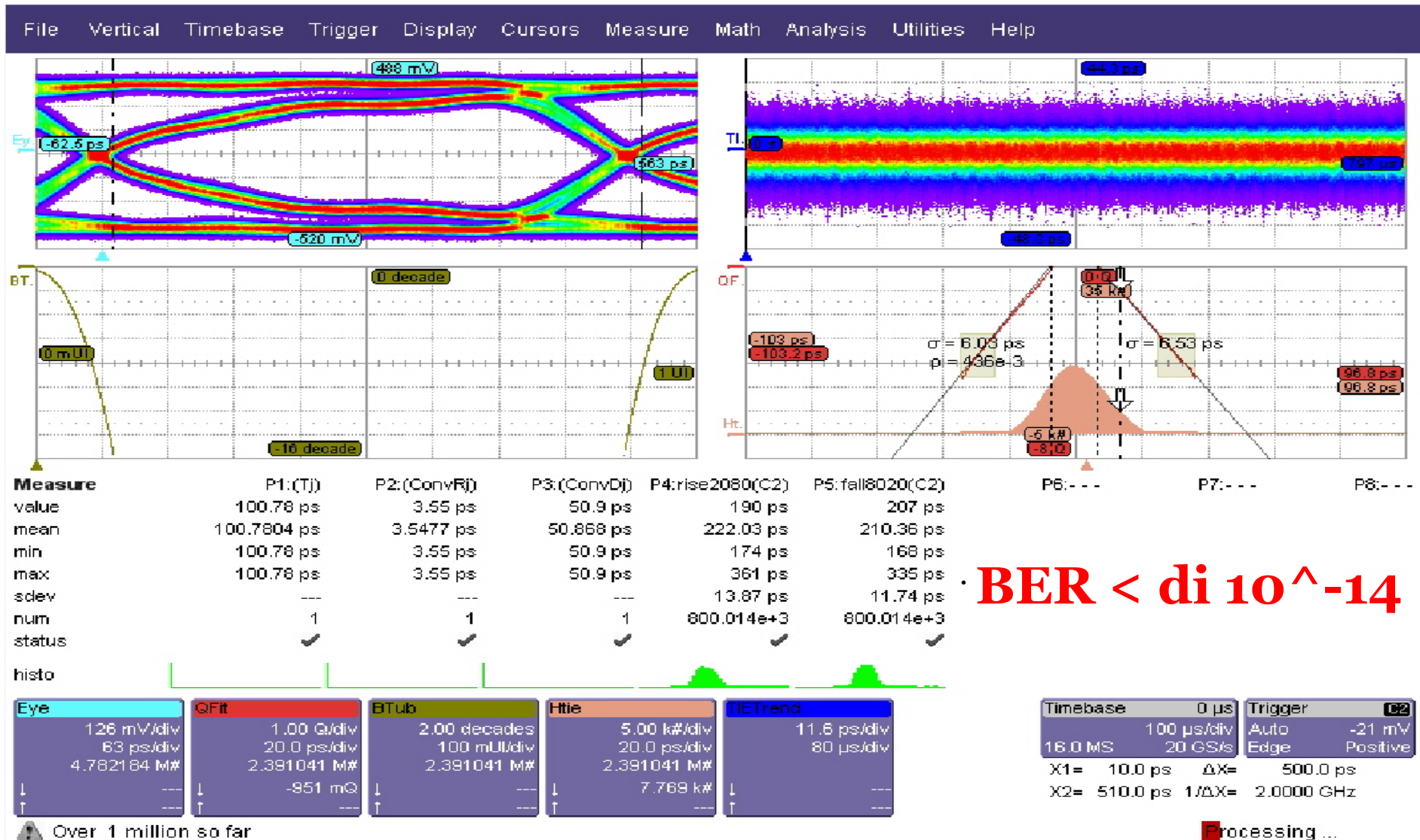* **SERDES's registers** works.
* **SERDES** works.
* **PRBS test** works.
* **JATG** works.

· **PRBS test** on serial links between MiniAMchip05s.

· **PRBS test** from MiniAmchp05 to Virtex-6 and from Virtex-6 to MiniAMchip05.

· **PRBS test** run for **~10 hours** to get statistic data of quality of comunication.

First Result

BER < di 10^-14

Our Goal

In the future (production phase) we would like to press a button.

And we hope that the result is:
- Ok, this LAMB board works
- ("Validate Status").

Thanks!!!!!