IEEE 802.3 Ethernet Working Group Liaison Communication

Source: IEEE 802.3 Working Group[1]

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Subject: Liaison to Optical Internetworking Forum PLL WG from IEEE 802.3

From: David Law – Chair, IEEE 802.3 Ethernet Working Group (David_Law@3Com.com)

Approval: Agreed to at IEEE 802.3 Plenary meeting, Atlanta, GA, November 19, 2009

Dear Lyndon,

The IEEE 802.3 Working Group thanks the Optical Internetworking Forum for their kind liaison dated October 19, 2009, which forwarded the OIF draft documents for the CEI-25G-LR and CEI-28G-SR projects for consideration.

As previously communicated by the IEEE P802.3ba Task Force, the CEI-25G-LR and CEI-28G-SR projects may be applicable to future systems based on the 100GBASE-LR4 and 100GBASE-ER4 specifications, which are based on a four lane 25 Gb/s architecture, as well as other possible members of the 100 Gigabit Ethernet family. We support the basic goal of having the two groups work together and share our mutual expertise and experience to speed up the development of these electrical specifications. In the spirit of this co-operation, attached please find Draft 3.0 of IEEE P802.3ba. Please note however that this draft is a work-in-progress, and the detailed content of the amendment is expected to evolve through completion of the Sponsor Ballot Process. We understand that access to this draft will be restricted to OIF membership only.

Given the prior expressed interest in these projects and the applicability of 25 Gb/s electrical signaling to 100 Gigabit Ethernet, the review of these two documents was assigned to the IEEE P802.3ba Task Force. The following feedback has been provided –

- o Priority – While electrical signaling at approximately 25 Gb/s is necessary for both chip-to-chip (module) and backplane applications, it is felt that the priority for industry development is on a 4 lane 25 Gb/s electrical interface that targets chip-to-module applications, such as Annex 83B of IEEE P802.3ba. This is not intended to imply that work in the backplane space is not necessary, but prioritization, based on the opinions of participants within IEEE 802.3.

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[1] This document solely represents the views of the IEEE 802.3 Working Group, and does not necessarily represent a position of the IEEE, the IEEE Standards Association, or IEEE 802.

- o While the CEI-28G-SR reference model can include a connector, it is the feeling of IEEE 802.3 participants that a specification for chip-to-module applications would be useful to the industry. The IEEE P802.3ba Task Force was faced with the same issue in the development of CAUI, and choose to develop two normative annexes – one for chip-to-chip applications (Annex 83A) and one for chip-to-module applications (Annex 83B).

- o Connector Performance – While the IEEE does not specify connectors, normative references to connectors in other specifications are often made. It is believed that the inclusion of the Integrated Crosstalk Noise specification in OIF2008.029.07 Section 10.2.6.7 could enable the OIF to provide guidance to the industry as to the crosstalk performance for a module connector.

- o Channel Model – The CEI-28G-SR specification calls out 300mm. Given that the specified insertion loss is less than the specified insertion loss for CAUI at 250mm for frequencies greater than approximately 2.5 GHz, it appears that improved FR-4 was used in the creation of the channel model. Given the indicated priority, it is felt that 300mm would be longer than is necessary for chip-to-module applications for Ethernet. Length, loss, and board materials are factors that must be balanced in the development of a channel model. At this time the IEEE 802.3WG can not provide a complete proposal for a channel model appropriate to this application space, but have encouraged our members to further explore this issue, and submit comments to the OIF.

- o From reviewing only OIF2008.029.03 it is not indicated that the CEI-28G-SR interface includes a CDR in the receiver. From offline discussions between members in our two bodies it is our understanding that the CEI 2.0 document that the CEI-28G-SR interface should include a CDR in the receiver. It would be helpful to state this in the respective document, so that no faulty assumptions are made.

- o Consideration of Power / Assumption of CDR in receiver – The reduction of power is critical, especially for a smaller form factor module targeting 100GBASE-LR4 and 100GBASE-ER4. Initial discussions have explored the use of a partially retimed interface, such as that being explored in INCITS T11.

- o The IEEE P802.3ba specification leverages heavily on the use of test boards, such as those specified in Annex 86A. We encourage the OIF to consider their use in the development of a chip-to-module electrical interface.

It is anticipated that individuals who are voting members of the IEEE 802.3 Working Group may submit comments to the OIF, either through their companies as members of the OIF or as non-members of the OIF.

We would like to continue to encourage the OIF to continue in its development efforts on these two specifications. We look forward to future communications regarding the two programs and their respective timelines.

Sincerely,

David J. Law

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