

Minutes of the special electronics meeting on the 21.8.2008

Present:

Jean-Pierre Martin
Luciano Musa
Magnus Mager
Lucie Linsen
Xavier Jansen
Gilles De Lentdecker
Jean-Paule Dewulf
Jan Timmermanns
Martin Killenberg
Ron Settles
Anders Oskarsson
Bjorn Lundberg
Ulf Mjornmark
Leif Jonsson

- 1) The 800 remaining PCA16 chips are at CERN waiting for the CERN administration to approve the order to the packaging company.
- 2) The 40 MHz ALTRO chips are mounted onto one of the 2nd prototype boards. It will arrive to Lund on the 28th of August. However, it can only be tested at higher frequencies after the new firmware has been completely installed and is working.
- 3) 165 PCA16 chips have been tested in Lund. Out of these 17 were found not to fulfill the test criteria, although it was not quite sure if it in some cases depends on the chip itself or on bad connections in the chip tester. In any case a 10% failure rate is no problem since we at the end will have enough chips remaining for the 10.000 channel system.
Decision: The selection criteria which has been used so far seems to be sufficient to sort out the bad chips.
- 4) The tests of the 2nd prototype FEC done in Lund was presented. The general performance is as expected and it was shown how the pedestal levels depend on the various parameter values. Running the PCA16 in shaper mode the largest dependence of the pedestal is with different gain settings but this variation is still acceptable for running the ALTRO at a fixed reference voltage. This should be 1200 mV in order for all channels to be on scale. With the PCA16 operated in non-shaping mode the dependence on the gain is more dramatic and would not allow the system to be run at one specific reference voltage. However, the gain settings in this mode can only be varied by 20% (between 5.25-6.5 mV/fC) and if it is run with the highest gain the pedestal level is compatible with those of the shaping mode running. It was agreed that we would run with this gain if no good arguments are given for running at lower gain and thus the dynamic system for setting the reference voltage would not be needed.

Decision: Go ahead and produce the 15 boards for which we have PCA16 chips.

- 5) The first CERNTech order comprising: 1 DRORC, 1 SIU, 1 optical-cable has been sent to Lund for setting up a system to instal the new firmware. This system will later be used in the test setup at DESY. Concerning the second CERNTech order (2 DRORC, 4 SIU, 4 optical-cables), the order document has been prepared and CERN is waiting for the official offer in order for CERN to place the offer. The additional RCU and DCS units have been ordered from a company in Helsinki and will be delivered week 41 after which is need one week of testing at CERN.

The code of the new firmware to test the connection with the RCU is available in Lund and we are waiting for the DRORC to arrive in order to be able to use it and implement it in the readout. The RCU firmware has to be modified, by Luciano, to handle the synchronization of the clock pulses between different RCU's

- 6) The distribution box (DBOX) is the DAQ Trigger interface for the LP-TPC. It consists of two parts:

- The logic unit responsible for the communication with TLU and the computer
- The fanout card which distributes the trigger and the clock.

1 DBOX is almost ready and parts are ordered for more. The RCU hardware has to be modified in order to receive trigger and clock from the DBOX. This is a small change and Luciano will provide Brussels with the needed information to do this. Brussels need readout software to test the functionality of the DBOX in a realistic environment. Lund will make this software for a readout version with a DBOX, which will be a good test for both the readout and the DBOX. This had been sent to Brussels 25.8.

- 7) The design of the electronics crate was presented and it was shown how the cooling could be done. The air has to be blown in from the back since the whole crate will sit inside the magnet during data taking. So far very preliminary tests have been performed in Lund showing that the temperatures at the position of the voltage regulators are still acceptable. An engineer at DESY is working out the details of the crate construction and further cooling tests will be done.