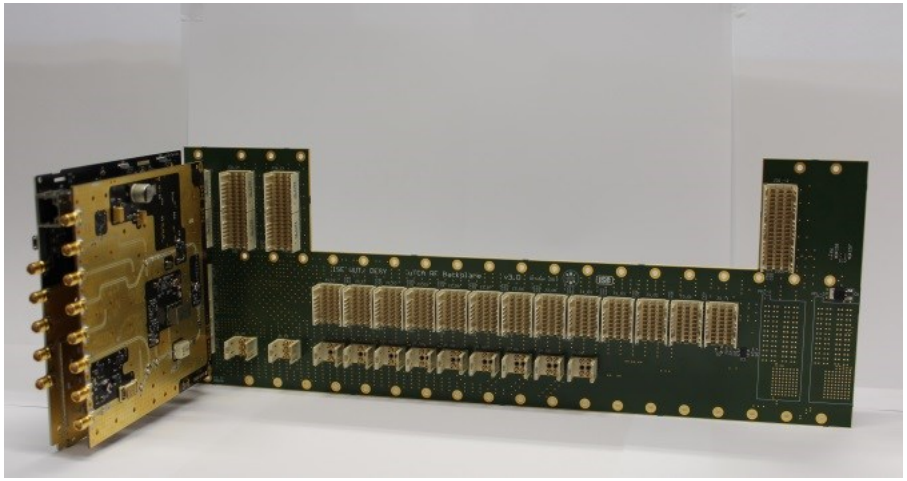
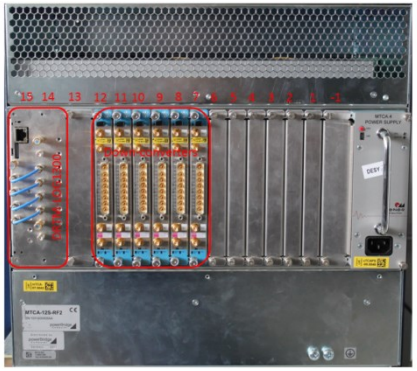
Integration Tests of the uRF-Backplane, Backplane Manager and uLOG.





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Warsaw, 11.06.2015

HELMHOLTZ ASSOCIATION

DESY

Current Status.

- uRF Backplane
  - Final version was produced and is available. Most of the functionalities have been tested.
- RTM Backplane Manager
  - Ver 1 produced and main functionality tested at NAT. The NAT part of the board has been verified the DESY part of the board is under testing -> DMCS.
- uLOG
  - Final version produced. Most of the functions have been tested.

Integration tests

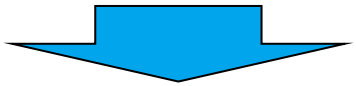
- uRF Backplane + uLOG
  - Performance tests in a fully loaded crate, spurs characterization, CLK reset, basic RF transmission -> A6M, A6S running application.
- uRF Backplane + BM + uLOG
  - So far no successful test of BM connected to uLOG over RF backplane -> activities ongoing at NAT and DMCS. The work has been defined and people have been assigned.

Open Points.

- Rear management:
  - NAT is working on the implementation of the management of the rear power supply.
- Application:
  - Zynq programming over SPI rechecking -> DMCS
  - Zynq FW development -> DMCS
  - uLOG ARM SW development -> DMCS
  - PCB for PCIe connection of the Zynq to the front PCIe switch -> DMCS
  - DOOCS server development for uLOG -> (not defined yet)
- Power consumption of the BM -> affects the uLOG production and operation.

Testing.

- So far integration testing was part of:
  - uLOG testing
  - XFEL installation setup (L3 stations)



Main findings so far…

- RESET -> X2 timer RTM gets in a state where it resets randomly the CLKs. This was noticed on one station. Tests ongoing.
- CLK rotation by 180 deg in respect to LOGM stations -> we have a configurable FW which is being tested.
- Bad soldering of some uLOG chips -> after 10 days of operation.
- Damaged CU, CPU and PM in the same crate (A7M) -> no investigation started yet -> first station out of 10.

The final integration tests have been defined and will be carried out by Tomasz L. when individual modules are ready.

Testing II.

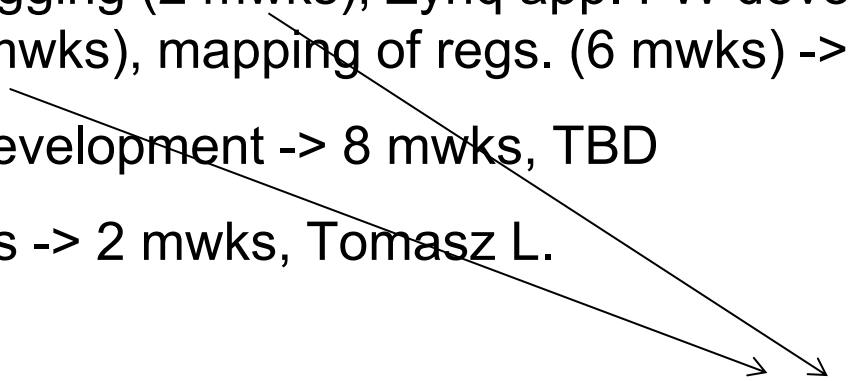
- RPM-PSC vs. Front-PM Testing
  - More than 10 times lower RMS noise in case of WIENER in comparison with NAT power module.
  - NAT is working on implementing a better filter. No PCB changes needed.

Documentation.

- Problems are tracked via redmine:
  - FW development
  - LLRF system installations
  - Hardware
- Document describing systematic tests is missing.
- Document specs for the uLOG DOOCS server is missing.

Schedule.

- NAT management development -> 50/75% done, 2-3 more weeks, NAT
- Zynq HW debugging (2 mwks), Zynq app. FW development (1 mwk), trans. PCB (2 mwks), mapping of regs. (6 mwks) -> 11 mwks, DMCS
- uLOG server development -> 8 mwks, TBD
- Integration tests -> 2 mwks, Tomasz L.



Production of the ~ 70 units can start.