TDD Baseline Proposal
for 802.3dm (updated)

January 21st, 2025

Phoenix, AZ

Ahmad Chini, Broadcom Corporation

Claude Gauthier, NXP

Frank Wang, Realtek

Kamal Dalmia, Aviva Links

Ramanjit Ahuja, Onsemi

Steve Gorshe, Microchip

Comments

- Multiple TDD based options for asymmetric Ethernet link was previously presented to the 802.3dm task force[1,2].

- Many participants and attendees have since shown interest to use the 64/65 encoding and stay with 3GHz/6GHz baud rates and lower complexity FEC.

- This joint presentation consolidates the proposal into a single TDD based solution with a note that the authors are open to further constructive comments from the task force members.

- The parameters are also optimized for ease of implementations.

1- https://www.ieee802.org/3/dm/public/1124/Chini_3dm_01a_1124.pdf
2- https://www.ieee802.org/3/dm/public/1124/Dalmia_Goel_3dm_01a_11112024.pdf

TDD Baseline
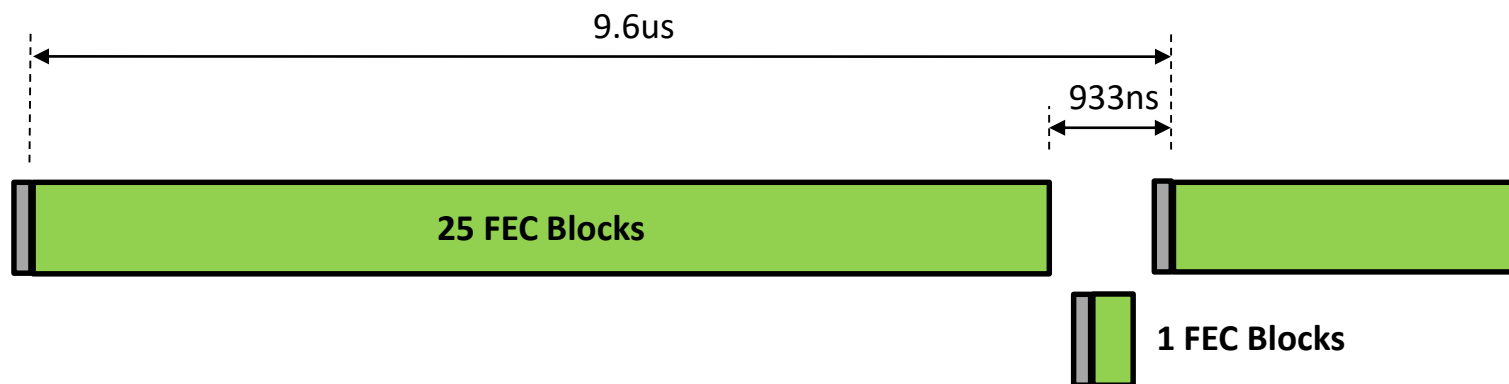
Ethernet Packets Boundary	64b/65b encoding
Speed Grades (@ xMII)	**Forward Link:** 2.5Gbps, 5Gbps & 10Gbps **Reverse Link:** 100Mbps (PAM2, 2.5Gbps line rate)
Modulation	**PAM2** for 2.5Gbps and 5Gbps **PAM4** for 10Gbps
Baud Rate	3.0Gsps for 2.5Gbps (forward and reverse link) 6.0Gsps for 5Gbps and 10Gbps (forward link)
TDD Cycle	9.6µs for ALL speed grades
FEC Block Period	346.66ns for ALL speed grades

TDD Baseline (cntd.)

FEC Type	**S=8bit Reed-Solomon Code** RS(130S, 122S), L=1 for 2.5Gbps (120Byte at XGMII, 15 x 65b+1b OAM) RS(130S, 122S), L=2 for 5.0Gbps (240Byte at XGMII, 30 x 65b+2b OAM) RS(130S, 122S), L=4 for 10Gbps (480Byte at XGMII, 60 x 65b+4b OAM) L= 2 and 4 shows number of interleaved RS codes
IBG (Inter Burst Gap) normal mode transmit gap	2 x 106.66ns
Total Refresh (Resync) Sequence	1120b PAM2 at 3Gsps 2240b PAM2 at 6Gsps
FIFO	**Forward link :** 292-Byte at 2.5Gbps 584-Byte at 5.0Gbps 1168-Byte at 10Gbps **Reverse link :** 116-Byte at 100Mbps

Let's define   T= One TDD Cycle / 360
Then note that:

            One FEC Block Period = 13T
            IBG = 4T
            Total Refresh Period = 14T

Thank you for your attention!

Questions?