ROD Firmware current status

Nico Giangiacomi
University and INFN Bologna

Tests with Master TTC Emulator

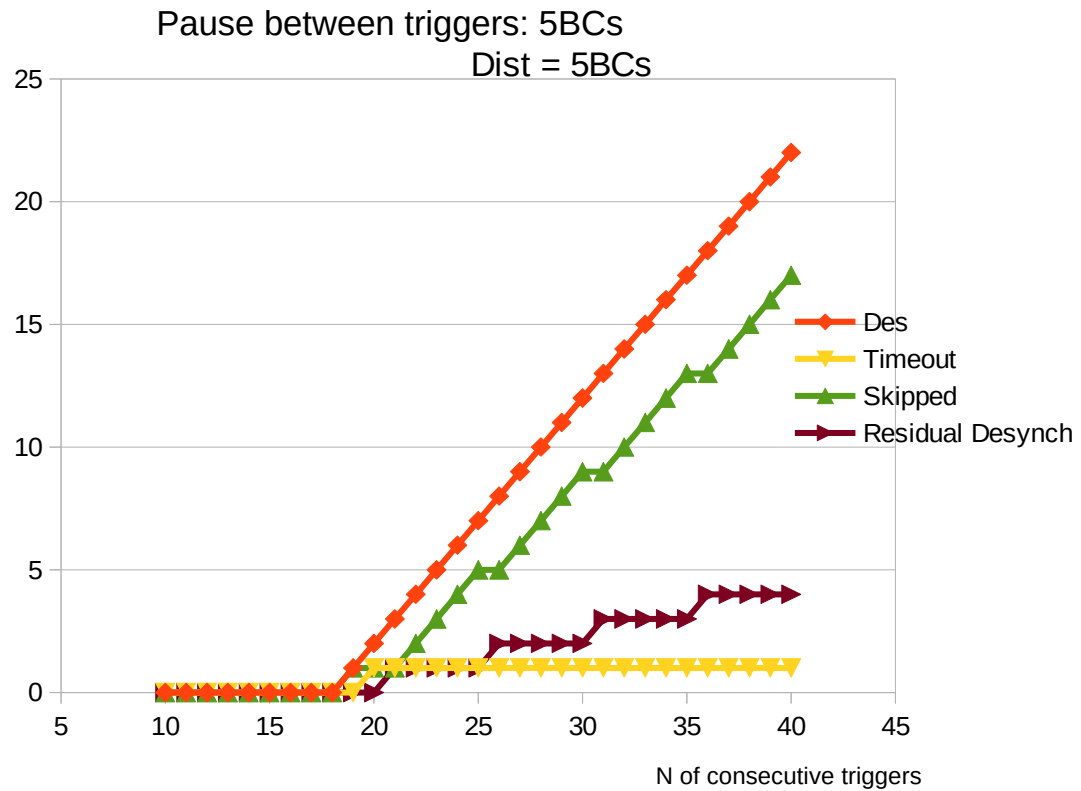
Master FW: f2c9111 → TTC Emulator (+ ChipScope)
Slave FW: 64397a9 → SmartL1Desynch (always OFF) + Desynch/Timeout/Skipped counters (for monitoring)

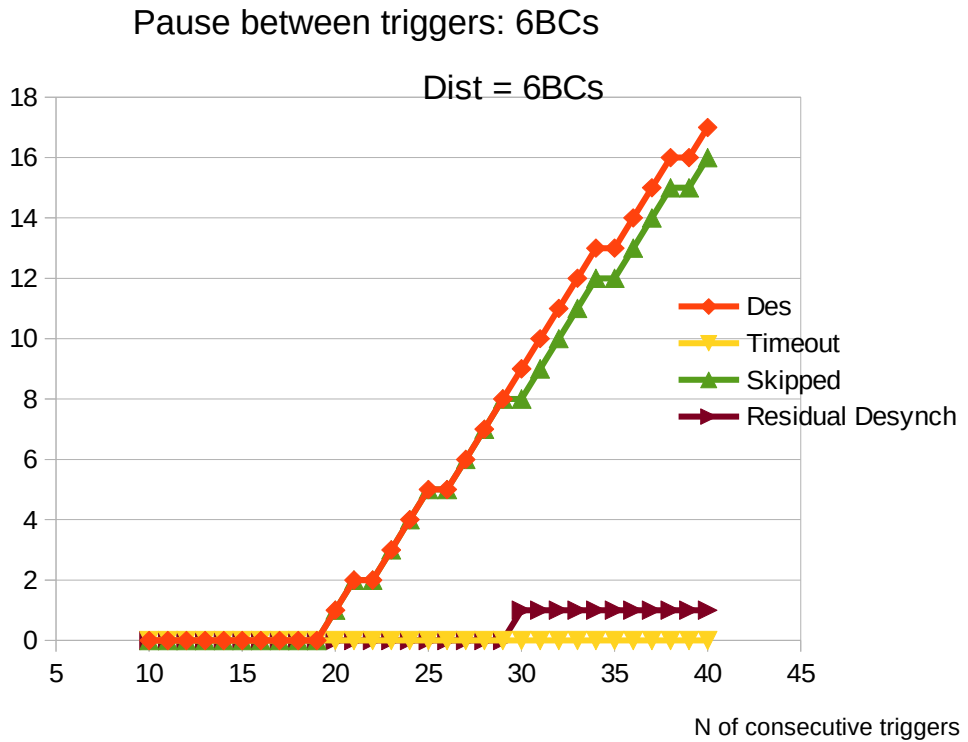
Tested on C1_S7 and C1_S17 with **detector (preamps off → no occupancy)**

Sending **N consecutive triggers** with **P pause between triggers** (pause = 5BCs or 6 BCs)

IDENTICAL results on **C1_S7 and C1_S17** → (all FEI3/MCCs behave the same way??)

Some results





Why timeout?

BOC chipscope: monitoring consecutive module data from ROD output

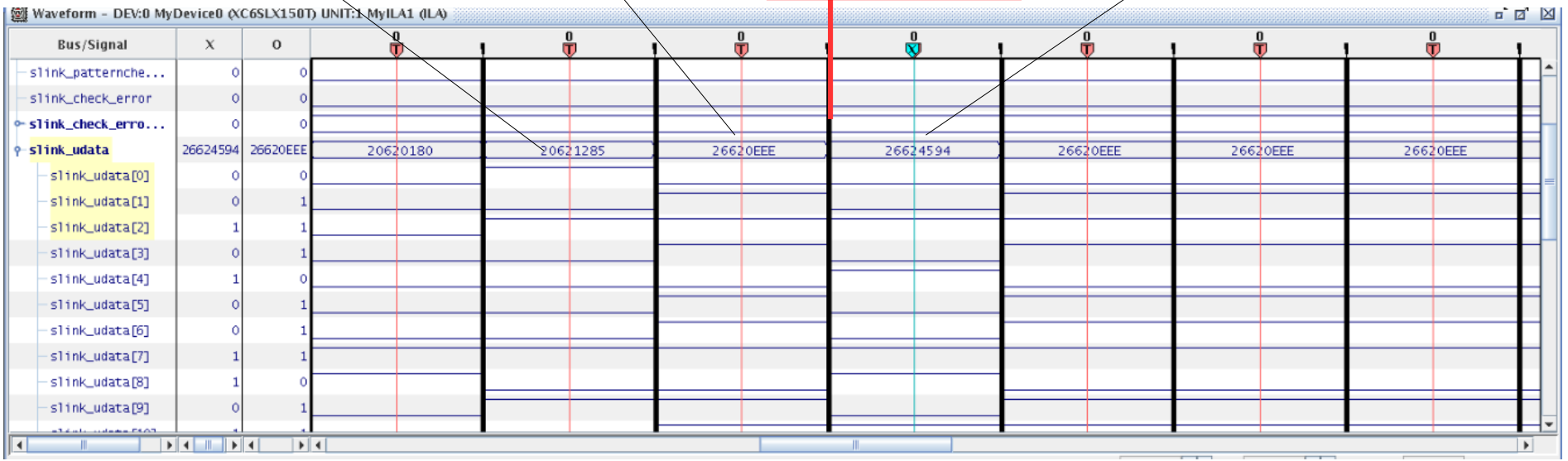
L1ID = 2
BCID = 0x85
1 Skipped trigger

Empy event
(added by ROD)
exp L1ID = 3
exp BCID = 0x8A

Missing event:
exp L1ID = 4
exp BCID =
0x8F

L1ID = 5
BCID = 0x94
4 Skipped trigger

DESYNCHED!!



Why timeout?

BOC chipscope: monitoring consecutive module data from ROD output

FROM MODULE

L1ID = 2
BCID = 0x85
1 Skipped trigger

FROM ROD

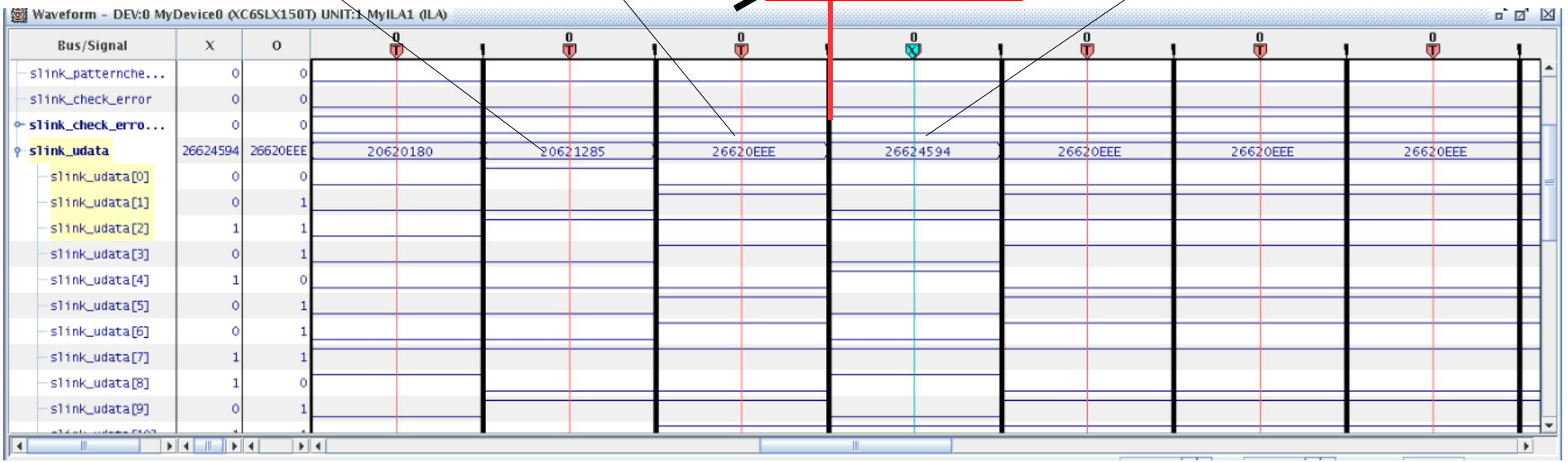
Empy event
(added by ROD)
exp L1ID = 3
exp BCID = 0x8A

Missing event:
exp L1ID = 4
exp BCID = 0x8E

FROM MODULE

L1ID = 5
BCID = 0x94
4 Skipped trigger

DESYNCHED!!



Why timeout?

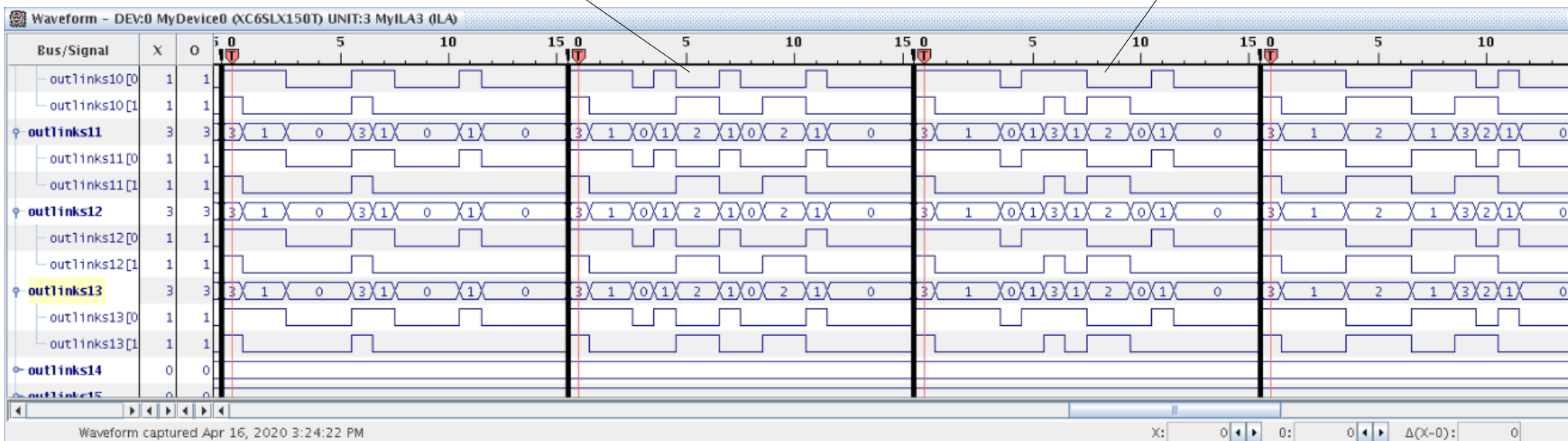
All modules behave the same way

BOC chipscope: monitoring consecutive module data directly from module (before ROD)

L1ID = 2
BCID = 0x85
1 Skipped trigger

L1ID = 5
BCID = 0x94
4 Skipped trigger

DESYNCHED!!



Why timeout?

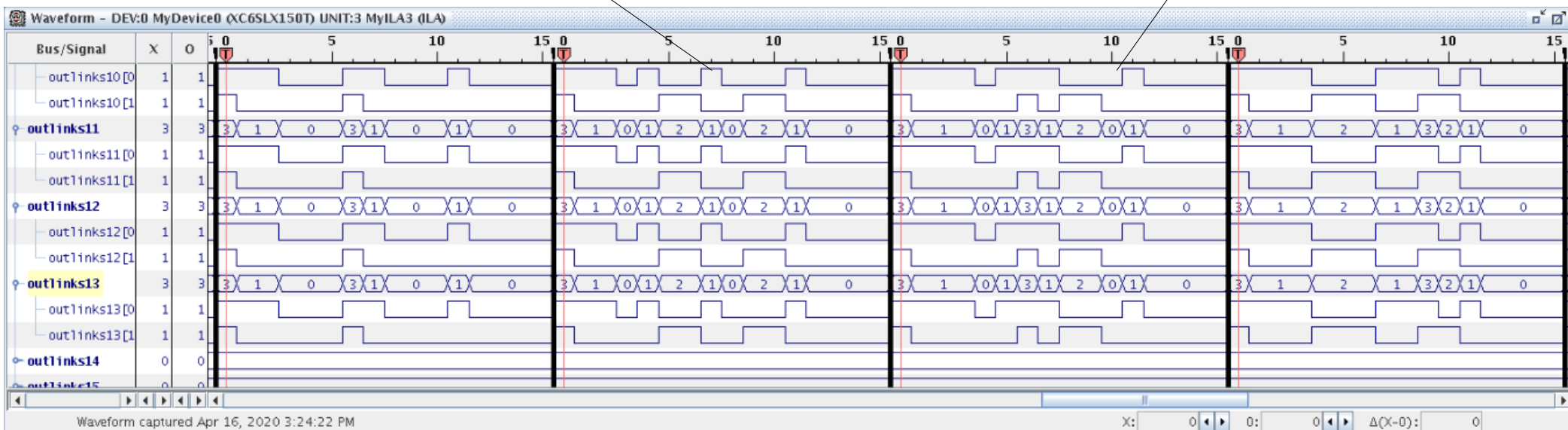
BOC chipscope: monitoring consecutive module data directly from module (before ROD)

Missing event:
L1ID = 4

L1ID = 2
BCID = 0x85
1 Skipped trigger

L1ID = 5
BCID = 0x94
4 Skipped trigger

DESYNCHED!!



Conclusions?

TTC emulator is correctly sending triggers to modules (module L1ID counter is increasing + XC lines checked)

Sometimes, in case of very stressful situation, 1 trigger is not sent by module (timeout → desynch)

Situation changes if first trigger is sent at a different time

(e.g. Test 1: BCs = 105, 111, 117, 123, 129, 136, ….. → no timeout
Test 2: BCs = 104, 110, 116, 122, 128, 135, …. → timeout)

To do next: test with different firmwares, test with occupancy, ????