RF-Backplane status update (ELMA/SCHROFF).

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Current Status.

- Final phase of development (current revision 3.2 is final one)
- Proper selection of MTCA crate for XFEL done (Schroff is official supplier, ELMA crates are also supported)
- No mechanical issues
- Backplane was well characterized in terms of:
  - S-parameters for RF channels (worst cases at 1.3GHz: $|S_{11}| < -18\text{dB}$, $|S_{21}| > 3.1\text{dB}$)
  - RF and CLK to RF channel-to-channel isolation (better than 82dB at 1.3GHz)
  - Phase stability over temperature and humidity (82fs/°C and 2fs/%RH for the longest RF channel)
- No issues regarding performance
Open Points.

> Management scheme:

- NAT is working on the implementation of final management functionality
- It should support the front MCH, MCH-RTM-BM, RPM-PSC and uLOG
- Procedure for full integration tests to be defined

> Any else?
Documentation.

- Datasheet

- Specification – one more revision expected due to minor changes requested so far from NAT side + possible changes after integration tests

- Manual (if needed)

- Final test reports (VNA&TDR characterization, phase drifts versus temperature and humidity, isolation)
Mass production status.

Mass production carried out by Schroff

- 3 prototypes produced by SCC in China have been evaluated, no mechanical or electrical problems found

- 50 pcs manufactured, they are still unpopulated since they are waiting for our approval -> delayed because of too big holes for press-fit ERNI connectors (according to Julien’s email)

- Schroff has checked durability of these connectors under typical removal forces and they do not see real issue (according to Julien’s email)

ELMA as alternative supplier on the market

- 3 prototypes delivered, the same PCB manufacturer used as for Schroff prototypes

- brief evaluation planned soon
Quality assurance for mass production.

> Quality assurance guaranteed by supplier -> Schroff

- Checking PCB against net list + impedance verification carried out by PCB fabricator (SCC in China) + visual inspection

- post-assembly electrical tests (connector pin to connector pin) + sanity check of EEPROM memory carried out by Schroff using automated test stand
Schedule.

- NAT management development finalization
- Integration tests with uLOG, MCH-RTM-BM and RPM-PSC
- Update of specification