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Accredited Standards Committee
INCITS, Information Technology

Doc. Number: 06-333v0
Date: 04/03/06
Project: FC-BaseT
Reply to: Claudio DeSanti
Brad Booth

TO: MEMBERSHIP of T11.2

FROM: Claudio DeSanti, Chair
Brad Booth, secretary

SUBJECT: Draft minutes from FC-BaseT WG meeting

AGENDA

- | | | |
|------|--|------------------------|
| 1. | Opening remarks and introductions | DeSanti (Cisco) |
| 2. | Meeting Policies | DeSanti (Cisco) |
| 3. | Administrivia | |
| 3.1 | Approval of this agenda | All |
| 3.2 | Approval of minutes
(06-188v0, 06-225v0) | All |
| 4. | Review of old FC-BaseT action items | DeSanti (Cisco) |
| 5. | Scheduled FC-BaseT business | |
| 5.1 | An Error Detecting Code for FC-BaseT, 06-115v1 | DeSanti (Cisco) |
| 5.2 | Proposed FC-BaseT Structure and Concepts, 06-025v1 | DeSanti (Cisco) |
| 5.3 | Proposed FC-BaseT PCS, 06-026v1 | DeSanti (Cisco) |
| 5.4 | Proposed FC-BaseT PMA and MDI, 06-262v0 | DeSanti (Cisco) |
| 5.5 | Proposed FC-BaseT Annex A, 06-263v0 | DeSanti (Cisco) |
| 5.6 | Proposed FC-BaseT Annex B, 06-264v0 | DeSanti (Cisco) |
| 5.7 | FC-BaseT Draft Proposal, 06-254v0 | Cobb (Systimax) |
| 5.8 | Power Backoff for FC-BaseT, 06-266v0 | McClellan (Solarflare) |
| 5.9 | Proposal for Optional TCM Mode in FC-BaseT PHY Standard,
06-289v0 | Powell (Broadcom) |
| 5.10 | Proposed Text for FC-BaseT E-FIFO, 06-286v0 | Ghiasi (Broadcom) |
| 5.11 | Proposed Text for FC-BaseT PHY Startup Procedures, 06-287v0 | Ghiasi (Broadcom) |
| 6. | Unscheduled FC-BaseT business | |
| 7. | Review of FC-BaseT action items | Booth (Quake) |
| 8. | Next meeting schedule | DeSanti (Cisco) |
| 9. | Adjournment | |

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RESULTS OF MEETING

1. Opening remarks and introductions

Chairperson Claudio DeSanti led the meeting. He started the meeting at 4:11 PM. He thanked our host company, Brocade, and led a round of introductions.

2. Meeting Policies

2.1 Attendance and Membership

Claudio DeSanti stated that all persons present are considered members of this meeting and may vote on questions, limited to one vote per company present. Attendance at this meeting does not count toward attendance at the plenaries of T11 and its task groups (i.e., being here will not get you out or keep you out of membership jeopardy).

2.2 Patents

Claudio DeSanti indicated that among the rules and policies under which this working group operates are the INCITS patent policies. He requested persons wishing to make statements or ask questions relevant to this policy not to do so at this work group meeting, but instead to do so at the T11.3 or T11 plenary meeting. The INCITS patent policies are specified in subclause 8.4 of RD-1, "Policies and Guidelines", available at http://www.incits.org/sd9_rev1c.htm#p8-4

2.3 Antitrust

Claudio DeSanti indicated that among the rules and policies under which this working group operates are the INCITS Antitrust Guidelines. Any member of the meeting is responsible for objecting if he believes discussion in the meeting violates those guidelines. If such discussion is not immediately terminated, it is the chairperson's responsibility to terminate the meeting. The INCITS Antitrust Guidelines are available at <http://www.incits.org/inatrust.htm>

3. Administrivia

The agenda (06-277v0) was updated and approved with no one objecting to the agenda. Schelto Van Doorn moved, Ali Ghiasi seconded.

The minutes (06-188v0 and 06-225v0) were approved with no modifications. Claudio moved, Scott Powell seconded.

4. Review of old FC-BaseT action items

AI-12: Scott Powell will define self synchronizing scrambler for next time. (overtaken by events)

AI-13: Schelto Van Doorn will work on Port Management, section 9. (carryover)

AI-14: Scott Powell will work on section 6. (carryover)

AI-15: Ali Ghiasi will work on section 7 and 8. (closed by 06-286v0 and 06-287v0)

AI-17: Brett McClellan to look at power backoff options for FC-BaseT. (closed by 06-266v0)

AI-18: Terry Cobb to look at channel specifications for FC-BaseT. (closed by 06-254v0)

5. Scheduled FC-BaseT business

5.1 An Error Detecting Code for FC-BaseT, 06-115v1, Claudio DeSanti

Claudio presented the results of an investigation to define an optimal error detecting code (EDC) for FC-BaseT. The Schlaefi lattice coding avoids the “odd bits” errors (e.g., 1-bit or 3-bit errors), except in degenerate cases. Using an EDC optimized 36/33 transcoding and side-stream scrambling it is possible to detect basically all relevant small errors occurring in control words. A set of parity-check matrixes with very good error detection properties has been identified. The selection of the optimal one is expected by next meeting. The group agreed to use the proposed scheme for error detection in FC-BaseT, because it is much simpler than a CRC and has better properties for the particular transmission technique used.

5.2 Proposed FC-BaseT Structure and Concepts, 06-025v1; Proposed FC-BaseT PCS, 06-026v1; Proposed FC-BaseT PMA and MDI, 06-262v0; Proposed FC-BaseT Annex A , 06-263v0; Proposed FC-BaseT Annex B, 06-264v0; Claudio DeSanti

Claudio presented a set of documents defining the structure of FC-BaseT, the PCS, the PMA and their interfaces. Although the goal of the group was to reference as much as possible the IEEE 802.3 standard, there are several things that need to be rewritten, because the FC-BaseT PCS is different than the one used in 1000Base-T. The documents contain some rewritten text taken from IEEE 802.3. Claudio would have liked people to review the documents before incorporating them in the draft, but Schelto commented that the best way to get review and comments is to have them into the draft. Then Claudio moved to incorporate the presented 5 documents (06-025v1, 06-026v1, 06-262v0, 06-263v0 and 06-264v0) into the next revision of the FC-BaseT draft. Schelto van Doorn seconded. The motion passed by acclamation.

Action: Claudio to address copyright approval from IEEE-SA.

5.3 FC-BaseT Draft Proposal, 06-254v0, Terry Cobb

Terry presented a proposal on how to define the MDI and the cable plant requirements for FC-BaseT. It is possible to reference other standards for all needs of FC-BaseT. Few comments were made, and Terry agreed to prepare 06-254v1 to address them. Terry moved to incorporate 06-254v1 (06-254v0 with modifications as per discussions during the meeting) into the next revision of the FC-BaseT draft. Claudio DeSanti seconded. The motion passed by acclamation.

5.4 Power Backoff for FC-BaseT, 06-266v0, Brett McClellan

Claudio presented, because Brett was unable to participate to this meeting. Brett investigated how Power Back-Off (PBO) may improve FC-BaseT. When internal impairments are cancelled, alien crosstalk becomes the dominant impairment, and the worst case for it is the coupling of short links with long links. The basic idea of PBO is to trade margin on short links with high SNR to improve longer links with low SNR. PBO may mitigate Alien FEXT levels between 50 and 150 MHz, the relevant frequencies for 4GFC-BaseT, resulting in up to 4dB in SNR improvement. PBO may also improve the compatibility of FC-BaseT with 10GBASE-T. The results of some analysis were presented. Reach in a mixed lengths environment is determined by the disturber length more than the considered link length. With PBO this issue is corrected. The analysis showed also that with good coding and good receivers (e.g., 16 states Trellis Coding with Tomlinson-Harashima pre-coding) 4GFC-BaseT may be able to get to a 100m reach on Category 6 cables. The group discussed this result, considered quite optimistic. A more complex PHY may be able to extend to 100m the reach of 4GFC-BaseT on Category 6 cables, but the framework in which the group operated so far has been not to create a new kind of PHY, but to define how to extend the existing 1000Base-T PHY designs to carry Fibre Channel. A reach of 50m at 4G has been considered more than enough by all marketing people. PBO is important to improve power requirements and compatibility with 10GBASE-T. **Action:** Scott to prepare PBO data related to shorter (less than 50m) links.

5.5 Proposal for Optional TCM Mode in FC-BaseT PHY Standard, 06-289v0, Scott Powell

Scott presented a proposal for an optional simplified TCM mode in FC-BaseT. TCM allows additional SNR gain over Schlaefi lattice, but is more complex. Scott presented in December 05-812v0, describing an optional 16-states TCM mode. However, a 16-states Viterbi decoder would be quite different from the 8-states one used in 1000Base-T. Defining an 8-states TCM mode for FC-BaseT, this proposal allows reusing the Viterbi decoder of 1000Base-T and therefore makes FC-BaseT an add-on to existing 1000Base-T designs. The SNR loss in respect to the 16 states TCM mode is less than 0.5 dB. The feature would be optional, but if two connected PHYs support it, then they shall use it. Discussion on optional to implement vs. optional to use. Optional to implement would make it optional in the standard. Optional to use would be mandatory to implement, but with the ability to be turned on/off. The group agreed that optional to implement would be preferred as Schlaefi is mandatory. Scott moved to add the optional TCM mode per 06-289v0 to FC-BaseT. Claudio DeSanti seconded. The motion passed by acclamation. A text proposal for incorporation in the draft is needed.

5.6 Proposed Text for FC-BaseT E-FIFO, 06-286v0; Proposed Text for FC-BaseT PHY Startup Procedures, 06-287v0; Ali Ghiasi

Deferred to the next meeting for lack of time.

6. Unscheduled FC-BaseT business

None.

7. Review of FC-BaseT action items

AI-13: Schelto Van Doorn will work on Port Management, section 9.

AI-14: Scott Powell will work on section 6.

AI-19: Claudio DeSanti to address copyright approval from IEEE-SA.

AI-20: Scott Powell to prepare PBO data related to shorter (less than 50m) links.

8. Next meeting schedule

Request 4 hours on Monday morning at the next T11 Plenary week in Anchorage, AK.

Request authorization for 2 conference calls and an Interim meeting. The Interim should be done during the week of May 8th in San Jose, CA.

9. Motion to adjourn

Motion to adjourn by Ali Ghiasi, seconded by Schelto Van Doorn.

Adjourned at 7:14 PM

10. Attendance

The following 11 people attended this meeting:

Company	Name
AGERE	Adam Healy
BROADCOM	Ali Ghiasi
BROADCOM	Kevin Brown
BROADCOM	Scott Powell
CIENA CORPORATION	Sashi Thiagarajan
CISCO SYSTEMS, INC.	Claudio DeSanti
INTEL CORPORATION	Schelto Van Doorn
MCDATA	Scott Kipp
QUAKE TECHNOLOGIES	Brad Booth
SYMANTEC	Roger Cummings
SYSTEMAX SOLUTIONS	Terry Cobb