5GBASE Backplane Baseline Proposal

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Supporters

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Agenda

- Define Baseline Proposal for 5G Backplane
- Covers Reconciliation Sublayer, PCS, PMA, Auto-Negotiation, EEE
- Does not cover PMD
- Does not cover registers but mostly should be same as 10GBASE-R

- Goal: Adopt set of baselines so we can get bulk of text started

5G PHY Performance Analysis

- Using channels from Calbone_CU4HDDsg_02_0915.pdf
- No RX DFE and no TX Equalization using 64/66 at 5.15625 Gb/s wu_CU4HDDSG_01_1115.pdf
- Investigating with COM model. Worst case may be static fixed TX setting

- 64/66 a good choice for 5G.

PMA and Clause 73 Auto-Negotiation

- **PCS**
  - Adopt Clause 49 PCS except run at half speed
  - Some timers may have to be adjusted
- **PMA**
  - Adopt Clause 51.1 to 51.3
  - No need to adopt clause 51.4 to 51.7 since we are not exposing the PMA
  - Loopback optional
  - Clause 72 training is not supported
- **Auto-Negotiation**
  - Adopt Clause 73 Auto-Negotiation
  - Technology Ability Field bit A12 to advertise 5GBASE-KR
  - Running Clause 73 Auto-Negotiation is mandatory prior to link
  - Disabling Clause 73 Auto-Negotiation for 5GBASE-R operation is outside the scope of the standard

Energy Efficient Ethernet

- State machines already defined in Clause 49
- Use numbers for BASE-KR PHYs

Table 78–2—Summary of the key EEE parameters for supported PHY

Protocol	T_s (µs)		T_q (µs)		T_r (µs)	
	Min	Max	Min	Max	Min	Max
100BASE-TX	200	220	20 000	22 000	200	220
1000BASE-T	182.0	202.0	20 000	24 000	198.0	218.2
1000BASE-KX	19.9	20.1	2 500	2 600	19.9	20.1
XGXS (XAUI)	19.9	20.1	2 500	2 600	19.9	20.1
10GBASE-KX4	19.9	20.1	2 500	2 600	19.9	20.1
10GBASE-KR	4.9	5.1	1 700	1 800	16.9	17.5
10GBASE-T	2.88	3.2	39.68	39.68	1.28	1.28

PHY or interface type	T_s (µs)		T_q (µs)		T_r (µs)	
	Min	Max	Min	Max	Min	Max
25GBASE-KR 25GBASE-CR	4.9	5.1	1 700	1 800	16.9	17.5
25GBASE-KR-S 25GBASE-CR-S	4.9	5.1	1 700	1 800	16.9	17.5

THANK YOU