LHC RF Meeting
22nd October 2003

Present: Luca Arnaudon, Philippe Baudrenghien, Olivier Brunner, Andy Butterworth, Edmond Ciapala, Trevor Linnecar, Volker Rödel, Joachim Tückmantel, Wolfgang Höfle.
Excused/Absent: Thomas Bohl, Elena Chapochnikova, Roberto Losito, Eric Montesinos, Daniel Valuch.

Agenda:
1) Module 3 status & planning (Roberto)
2) Power Couplers (Eric)
3) ADT (Wolfgang)
4) P4 Integration (Volker)
5) Round Table / AoB

1) Module 3 status & planning (Roberto)
- Waveguides are being fitted. The module will be cooled down starting week 44, which should allow power tests to start the following week.

2) Power Couplers (Eric)
- **Couplers 5 and 6:** Brazing is being done in the central workshops. After testing the couplers will be assembled and baked. Conditioning in SA2 should start in two weeks. Four weeks are allowed for conditioning
- **Couplers 7 and 8:** Parts are ready for assembly and brazing in the central workshops should start next week. They should be ready well in advance (2 weeks) before conditioning in SA2 can start.
- **Window Ceramics:** The next batch of 6 are expected in 4 weeks from Verelec
- **Second Polarization Ceramics:** Discolouration was observed after bake-out on the EST produced samples. These had been made from existing CERN material. 20 new ceramic rings have been ordered from Verelec. They will also supply a prototype fitted with titanium rings. In the meantime 12 good completed ceramic rings are in stock. These were made using improved procedures, together with the pre-machining of the titanium rings. They have successfully withstood heating to 250 degrees C.

3) ADT (Wolfgang).
- **Power Converters - Ug1 & Ug2:** The tender opening date for replies to tender for Ug1 and Ug2 supplies is 28th October. Two companies have tendered.
- **Power Converters - Anode:** Final specifications are being prepared and will be put in EDMS. The specification committee will be on October 30th, combined with that for LEIR supplies. Specification of the control interface is ongoing and will be ready for Oct 30th.
Production will take 9 months. We should aim for delivery as soon as possible, i.e. no additional waiting period.
- **ADT Kicker Tanks:** VA group have confirmed the non-compliance of the two kicker tanks received from Dubna. A slight change in construction to facilitate the welding has been proposed by J-F Malo.
- **Kicker ripple:** Simulations on the resulting large oscillation amplitudes in certain bunches and increase of emittance have been started using Mathematica, but computation is slow. Turn-by-turn simulations could also be done.
- **Driver amplifiers:** Status as last meeting - a review of the proposed design will be done, based on design documentation to be received from the firm in week 44.

4) Integration (Volker)

- **Crash barriers for ACS & ADT:** Necessary material is now in SR4.
- **Drawings from CV** for integration are expected next week.
- **The number / positioning of pressure limiting valves** for klystrons and loads is not yet decided. Space is available for either of the two solutions proposed (1 per klystron or one per group of four klystrons).
- **Warm recovery Line:** Our proposal needs to be defined. **(Action Roberto, L. Serio)**

5) Round Table

- **Klystron Controls for Linac 4:** (Luca) A proposal for control of the klystron in the test area for Linac 4 has been presented to the Linac team. The layout is close to that proposed for the SM18 second bunker. Control of the modulator and the choice of power supply for this low duty pulsed application remains to be decided.
- **Electronics:** (Luca) DCCT electronics designed by Daniel has been tested in SM18.
- **Klystrons** (Olivier) Klystron 8 will soon be tested. The frequency previous klystron still has to be checked **(Action: Philippe)**
- **Function Generator for SM18 tests:** (Andy) Quentin King (AB-PO) can provide function generators with analog outputs. Programming can be done over a serial link. This solution is compatible with the longer-term approach and should therefore be adopted.
- **Radiation presentation to AB-BDI:** (Andy) There was interest in the results obtained for UX45 and they will request similar studies for their areas.
- **New Control Room Working Group:** (Andy) Information is being collected from the users. We do not intend to use this for MDs, but rather as an area to allow us to work closely with the operations team, with some limited basic facilities (consoles, instruments). The design layout of the different facilities in the new building has bee contracted out to two firms.
- **Front End Software:** (Andy) An information meeting on the BDI originated FESA (Front End Software Architecture) adopted as standard (new applications only for now) was held last week. Other equipment groups, including RF have given input. The system should be quite suitable for our applications; the first will be the LLRF Tuner Module.
- **Low Level RF:** Version 2 of the IQ demodulator is being realized. The clock distribution module is progressing well. A DSP has been retained in the second part of the tuning module. It replaces the DSP in the tuner drive electronics crate. Serial transmission between LLRF tuning module and the crate allows flexibility and easy upgrade.
- **Use of DSPs** (Trevor) The problem of poor reliability due to unexpected 'side effects' with complex programmable devices is a serious risk for the LHC RF systems. We should investigate ways of ensuring complete reliability (Special programming tools, proper analysis, design and implementation, thorough testing, discipline in avoiding ill-considered changes, etc.) Useful experience will be gained in SM18.
- **LHC Status report** (Volker) An update, reflecting progress since the last report in June, is requested by project management. The June report has been circulated to the responsible engineers are asked to provide the appropriate information.
- **Use of CADENCE for PCB layouts:** This is the recommended tool; several members of the group are using it regularly. There will be a 2-day course at the end of November
- **Other Courses:** Joachim has circulated information on current training courses that might be relevant. The question of possible training on DSPs (see above) was raised.

Next Meeting:
Wednesday 29th October 2003

E. Ciapala, 22nd October 2003