QIE-reset signal phase shift test

OS

Methodology

- 2 ngFECs —> 2 ngCCMs (ngFEC1 & ngCCM1 -green, ngFEC2 & ngCCM2 - purple). Same mTCA crate (thus same AMC13 & BU clock injector). Probing the FE crate QIE reset signals while:
  - Case 1: Power cycling ngFEC1, keeping all other modules on.
  - Case 2: Power cycling ngCCM1, keeping other modules on.
  - Case 3: Connecting ngCCM1 and ngCCM2 to a single ngFEC (different SFP+ connectors) and power cycling the ngCCM1.

Case 1

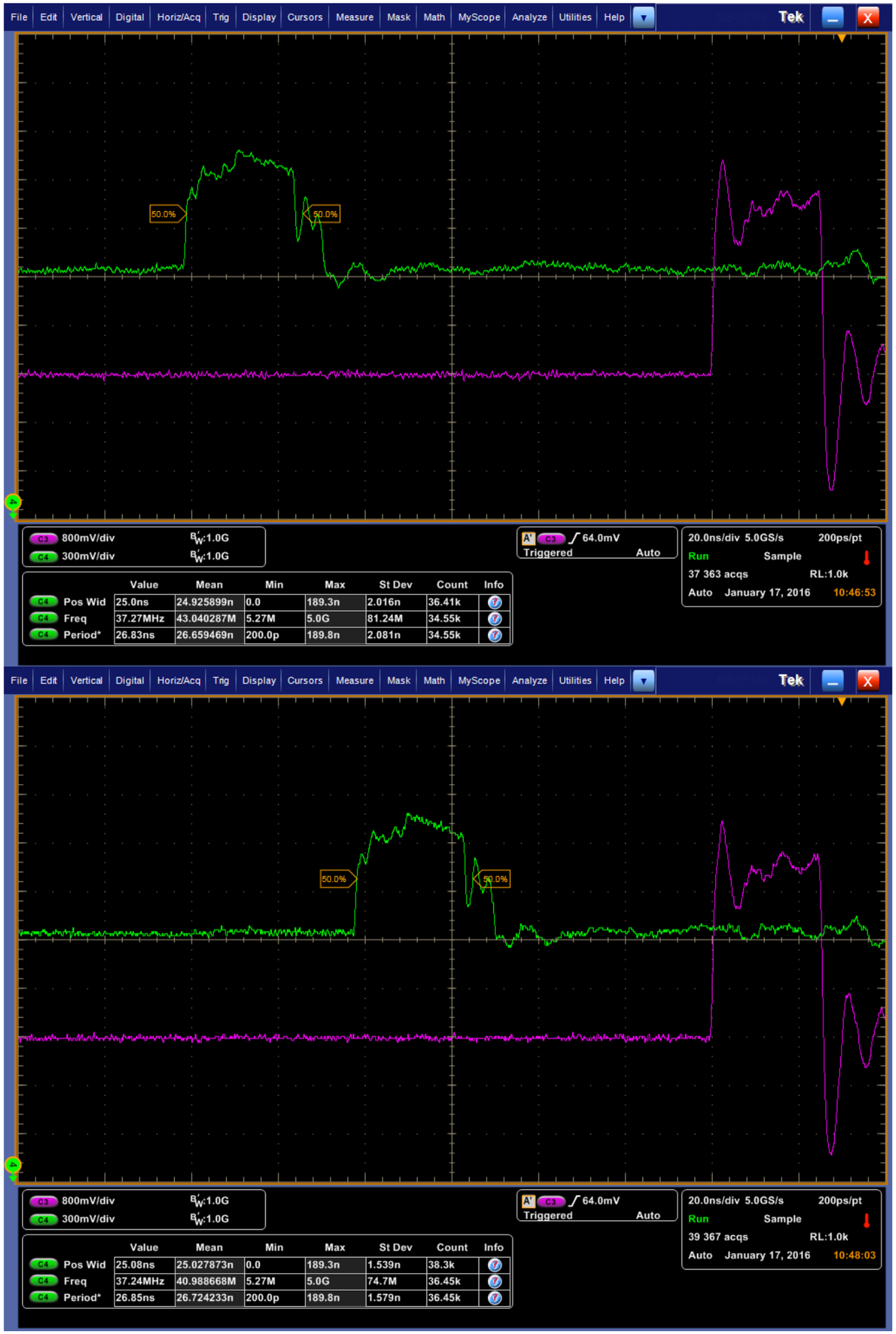
ngFEC 1

POWER CYCLE

ngFEC 2

ngCCM 1

ngCCM 2



Case 2

ngFEC 1

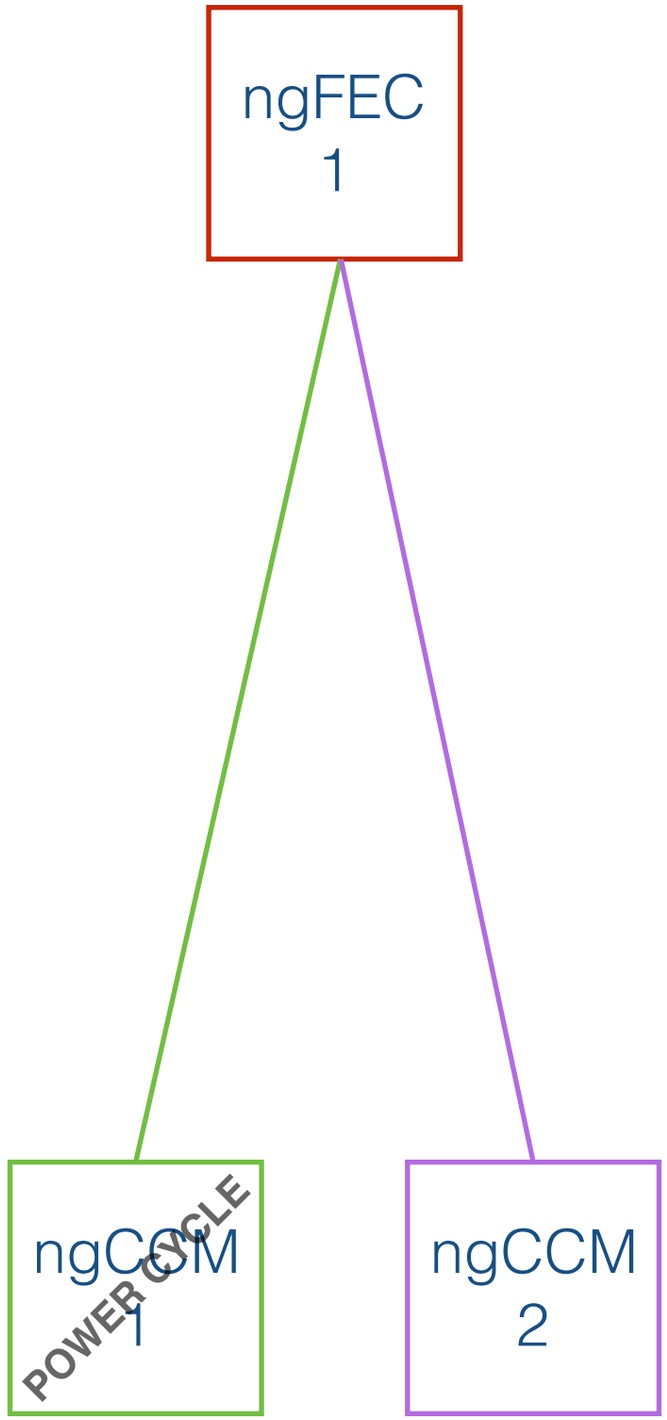
ngFEC 2

ngCCM 1

POWER CYCLE

ngCCM 2

Case 3


ngFEC
1
ngCCM
1
POWER CYCLE
ngCCM
2


File Edit Vertical Digital Horiz/Acq Trig Display Cursors Measure Mask Math MyScope Analyze Utilities Help
Tek
50.0%
50.0%
C3 800mV/div BW:1.0G
C4 300mV/div BW:1.0G
A' C3 64.0mV
Triggered Auto
20.0ns/div 5.0GS/s 200ps/pt
Run Sample
44 602 acqs RL:1.0k
Auto January 17, 2016 10:51:03
Value Mean Min Max St Dev Count Info
C4 Pos Wid 25.06ns 21.744366n 0.0 189.3n 8.452n 43.52k
C4 Freq 37.16MHz 159.1172M 5.26M 5.0G 387.9M 41.33k
C4 Period* 26.91ns 23.308552n 200.0p 190.1n 8.747n 41.33k
File Edit Vertical Digital Horiz/Acq Trig Display Cursors Measure Mask Math MyScope Analyze Utilities Help
Tek
50.0%
50.0%
C3 800mV/div BW:1.0G
C4 300mV/div BW:1.0G
A' C3 64.0mV
Triggered Auto
20.0ns/div 5.0GS/s 200ps/pt
Run Sample
46 706 acqs RL:1.0k
Auto January 17, 2016 10:52:15
Value Mean Min Max St Dev Count Info
C4 Pos Wid 25.05ns 21.523261n 0.0 190.9n 8.845n 45.61k
C4 Freq 37.36MHz 153.66051M 5.26M 5.0G 333.9M 43.21k
C4 Period* 26.77ns 23.163764n 200.0p 190.1n 9.267n 43.21k

Results

- Phase shifts are observed in all three scenarios: Restarting the ngFEC board can also trigger an additional shift due to the ngCCM-link restart.

- Possible solution on the ngFEC side: Updating the TTC-decoder module (can be directly taken from the uHTR firmware). I am currently writing my thesis, never had time to do it myself. Francesco & Tugba? if not, in 3 weeks I can do it.

- ngCCM side?