

802.3an Task Force

Minutes of the Interim Meeting held in Ottawa, Canada on Sept. 29, 30 and Oct. 1, 2004

Wednesday, September 29

The meeting was called to order at 8:30 AM by the Chair of the Task Force, Brad Booth. George Eisler volunteered to serve as the recording secretary for this meeting.

After a round of introductions by attendees, the Chair reviewed the operating rules of the Task Force. At 8:50 AM the Chair read the IEEE SA Standards Board Bylaws on Patents in Standards as follows:

6. Patents

IEEE standards may include the known use of essential patents and patent applications provided the IEEE receives assurance from the patent holder or applicant with respect to patents whose infringement is, or in the case of patent applications, potential future infringement the applicant asserts will be, unavoidable in a compliant implementation of either mandatory or optional portions of the standard [essential patents]. This assurance shall be provided without coercion and prior to approval of the standard (or reaffirmation when a patent or patent application becomes known after initial approval of the standard). This assurance shall be a letter that is in the form of either:

a) A general disclaimer to the effect that the patentee will not enforce any of its present or future patent(s) whose use would be required to implement either mandatory or optional portions of the proposed IEEE standard against any person or entity complying with the standard; or

b) A statement that a license for such implementation will be made available without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination.

This assurance shall apply, at a minimum, from the date of the standard's approval to the date of the standard's withdrawal and is irrevocable during that period.

The chair next reviewed topics inappropriate for discussion during IEEE meetings as follows:

Don't discuss licensing terms or conditions

Don't discuss product pricing, territorial restrictions or market share

Don't discuss ongoing litigation or threatened litigation

Don't be silent if inappropriate topics are discussed Do formally object

The Chair then reviewed the Standards process and noted the progress of the Task Force on the projected time-line.

The Objectives of the 802.3an project were next reviewed, as follows:

P802.3an Objectives

- Preserve the 802.3/Ethernet frame format at the MAC Client service interface
- Preserve min. and max. frame size of current 802.3 Std.
- Support full duplex operation only
- Support star-wired local area networks using point-to-point links and structured cabling topologies
- Support a speed of 10.000 Gb/s at the MAC/PLS service interface
- Select copper media from ISO/IEC 11801:2002, with any appropriate augmentation to be developed through work of 802.3 in conjunction with SC25/WG3
- Support Clause 28 auto-negotiation
- Support coexistence with 802.3af
- To not support 802.3ah (EFM) OAM unidirectional operation
- Meet CISPR/FCC Class A
- Support operation over 4-connector structured 4-pair, twisted-pair copper cabling for all supported distances and Classes
- Define a single 10 Gb/s PHY that would support links of:
 - At least 100 m on four-pair Class F balanced copper cabling
 - At least 55 m to 100 m on four-pair Class E balanced copper cabling
- Support a BER of 10^{-12} on all supported distances and Classes

Geoff Thompson asked for clarification of the Objective relating to coexistence with 802.3af powering over 10GBASE-T. The request was noted but no action was taken.

The agenda as presented was adopted by voice by the Task Force.

Presentations commenced in the order of the agenda. Each presentation was followed by a question and answer period and general comments from the floor.

Sterling Vaden - Liaison from TIA 42.7

Sanjay Kasturia, Editor - Status and comments on generating the Draft 10GBASE-T Standard

Scott Powell - Four Channel Sampling

Sailesh Rao – Is 800 Msps the Optimum Symbol Rate?

The meeting then recessed for lunch and presentations resumed at 1 PM.

William Jones – On the Need for Precoder Updates in Data Mode

Gottfried Ungerboeck – Coding and Modulation:128-DSQ+LDPC

Jose Tellado (for Dariush Dabiri) – Comparative Study of Proposed LDPC Codes

Chine-Hsin Lee – LDPC Evaluation

Katsutoshi Seki – Performance Evaluation of Low-latency LDPC Code

Brett McClennan – 800 Mhz 12D 12PAM Mapping and Frame Structure Proposal

Sailesh Rao – Update on LDPC 4D-PAM8 Proposal

The meeting adjourned for the day at 5:40 PM

Thursday, September 30

Presentations resumed at 8:30 AM

Keshab Parhi – Pipelining TH Precoders

Jose Tellado – Benefits of 800Mbaud PHY

Sailesh Rao – Issues with the PAM12 Proposal and Derivatives

The meeting recessed for lunch and afterwards resumed with presentations

Pat Thaler – Improving Auto-Negotiation Efficiency – Next Page Extension

Katsutoshi Seki – Startup Protocol

Following the presentations and discussion, the Chair proceeded with a series of straw polls:

- Those in favor of adopting the PHY baseline proposal in:
 - rao_2_0904.pdf: 9
 - tellado_1_0904.pdf: 30
 - Undecided: 14

Constellation

- Those in favor of adopting PAM8 as the baseline constellation.

-Yes: 10

-Undecided: 16

•Those in favor of adopting PAM12 as the baseline constellation.

-Y: 23

-U: 13

•Those in favor of adopting 128-DSQ as the baseline constellation.

-Y: 8

-U: 22

Constellation

•Those in favor of adopting PAM12 as the baseline constellation.

-Y: 30

-N: 9

•Those in favor of adopting PAM8 as the baseline constellation.

-Y: 10

-N: 31

•Those in favor of adopting 128-DSQ as the baseline constellation.

-Y: 13

-N: 9

LDPC

•Those in favor of an LDPC-2048 family as the baseline LDPC.

-Y: 6

-N: 24

•Those in favor of an LDPC-1024 family as the baseline LDPC.

-Y: 34

-N: 6

T. Dineen asked the Chair if the Task Force would consider taking a vote on the straw polls that achieved 75% majority. The Chair offered to accept a motion from the floor asking if the Task Force was ready to consider Motions on the Straw Poll subjects.

- Move that the Task Force take motions on straw polls that have gained consensus.
 - M: T. Dineen
 - S: H. Barrass
 - Procedural (>50%)
 - TF: Y: 25 N: 17 A:
 - Motion PASSES

The following technical motions were considered;

Constellation

•Task Force adopt PAM12 as the baseline constellation.

-M: T. Dineen

-S: G. Eisler

-Technical ($\geq 75\%$)
-TF: Y: 34 N: 10 A: 14
-3: Y: 16 N: 2 A: 8
-Motion PASSES

LDPC

•Task Force adopt the LDPC-1024 family as the baseline LDPC.
-M: T. Dineen
-S: G. Zimmerman
-Technical ($\geq 75\%$)
-TF: Y: 32 N: 15 A: 9
-3: Y: 15 N: 5 A: 4
-Motion FAILS

Straw polls were then taken on the Auto-negotiation proposals:

Auto-negotiation

•Adopt thaler_1_0904.pdf as a baseline for next page extension for 802.3an auto-negotiation.
-Y: 23
-N: 0

•Adopt tighter FLP burst to burst tolerance for 802.3an (with 8 us in presentation corrected to 8 ms).
-Y: 25
-N: 5

Motions resumed:

Auto-negotiation

•Move that the Task Force adopt next page extension of thaler_1_0904.pdf as the baseline for 802.3an auto-negotiation next pages.
-M: H. Barrass
-S: P. Thaler
-Technical ($\geq 75\%$)
-TF: Y: 23 N: 5 A: 21
-3: Y: 16 N: 4 A: 7
-Motion PASSES

Comment resolution activity resumed until adjournment at 6:30 PM

Friday, October 1

The Task Force was called to order at 8:30 AM and resumed with comment resolution. A comment regarding the Objective referring to Cat 6 augmented cabling led to the following Motion:

Augmented Class E

•Move that the Task Force adopt the following Objective and forward for approval to the 802.3 WG:

–“100 m on four pair Augmented Class E balanced copper cabling as specified in Clause 55.7.”

–M: T. Cobb

–S: R. Mei

–Technical ($\geq 75\%$)

–TF: Y: 19 N: 6 A: 19

–3: Y: 11 N: 4 A: 4

–PASSES

[Editor to add note that the above text will be added upon approval of the objective by the 802.3 WG.](#)

The comment resolution activity was thereafter concluded and the following further motions were offered:

Modulation, Equalization, and Coding

Move that 10GBASE-T adopt:

–800 Msymbols/s modulation rate

–Small number of selectable precoders specified by rational transfer functions

–4 or less LDPC code blocks per 10GBASE-T PCS frame

–Moved by: Scott Powell

–Seconded by: J. Tellado

–Technical ($\geq 75\%$)

–TF Members: Y: 38 N: 11 A: 5

–802.3 Voters: Y: 21 N: 1 A: 4

–PASSES

–After Motion to Divide: (S. Rao, J. Jover) Y: 16 N: 28 (Fails)

64B/65B

•Move that the Task Force adopt 64B/65B as the method of PCS encapsulation as the basis for further work.

–M: J. Tellado

–S: H. Barrass

–Technical ($\geq 75\%$)

–TF: Y: 37 N: 8 A: 9

–3: Y: 21 N: 2 A: 3

–Motion PASSES

THP adaption

•Move that the Task Force adopt that the THP shall not be changed after start-up.

-M: J. Tellado

-S: S. Powell

-Technical ($\geq 75\%$)

-TF: Y: acclamation N: A:

-.3: Y: acclamation N: A:

-Motion PASSES

FLP

•Move that the Task Force adopt transmit FLP burst to FLP burst timing of the range 8.0 to 8.5 ms for 802.3an.

-M: P. Thaler

-S: G. Zimmerman

-Technical ($\geq 75\%$)

-TF: Y: 24 N: 3 A: 17

-.3: Y: 14 N: 3 A: 6

-Motion PASSES

12D PAM12 mapping

•Move that the Task Force adopt as a baseline the 12D PAM12 mapping described on pages 6-10 in mcclellan_1_0904.pdf.

-M: B. McClellan

-S: G. Zimmerman

-Technical ($\geq 75\%$)

-TF: Y: 30 N: 14 A: 9

-.3: Y: 17 N: 3 A: 5

-Motion FAILS

Precoder

•Move that the Task Force adopt at most 8 precoding functions.

-M: S. Powell

-S: J. Tellado

-Technical ($\geq 75\%$)

-TF: Y: N: A:

-.3: Y: N: A:

-Motion Passes/Fails (Postponed)

•Motion to postpone until November plenary.

-M: G. Zimmerman, S: C. Di Minico

-TF: Y: 27 N: 11 A: 11

-Procedural ($> 50\%$)

-Motion PASSES

D1.1

•Move that the Editor generate D1.1 for Task Force review.

–M: H. Barrass

–S: M. McConnell

–Procedural (>50%)

–TF: Y: acclamation N: A:

The Chair announced and sought general agreement on interim meetings:

Vancouver, BC during the week of January 24th,2005 (potential BICSI conflict)

Edinburgh, Scotland during May 2005, dates TBD

Adjournment motion:

•M: H. Barrass

•S: M. McConnell

Passed by acclimation

The meeting adjourned at 12 Noon.

George Eisler