

Minutes of T11.1 Ad Hoc meeting on HIPPI-6400 Optics
August 11, 1998
Portsmouth, UK

1. Opening remarks and introductions

The Chairman, Don Tolmie of Los Alamos National Laboratory, opened this meeting at 6 PM and thanked Paul Levin and Xyratex for hosting this meeting. Don lead a round of introductions. The list of attendees is at the end of these minutes.

2. Selection of secretary

Don Tolmie thanked Roger Ronald for taking the meeting notes for the June meeting, and solicited a volunteer to take the meeting notes for this meeting. Arun Agarwal volunteered. Don Tolmie will produce the final HIPPI-6400 Optical minutes separate from the other HIPPI minutes.

3. Review / modify the draft agenda

Draft agendas were distributed via e-mail before the meeting. Presentations were added as:

- 7.1 Skew measurements in ribbon cables
- 7.2 Performance of MT based connectors
- 7.3 Text for modal noise
- 7.4 Text for Annex A on connector loss calculation

These minutes represent the approved agenda.

4. Document distribution

Don described the HIPPI web page at <http://www.cic-5.lanl.gov/lanp/ANSI/>, stated that the appropriate documents would be placed there, and encouraged people to pick up the documents before the meeting as extra documents would not be available at the meeting.

5. Review minutes of previous meeting

The minutes of the June 9, 1998, meeting in St. Petersburg were reviewed.

Schelto van Doorn moved, and Dave Hyer seconded, to approve the June 9 minutes as written. Motion passed unanimously.

6. Review of old action items

The action items from the June meeting were reviewed:

1. Greg Chesson, Steve Joiner, Mark Donhowe, and Dan Brown to resolve the jitter budget and specification line items. (In process)
2. Dan Brown to facilitate an interim teleconference to work on the jitter resolution. (Done)
3. Mark Donhowe to send the jitter write-up to Tolmie for posting on the web page. (Done)
4. Don Tolmie to announce over the e-mail reflector when the jitter write-up is available. (Done)
5. Dan Brown to review the ATM Forum wording for model noise and suggest wording for our document. (Done)
6. Chris Karaguleff to send the title of FOTP-54 to Tolmie for inclusion in the next revision. (Done)
7. John Keesee to add a fiber number callout to the connector drawing. (Done)
8. Dan Brown to address the open issues concerning the eye mask in 7.1. (Carryover)
9. Chris Keller to provide material for Annex B describing optical module channel-to-channel skew testing. (Done by Dan Edmans)
10. Steve Joiner to run the ATM modal noise power penalty model with connection loss numbers of 0.75 dB to 1.25 dB. (Carryover)
11. Dan Brown to provide example connector loss calculations. (Done)
12. Don Tolmie to update HIPPI-6400-OPT Rev 0.5 with the changes agreed to at the June meeting. (Done)

7. Presentations

7.1 Skew measurements in ribbon cables

Klaus Schulz (Siemens) presented skew measurements in ribbon cables. Reported availability of low-skew ribbon cables and measurements performed. Results of two methods were presented: 1) Quadrature Phase shift method by EG&G using SM fiber launch at 1300nm, and 2) Time of flight method by Siemens using 62.5micron at 850nm. Time of flight method showed 0.2ps/m higher skew compared with the phase shift method.

Dan Brown (AMP) questioned about the relevance of low-skew fiber cable for HIPPI-6400. The specification allows 5000ps skew over 300m length with SuMAC deskew chip. Klaus continued the presentation for general informational purpose. Maximum skew measured was about 5ps/m. Skew measurements showed 'bathtub' distribution indicating higher stress related skew on outer fibers. A ribbon with Kevlar strength members on the edges showed better results. Cables made with 'soft jacket material' showed somewhat different results with some improvements in the overall skew among 12 fibers. Conclusion was that 1ps/s skew fiber is expensive but is needed for parallel link without SuMAC chip.

7.2 Performance of MT based connectors

Klaus Schulz (Siemens) presented issues related to MT based multifiber connectors. Reported evidence of surface damage around alignment pin holes after 20-30 mating/de-mating of these connectors. 5% of the parts showed this degradation. Probable cause is imperfect parallelism of the two pins, which apply frictional forces at the entry points resulting in chipping and erosion of material. Misalignment may also cause lack of physical contact. Klaus suggested that the improvements are needed in alignment mechanism, e.g., shorter alignment pins. A new design with floating loaded ferrule and latch for mechanical integrity should be considered and may be necessary.

Aire Van Praag (CERN) commented that he has some test results with some 1,000 insertions on MT connectors and no such problem was observed. Arie will submit the report containing the test results to Don Tolmie for posting on the web pages. Dan Brown (AMP) asked what action, if any, this

group should take? Ron Bossard (3M) mentioned that TIA/EIA 6.3 is working on MT intermateability standards. Dan would like to respond /comment on this performance issue at the next HIPPI-6400 Optical meeting. Don Tolmie noted that a major reason the MT connector was chosen for HIPPI-6400 was that it had good market penetration and performance.

7.3 Text for modal noise

To follow up the last meeting's discussions, Dan Brown (AMP) presented revised text for 'modal noise' section. One item in particular is that the new text specifies a maximum single connection loss of 0.75 dB. It was agreed that the text should be used in the document as presented until results of modal noise model become available. Steve Joiner (HP) has a model for modal noise prediction, but Steve was absent at this meeting. Dan also reported that TIA is working on mode power measurement and the work may result in a test procedure to determine mode distribution.

7.4 Text for Annex A on connector loss calculation

Dan Brown of AMP presented text for Annex A giving an example connector loss calculation. This is a method for designing or budgeting connection links loss. The text was reviewed and a few changes made, e.g., changing "...loss..." to "...loss budget..." in several places. It was agreed to include the text in the next document revision.

8. Jitter discussion

Mark Donhowe (GORE) had put together a document on the web that defines all misalignments with SuMAC chip. Various jitter components are added to a total of <1nsec including all clock misalignment. David Hyer (DEC) asked if the numbers are typical or worst case. Dan Brown clarified that the numbers are worst case, and are subject to interpretation. No further discussion was possible on this topic in the absence of both Steve Joiner and Mark Donhowe. Arun Agarwal (Siemens) suggested that the document be included in Section 5.1 on signal characteristics.

9. Review HIPPI-6400-OPT Rev 0.6

Rev 0.6 contained the changes from the June meeting in St. Petersburg Beach. All of the new and revised text was accepted as drafted, with exceptions listed below.

In Figure B.3a, trigger shown running off data generator. It was suggested to include text 'scope should be triggered by a stable trigger source originating at the data generator'. The sentence to also be included in section B.2.1 and B.2.2 at the end of item "a -".

Replace the word 'opto-electronic (O/E) converter' in section B.2, p.17, by 'optical to electrical (O/E) converter'. On page 21, correct Figure B.5 caption. Instead of 2(a) and 2(b), it should read (a) and (b). In section B.2.1 and B.2.2, item d, replace 'electrical' with 'electrical and optical'.

10. Call for patents

Don issued a call for disclosure of the existence of patents required to implement the results of any and all HIPPI standards. It is necessary for the patent holders to agree to license those patents in conformance with the ANSI patent policy if the project on which they apply is to proceed. T11 and its Task Groups are not involved in this process at all other than to issue the call and forward paperwork.

The contact at ANSI is the General Counsel, Ms. Amy Marasco - (212) 642-4954 or amarasco@ansi.org. A patent policy description is at www.ansi.org/proctbl.html, section 1.2.11.

No new patent claims were made at this meeting.

11. Planning for future work

Nothing new, continue as we have been.

12. Future meeting schedule

The HIPPI Optical group will continue to meet only during plenary weeks for the foreseeable future.

The next meeting will be on Tuesday, October 6, from 6 PM to 9 PM. The location is the Fort Lauderdale Marriott North, 6650 North Andrews Ave., Ft. Lauderdale, FL 33309, phone: (954)771-0440 or (800)343-2459, fax: (954)771-7519. The room rate is \$125.00 US/night-all inclusive. Use the group name T11/Adaptec when making reservations; reservation cutoff date is September 5, 1998. The host is Adaptec and Norm Harris, nharris@corp.adaptec.com.

The agenda will be essentially the same as the agenda for this meeting.

14. Review action items

1. Greg Chesson, Steve Joiner, Mark Donhowe, and Dan Brown to resolve the jitter budget and specification line items.
2. Dan Brown to address the open issues concerning the eye mask in 7.1.
3. Steve Joiner to run the ATM model noise power penalty model with connection loss numbers of 0.75 dB to 1.25 dB.
4. Don Tolmie to update HIPPI-6400-OPT Rev 0.6 with the changes agreed to at the August meeting.
5. Arie van Praag to forward the CERN testing presentation to Tolmie for posting on the web site.
6. Arun Agarwal to investigate jitter testing with the SuMAC chip. Discuss with Greg Chesson.
7. Dan Brown to reply to Siemen's "MT connector problem presentation" at a future meeting.

13. Adjournment

The meeting adjourned at 8:30 PM.

Attendance

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