

Unconfirmed Meeting Minutes: IEEE P802.3bq 40GBASE-T Task Force  
March 19, 2014  
Beijing, China

Prepared by George Zimmerman

IEEE P802.3bq 40GBASE-T Task Force meeting convened at 09:05 AM, Wednesday, March 19, 2014 by David Chalupsky, 802.3bq Task Force Chair.

Attendance is listed in Appendix A

**ADMINISTRATIVE MATTERS**

**Presentation:** [agenda\\_3bq\\_01\\_0314.pdf](#)

**Presenter:** Dave Chalupsky, Chair.

The Chair called for introductions and affiliations, and a short joke, song or limerick.

The Chair reviewed the agenda. Mr. Chalupsky turned to presentation agenda\_3bq\_01\_0314.pdf and reviewed the schedule of presentations for the meeting.

**Motion #1:** Approve the agenda as modified from [agenda\\_3bq\\_01\\_0314.pdf](#)

**M:** Brad Booth

**S:** Ron Nordin

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

**Motion #2:** Approve the minutes from the January meeting

([http://www.ieee802.org/3/bq/public/jan14/Unconfirmed\\_minutes\\_3bq\\_0114a.pdf](http://www.ieee802.org/3/bq/public/jan14/Unconfirmed_minutes_3bq_0114a.pdf))

**M:** Wayne Larsen

**S:** Valerie Maguire

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

The Chair then resumed the review of presentation agenda\_3bq\_01\_0314.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 responses.
- 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 9:33 am, Mr. Chalupsky showed slides 0 through 4 patent policy from [agenda\\_3bq\\_01\\_0314.pdf](#). Mr. Chalupsky showed slide 0 and read aloud slides 1

through 4. Mr. Chalupsky made the call for potentially essential patents at 9:36am, 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) and an updated draft of the TIA Category 8 specification (Draft 0.9d of ANSI/TIA-568-C.2-1), both updated since of January 2014 are posted to the private area of the Task Force website.)

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 0314.pdf](#))  
**Abstract:** Report of activities of the 802.3bq channel modeling ad hoc since the January Interim meeting. The channel modeling ad hoc held 2 conference calls since the January interim. The main activity reported was.... Channel ad hoc meetings will be approximately every on Tuesdays, with the next meeting Tuesday April 8.  
**Presenter:** Brad Booth, Microsoft, Co-chair 802.3bq channel modeling ad hoc  
**Co-author:** Pete Cibula, Intel, Co-chair 802.3bq channel modeling ad hoc  
**Discussion:**

At 9:44, Mr. Chalupsky assumed secretary role so Mr. Zimmerman could present.

**Title:** PHY Baseline Proposal Ad Hoc Report ([zimmerman 3bq 01 0314.pdf](#))  
**Abstract:** Two PHY Baseline Proposal Ad Hoc meetings were held between the January Interim meeting and the March Plenary. This contribution reports on those meetings, summarizes the 3 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:**

At 9:58 AM, Mr. Zimmerman re-assumed secretary role.

**BREAK AT 9:59 AM TO RECONVENE AT 10:18AM**

The Chair asked the group's consent to modify the agenda to present wagner\_3bq\_01\_0314.pdf later in the day so that Mr. Diminico, a co-author, could attend the discussion. There were no objections voiced.

**Title:** 40GBASE-T ARJ45 ICM ([renteria\\_3bq\\_02\\_0314.pdf](#))

**Abstract:** This technical contribution in support of IEEE 802.3bq 40GbE standard development provides test data for Insertion Loss, Return Loss, FEXT & NEXT on channels utilizing the IEC 61076-3-110 standard connectors ARJ45 build into an ICM.

**Presenter:** Victor Renteria, Bel

**Discussion:** There was some discussion regarding backwards compatibility with 10GBASE-T and 1000BASE-T, which the presenter clarified would be using hybrid patch cords, and that the OCL of the magnetics was similar to that used in 10GBASE-T ICMs, greater than 160uH.

**Title:** Test Data: Transmission Characteristics of Channels utilizing AJR45 Connectors ([marowsky\\_3bq\\_01\\_0314.pdf](#))

**Abstract:** This technical contribution in support of IEEE 802.3bq 40GbE standard development provides test data for copper cable channels utilizing the IEC 61076-3-110 standard connectors ARJ45. In order to provide comparison with other connectivity options the data includes 2-26-2 m channel. Also a longer 50 m channel 2-46-2 was constructed and measured. Testing was done in 2 GHz and 3 GHz spectra. Data demonstrated significant improvement in RL (10 to 12 dB) and NEXT (up to 30 dB). The ARJ45 connectors are based on electrical isolation resulting in the improved channel transmission performance.

**Presenter:** Victor Renteria, Bel (for Rich Marowsky and Yakov Belopolsky).

**Discussion:** There was some discussion regarding how the IEC 60603-7-71 connector, implemented as an S-RJ45 or GG-45 might relate to the presented results, with differing opinions, and which variants were allowed in ISO cabling standards. There was also some discussion of whether hybrid patch cords would be an acceptable solution in the data center, with differing opinions.

**Title:** 10m connector-less 40GBASE-T channel data ([nordin\\_3bq\\_01\\_0314.pdf](#))

**Abstract:** Data is provided for 10m length and using S/FTP Cat8 cable.

**Presenter:** Bob Wagner, Panduit

**Discussion:** There was no significant discussion.

**Title:** Initial Measurements of System Background Noise in 10GBASE-T Systems ([cibula\\_3bq\\_02a\\_0314.pdf](#))

**Abstract:** The P802.3bq PHY Baseline Proposal ad hoc has noted that system background noise power may be a significant factor in optimizing 40GBASE-T PHY designs. This presentation describes a measurement methodology and system results obtained using that methodology. This presentation updates results previously presented and includes direct spectrum analyzer measurements to extend the frequency span for noise measurements in actual 10GBASE-T systems.

**Presenter:** David Chalupsky, Intel

**Co-Author:** Peter Cibula, Intel

**Discussion:** The group thanked the presenter and Mr. Cibula for the measurement data, and there was discussion regarding whether additional switch measurements. The presenter wanted to know whether the MDI measurements would be sufficient, as they were much easier and nondestructive. Discussion suggested that measurements with improved noise floors might be useful, but the question of whether MDI measurements were sufficient was inconclusive. PHY designers interested in these measurements should contact Mr. Cibula for discussion at the next channel modeling ad hoc.

**Title:** An End User Perspective of 10GBASE-T Time-To-Link and Some Implications for 40GBASE-T PHYs ([cibula\\_3bq\\_03a\\_0314.pdf](#))

**Abstract:** Time-To-Link is a system performance metric that characterizes 10GBASE-T PHY behavior through autonegotiation as defined in IEEE 802.3 Clause 28 and the 10GBASE-T startup sequence as defined in 802.3 Clause 55, Subclause 55.4.2.5.14. This presentation provides some user experience with 10GBASE-T Time-To-Link, describes observed system-level link behavior, and presents some implications to and recommendations for 40GBASE-T PHY control and startup sequence timing.

**Presenter:** David Chalupsky, Intel

**Co-Author:** Peter Cibula, Intel

**Discussion:** The presentation provided additional information beyond what had previously been presented to the PHY ad hoc, and clarified that it would be desirable to improve time to link incrementally from the current ~7sec to <6sec. The presenter answered questions of clarification, and pointed out that he used various vendors' designs, that TTL issues are a combination of multi-vendor interoperability and channel challenges, with the channel dominating at 100m & above links.

The next presenter asked the group's consent to present an updated presentation from what had been posted to the website, with revised and additional technical content. The group welcomed the updated data.

**Title:** Use Case Analysis for 40GBASE-T ([wagner\\_3bq\\_01a\\_0314.pdf](#))

**Abstract:** Focus is on stating the case for why 40GBASE-T is needed. Will run through a few architecture scenarios showing how many servers can be

connected with a max length of 30m for 40GBT and how best to achieve this. Since one of the biggest benefits is lower costs will provide an aggressive and conservative model showing the relative cost decrease if 40GBASE-T is used.

**Presenter:** Bob Wagner, Panduit

**Discussion:** The presenter and co-author offered that this contribution was to provide market background and use cases for PHY vendors to understand the potential and need for 40GBASE-T. It was a response to an action item originally in the PHY ad hoc. There was discussion of the various floor layouts offered, and the presenter clarified that there were many variations possible, that he had seen quite a few different layouts, and that this variation only improved the utility offered by an intermediate reach solution like 40GBASE-T. The presenter offered to provide the data center designer data to data center network architects for further input, and to determine recommended configurations for 40GBASE-T.

The group supported informal communications of the information in this contribution to data center cabling and architecture experts, such as in the TR42 and ISO/IEC SC25 WG3 committees, but without sending formal liaisons at this time.

#### **BREAK FOR LUNCH AT 12:34 PM AND RECONVENED AT 2:04 PM.**

**Title:** PBO in 40GBASE-T ([wu\\_3bq\\_01\\_0314.pdf](#))

**Abstract:** This contribution reviews and expands on a previous presentation to the PHY Baseline Proposal ad hoc, describing the power savings advantages and how Power Back Off might be adopted for 40GBASE-T.

**Presenter:** Peter Wu, Marvell

**Discussion:** There was no discussion.

At 2:30, Mr. Chalupsky assumed secretary role so Mr. Zimmerman could present.

**Title:** Strawman for PHY Baseline Proposal ([zimmerman\\_3bq\\_02a\\_0314.pdf](#))

**Abstract:** The PHY Baseline Straw man discussed in the ad hoc is reviewed, along with results to date, and a proposal to move forward.

**Presenter:** George Zimmerman, CME Consulting / Aquantia & Commscope

**Discussion:** There was general support for the proposed moving forward, and the presenter answered questions of clarification regarding refinements to the straw man, how baud rate might relate to those refinements, whether fast retrain would still be useful if there were THP update in 40GBASE-T, and how a short reach mode might operate.

At 2:52 PM, Mr. Zimmerman re-assumed secretary role.

#### **DISCUSSION, MOTIONS & STRAW POLLS**

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

### **MOTIONS:**

**Motion #3:** Move to adopt the proposal on page 6 of zimmerman\_3bqah\_1213.pdf, based on a 4X rate scaling of Clause 55 signaling, as a baseline PHY specification with future consideration of the proposed modifications listed on the same slide.

**M:** George Zimmerman    **S:** Peter Wu

**Y: 18 N:0 A: 1**

**MOTION PASSES (Technical >75%)**

**Motion #4:** Move to adopt a power back off scheme in 40GBASE-T with no more than 3 steps, 0 dB, 6dB and 12 dB back off from nominal 0dBm at the MDI. Consideration of whether support for the 12 dB step is mandatory is for further study.

**M:** Peter Wu    **S:** George Zimmerman

**Y 15: N: 0 A:3**

**MOTION PASSES (Technical >75%)**

There was discussion regarding the implications of multi-rate PHY support and a request for contribution on that subject.

There was discussion regarding the relationship of 40GBASE-T and power over Ethernet, and how that related to project objectives. The Chair requested contributions on the coexistence of 40GBASE-T and power over Ethernet, including coexistence of unpowered 40GBASE-T links with PoE enabled links.

### **OTHER ADMINISTRATIVE BUSINESS**

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

### **Adjournment**

**Motion #5: To adjourn the meeting.**

**M:** Brad Booth    **S:** Hugh Barrass

**MOTION PASSES by voice without opposition**

**The Meeting was adjourned at 3:21 PM, Wednesday, March 17, 2014.**

Appendix A: Attendees at the IEEE P802.3bq 40G BASE-T Task Force Meeting, March 19, 2014

Total attended:	25		Daily # attended:	25
<b>IEEE P802.3bq 40GBASE-T Task Force March 2014</b>				<b>3/19/2014</b>
<b>Last Name</b>	<b>First Name</b>	<b>Employer</b>	<b>Affiliation</b>	<b>WEDNESDAY</b>
Barrass	Hugh	Cisco	Cisco	X
Booth	Brad	Microsoft	Microsoft	X
Brillart	Theo	Fluke Electronics	Fluke Electronics	X
Chalupsky	David	Intel	Intel	X
Choudhury	G. Mabud	Commscope	Commscope	X
DiMinico	Christopher	MC Communications	Panduit	X
Flatman	Alan	LAN Technologies	LAN Technologies	X
Hammond	Bernard	TE Connectivity	TE Connectivity	X
Herman	Todd	Commscope	Commscope	X
Jimenez	Andrew	Anixter Inc.	Anixter Inc.	X
Lackner	Hans	QoSCom Gmbh	QoSCom Gmbh	X
Larsen	Wayne	Commscope	Commscope	X
Law	David	HP	HP	X
Lu	Huang	China Mobile	China Mobile	X
Maguire	Valerie	Siemon	Siemon	X
Ng	Chun Wing Alan	Belfuse	Belfuse	X
Nielsen	Allan	TE Connectivity	TE Connectivity	X
Nordin	Ron	Panduit Corp.	Panduit Corp.	X
Renteria	Victor	Belfuse Inc	Belfuse Inc	X
TSENG	Wen-Cheng	Mediatek	Mediatek	X
Wagner	Bob	Panduit Corp.	Panduit Corp.	X
Wang	Allen	Lenovo	Lenovo	X
Wu	Peter	Marvell	Marvell	X
Zimmerman	George	CME	Commscope, Aquantia	X
Zo	Leonard	Pulse	Pulse	X