802.3bq Editors Report

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Editorial Team (June 2014)

- George Zimmerman, Chief Editor
  - Clause 98.x, PHY specifications, excluding 98.7
- Chris Diminico, Editor
  - Clause 98.7, Link Segment Characteristics
- Valerie Maguire, Editor
  - Front matter, Clause 1, Definitions
- Hugh Barrass, now TBD
  - Clause 45 Management, Clause 28 Autoneg
  - Clause 78 Energy Efficient Ethernet
  - First cut on Clauses 98.2 & 98.3 Architecture & FEC sublayer (similar to Clause 91 FEC)

Hugh Barrass will be missed in .3bq

- First, a friend and a great contributor
- Visionary behind architectural alignment with 40G
  - Unfortunately he passed before he could draft a first cut
  - Looking for volunteers familiar with Clause 91 and 40G architecture to help first cut writing
- Passion for Energy Efficient Ethernet
  - His ideas would push us, precisely because he was NOT a PHY circuit guy
  - Understood EEE interactions behind the PHY were as or more important

Editorial Responsibilities

Clause	Amendments	Owner
1	New normative references, definitions, abbreviations	Val
28	Auto-Negotiation support for new PHY	Val
	Annex 28b, 28C, 28D	Val
30	Add new management objects/attributes	TBD
45	Add new registers/bits	TBD
78	Add new Energy Efficient PHYs	TBD
80	Add new 40 Gb/s Ethernet PHY, EEE primitives	Val
81	XLGMII - any change?	
82	EEE signaling and state machines	TBD
83	XLAUI - any change? (add base-t to diagrams)	
98	40GBASE-T 98.1-.6	George
	98.7 channel	Chris
	.8 MDI	George
	.9 Environmental	George

Big ticket items: Clause 98 (except 98.7)

- Adopted Strawman based on 10GBASE-T
  - Copied in Clause 55 text as a starting point
    - Gives us a starting outline
  - Modified baud, frequencies, references to 10Gbps Ethernet
  - Tests will need modification
  - State machines so far untouched
  - Refer to Clause 55 for reference if you're proposing changes
    - Some subclauses untouched
- Adopted FEC sublayer proposal and architecture
  - Reformulation of former PCS section in progress
- Several proposals at this meeting to resolve test modes and conversion of electrical specs to 40G

Technical Items to work on

- Energy Efficient modes
  - Going beyond just LPI / refresh signalling
  - Fast wake
  - Deep sleep?
- Startup timing & modifications
- Power back off
- Noise and EM immunity tests
  - Alien crosstalk
  - Cable clamp extension or replacement

Subclauses with Minor Changes

- Subclauses 55.2 & 55.3 (service primitives & interfaces & PCS)
  - To be rewritten as 98.2 & 98.3 to reflect new architectural model (Hugh was to do 98.3)
- Subclause 55.4 PMA sublayer will require minor adjustments but can be adopted and later changed
- Subclause 55.5 PMA electricals requires scaling for new frequencies
  - Other adjustments proposed

Subclauses to adopt untouched

- Adopt 55.6 Management Interfaces as 98.6, including subclauses
- Adopt 55.9 Environmental Specifications as 98.9, including subclauses
- Adopt 55.10 PHY labeling untouched, as 98.10
  - Remove Fast retrain support from list if we later delete it from the rest of the spec
- Adopt 55.11 Delay Constraints untouched as 98.11 with appropriate replacement of XGMII reference point to a 40G architecture
  - Consistent with Motion #5 passed at May 2014 meeting

Thorny Administrative Stuff - Objectives

- The text of our objectives is inexact, and differs from the past:
- We say:
  - “Preserve the 802.3 / Ethernet frame format utlilizing the 802.3 MAC”
- Clause 55 and others worded it:
  - “Preserve the IEEE 802.3/Ethernet frame format at the MAC client service interface”.
- Recommend aligning with Clause 55 text

Low hanging fruit – Clause 98 EEE

- EEE (various subclauses)
  - Support for the basics - LPI
  - Adopt 802.3bq support of LPI as in the clause 55 base
    - Scale timing with bit / LDPC frame timing
    - Address other modifications to timing, parameter adjustments and additional modes as they are propose

Low hanging fruit – Clause 98.4 PMA

- Need a basis for PMA text
  - Adopt Clause 55.4, PMA sublayer as 98.4, with license to the editor to implement necessary modifications to replace PCS/PMA interface with FEC/PMA interface
    - Note this adopts the PMA signalling, and state machines, which may be modified by future decisions, such as possibly deleting fast retrain or changing startup timing
    - Startup timing is defined independent of bit times

Low hanging fruit – Clause 98.5 PMA electrical

- Basis for PMA electrical specifications:
  - Recommend adopt Clause 55.5 PMA electrical specifications as 98.5, including test modes and test fixtures as baseline specifications,
    - Modifications will follow
- Transmit linearity (98.5.2 test mode 4)
  - Scale tones by 4X in frequency
- Output droop times (98.5.3.1)
  - Scale output droop times from 10ns to 2.5ns
- Other modifications will follow

Low hanging fruit – Clause 98.5 PMA electrical (TX)

- Transmit timing jitter 98.5.3.3
  - Scale by 4X from 5.5psec to 1.3psec
  - Other changes, e.g., jitter definition, may follow
- Transmit PSD mask & power level 98.5.3.4
  - Eqn 55-9, 55-10, Fig 55-38: Adjust -10 dB, frequency stretch 4X both max & min mask (per Broadcom contribution to ad hoc)
  - Power level from -0.8 to +1.2 dBm nominal (w/0dB backoff)
- Transmit clock frequency 98.5.3.5
  - Scale to 3200MHz, maintain +/- 50ppm

Low hanging fruit: 98.5 PMA electrical (RX)

- Receiver frequency tolerance 98.5.4.2
  - Scale frequency from 800 MHz to 3200 MHz
- Alien Crosstalk noise rejection 98.5.4.4
  - Adjust link segment to 30 meters
  - Adjust frequency of noise source to 10 Mhz to 2000 MHz
  - Replace noise level with TBD

Items to wait until further definition of other clauses

- Definitions (Clause 1)
- Management Registers (Clause 30, 45)
- Autonegotiation bit modifications (Clause 28)
- Clause 98.12 – PICS
- All these are much more easily done after the rest of the document is full

Clause 98.7 – Link Segment Spec

- Lots of work done in cabling standards bodies
  - Different than 10GBASE-T, hopefully less complicated
  - Editor to propose a baseline structure this meeting
- Break now to presentation by Chris Diminico on Link Segment Specifications