Issues to resolve to evolve 802.3bz draft 0.1

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(UPDATED 6/22/15)

Overview of drafting process

- Scope of this presentation is Clause 126
- Began with 802.3bq D2.1 base text, except Clause 126.7 which is from Clause 55.7
  - Convert XLGMII 64 bit references to XGMII 32 bit references
  - Convert DSQ128 references to PAM16
  - Convert PCS to 64/65b + LDPC coding, & frequency scale PMA electricals per motion (Shirani_3bz_02_0515.pdf)
    - Includes startup timing
  - Modify Autoneg and infofield parameter exchanges per Lo proposal (already in bq base)
  - Modify equations in 126.7 per zimmerman_3bz_0515.pdf
- Carry forward all Clause 55 features included in bq.
- Add Editor's notes on features to be decided

Two PHYs, Nomenclature and Scalings

- Two PHYs in the draft: 2.5GBASE-T and 5GBASE-T
  - Referred to separately in text requirements
    - e.g., 2.5GBASE-T or 5GBASE-T PHYs shall…
  - Except where a state or control for shared functionality is required
    - e.g., DISABLE_2.5/5GBASE-T_TRANSMITTER
- For parameters which scale with the PHYs data rate, the parameter S is used for scaling
  - *S* = 0.5 for 2.5GBASE-T, and *S* = 1 for 5GBASE-T

Timing Issues to be Resolved

- *Startup timing stays as Cl 55*
  - *Transition counter start values adjusted by ½ to ¼ from Cl 55, to maintain timing in wall-clock time*
- *lfer_timer interval is assumed scaled with bit rate in this draft*
  - *Should we keep it constant 125us?*
  - *802.3bq D2.1 is inconsistent on this issue and needs a comment to fix*
- *Only loop-timed Delete non-loop timed option*
  - *Currently deleted in the text, as in bq, but Clause 55 text is shown in strikeout*

EEE Issues *(UPDATED)*

- Need to accept fast retrain functionality
  - Assumed accepted, in the text
  - Counters are scaled /2 and /4 from 10GBASE-T
- EEE timing changes in bq were carried into bz
  - SLEEP reduced to 6 LDPC frames (from 9 in Cl 55)
  - REFRESH to 6 LDPC frames (from 4 in Cl 55)
- ~~LPI sleep and wake times (Clause 78) were scaled with frame time, not bit time~~
- *UPDATE: LPI scaled with bit time, meaning 2X LDPC frames in new clause 126 context*
  - *ALERT and Link Failure signal were explicitly defined*

Training issues

- Periodic Training Sequence is incomplete
  - Existing Clause 55 text is nonfunctional, to be deleted by maintenance included in 802.3bq
  - No autonegotiation bit allocated in 802.3bz motions
- Need to determine whether periodic reinitialization is:
  - Deleted (as 10G amended), and no bit allocated
  - Per 802.3-2012 Clause 55 (broken), and bit wasted
  - Modified (as in draft Clause 113), and bit allocated
- Editor's recommendation - delete text

PMA Electrical Issues

- Most PMA electrical specifications scale nicely with symbol rate
- A few may need adjustment (shirani_3bz_01_0615.pdf)
  - Transmitter droop specification –
    - Controlled by highpass corner of transformer – keep same time constant as 10G (shirani slide 11)
  - Transmit SFDR specification –
    - Recover some implementation margin here (dominated by echo canceller needs in 10G) (shirani slide 11)
  - Out of band transmit PSD mask-
    - Relaxing rolloff will better enable multi-speed PHYs (shirani slides 5&6)
- Will need motions to accept

PMA Rejection of External Noise

- Currently draft proposes Clause 55/113 alien crosstalk rejection test
  - Summed wideband AWGN noise source
  - Levels and bandwidths are TBD
- Currently draft proposes Clause 113 rejection of EM fields text and references Clause 113A cable clamp
  - Refinement of cable clamp from Clauses 40 & 55
  - 802.3bq text requires some genericizing

Link Segment Related

- Frequency extensions of internal parameters
  - IL, RL, NEXT, FEXT beyond 100 MHz Cat5E
  - Do those matter for 2.5GBASE-T
- Alien Crosstalk levels
- Alien Crosstalk Margin Computation, or other sliding scale test

Additional (UPDATED)

- *Latency specifications are TBD.*