Unconfirmed Meeting Minutes: IEEE P802.3bq 40GBASE-T Task Force

November 4-5, 2014
San Antonio, TX, USA

Prepared by George Zimmerman

IEEE P802.3bq 40GBASE-T Task Force meeting convened at 08:00 AM, Tuesday, November 4, 2014 by David Chalupsky, 802.3bq Task Force Chair.

Attendance is listed in Appendix A

ADMINISTRATIVE MATTERS

Presentation: agenda_3bq_01_1114.pdf
Presenter: Dave Chalupsky, Chair.

The Chair called for introductions and affiliations, the participants introduced themselves, and the Chair then proceeded with the agenda.

The Chair reviewed the agenda. Mr. Chalupsky turned to presentation agenda_3bq_01_1114.pdf and reviewed the schedule of presentations for the meeting.

Motion #1: Approve the agenda from agenda_3bq_01_1114.pdf

M: Pete Cibula S: Valerie Maguire
Approved by voice vote without objection (Procedural > 50%)

Motion #2: Approve the minutes from the September 2014 meeting (http://www.ieee802.org/3/bq/public/sep14/unconfirmed_minutes_3bq_0914.pdf)

M: Jon Lewis S: Ron Nordin
Approved by voice vote without objection (Procedural > 50%)

The Chair then resumed the review of presentation agenda_3bq_01_1114.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.
Mr. Chalupsky then continued review of the presentation, Big Ticket items for this meeting.

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 **8:21 AM**, Mr. Chalupsky showed slides 0 through 4 patent policy from agenda_3bq_01_1114.pdf. Mr. Chalupsky showed slide 0 and read aloud slides 1 through 4. Mr. Chalupsky made the call for potentially essential patents at **8:23 AM**, and none responded. Mr. Chalupsky then completed the reading of slide #4.

Mr. Chalupsky then continued review of the presentation, discussing that the group had entered the "Task Force Review" phase where we would be primarily comment driven.

LIAISONS

The Chair moved to liaisons, and noted liaisons to 802.3 which Mr. Law, Chair of the 802.3 Working Group had assigned to the Task Force:

TIA TR42.7 to IEEE 802.3 on draft 2.0c of ANSI/TIA-568-C.2-1 (received prior to the September Interim) and TIA TR-42 to IEEE 802.3 on draft 2.0E of ANSI/TIA-568-C.2-1 conveying the latest draft(s) of the category 8 cabling specification.

ISO/IEC SC25/WG3 to IEEE 802.3 on channel specification above 1 600 MHz communicating the ISO/IEC SC25/WG3 had established normative specifications for Class I and Class II channels up to 2000 MHz in the draft of ISO/IEC 11801 Ed. 3, and providing an update on the schedule for that document, with a committee draft in March 2015, and a technically stable draft out of the September 2015 ISO meeting.

ISO/IEC SC25/WG3 to IEEE 802.3 on ISO/IEC 11801-9901 communicating that t ISO/IEC/TR 11801-9901 (Technical Report on 40G balanced cabling) has been published and is available on the IEC Web store.

The Chair asked whether a response to these liaisons was necessary, and received the concurrence of the liaison officers and those in the Task Force that a formal response was not necessary at this time.

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: P802.3bq Receiver Common Mode Noise Rejection Ad Hoc Report (cibula_3bq_01_1114.pdf)

Abstract: The presenter described the status and next steps for the ad hoc organized to investigate the receiver common mode noise rejection (aka "cable clamp") test, and develop corresponding text for 802.3bq to adopt for clause 98.5.4.3. The ad hoc had held one meeting since the September interim, and, heard 2 contributions. An additional ad hoc meeting was planned for Wednesday of the plenary week.

Presenter: Pete Cibula, Intel, Chair 802.3bq RXCMRR ad hoc

Discussion:

At 08:45 am, Mr. Cibula assumed the duties of secretary so Mr. Zimmerman could present and resolve comments as editor. Motions related to the resolution of comments are captured in the comment resolution database.

Title: 802.3bq Editor's Report (zimmerman_3bq_01_1114.pdf)
Abstract: The editor reported on the status and comments received of the draft 1.0, along with a proposed agenda for comment resolution

Presenter: George Zimmerman, CME Consulting / Aquantia & Commscope, Chief Editor IEEE 802.3bq
Discussion: Mr. Zimmerman urged participants to look at the bulk of 802.3-2012 with a focus on "What have we missed?" The Editor asked if there were any objections to the proposed agenda for comment resolution.

The Task Force then moved into the formal comment resolution process with Mr. Zimmerman presenting, handing off to editors of various Clauses as needed, following roughly the agenda below, except where indicated, comment resolution was led by Mr. Zimmerman.

Clauses 78 & 98 – EEE related (led by Jim Graba, Broadcom)

Clause 98.7 & Link Segment-related (including short reach) (led by Chris Diminico, MC Communications / Panduit)
Included Diminico & Larsen contributions, below.

Clause 98.8 / MDI
Clause 98.1- 98.6 except for: above & autoneg
98.3 included Peter Wu's contribution, below.
Clause 28 & 98 autoneg related

Clause 30&45 comments (led by Valerie Maguire, Siemon Co.)

Clause 31 MAC-related comment
Remaining editorial Comments

During the course of comment resolution, the following contributions were heard:

Title: PHY-initiated Departure from LPI (graba_3bq_01_1114.pdf)
Abstract: This contribution provides detail of a proposal to resolve comments related to PHY initiated departure from LPI.
Presenter: Jim Graba, Broadcom
Discussion: See resolved comment files.

Title: Cabling Transmission Parameters (larsen_3bq_01_1114.pdf)
Abstract: This contribution provides proposals to resolve comments related to 98.7 and fill in additional cabling transmission parameters.
Presenter: George Zimmerman, CME Consulting/Commscope, for Mr. Larsen
Discussion: See resolved comment files.

Title: 802.3bq D1.0 Comment#2 (diminico_3bq_01_1114.pdf)

Abstract: This contribution provides proposals to resolve comments related to 98.7 and fill in additional cabling transmission parameters.
Presenter: Chris Diminico, MC Communications / Panduit
Discussion: See resolved comment files.

Title: RS code scheme to protect “un-coded” bits at 40GBASE-T (wu_3bq_01a_1114.pdf)
Abstract: This contribution provides a proposal to resolve comments related to 98.3 PCS Specification
Presenter: Peter Wu, Marvell
Discussion: See resolved comment files

Having completed comment resolution, Mr. Zimmerman resumed recording secretary duties at 3:35PM.

PRESENTATIONS NOT TIED TO COMMENTS

Having completed comment resolution, the Chair then moved to presentations not tied to resolving particular comments.

Title: Effect of Interface Geometry on Transverse Conversion Loss for 40GbE connectivity. Test Data and Information (belopolsky_3bq_01a_1114.pdf)
Abstract: This technical contribution in support of IEEE 802.3bq 40GbE standard development provides information and test data for copper cable channels with connectors per IEC 61076-3-110 (ARJ45) and IEC/ISO 60603-7 (RJ45). It discusses the differences between connectors and effects of interface geometry on the Transverse Conversion Loss (TCL). The TCL can be reduced by utilizing a higher level category 8.2 interface. The Ethernet systems from 1 to 40 GbE could benefit from the reduction of the TCL and corresponding common mode noise
Presenter: Yakov Belopolsky, Bel Stewart Connector
Discussion: Questions were asked and answered. There was significant discussion about the interaction of the connector and cable, the use of Cat6a components to compare with, and the state of the ISO 11801 specification with regards to TCL.

Title: Updated Test Data for Channels based on Proposed Category 8.2 Connectivity IEC 61076-3-110 ARJ45 (belopolsky_3bq_02a_1114.pdf)
Abstract: The objective of this contribution in support of IEEE 802.3bq 40GbE standard development is to provide direct test data for copper cable channels utilizing the standard connectors per IEC/ISO 61076-3-110 ARJ45. The data covers a variety of channels: 5m, 7m, 30m and 50m constructed with several cables. Testing was done in 2 GHz and 3 GHz spectra. Data demonstrated that use of IEC/ISO 61076-3-110 ARJ45 connectivity resulted in channels with improved transmission characteristics RL, NEXT, ACR, etc. The availability of copper connectivity is vital for implementation of 40GbE technology.
Presenter: Yakov Belopolsky, Bel Stewart Connector

Discussion: There was vigorous discussion of the results presented, including how the performance reported relates to ISO Class II channels, the inclusion of the connectors in ISO Class II channels, the impact of the results on PHYs designed for worst-case channels, and potential benefits of the connectors offered. After much discussion, the following straw poll was offered:

Straw Poll: **I would the support the addition of the *IEC 61076-3-110 as an alternative MDI connector for P802.3bq***
Yes: 10
No:7
Abstain: 7

The Chair then noted that the remaining contributions were not asking action of the Task Force, and asked the group if the contributions could be heard in the Receiver Common Mode Noise Rejection ad hoc. The presenters agreed.

The Chair then
Motion #3: **Move to:**

- **Adopt proposed responses to remaining editorial comments as indicated in the proposed resolutions**
- **Generate Draft 1.1 from Draft 1.0 and closed comments published for review by November 20, 2014**
- **Initiate a second Task Force review**

M: Paul Vanderlaan **S: Shadi AbuGhazahleh**
Technical >= 75%
Y: 24 N: 0 A: 1
MOTION PASSES

Having completed business for the day, 802.3bq recessed for the day at 5:10PM to reconvene at 9AM.

IEEE P802.3bq 40GBASE-T Task Force meeting convened at 09:01 AM, Wednesday, November 5, 2014 by David Chalupsky, 802.3bq Task Force Chair.

Mr. Cibula acted as Recording Secretary, as Mr. Zimmerman was detained in another meeting.
Attendance is listed in Appendix A

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Mr. Chalupsky reviewed the goals for the meeting, access to the reflector and website, and ground rules.
Mr. Chalupsky then continued review of the presentation, Big Ticket items for this meeting.

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 **9:06 AM**, Mr. Chalupsky showed slides 0 through 4 patent policy from agenda_3bq_01_1114.pdf.

Mr. Chalupsky then continued review of the presentation, summarizing business completed in the previous day's session. Mr. Chalupsky noted that the task force will be hearing the last two scheduled contributions and then conclude the meeting with any final business.

Title: Shielding Characteristics of Some Ethernet Channels Under Radiated-Immunity Test Conditions: Method and Initial Results. (pischl_3bq_01b_1114.pdf)

Abstract: The upcoming Ethernet standards for data-rates beyond 10 Gbps over copper channels propose shielded cables and connectors. The quality of the cable and connector shields is typically tested with bench-methods that measure "screening attenuation", "shielding effectiveness", or "transfer impedance". The balance and conversion of shielded cables is often not tested nor specified. When specified, the conversion is defined by bench-level methods and usually for each individual pair. While these bench methods can be useful in characterizing the quality of the shield and balance to reject EMI, they do not reveal to what levels of common-mode and differential-mode EMI an Ethernet transceiver is exposed to in realistic test conditions using various cables and connectors. This study:

a. Describes a test method for direct assessment of EMI conditions to which a transceiver may be exposed under the radiated-immunity test conditions.
b. Provides initial test results obtained on some available cabling systems.

The described test method and results can be expanded in future, to include various EMC-test conditions, magnetics, connectors, and cabling options. By measuring under the realistic conditions of the immunity tests, the results can help further development of transceivers and the components of the channel to meet various EMC-immunity requirements.

Presenter: Neven Pischl, Broadcom

Discussion: Participants asked several questions related to the measurement setup, with explanations from the presenter (1) noting that results were obtained at the MDI without compensation and without magnetics, (2) clarifying the location of the test boxes in the chamber, (3) providing further details on instrument connections, (4) clarifying the channel topology as a 2-connector channel, (5) clarifying the location and type of in-line couplers used, and (6) describing other specifics of the test setup. Participants were referred to a Telcordia specification (GR1089) for additional details. One participant provided some historical perspective (and indicated the existence of related studies) on the relationship between cable orientations and injected noise. The Rx CMNR ad hoc chair asked the commenter if he would be willing to bring this data into the ad hoc. A review of the results prompted participants to comment that the common-mode and differential-mode results taken together are useful to characterize mode conversion, and that the real areas of interest to PHY implementers are the differential signal measurements and the effects of these signal levels on PHY SNR operating margin.

The presenter noted that future work is planned with other lengths and configurations.

Following the presentation, Mr. Zimmerman resumed his duties as secretary at 10:05AM, so that Mr. Cibula could present.

The Chair discussed additional business while Mr. Cibula prepared to present.

FUTURE MEETINGS

Straw Poll on future meetings

I will be attending:

January 12, 2015 Interim Week, Atlanta, Georgia, USA

Y: 20

N: 1

Maybe: 5

March 2015 Plenary Week, Berlin, Germany

Y: 10

N: 2

Maybe: 13

PRESENTATION:

Having concluded the other business, presentation resumed:

Title: Induced Common Mode Voltages on Shielded Twisted Pair Cabling (cibula_3bq_02_1114.pdf)

Presenter: Pete Cibula, Intel

Abstract: This contribution presents measurements of common-mode voltages induced on shielded 30m channels using a modified cable clamp methodology. Results are provided for consideration by PHY implementers, and some suggestions for improvements to the existing test are provided for consideration by Task Force participants.

Discussion: The presenter provided a methodology showing that with appropriate modifications the cable clamp test can be used to inject common mode noise up to 2GHz. A participant noted that PHYs will be sensitive to the worst-case pair at any frequency, and Mr. Cibula noted he could reprocess the data with that metric. During discussion the presenter noted that the measurement plots were mislabeled in the vertical axis. Labeling should be “Differential noise level (tip to ring)”. Discussion and the presenter concurred that further discussion and work in the Rx Common Mode Noise Rejection ad hoc was warranted. (next meeting November 19)

DISCUSSION, MOTIONS & STRAW POLLS

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

No further motions of business were offered.

Adjournment
Motion #4: To adjourn the meeting.
M: Brett McClellan S: Theo Brillhart
MOTION PASSES by voice without opposition
The Meeting was adjourned at 10:51AM, Wednesday, November 5, 2014.

Appendix A: Attendees at the IEEE P802.3bq 40G BASE-T Task Force Meeting, November 4-5, 2014

Total attended:	33		Daily # attended:	29	32
IEEE P802.3bq 40GBASE-T Task Force November 2014				**11/4/2014**	**11/5/2014**
Last Name	**First Name**	**Employer**	**Affiliation**	**TUESDAY**	**WEDNESDAY**
Abughazaleh	Shadi	Hubbell	Hubbell	x	x
Assouad	Simon	Broadcom	Broadcom	x	x
Bains	Amrik	Cisco	Cisco		x
Belopolsky	Yakov	Bel Stewart	Bel Stewart	x	x
Brillart	Theo	Fluke Electronics	Fluke Electronics	x	x
Carty	Clark	Cisco	Cisco		x
Cates	Ron	Marvell	Marvell	x	x
Chalupsky	David	Intel	Intel	x	x
Cibula	Pete	Intel	Intel	x	x
Dalmia	Kamal	Aquantia	Aquantia	x	x
DiMinico	Christopher	MC Communications	Panduit	x	x
Feyh	German	Broadcom	Broadcom	x	x
Flatman	Alan	LAN Technologies	LAN Technologies	x	x
Graba	Jim	Broadcom	Broadcom	x	x
Kish	Paul	Belden	Belden	x	x
Lackner	Hans	QoSCom Gmbh	QoSCom Gmbh	x	x
Lewis	Jon	Dell	Dell	x	x
Lo	William	Marvell	Marvell		x
Maguire	Valerie	Siemon	Siemon	x	x
Maynes	Curt	3M	3M	x	
McClellan	Brett	Marvell	Marvell		x
Mei	Richard	Commscope	Commscope	x	x
Moffitt	Bryan	Commscope	Commscope	x	x
Nordin	Ron	Panduit Corp.	Panduit Corp.	x	x
Pischl	Neven	Broadcom	Broadcom	x	x
Renteria	Victor	Belfuse Inc	Belfuse Inc	x	x
Sedco	Steve	Foxconn	Foxconn	x	x
Souvignier	Tom	Broadcom	Broadcom	x	x
Sparrowhawk	Bryan	Leviton	Leviton	x	x
Vaden	Sterling	Vaden Enterprises	Vaden Enterprises	x	x
Vanderlaan	Paul	Berk-Tek LLC	Berk-Tek LLC	x	x
Wu	Peter	Marvell	Marvell	x	x
Zimmerman	George	CME	Commscope, Aquantia	x	x