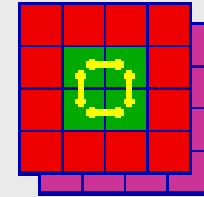




ATLAS Level-1 Calorimeter Trigger



CP/JEP ROD Prototype

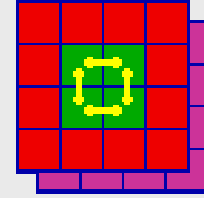
Test Status, March 2002

Flow Control: Once wise, twice bitten.

Bruce .M. Barnett



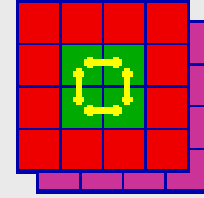
Overview



- DSS Status
- ROD Status (3)
- Summary
- Plans



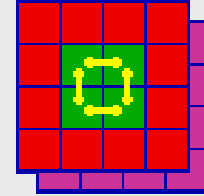
DSS Status



- Fault “DSS-1”
 - address counter of s-link destination card.
 - behaviour: occasionally offset by one from correct value, after transmission.
 - Fixed (December/January)
- Need to define and test new firmware for slice tests. (To handle L1A generation, event tagging.)



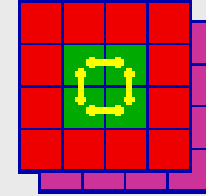
ROD Status (1)



- All previous fault reports addressed.
 - Slice operation: fixes were thought complete.
 - Rol operation: corresponding firmware needs test.
- But:
 - various data corruption faults detected with flow into S-Link ODIN card in “ROS”-like PC.
 - Is this in the ROD or in the ODIN/PC/software?



ROD Status (3)



- And new fault reports:

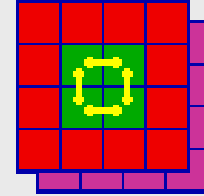
Unfortunately, new problems have arisen. In tests used in **CP-Slice-12**, bursts of events were separated by a minimum time, that time dictated by the time required for the ROD status register to indicate that the input FIFOs were empty. Each event within a burst was (typically) 10 microsecond after the previous. After installing the new S-Link firmware EEPROM, frequent errors appeared in that test setup. To diagnose, the bursts were separated by long intervals (of the order of a second), and the inter-event time was varied. 64 events were transmitted per burst. Above around 100 microsecond per event, operation was stable. Below this errors started to be observed in the events as they reached the S-LINK destination. Again data corruption similar to that observed in **CP-Slice-12** was observed. This time, data is lost and replaced by data already appearing 29 words earlier in the data-segment. This typically happens some 60 words after the beginning of the segment (after a sub-status word).

```
0000000094 : 37c4900000 ok
0000000095 : 374080160a ok
...
0000000134 : 374a214aa4 ok
0000000135 : 3740c01e0e ok
...
0000000161 : 3743e08240 ok
0000000162 : 3744609248 ok
0000000163 : should be 3744e0a250 is received as 374a214aa4
0000000164 : should be 374560b258 is received as 3740c01e0e
```

The Status words in the S-Link trailer indicate no abnormal fault, but the new bits in the Spy Buffer CR indicate "overflow_error_2" (Bit 7).



Summary

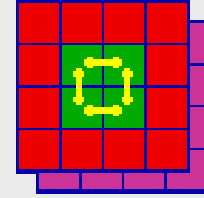


Fault	Description	Status
DSS-1	S-link destination address counter miscount	Done *
DSS-2	DAV Glitch	Requires study
DSS-3	Slice value of 4,5 not interpreted correctly	Done
CPSlice-1	<i>CPM-ROD link down on FPGA/TT= 01000/11</i>	Done *
CPSlice-2	Substatus Word misnumbering.	Done
CPRoI-3	FIFO doesn't empty (Flow control fails)	Done
CPRoI-4	Channel/Module ID Bits swapped	Done
CPRoI-5	BOF in S-Link record seen as BOF00001	s/w artifact
CPSlice-6	S-link LFF enable mask and s/w XOFF have no effect. (Slice operation)	Done
CPSlice-7	Slice readout modes with more than one slice fail.	Done
CPSlice-8.	Bad Sub-status words in multi-slice operation	Done
CPRoI-9	Spy buffer registers clear doesn't work	s/w artifact *
CPSlice-10	Operation fails after initial fragment	Done
CPSlice-11	Parity Error word incorrect	Done
CPSlice-12	Data Corruption on Application of LFF (1)	Done *
CPSlice-13	Data Corruption on Application of LFF (2)	Under study *

* New since November (Joint) collaboration meeting



Plans



- Understand new flowcontrol problems
- Retest RoI behaviour with newest firmware
- Slice Test needs:
 - Define new DSS firmware requirements.
 - and test implementation.
- And of course, soak.