Minutes of ATLAS Level-1 Calorimeter Trigger Phone Conference – 2 June 2005

Birmingham: Gilles Mahout, Dimitrios Typaldos
Heidelberg: Ralf Achenbach, Paul Hanke, Eike-Erik Kluge, Kambiz Mahboubi (at RAL), Frederik Rühr, Klaus Schmitt, Hans-Christian Schultz-Coulon, Pavel Weber
Mainz: Uli Schäfer
Queen Mary: Eric Eisenhandler (chair)
RAL: Bruce Barnett, Richard Booth, Viraj Perera
Stockholm: Christian Bohm, Sten Hellman

Birmingham

Gilles reported that he has now widened the backplane FIO timing windows from 2.2 ns to more than 2.6 ns. This was achieved by delaying some signals having slightly shorter track lengths. The delay was implemented with small capacitors, but on the final CPM the track lengths will simply be corrected.

SSTL2 levels are now being used for both the Serialiser and CP chips. This has not yet shown the expected small improvements in timing window width due to improved pulse shape. However, things are no worse so SSTL2 will be continue to be used.

The latest CPM version has been tested in an oven over a temperature range of 40 °C. Timing windows narrowed slightly, by about 400 ps.

A test was made to see how much margin there is on the 40 MHz CPM clocking rate. The module worked up to 43 MHz, which sounds adequate.

The Production Readiness Review for the CPM will be held on Tuesday, 7 June.

Heidelberg

Paul reported that 18 assembled AnIn daughter cards have been received. This is the new design with single-channel amplifiers, to minimise cross-talk. Sixteen of the cards will be put onto the four prototype PPMs in place of the original version.

The new LCD card PCB is being fabricated; as soon as it comes back Klaus will assemble it.

There are now 300 accepted MCM substrates at Hasec, ready for bonding. A further 120 are coming soon. The procedure is first to make 20 MCMs – these will use the worst accepted ASICs, i.e. those from the lowest-yield wafers, in order to see if there are any problems.

No more has been heard from the company about the low-yield wafer problems.

Kambiz has been at RAL working on PPM readout to ROD. It is now possible to set readout delay registers in the ASIC, so that comparisons between expected readout can be done. Tests with low-speed readout for link stability have been successful, with no problems in about 1.5 million events. The testing has now advanced to trying out firmware that allows readout to work at higher rates.

Mainz

Uli reported that problems were seen with JEM readout cards, even the new ones which have four-layer PCBs. After some time, the problem turned out to be their G-link tester and not the new readout cards. Using DSS instead, both DAQ and RoI links run overnight without problems. Note that the old double-sided readout cards still show some errors, so they will be discarded and four more of the new design will be made.

It it not clear that there is enough time to make a new G-link tester for production testing, so the DSS might have to be used.

Due to this readout card problem, Uli is only just resuming work on the FIO reflection problem.

Steve Hillier had asked whether the PPM to JEM cable mapping from the new LCD card is correct. It is believed to be ok, but it is suggested that Stockholm go through the documentation to check.

RAL

Viraj reported that 6 new TTCdec cards (with mounting holes) have arrived and are being tested.

Schematics for the new VMM design are now on the web, and the informal review should be held soon.

The large order for LSMs, sufficient to test an entire crate of LVDS inputs, is due to arrive on 10 June.

Four PPM G-link rear-transition cards are due to arrive on 30 June.

The production CMM design goes into the RAL Drawing Office next week.

The CPM parts list has been sent to DDI for a price quotation.

A commercial quotation for putting 37-way connectors onto 16-pair analogue cables is being obtained.

Bruce reported that readout over a single link from the CPM to the 9U ROD is stable. A firmware modification to the header format is needed from James.

Bruce also asked whether the PPM readout control is fully compatible with the 9U ROD; Heidelberg replied that it should be ok.

Stockholm

Sten first reported on the backplane on behalf of Sam. There are five serious bidders preparing offers; the deadline is 10 June. Once a bid is selected, there is a 10-day period for any appeals of the decision, after which production can begin.

Two student workers will prepare crate hardware over the summer, together with additional effort from the workshop. The hope is to be able to ship out crates soon after the production backplanes arrive in Stockholm.

Sam plans to travel to RAL at the end of June for CMM tests; this should be coordinated with other people needed for these tests.

Sten reported on the LVDS cable situation. There is a verbal statement that they are available. Only simple electrical tests would be included in the standard price, we would have to pay for anything more. The firm does not wish to put on CERN labels, but could make its own; we probably do not want that. Delivery is stated to be 6–8 weeks. We need to get all this in writing. Possible procedures for tender and purchasing were discussed, including whether any undesirable delay to the CPM programme would be introduced. We need things in writing from the firm. We must write a specification, must decide on what tests are required, and check that these cables are permitted for underground use at CERN.

Eric Eisenhandler, 3 June 2005