

The Copper Work Group was called to order at 8:30 AM on June 4, 2003 by Ed Grivna of Cypress Semiconductor. After review and updates, a motion was made by Schelto Van Doorn of Intel to approve the following agenda. This motion was seconded by Vit Novak of Sun Microsystems, and passed by acclamation

Agenda for June 2003 T11.2 Copper Ad Hoc

1. Introductions
2. Approval of Agenda
3. Attendance and Membership (We ARE now recording attendance)
4. Patent Policies
5. Antitrust Guidelines
6. Review of Old Action Items
7. Presentations
 - 7.1 Ali Ghiasi (Broadcom) - SCA2 Connector Evaluation
 - 7.2 Mike Fogg (TYCO) - SCA2 Update
8. FC-PI-2 status
 - 8.1 FC-PI-2 Comment Resolution
9. New Business Items
 - 9.1 Meritec - Connector announcement
 - 9.2 FC-PI-3 planning
10. Review of Action Items
11. Meeting Schedule
12. Future Meeting Locations/Dates
13. Adjournment

No old action items were listed as being pending.

The first presentation was document T11-03-375v0 from Ali Ghiasi of Broadcom. It reviewed both simulated and measured S-parameters for the SCA2 connectors when used for 4x FC signaling rates. The presentation documented numerous conclusions

- That the present return-loss limits set in the comment resolutions for FC-PI-2 are not sufficient to handle the actual reflections and losses present in the SCA2 connectors
- The present receive sensitivity requirements at Betat-R and Alpha-R will require higher launch amplitudes than most devices would prefer to generate.
- Future and existing smaller geometries will require lower launch amplitudes due to supply and breakdown limits.
- The present return loss slope of 20dB/decade matches that only of a capacitor load and not the actual loss slope of a more complex load.

The second presentation was document T11-03-379v0 from Mike Fogg of Tyco Electronics. It showed the extracted S-parameters and part numbers of specific

Tyco manufactured SCA2 connectors. One artifact was found in the plotted value that Tyco will take under review.

Discussion followed that Broadcom would like to lower the required receive sensitivity from the present 300 mV p-pd to allow the launch amplitudes to be reduced. HP requested a straw poll on sensitivity at the Alpha-R point to find out where the sensitivity is among silicon manufacturers at a 4.25 GBd signaling rate. The results of that poll were:

Receive Sensitivity	Number of suppliers
100 mV p-pd	1
150 mV p-pd	6
200 mV p-pd	9
250 mV p-pd	9
300 mV p-pd	10

It was also noted that the eye amplitude at the Beta-R point would need to be larger than this to accommodate

- Additional losses in the interconnect between the SCA2 connector and the PHY
- The non-ideal parasitics of the line receiver (and driver) which will reduce the amplitude due to interconnect.

Discussion centered around if the receiver sensitivity should be reduced. Segate objected on the grounds that the present return loss allocation did not permit any reduction in receiver sensitivity, and would not entertain any change to the receive number until the return loss was resolved to allow a lower loss, and there was time sufficient to evaluate it.

While Dr. Ghiasi prepared a proposed modified return loss profile, the agenda was processed out of sequence to allow time to be used efficiently. Ed Cady of Meritec presented info on an additional backshell configuration for the 4-lane copper connector documented in FC-PI-2. This allows a right-angle exit on the cable to reduce the spacing needed between the equipment bulkhead and any cabinet or equipment door.

FC-PI-3 developments were discussed next. FC-PI-3 was approved by INCITS as project 1625-D on May 5, 2003. Greg McSorley of EMC has volunteered to continue as primary editor of this document, but will require clause editors for all input.

Ali Ghiasi of Broadcom volunteered to be clause editor supporting the definition of the Delta point for the XFP module interface.

Motions:

#1. That the return loss specification for 4.25 GBd signaling at beta-T and beta-R be modified to be -12dB from 50 MHz to 500 MHz, and from 500 MHz to 4.25 GHz be $-12 + 11.3 \cdot \log(f^2)$ with frequency (f) in GHz.

Moved by Ali Ghiasi of Broadcom
Seconded by Bill Ham of HP

Yes – 16, No – 1, Abstain - 4

#2. The copper work group recommends to T11.2 that the comments and resolutions pertaining to the electrical portions of FC-PI-2 contained in 03-005v4 be approved for incorporation into a new draft of FC-PI-2, and that said draft be forwarded to T11 for further processing.

Moved by Greg McSorely of EMC
Seconded by Ed Cady of Meritec

Yes – 19, No – 0, Abstain - 4

Action Items:

- Greg McSorley to provide a Framemaker template file to Ali Ghiasi for use in creating the XFP related clause in FC-PI-3
- Ali Ghiasi to request that Bob Snively post, as a T11 document, a letter from the XFP MSA Consortia to INCITS/T11 authorizing use of the documentation present in the XFP MSA for use in creating an INCITS standard.
- Schelto Van Doorn to post the latest draft of IEEE 802.3ak (CX-4) to the T11 website for evaluation and consideration in FC-PI-3 development
- Mike Fogg to post a revised form of his presentation to the T11 website with the Tyco copyright notice removed.

The agenda for future meetings was reviewed, and the FCSM-2 meeting on Thursday was exchanged with the FC-PI-2 comment resolution meeting on Monday afternoon. Due to work load, the copper work group meeting will be shortened by one half hour, and lengthened the following optical work group meeting by an equivalent amount of time.

The meeting was adjourned at 12:27PM.