Attendance:

Mr. Ken Paist	Agere Systems
Mr. Chuck Hill	Alta Engineering
Mr. Minchuan Wang	Dell
Mr. Barry Olawsky	Hewlett Packard Co.
Mr. Harvey Newman	Infineon Technologies
Mr. Mike He	Intel Corp.
Mr. Michael Jenkins	LSI Logic Corp.
Mr. Paul Wassenberg	Marvell
Mr. Galen Fromm	Molex Inc.
Mr. Alvin Cox	Seagate Technology
Mr. Kevin Witt	Vitesse
Mr. Adrian Robinson	Vitesse
Mr. Benoit Mercier	ST Microelectonics
Mr. Jeff Choun	

14 People Present

Agenda:

1. Kevin Witt & Adrian Robinson: SAS-2 iPASS Data Eyes vs DeEmphasis
http://www.t10.org/ftp/t10/document.06/06-206r0.pdf
Simulations for .5-meter cable verified with actual data taken by Vitesse that the range in pre-emphasis has minimal impact to the eye. A 6 dB de-emphasis for external doesn't have too much negative impact on a short cable.

2. Spread spectrum clocking
a. Yuriy to present information on down-spreading versus symmetric.
http://www.t10.org/ftp/t10/document.06/06-193r0.pdf
Concern about power required to support receiver tolerance of SSC and jitter trade-off to SSC amount. Downspreading approach is common in industry. Don't expect to see any change.

b. Harvey to post a few notes on system clock impact.
http://www.t10.org/ftp/t10/document.06/06-192r0.pdf
Discussed system issues with SSC variations such as 5000 ppm and 2000 ppm transmission in the same system. Looked at common clock issues and discussed number of aligns that need to be inserted to support SSC. The SAS protocol would have to be changed to add more aligns. SATA will probably remain at 5000 ppm downspreading at G3 due to motherboard designs and backwards compatibility. Looked at some applications and may be able to keep SSC between an initiator and expander if both support SSC even though the expander had to shut off SSC due to a legacy device.

c. HP (Barry) to provide more emissions data as available.
Hardware issues have been resolved and should have data face-to-face.

d. Backwards compatibility and other issues need to be discussed and resolved. Alvin has posted a considerations document:
http://www.t10.org/ftp/t10/document.06/06-129r1.pdf
Several issues are present and this needs special attention at the face-to-face.

3. Continued discussion on 6Gbps specification elements
TCTF definition: Rob and Barry to describe some issues that may lead to interoperability problems.

4. New business
Equalization tuning:
If the mechanism is there in the protocol to adjust transmitter de-emphasis, some are concerned that if this feature is optional, it will be mandatory from a marketing perspective. 4th generation speeds are expected to require it and 6Gbps (3rd generation) would benefit with having it optional so that knowledge can be gained for a smooth transition. Harvey has provided one possible solution for the speed negotiation sequence, however the PHY group needs to determine exactly what it wants and how it is to be implemented before taking this to the protocol group. Missing something now could be disastrous for future generations. The time required, interactive adjustment, receiver complexity to determine goodness of Tx settings, and other details need to be examined.