

Unconfirmed Meeting Minutes: IEEE P802.3bq 40GBASE-T Task Force
May 12-13, 2014
Norfolk, Virginia, USA

Prepared by George Zimmerman

IEEE P802.3bq 40GBASE-T Task Force meeting convened at 01:00 PM, Monday, May 12, 2014 by David Chalupsky, 802.3bq Task Force Chair.

Attendance is listed in Appendix A

ADMINISTRATIVE MATTERS

Presentation: [agenda_3bq_01_0514.pdf](#)

Presenter: Dave Chalupsky, Chair.

The Chair called for introductions and affiliations.

The Chair reviewed the agenda. Mr. Chalupsky turned to presentation agenda_3bq_01_0514.pdf and reviewed the schedule of presentations for the meeting. The Chair noted that he had received a request for Mr. Barrass to reprise his presentation from the July 2013 meeting discussing architectural issues, and asked to insert this into the agenda for Tuesday morning. There was no objection. (This change resulted in [agenda_3bq_01a_0514](#))

Motion #1: Approve the agenda from [agenda_3bq_01a_0514.pdf](#),

M: Pete Cibula

S: Paul Vanderlaan

Approved by voice vote without opposition (Procedural > 50%)

Motion #2: Approve the minutes from the March meeting

(http://www.ieee802.org/3/bq/public/mar14/unconfirmed_minutes_3bq_0314.pdf)

M: Theo Brillhart

S: Bob Wagner

Approved by voice vote without opposition (Procedural > 50%)

The Chair then resumed the review of presentation agenda_3bq_01_0514.pdf:

- Mr. Chalupsky asked if anyone was attending from the press including those who would run a public blog on this meeting – there were no indications from the group.
- Mr. Chalupsky noted that there should be no recording or photography without permission.

Mr. Chalupsky reviewed the goals for the meeting, access to the reflector and website, and ground rules.

Attendance, Mr. Chalupsky advised the group of the IEEE meeting attendance tool and procedures, including both the attendance book and the web attendance tracking tool.

IEEE Patent Policy, at 1:28 PM, Mr. Chalupsky showed slides 0 through 4 patent policy from [agenda 3bq_01_0514.pdf](#). Mr. Chalupsky showed slide 0 and read aloud slides 1 through 4. Mr. Chalupsky made the call for potentially essential patents at 1:30PM, and none responded. Mr. Chalupsky then completed the reading of slide #4.

Mr. Chalupsky then continued review of the presentation, Big Ticket items for this meeting, and a possible project timeline.

LIAISONS

The Chair moved to liaisons, and noted that there were no official letters, but noted that a draft of the ISO/IEC Draft Technical Report (ISO/IEC Draft Technical Report 11801-99-1), last updated January 15, 2014, and a newly updated draft (as of April 22, 2014) of the TIA Category 8 specification (Draft 1.0a of ANSI/TIA-568-C.2-1) are posted to the private area of the Task Force website.

The Chair invited Wayne Larsen, Chair of TIA TR42.7 for comments describing changes to the Category 8 draft. Mr. Larsen said that the channel requirements had not changed, and the draft had been cleaned up in preparation for a mock ballot.

The Chair completed review of the presentation noting the project objectives which were unchanged from the prior meeting, and since the group has been in Task Force.

PRESENTATIONS

The Chair then moved to the presentations for the meeting. (Secretary's note – where significant group discussion occurred, particularly involving future actions, a summary of any follow-on points is provided. Abstracts are given as a guide to the presentation material, where possible, these are as provided by authors.)

- Title:** Channel Modeling Ad Hoc Report ([cibula 3bq_01_0514.pdf](#))
- Abstract:** Report of activities of the 802.3bq channel modeling ad hoc since the March Plenary meeting. The channel modeling ad hoc held 3 conference calls since the March plenary, including a joint meeting with the PHY Baseline Ad Hoc. The main activity reported were refinements to host board background noise measurements and observations on cabling dynamics. Channel ad hoc meetings will be approximately every other Tuesday; with the next meeting scheduled for Tuesday, May 20 at 8AM Pacific Time.
- Presenter:** Pete Cibula, Intel, Chair 802.3bq channel modeling ad hoc
- Discussion:** There were no questions for the presenter.

At 1:43PM Mr. Chalupsky assumed secretary role so Mr. Zimmerman could present.

- Title:** PHY Baseline Proposal Ad Hoc Report ([zimmerman 3bq_01_0514.pdf](#))
- Abstract:** Two PHY Baseline Proposal Ad Hoc meetings were held between the March Interim meeting and the May Interim. This contribution reports on

those meetings, summarizes the contributions heard, and discusses next steps towards a PHY Baseline Proposal.

Presenter: George Zimmerman, CME Consulting / Aquantia & Commscope, Chair
802.3bq PHY Baseline Proposal ad hoc

Discussion: There were no questions for the presenter.

At 1:53 PM, Mr. Zimmerman re-assumed secretary role.

Title: An Assessment of Real-Time Background Noise in 10GBASE-T Systems
([cibula_3bq_02_0514.pdf](#))

Abstract: This presentation updates results previously presented and includes time domain measurements of peak noise events on host boards. Prior contributions have focused on characterizing system background noise power using frequency-domain measurement techniques. This contribution describes a time-domain measurement methodology and results for system noise obtained using that methodology, focusing on both common-mode and difference-mode noise characteristics.

Presenter: Peter Cibula, Intel

Discussion: There was some discussion of the noise model and whether further measurements were needed. There were no requests for further measurements.

A participant noted that the presented time domain measurements generally showed that the noise lacked short-term transients, and therefore the spectrum analyzer measurements were reliable. Another participant asked for, and Mr. Cibula agreed to provide the power spectral values (frequency and dBm/Hz) from his spectrum analyzer measurements so that PHY vendors could incorporate the host board noise model into their internal channel models, using whatever (implementer-dependent) front-end filtering they chose. The group thanked Mr. Cibula for his contributions.

Title: Cable dynamics an End User Perspective ([chalupsky_3bq_01_0514.pdf](#))

Abstract: Mechanical movement of a physical link can result a time-varying channel response, which in turn can affect the Ethernet physical layer performance. This presentation discusses cases where such movement exists during network operation, the user's expected result, and a call for additional information.

Presenter: David Chalupsky, Intel

Co-Author: Pete Cibula, Intel

Discussion: There was some discussion, but none presented any existing cabling specifications or folklore for time-dependent behavior of cabling channel transmission characteristics.

BREAK AT 2:46 PM TO RECONVENE AT 3:29 PM

Title: 40GBASE-T RJ45 ICM ([chiang_3bq_01a_0514.pdf](#))
Abstract: Presenting test data on Foxconn's 40GBASE-T ICM.
Presenter: Jerry Chiang, Foxconn Interconnect Technology
Co-Authors: Roger Xu, Anna An, Foxconn Interconnect Technology
Discussion: The presenter noted that they would make S-parameter files available to the ad hoc, likely within a few weeks.

Title: Relative Power of new channel data ([rossbach_3bq_01_0514.pdf](#))
Abstract: The presentation applies the concept of relative power to new channel data which has been submitted late 2013 and during 2014. It demonstrates the positive impact of the improvements in cabling and the isolation path to the relative power consumption
Presenter: Martin Rossbach, Nexans
Discussion: A participant asked whether the measurements were scaled to specification, as had been previously discussed, and the presenter indicated they had not. Another participant indicated appreciation for a presentation attempting to update how cabling changes have affected power.

DISCUSSION

Having completed the scheduled presentation for the day, the Chair then entertained discussion.

Discussion initially focused on whether the group might send an informal communication to the ISO cabling group asking about tests or specifications for the time rate of change of return loss during cable bend. There was no consensus on whether or what to put to forward to ISO.

THE MEETING RECESSED FOR THE DAY AT 4:55PM

THE MEETING RECONVENED TUESDAY MAY 13, 2014 AT 9:24AM

The chair briefly reviewed the agenda presentation, particularly reviewing the following items:

- Mr. Chalupsky asked if anyone was attending from the press including those who would run a public blog on this meeting – there were no indications from the group.
- Mr. Chalupsky noted that there should be no recording or photography without permission.

Mr. Chalupsky reviewed the goals for the meeting, access to the reflector and website, and ground rules.

Attendance, Mr. Chalupsky advised the group of the IEEE meeting attendance tool and procedures, including both the attendance book and the web attendance tracking tool.

IEEE Patent Policy, at **9:27 AM**, Mr. Chalupsky showed slides 0 through 4 patent policy from [agenda 3bq_01a_0514.pdf](#). Mr. Chalupsky showed slide 0 and read aloud slides 1 through 4. Mr. Chalupsky made the call for potentially essential patents at **9:28AM**, and none responded. Mr. Chalupsky then completed the reading of slide #4.

As previously announced, the Chair entertained Mr. Barrass to reprise his contribution from July 2013, as it was relevant to some of the issues being discussed at this meeting.

Title: Architectural issues for 40GBASE-T ([barrass 3bq_01_0713.pdf](#))

Abstract: This presentation discusses a number of architectural issues relating to the segmentation of the PCS and PMA and discussed how they would relate both to prior BASE-T PHYs and to the 40/100G architecture in the 802.3 standard. Architectural options are suggested, and discussed relative to impacts on the 40/100G architecture, Energy Efficient Ethernet and (possible) Fast Retrain.

Presenter: Hugh Barrass, Cisco Systems

Discussion: There was significant discussion. A participant voiced (and the presenter agreed) that the decision on sub layer partitions would best be made before text was drafted, and therefore at this meeting. A participant noted that participants, especially PHY designers, should think about what loopback points they may need under the new partitioning. Another participant requested that changes in the text due to the architecture be diagrammed when the text was presented. Further discussion revealed that the PHY baseline proposal needs to focus on whether or not to support a fast retrain functionality in 40GBASE-T.

Title: Delay Constraint Considerations for 40GBASE-T
([chalupsky 3bq_02_0514.pdf](#))

Abstract: Propose to keep the delay constraints not higher than 25600BT in 40GBASE-T

Presenter: David Chalupsky, Intel

Discussion: A participant noted that from a systems OEM perspective, he would agree with the presenter, and would like to see the delay constraint less than 25600 BT, preferably 16000BT, in keeping with a maximum length frame.

Title: Delay Constraints in 40GBASE-T ([wu 3bq 01a 0514.pdf](#))

Abstract: Propose to keep the delay constraints not lower than 25600BT in 40GBASE-T

Presenter: Peter Wu, Marvell

Co-author: William Lo, Marvell

Discussion:

At 10:21AM, Mr. Chalupsky assumed secretary role so Mr. Zimmerman could present.

Title: Delay Constraints in 40GBASE-T ([zimmerman 3bq 02 0514.pdf](#))

Abstract: Propose to maintain the 25600BT delay constraint in 40GBASE-T, decreasing delay time by a factor of 4 from 10GBASE-T

Presenter: George Zimmerman, CME Consulting / Aquantia

Co-author: Paul Langner, Aquantia

Discussion: There were clarifying questions on the division between coding latency and signal processing latency. One participant noted that there was a single point of overlap between this and the previous presentations, that being adopting a delay constraint of 25600 BT.

At 10:54 AM, Mr. Zimmerman re-assumed secretary role.

BREAK AT 10:54 AM AND RECONVENED AT 11:15 AM.

Title: 40GBASE-T Uncoded Bits Protection Proposal ([lo 3bq 01 0514.pdf](#))

Abstract: Present a scheme to protect uncoded bits while fitting into existing LDPC, DSQ, and 3200 Mbaud/s

Presenter: William Lo, Marvell

Discussion: A participant asked for clarification on how the uncoded bits were mapped into the RS code.

At 11:31AM, Mr. Chalupsky assumed secretary role so Mr. Zimmerman could present.

Title: Update and proposal for DSQ128+ for Coding the Unprotected Bits ([langner 3bq 01 0514.pdf](#))

Abstract: Proposal to baseline coding the unprotected bits using the DSQ128+ technique. This efficient technique employs a Reed Solomon code, using

a 256 square constellation on the last 8 symbols of the frame. Update will include considerations of error detection.

Presenter: George Zimmerman, CME Consulting / Aquantia & Commscope

Co-Author: Paul Langner, Aquantia

Discussion: There were several questions of clarification and discussion of whether there was additional degradation due to the changes in modulation. The presenter suggested that there were no additional degradations noted in testing. The presenter offered a correction to slide 5 of the presentation, to be posted as an "01a" contribution.

At 12:03 PM, Mr. Zimmerman re-assumed secretary role.

Title: Uncoded Bits Protection Proposal ([bliss_3bq_01_0514.pdf](#))

Abstract: Present a scheme to protect uncoded bits....

Presenter: Will Bliss, Broadcom

Discussion: There were questions of clarification for the presenter, asked and answered.

BREAK AT 12:30 PM AND RECONVENED AT 2:05 PM

DISCUSSION, MOTIONS & STRAW POLLS

Having concluded the presentations for the meeting, the Chair then moved to discussion, motions and (additional) straw polls.

The group heard some discussion on the various proposals for protecting the unprotected bits. The group discussed the differences and took several straw polls to narrow the choices.

Straw Poll #1: Vote for as many as you like (Chicago Rules)

For the unprotected bits:

- a. Do Nothing
- b. Study the problem more = 6
- c. Accept Bliss = 8
- d. Accept Langner = 8
- e. Accept Lo = 9
- f. Accept something else? = 2

22 in the room

Straw Poll #2: Vote for as many as you like (Chicago Rules)

For the unprotected bits, I am opposed to:

- a. Do Nothing = 13
- b. Study the problem more = 4
- c. Accept Bliss = 0
- d. Accept Langner = 5

- e. Accept Lo = 0
- f. Accept something else? = 2

22 in the room

Straw Polls #3 & 4: Vote for one
For the unprotected bits

- a. Accept Bliss: Y: 6 N: 1 A: 14
- b. Accept Lo: Y: 7 N: 0 A: 14

A participant then suggested that the proponents of Bliss and Lo attempt to prepare a joint proposal, which they went to discuss. A break was then called to facilitate progress.

BREAK AT 2:45PM UNTIL 3:10 PM

Following the break, the following presentation was made:

Title: 40GBASE-T Uncoded Bits Protection Merged Solution
([lo_3bq_02_0514.pdf](#))

Abstract: The presenters of Lo and Bliss presented a consensus proposal based on an RS (140, 136, 2^{11}) code, using a 12 256b/257b + 2 64/65b transcoding words, and protecting 2 11-bit RS symbols.

Presenter: William Lo, Marvell

Discussion: The group asked a few questions of clarification, before the following motion was made.

MOTIONS:

Motion #3: Move to adopt [Lo_3bq_02_0514.pdf](#) to protect the bits unprotected by the LDPC.

M: William Lo **S:** Tom Souvignier

Y: 14 N: 0 A: 7

MOTION PASSES (Technical >75%)

Motion #4: Instruct the editor to prepare draft text based on option 3 in [barrass_3bq_01_0713.pdf](#), and prepare a summary of the changes relative to the strawman for presentation at the next meeting.

M: George Zimmerman **S:** Hugh Barrass

Y 11: N: 0 A: 5

MOTION PASSES (Technical >75%)

Motion #5: Move to adopt a maximum delay constraint of 25600BT for the 40GBASE-T sublayers

M: Wayne Larsen

S: Paul Vanderlaan

Y 15: N: 1 A: 6

MOTION PASSES (Technical >75%)

OTHER ADMINISTRATIVE BUSINESS

The Chair then discussed future meetings and having completed the business of the meeting entertained a motion to adjourn.

Straw Poll on future meetings

I will be attending:

July 13-18, 2014 Plenary Manchester Grand Hyatt, San Diego, CA USA

Y:14

N:1

Maybe: 8

September 8-12, 2014 Interim, Brookstreet Hotel, near Ottawa (Kanata), Canada

Y:14

N:2

Maybe: 7

Adjournment

Motion #6: To adjourn the meeting.

M: Hugh Barrass S: Wayne Larsen

MOTION PASSES by voice without opposition

The Meeting was adjourned at 3:47 PM, Tuesday, May 13, 2014.

Appendix A: Attendees at the IEEE P802.3bq 40G BASE-T Task Force Meeting, May 12-13, 2014

Total attended:	29		Daily # attended:	25	28
IEEE P802.3bq 40GBASE-T Task Force May 2014				5/12/2014	5/13/2014
Last Name	First Name	Employer	Affiliation	MONDAY	TUESDAY
Abughazaleh	Shadi	Hubbell	Hubbell	x	x
Barrass	Hugh	Cisco	Cisco		x
Bliss	Will	Broadcom	Broadcom	x	x
Brillart	Theo	Fluke Electronics	Fluke Electronics	x	x
Chalupsky	David	Intel	Intel	x	x
Chiang	Jerry	Foxconn Interconnect Tech	Foxconn Interconnect Tech	x	x
Cibula	Pete	Intel	Intel	x	x
DiMinico	Christopher	MC Communications	Panduit	x	x
Dinh	Thuyen	Pulse Electronics	Pulse Electronics	x	x
Donahue	Curtis	UNH - IOL	UNH - IOL	x	x
Flatman	Alan	LAN Technologies	LAN Technologies	x	x
Hammond	Bernard	TE Connectivity	TE Connectivity	x	x
Hess	John	Bel Stewart	Bel Stewart		x
Hess	Dave	Cord Data	Cord Data	x	x
Kish	Paul	Belden	Belden	x	x
Klempa	Mike	UNH-IOL	UNH-IOL	x	x
Larsen	Wayne	Commscope	Commscope	x	x
Liu	Zhenyu	Marvell	Marvell		x
Lo	William	Marvell	Marvell		x
Maguire	Valerie	Siemon	Siemon	x	x
Malkemus	James	General Cable	General Cable	x	
Renteria	Victor	Belfuse Inc	Belfuse Inc	x	x
Rosbach	Martin	Nexans	Nexans	x	x
Souvignier	Tom	Broadcom	Broadcom	x	x
Vaden	Sterling	Vaden Enterprises	Vaden Enterprises	x	x
Vanderlaan	Paul	Berk-Tek LLC	Berk-Tek LLC	x	x
Wagner	Bob	Panduit Corp.	Panduit Corp.	x	x
Wu	Peter	Marvell	Marvell	x	x
Zimmerman	George	CME	Commscope, Aquantia	x	x