TSF->2D 25Gbps

2023/4/19

T.Koga

25Gbps operation

-Protocol of TSF->2D is updated with 25Gbps

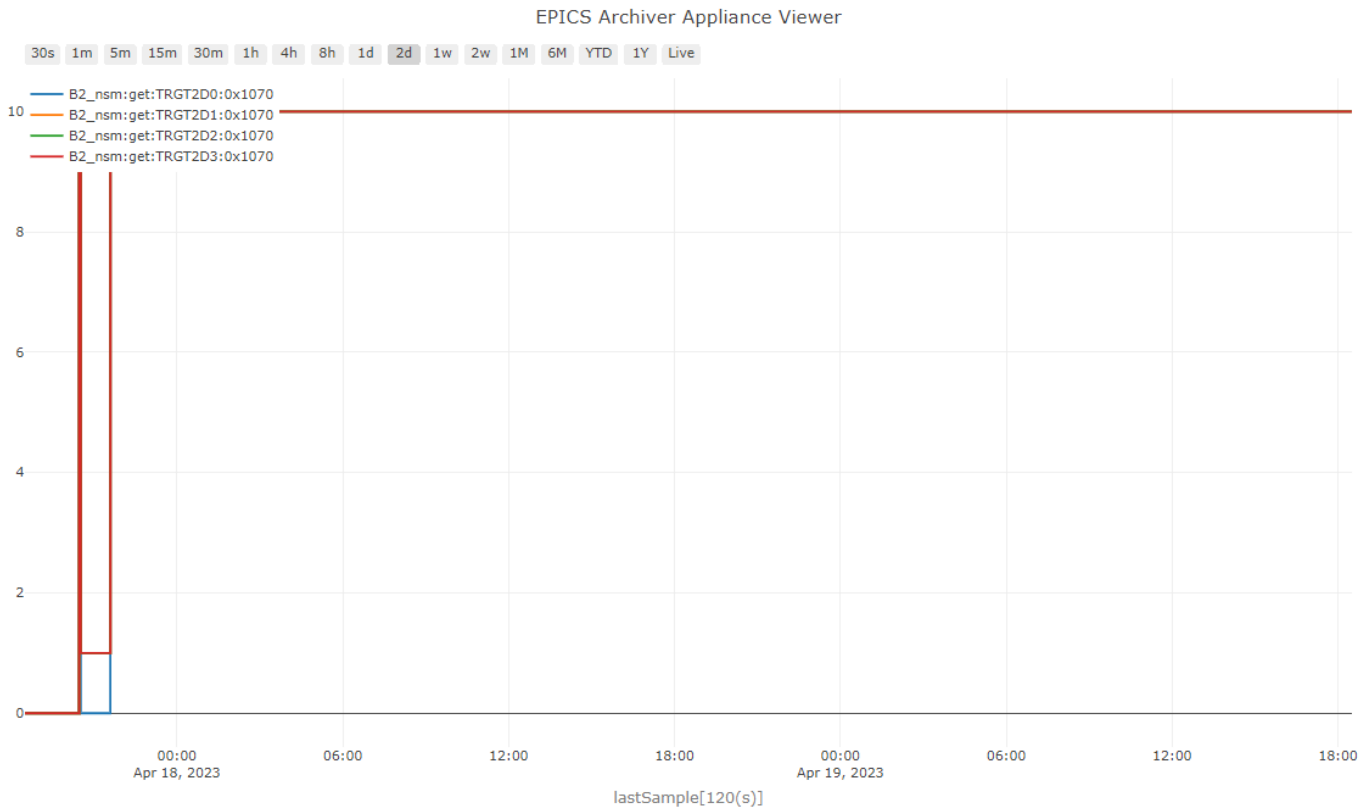
-all axial TSF (5 UT4 modules) and all 2D (4 UT4 modules)

-#bit/32MHz/2lanes increased from 768 to 1536

-Optical link and cc are stable for a few days

-Latency will be checked later, when cosmic can be taken with CDC

link on



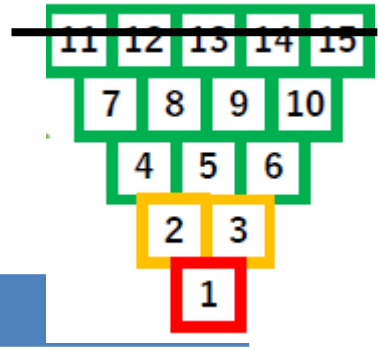
link off

time

Idea of new bitmap

-SL0

-Example to send all wires TDC with 32ns timing resolution



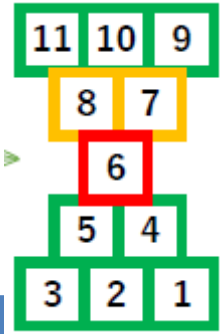
bit number	
1536-1315	spare
1314-1265	TSF0 hit pattern TDC (cc of each wire, 5bit × 10wire=50bit, 32ns)
…	…
614-565	TSF14 hit pattern TDC (cc of each wire, 5bit × 10wire=50bit, 32ns)
564-550	TSF0 hit pattern (existence of wire hit, 1bit × 15wire = 15bit)
…	…
354-340	TSF14 hit pattern (existence of wire hit, 1bit × 15wire = 15bit)
339-331	cc
330-310	TSF0 (TSID(8), priority timing(9), LRflag(2), priority flag(2))
..	…
36-16	TSF14 (TSID(8), priority timing(9), LRflag(2), priority flag(2))
15-0	Spare, cc

new

Idea of new bitmap

-SL2,4,6,8

-Example to send all wires TDC with 32ns timing resolution



bit number	
1536-1110	spare
1109-1065	TSF14 hit pattern TDC (cc of each wire, 5bit × 11wire=55bit, 32ns)
…	…
559-505	TSF14 hit pattern TDC (cc of each wire, 5bit × 11wire=55bit, 32ns)
504-404	TSF0 hit pattern (existence of wire hit, 1bit × 11wire = 11bit)
…	…
350-340	TSF14 hit pattern (existence of wire hit, 1bit × 11wire = 11bit)
339-331	cc
330-310	TSF0 (TSID(8), priority timing(9), LRflag(2), priority flag(2))
..	…
36-16	TSF14 (TSID(8), priority timing(9), LRflag(2), priority flag(2))
15-0	Spare, cc

new

backup

present bitmap

-SL0

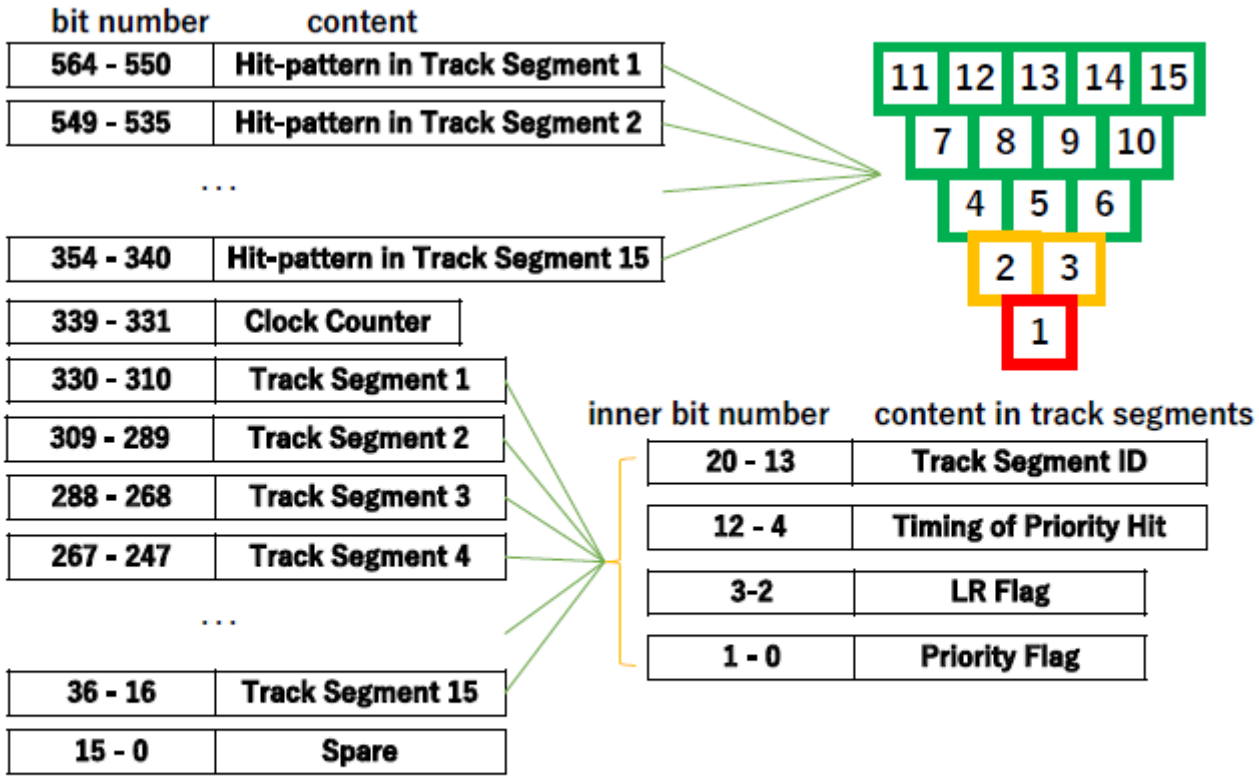


Figure 6.1: Bitmap from the TSF0 module to the 2D tracker module.

https://wiki.kek.jp/pages/viewpage.action?pageId=133075316

present bitmap

-SL2,4,6,8

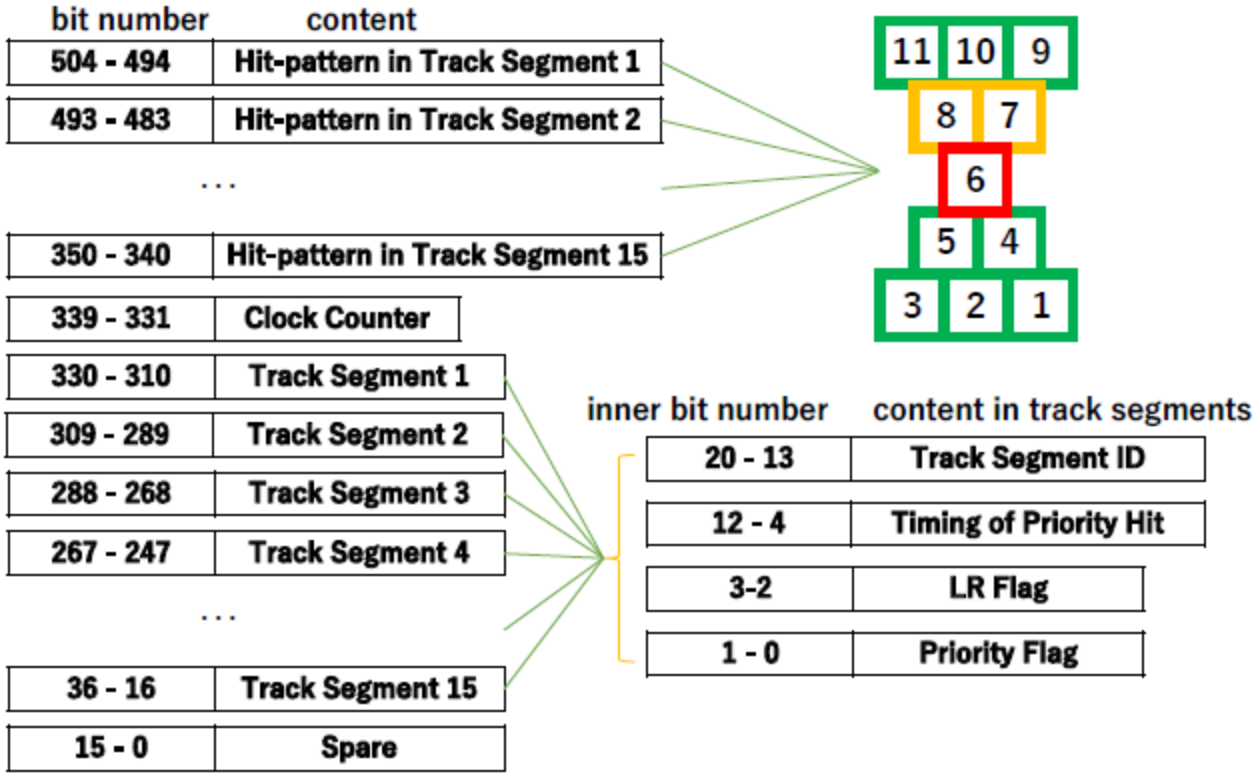


Figure 6.2: Bitmap from the TSF2, TSF4, TSF6 and TSF8 modules to the 2D tracker module.

https://wiki.kek.jp/pages/viewpage.action?pageId=133075316