# LHC RF Meeting
12th November 2004

**Present:** Luca Arnaudon, Olivier Brunner, Andy Butterworth, Philippe Baudrenghien, Edmond Ciapala, Trevor Linnecar, Pierre Maesen, Jean-Claude Perrier, Daniel Valuch, FrodeWeierud.

## 1. ACS Modules and SM18

- **Module 1 progress** Conditioning was completed by the end of week 45. All cavities have reached 8 MV/m. Full power (300 kW) was applied to all couplers. Measured radiation with full field was relatively low in all cavities (20 mS/hour or 2 rad/hour)
- **Power Measurements:** Variations in RF forward power of up to 20 % are seen when the cavity is detuned from resonance to one side or the other. Input/Output power reflection for both input and output ports of the circulator (S11 and S22) are specified as ⩽ -28 dB. We should try to understand this since there is a risk of problems in LHC with such high reflections going back to the cavities with beam. (from LEP experience). Tests can be done in Hall 112 and in SM18.

**(Action: Olivier)**

- **Module 5 (Pierre)** is now in the bunker and being connected for thermal cycling. We hope to start this weekend but at present there is a small helium leak.
- **352 MHz: (Olivier/Luca)** The power system has been tested to 400 kW DC on the klystron. RF will be applied to a short in the waveguide next week. (The waveguides for Soleil are in place and the control system patch panel is installed.)

## 2. ACS Coupler Progress (Eric)

- **Couplers 114 and 115:** Conditioning continues in SA2.
- **Couplers 116 and 117:** Pre-assembly ('montage a blanc') has been done, the parts will be rinsed and they will be assembled and tested next week.

## 3. UX45 grounding (Olivier/Philippe/Jean-Claude)

- **Rack area grounding:** The proposal is to mount the UX45 racks, both ACS and ADT, on a false floor, raised to bunker door height, supported by a structure of ordinary metal beams. Ground grids, best made of copper (separate for each system?) would be laid under the racks on the tunnel floor underneath the beams and earth connections made directly to each of the racks, This is preferred to using the metal beams themselves for the earth grid; it avoids having to clean them to fix copper braid to connect them together and the to racks etc.
- **Ground lines in Aleph rails:** The grids under the ADT and ACS racks will use earth bars in the Aleph rail trenches, connecting to the normal earthing system near the cavern walls. The ACS bar will also connect to the two Faraday cages. Klystrons and HV bunkers will use the remaining pair of rails, one bar on each side of the cavern, connecting to the main IR4 central earth point. This arrangement allows a low impedance earth for power equipment, independents of the path for the low power systems.

## 4. UX45 Installation (Olivier)

- **CE work:** The details of platforms and tunnel walls are being decided. The shielding wall will be done in two stages, upper and lower parts separately.
- **ADT Racks:** There is a possibility of installing the ADT electronics in the US. The main advantage would be short cables to the equipment, in particular the coax drive cables from the driver amplifiers which would otherwise need to be 7/8 flexwell, difficult to route for the large numbers involved. This needs to be looked at by Wolfgang.

**(Action: Wolfgang)**

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## 5. Klystron modulator/divider (Olivier)

We still have to decide on this; with the divider we can reduce ripple by a factor 2 maximum, with the modulator a factor 5 may be possible. Is the extra complexity justified ?

## 6. AoB

- **LHC 6-month status reports.** The management (DG) attaches importance to these; we are asked to put information in a more rigorous form. (to be communicated)

- **EMC Workshop:** will be a one day event on the 25th of November. Everyone should try to attend.

**Next Meeting:** Friday 19th November at 08:45 in the JBA Room 864-2-B14.

E. Ciapala, 17th November 2004