

P1394B – CHICAGO, IL – September 9, 1998
COPPER WORKING GROUP MEETING – “COPPERHEADS”

AGENDA

➤ **Review and approve of last meeting's minutes**

Summary of August Minutes

- ◆ Proposal for bulk cable testing methodology passed.
 - Forwarded to the secretary to put into Framemaker.
 - Complete – Under review; copies at the meeting regarding
- Discussion - Dave Brunker brought up the issue of equipment manufacturer reference in the test specification. This needs to be addressed in the document. A disclaimer could be added regarding the use of equivalent equipment. Identification of additional equivalent equipment will be considered.
- ◆ Proposal made for cable detect pin in 6 ckt I/O using inexpensive switch.
 - David Wooten requested data by October meeting to determine if new cable + switch are necessary for S1600 with current 6 ckt I/O, as this will impact the silicon pinout.
- ◆ Ongoing proposal to change shape/geometry of existing contacts in the socket
 - Follow-up presentation required on durability and reliability numbers – Reported to be in progress
- ◆ Chuck Brill to propose an EMI/RFI test for review
 - Information presented, details under reviews
 - Chuck to provide more legible copy for review
- ◆ Colin Whitby-Strevens has requested that this group provide NEXT information for the 6 ckt I/O system. These are needed to understand total electrical budget. Request is based on work in Fibre Channel.
 - Discussion - Colin indicated that some of the reasoning is the -26dB NEXT threshold specified in the latest 1394.b draft (0.13). With a max launch of 800mV, NEXT worked out to be 40mV or 5%. The total noise budget is 80 mV (See table 5-10 in 0.13 draft). This also includes 15mV noise, 20mV Off Transmit, and 5mV of margin. These parameters in conjunction with Annex B of 1394, plus skew per p1394.B need to be considered
- Minutes unanimously approved

➤ **Review of Past Presentations**

- ◆ Switched 1394 Header
 - ALPS has requested user input on cable detect requirements
- ◆ Geometry changes to contacts by Berg
 - Pending
- ◆ EMI/RFI Testing
 - Awaiting detailed review

➤ **New Items**

- ◆ Presentations
 - None
- ◆ Develop Ongoing Action Items
 - EMI/RFI Baseline test method
 1. Presentation posted on web
 2. Call for test method input and review of details
 3. Presentation posted was not legible, need better copy
 - Comment by Chuck Brill – will re-post to reflector within 2 weeks
 - Cable detect pin in copper connector

- Proposal under review
- User feedback requested by Alps to allow for high-speed operation with legacy performance
- Action from the Chairman to determine by October whether a new cable + switch are needed
- In long discussion it was decided that a cable detect pin will be needed at S1600 which will affect the Header and the plug. The reasoning was that the S1600 cable assembly will need to be built to a higher level of workmanship using materials capable of higher performance, and tested to a higher level than 1394-95/1394a assemblies. It is to be determined whether a similar cable detect system will be needed at S800, pending testing. That testing must determine whether a cable, which just meets 1394-1995/1394a requirements, can be operated connected to a modified receptacle and perform to the 1394.b electrical and signaling requirements.
 - Another consideration was color code for ID (determined to be not always useful since a consumer will likely ignore the color code)
 - A question was raised whether Compliant 1394-95 cables and currently available connectors made by first tier, professional manufacturers:
 1. Will it meet S800 @200pS with no changes to any connectors and no EMC considerations to be considered (i.e. 1394.b differential vs. 1394-95 single ended)?
 2. Will it meet S1600 @ 100 pS with the same stipulations as in 1.?
 **Those polled gave the following responses:
 - Dave Brunker: 1. Yes, 2. No
 - Bill Northey: No to both, but will review
 - Chuck Brill: No to both, but will review
 - Long discussion whether minimum 1394-1995 compliance was sufficient to get to S1600; or will there have to be a higher standard? (Wooten) It appears that there will be a new modified set of standards to meet S1600
 - D. Brunker pointed out that with the 100 ps requirement for both S800 and S1600, in conjunction with the NEXT requirements pointed out by Colin Whitby-Stevens, the cables may not work at either S800 or S1600. D. Wooten indicated that we may have to push back to the silicon group that at S800, an edge rate of 200ps will have to be used to assure signal integrity
 - Brad Bickford indicated there is a concern with EMI beyond S400. He indicated that there has been some work done to solve the issues, but it appears to be of a proprietary nature. The Chairman indicated that there should be some pressure from anybody involved to put the issues out for consideration. If there is IP involved with the proposal, then it should be declared and meet the IEEE rules at the time of presentation
 - An ongoing review of the 1394.b specification as it evolves, is needed to keep up with electrical changes and their effect on the connector issues
- Bulk cable specification methodology
 - Passed – to be added to P1394b document
 - Document in Framemaker and under review
- Matrix of physical interfaces
 - Updated from last meeting (Included below including modifications from previous version)
- Connector contact design modifications
 - Awaiting durability/reliability data
 - Bill Northey indicated that data should be available for the December meeting in Monterey

General Action:

Chairman to present at the September 1394b Plenary Meeting:

- At S800 the PHY silicon will have to have a rise-time of 200 ps, not 100 ps shown in the current draft to meet NEXT and total electrical budget for the cable and connector.
- The S1600 PCB connector will need a switch to tell the PHY that this is S1600 cable. It will also become a much more sophisticated cable assembly maybe similar to Fibre Channel in costs and performance. We should look at adding 2 pins to the PHY for safety and future use.

➤ Meeting Adjourned

1394 Connector/Cable Reference *Draft*

IEEE Reference Standards:

- 1394-1995 6 ckt. External I/O & S400 cable
- 1394-1995 Internal device connector & S400 cable
- P394a 4 ckt external I/O & S400 cable

IEEE Standards in Development:

- P1394b PN FO7 POF (plastic optical fiber, S100 – 200)
- P1394b LC Glass Fiber (S400 – 3200)
- P1394b Cat 5 UTP (S100)
- P1394b 6 ckt. Backward compatible external I/O (S800-1600)*

Industry Standards:

- Device Bay Connectors & S1600 cables

* S3200 connector and cable to be addressed in future work