Attendance:

Mr. Paul von Stamwitz	AMCC
Mr. Jesse Jaramillo	Amphenol
Mr. Douglas Wagner	FCI
Mr. Kiran Venanabhatla	Finisar Corp.
Ms. Monica Li	Finisar Corp.
Mr. Mike Fitzpatrick	Fujitsu
Mr. Barry Olawsky	Hewlett Packard Co.
Mr. Dan Colegrove	HGST
Ms. Carrie Cox	IBM Corp.
Mr. George O. Penokie	IBM Corp.
Mr. Schelto van Doorn	Intel Corp.
Dr. Mark Seidel	Intel Corp.
Mr. Pankaj Kumar	Intel Corp.
Mr. Michael Jenkins	LSI Logic Corp.
Mr. Gabriel Romero	LSI Logic Corp.
Mr. Keith Maloney	LSI Logic Corp.
Mr. John Lohmeyer	LSI Logic Corp.
Mr. Paul Wassenberg	Marvell Semiconductor, Inc.
Mr. Helen Lui	Maxim
Mr. Galen Fromm	Molex Inc.
Mr. Michael Rost	Molex Inc.
Mr. Hock Seow	NEC Electronics America, Inc.
Mr. Robert Watson	PMC-Sierra
Mr. Rick Hernandez	PMC-Sierra
Mr. Alvin Cox	Seagate Technology
Mr. Benoit Mercier	STMicroelectonics
Mr. Doug Loree	Toshiba
Mr. Kevin Witt	Vitesse Semiconductor
Mr. Larry McMillan	WDC

29 in attendance

Agenda:

1. SAS-2 Electrical Specification Proposal 06-496 [Witt]
http://www.t10.org/ftp/t10/document.06/06-496r2.pdf

Additional discussion:
Proposal for 6G SAS Phy Specification 07-001 [Jenkins]
http://www.t10.org/ftp/t10/document.07/07-001r0.pdf

Spent the entire time discussing 07-001. This proposal covers many of the items below.
With regards to the transmitter device spec proposal, 07-001 has a great deal in common with 06-496r2.

The differential voltage in 07-001 is defined by using pk-to-pk and mode voltages. This is similar to the suggestion I made below in item b regarding how to measure de-emphasis. The pk-to-pk voltages represent the signal with no de-emphasis.

De-emphasis is not included as a set value. This is an item that needs to decided upon, but was not a subject of lengthy debate during this call. (Deferred to a later time.) Mike includes a page presenting his concerns with a fixed de-emphasis.

DC common mode and differential impedance are considered to be included in the return loss plots. Mike proposes the DC values be dropped and just use the return loss plots. He also updated the equations to reflect 3.0 GHz rather than 4.25GHz to represent the values in SAS terms. The plots are the same as in 06-496r2 and were not copied into this proposal.

The jitter values include question marks, but jitter has not been discussed yet and the values are intended as initial place holders.

Overall, the major differences in this TX specification proposal include the use of mode measurement for the de-emphasized signal and the removal of fixed de-emphasis.

The Receiver specification differences were limited to the use of the return loss plots for the DC common mode and differential impedances.

We spent much time discussing the "interoperability" proposal. The method shown uses a combination of a reference compliance channel and simulated equalization to produce an eye diagram. This is similar to the existing SAS specification except that the equalization simulation is added. Some concerned are that equipment may not be able to add the equalization simulation and that we are specifying the transmitter output as a delivered signal rather than a simple measurement made at the transmitter device compliance point. Simple would be better, however, it may require a combination of the simple method plus the delivered, processed signal to achieve the desired performance specification. Concern was also expressed over the de-emphasis and how it is supposed to be optimized (according to the OIF version in the box) since we have not

The reference TX specification received a major complaint in that the VMA amplitude was used rather than the Vpp value. The concern is that the de-emphasis is included as a variable from 0-6 dB and that if 6dB and 400mV are used for the reference values, a high-loss channel would not deliver the required signal to the receiver. If the Vpp is used, then the 800mV combined with 0-6 dB still gives a 400mV minimum signal amplitude into the channel. Mike is to supply additional supporting data on the reference differential capacitance.

a. Concentrate on page 6: Transmitter device signal characteristics.
Avoid the de-emphasis line for this call and work on the more commonly agreed-upon numbers.

b. De-emphasis measurement (page 8)
It seems that the major issue with the measurement technique is the window location that the measurements are made.
What if Vpk is the pk-pk voltage (wherever it is at) and Vde is a mode value? Since the test is made on the transmitter through a zero length load, the mode portion should not see too large of a spread. (This approach is taken in 07-001.)

c. Receiver Device Signal Characteristics (page 11)

2. 10-meter cable specification issues
http://www.t10.org/ftp/t10/document.06/06-499r0.pdf

Several simulations in process and should have proposal update at January meeting.

Next call: 12/7/2006

Agenda: Review of above items using 06-496 as the basis and considering the 07-001 discussion.

Weekly teleconferences scheduled for Thursdays at 10 am CST:

PARTICIPANT INFORMATION:

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PARTICIPANT CODE: 3243413

Webex information:
https://seagate.webex.com/seagate

Topic: SAS-2 PHY WG
Date: Thursday
Time: 10:00 am, Central Standard Time
Meeting number: 826 515 680
Meeting password: 6gbpsSAS

No call on 12/28.