

Notes of ATLAS Level-1 Calorimeter Trigger Phone Conference – 14th October 2004

Birmingham: Richard Booth, Stephen Hillier, Gilles Mahout, Richard Staley, Dimitrios Typaldos, Peter Watkins

Heidelberg: Ralf Achenbach, Florian Föhlisch, Christoph Geweniger, Kambiz Mahboubi, Karlheinz Meier, Pavel Meshkov, Klaus Schmitt

QMUL: Eric Eisenhandler*

RAL: Bruce Barnett, Norman Gee, Tony Gillman, Viraj Perera

* *at RAL*

1. Birmingham

- Gilles noted that the VME access problem seen with the CPM at CERN had been partially solved by a firmware change. There was still a concern that the damaged VME-- connector in the TCM slot may be causing a problem with a missing termination resistor on one of the data lines.
- Richard reported that the new CPM1.6 layout would be completed in about another week, and then sent out for manufacture (2 modules to be assembled).
- The LVDS Source Module (LSM) layout is also almost complete, requiring about another two weeks before manufacture starts.

2. Heidelberg

- There was some discussion about some of the problems seen with the PPM at the ATLAS test-beam. To try to understand the access and control problems of the PHOS4 chips, Pavel has tested many channels of via the I2C interface in the MCM test rig at Heidelberg, and all were OK, so fortunately there does not seem to be a design fault with the MCM itself. The current suspicion is that there is either a firmware problem or some problem with the I2C distribution on the PPM.
- He has also looked at the parity errors seen on some channels into the JEM, but again this fault does not show up in the Heidelberg test-rig. Should these tests be repeated with an actual CPM or JEM receiving the LVDS signals?
- Hasec have not yet glob-topped the latest MCMs, as the necessary machine has been unavailable, but it is hoped that this work will be done next week. The plan is to produce 2 MCMs with glob-topping and two with silicone gel filling, all of which will then be stressed by extensive vibration testing and temperature cycling,
- It was noted that glob-topping is an industry-standard technique for filling packages, so this should prove to be a perfectly satisfactory process.
- A total of 60 MCMs have now been fabricated with the new FR4 substrate material and silicone gel filling, of which 49 have been tested OK.
- Eric asked if it would be possible to make minor changes to the MCM layout if it were found necessary because of PHOS4 (or any other) problems. Karlheinz replied that in principle it would be possible, but that it was very late to attempt this, and that there was no evidence at present that any changes were needed. The latest version of the PHOS4 die, which has fixed the reset problem, has a radically different footprint compared to the present chip, and is still at the prototype stage. There is hopefully an adequate workaround solution to the reset problem involving a modified power-up sequencing on the PPM motherboard.
- Eric also asked if the current ReM FPGAs had adequate resources for the expected firmware load. Kambiz replied that the utilisation factor is currently only about 50%. He noted that the batch of

devices in stock at Heidelberg were purchased some time ago, but are still in sealed bags, so there should be no problem in using them on the production modules.

3. *QMUL*

- Eric suggested that the run information from the log-book used during the test-beam work should be summarised, something that Norman has already started. He also noted that the available data plots should be collated for general use, but that care should be taken when using data supplied by other groups.

4. *RAL*

- Viraj reported that for a number of reasons there has been limited progress on testing the 9U ROD. It has now been installed in the recently-received Wiener crate (which is fitted with the required 48V power supply), and the module powers up correctly. JTAG testing has been completed satisfactorily. As Adam is on sick leave, the CPLD code for System ACE has been written by Ian.
- For the latest CPM design (CPM1.6), all components are available, except for the optical transceiver card-cages, where the first manufacturer approached requires a minimum order quantity of 1200 parts at £5 each, and a lead time of 11 weeks! Alternatives will be sought.
- The quotation for assembly of the LSM is £1150 per module, not including the cost of pcb manufacture.
- The new optical G-link receiver daughter-cards are expected next week.
- The TCM and VMM re-designed schematics are almost complete, and will be put on the web.

Next Phone Conference – Thursday 28th October 2004 at 14:00 (UK), 15:00 (Germany, Sweden)

Tony Gillman