



Pilot Run Meeting

Update from CERN

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We are concentrating the tests on one panel

Problems encountered:

Missing triggers: we are able to see all the 6 levels but there were missing triggers. *Problem solved*

Baseline Calibration: was not working properly → we disabled the FED automatic baseline restorer. *Problem under investigation*

CalDelay shifts: power cycling the VME crate some times happens that we have to set the CalDelay to different values. *Problem under investigation*



Sometimes the TTC stops issuing triggers in the middle of a calibration run. It is seen both at the L1A nim output from the TTC, and also on the analog output from the module - no data comes and no trigger is seen. We have discovered that this does not happen when we prescale or disable the cyclic BGO that sends BGO-1, which is the BC0 command (BC0 resets the bunch crossing counter on every orbit, It should have no prescale)

We think that the problem came from the asynchronous-overlapping of the CalSync command to the BC0 command : we are not supposed to send two BGO commands within 44 BX of each other. The CalSync command issued by the SOAP message that translates to a VME command does not respect such constraint. Moreover the DOUBLE command feature of the TTCci wasn't fully tested



Solution:

we configured the TTCConfiguration.txt file in such a way that a CalSync SOAP message corresponds to a BGO Start. The BGO Start starts the Cyclic generator which includes the following actions:

- Issues two PreCal commands one in the current Orbit (after 100 BX) and the other in the following Orbit (always at 100 BX)
- Issues a L1A after 225 BX at the following Orbit
- The BC0 command (event counter reset) is permanently issued at each orbit.

The situation is solved because thanks to the 100 BX delay between the BC0 and the PreCal we don't have conflicts anymore

The reason why we are sending two "PreCal" before the L1A is the following: the BGO start command is issued asynchronously with respect to the orbit, therefore it might fall anytime within an orbit. It seems that if it falls between the time at which the PreCal and L1A are supposed to be issued (= between 100 BX and 225 BX from the orbit) the PreCal command is lost, and only L1 is sent. Using two PreCal and sending the L1A in the next orbit solve the problem



Sometimes there are no hits, but they can be restored by changing the CalDelay settings from DAC ~ 90 to DAC ~ 130 (values suggested by Renaissance optimization of CalDelay)

At 0.32 ns/DAC count, this difference is disturbingly close to 12.5 ns, half a clock period; perhaps the shift is similar to what Danek saw in the pixel FEC PLL, which he reports locks randomly to rising or falling edges of the clock

Problem under investigation



At the moment the baseline correction for the FED is commented out of XDAQ

(C) After we turn on the baseline correction we must do a local reset of the FED. Will Johns has fixed it

(E) We still see unusual data in the first few clock cycles of Spy FIFO1 transparent mode

Problem under investigation



Occasion for Mauro to learn, thanks to Souvik, how the software is structured, hierarchy of classes etc... give then a contribution on its development

Useful for Souvik to learn more deeply how the hardware works



- Several bugs were introduced in the extension to support multiple FEC and FED boards in each crate and multiple crates. We fixed those bugs at PSI and CERN.
- Work on RCMS Function Manager <-> XDAQ began with a new Function Manager with the new states and access to RS3 database. It has stalled temporarily because of hardware problems we are debugging.
- Implemented a new Low Level GUI for the PixelFECSupervisor.
 - Allows one to graphically drill down from a FEC-Crate level to a ROC level and manipulate its DAC settings, and trims and masks of individual pixels.
 - ROC GUI looks like COSMO or Renaissance
 - AJAX technology is used to communicate with the web-server over HTTP without GET/POST, thus eliminating browser refreshes for realtime control. (Not seen in other XDAQ applications yet.)