

Approved Minutes
IEEE P802.3AP - Backplane Ethernet
January 24 – 26, 2005
Vancouver, BC

Prepared by: John D'Ambrosia

Meeting convened at 8:32 am, January 24, 2005

Agenda / Housekeeping Issues

- Adam Healey has been delayed by weather, and has designated Schelto van Doorn to act as chair until his arrival.
- Introductions
- Agenda (agenda_01_0105)
 - Approved by voice vote without objection
 - Moved by John D'Ambrosia
 - Seconded by Mike Altmann
- Review of Minutes from November meeting
 - Motion to approve minutes from November meeting
 - Moved by Fulvio Spagna
 - Seconded by Jimmy Sheffield
 - Minutes were Approved by voice vote without objection
- Goals for meeting discussed
 - Development of Draft 1.0
 - Adopt proposals to fill holes in baseline text.
 - Big Ticket Items
 - Interconnect Specifications
 - 10GBASE-KR
 - Resolve comments against Draft 0.7
 - Presentations
 - Formalize points of agreement with motions
- IEEE rules read to the body by Chair
- Rules for this interim meeting allow all registered attendees present to speak and vote
- IEEE Patent policy read to the body by Chair
- Inappropriate Topics for IEEE meetings read to the body by Chair
- IEEE Project Flow Discussed
- Project Details
 - Approved PAR - <http://standards.ieee.org/board/nes/projects/802-3ap.pdf>
 - 5 Criteria - http://ieee802.org/3/ap/802_3_ap_5criteria.pdf
 - Objectives - http://ieee802.org/3/ap/802_3_ap_objectives.pdf
- Review of November meeting
- Project schedule discussed
 - See agenda_1_0105 for Project Timeline
- Chair requested
 - All questions on presentation be held to end
 - All questions relevant to content and clarification of content

- If an individual knows that they will be making a motion, please have wording of motion to secretary prior to Motion Madness on Wednesday.

Presentation #1

Title – Editor's Report
By – Schelto van Doorn, Intel
See – vandoorn_01_0105.pdf

Discussion

- Only 5 individuals responded. This has to be increased.
- Breakout meeting for discussing overlap of Clause 45 registers with 802.3an and 802.3aq.
- Review status of auto-negotiation

Presentation #2

Title – Signaling Ad Hoc Report
By – Mike Altmann, Intel
See - altmann_01_0105.pdf

Break – 9:39am
Reconvened at 9:52am

Presentation #3

Title – 10.3125Gbps NRZ Simulation Results Using "StatEye" and "Signal to Interference Model" on Cascaded Channel Components
By – Shannon Sawyer, Agilent
See - sawyer_01_0105

Discussion

- SDD21 is a tool, but not giving enough
- There were issues with the release of Stateye used by Agilent with the Tyco crosstalk data. This needs to be investigated as Stephen Anderson had used Tyco crosstalk, but it was thought this was done with a different version than what was used by Shannon.

Presentation #4

Title – NRZ simulation results over ad-hoc channels
By – Joe Abler, IBM
See - abler_01_0105

Discussion

- Problems seen with Goergen data. Charles Moore has edited the files, and has gotten them to work. Charles will provide files.
- Percent eye openings – the width margin after CDR at a certain BER (10^{-12}). See spreadsheet for complete values (horizontal and vertical opening)

Stephen Anderson didn't arrive on time.

Presentation #5 (11:05 – 11:35)

Title – 10Gbps Signaling Proposal Using Unified Signaling
By – Justin Gaither, Xilinx
See gaither_01_0105.pdf

Discussion

- Tx Mask needs work.
- Rx Diff. Peak Amplitude Maximum values of 1600 mVp-p chosen to maintain backwards compatibility for 1000BASE-KR specifications.
- Discussion regarding taps in Tx Linear Equalizer architecture, but it is being presented as a baseline starting point.

Presentation #6 (11:35 – 12:00)

Title – 10GBASE-KR Start-Up Protocol
By – Rob Brink, Agere
See brink_01_0105.pdf

Discussion

- Out-of-band loop closure may use some time out setting to prevent stability issues
- Timing relationship of full duplex channels adapting at the same time needs to be carefully considered.
- Intelligence in Rx only. Having the Tx being able to talk to the Rx could improve Link Initialization.
- Adding things to the protocol could increase complexity which leads to problems.

Break for Lunch at 12:10pm
Meeting Reconvened at 1:32pm

Presentation #7

Title – Proposal to Use PR-4 Signaling for 10GBASE-KR Links
By – Mike Altmann, Intel
See altmann_01_0105.pdf

Discussion

- Simulations do not include package or ac coupling cap.
- Numbers listed in table on Slide #15 are incorrect.

Presentation #8

Title – Proposed Receiver Interference Tolerance Specification
By – Charles Moore, Agilent
See moore_01_0105.pdf

Discussion

- Time to run – ½ hour run not including setup time
- Testing of the channel is done in such a manner that Rx are actually being tested at the loss limit
- May need to be tested pending signaling selection

Meeting break 2:56pm

Meeting Reconvened at 3:15pm

Presentation #9

Title – Simulations of Duobinary and NRZ Over Selected IEEE Channels, Including Jitter and Crosstalk
By – Stephen Anderson, Xilinx
See anderson_01_0105.pdf

Discussion

- All results are at the input to the Rx prior to any equalization
- For Tyco simulations provided xtalk relevant to forward channel response was not used. Worst case Xtalk across all cases was used to limit number of simulations.

Presentation #10

Title – HVM ATCA Channel Performance
By – Will Peters, Intel
See peters_01_0105.pdf

Discussion

- Pulse response is of SDD21 with an ideal load.

Presentation #11

Title – Status Update: SDD21 and SDD11/SDD22 Model Development
By – John D'Ambrosia, Tyco Electronics
See dambrosia_01_0105.pdf

Presentation #12

Title – Need for a Normative Channel Model Approach
By – John D'Ambrosia, Tyco Electronics
See dambrosia_02_0105.pdf

Discussion

- Discussion of normative tool – what is suggested? John – StatEye-like concept as people have had issues with implementation of StatEye. A list of issues is currently being acquired to allow identification of perceived problem areas.

Meeting ended for day at 5:00pm

Meeting Reconvened Tuesday, January 25 8:35am

John D'Ambrosia was asked to briefly speak to Presentation #12 again, as it had been given before its scheduled time.

Presentation #12A

Title – Need for a Normative Channel Model Approach

By – John D'Ambrosia, Tyco Electronics
See dambrosia_02_0105.pdf

Discussion

- Informative SDD21 mask is meant to get people in the general ballpark of channel throughput that is needed, but is not sufficient by itself to be used in a normative manner.
- TP1 – TP4 return loss by itself interacts with other aspects of the system, so that an informative mask by itself could give misleading results due to interaction between various aspects of the system.
- The development of an informative tool would need the group to define different components in the system, i.e. packaging, terminations, AC coupling.
- The OIF StatEye version does agree on a package model (perhaps simplistic) and terminations.

Presentation #13

Title – Update on OIF Statistical Eye Activities
By – Mike Lerer, Rapid Prototypes
See lerer_01_0105.pdf

Discussion

- Correlation data on StatEye to measurements was just given.
- Mike is talking about the OIF version of StatEye, which is under OIF
- Significant work needed to use StatEye as a signaling comparison tool. Amount of change would be limited if only tailored to selected signaling scheme.
- Correlation of signaling schemes not implemented in StatEye would be necessary.
- OIF version of Stateye code is available to the IEEE through the OIF liason. Open source code is available to all via Stateye.org, but is not necessarily the same as the OIF version.
- Correlation between Stateye versions and stateye simulations and measurements have been done.

Presentation #14

Title – A Close Look at Statistical Eye Algorithm and Issues
By – Majid Barazande-Pour, Vitesse
See barazande_pour_01_0105.pdf

Discussion

- Majid's concerns are with the implementation of the code, not the principles driving it.
- StatEye is not simulation in time domain.
- MMSE used.
- NO CDR model, it is the eye after equalization.
- It will take time to get duobinary into StatEye. Majid estimated a few months with a few dedicated people. Vitesse has code in time domain simulations that does the same type concepts of Stateye.

Presentation #15

Title – Crosstalk Summation on 10G Channels
By – Brian Von Herzen, Rapid Prototypes

See vonherzen_01_0105.pdf

Discussion

- Simplistic assumption that the aggressors are equivalent. Brian agreed and feels that the concept can be applied to equivalent and non-equivalent.
- Linear is more conservative approach.

Meeting break at 10am

Meeting Reconvened at 10:15am

Presentation #16

Title – Choose Signaling First
By – Justin Gaither, Xilinx
See gaither_02_0105.pdf

Discussion

- Concerns expressed about comment made regarding only one architecture needs to be shown to be feasible may raise interoperability issues. Supporters of the presentation feel that the problem gets staked out by a reference receiver and then the burden is on the implementer to make it work.
- We are getting into a schedule crunch and need to make a decision, and data is not coming in from all of the camps.

Presentation #17

Title – Transceiver Friendly Auto-Negotiation Signaling for 802.3ap
By – Pat Thaler, Agilent
See thaler_01_0105.pdf

Meeting adjourned for lunch at 11:34

Meeting reconvened at 1:07pm

Comment Resolution

Adam Healey arrived, and resumed chair position. Comment Resolution was deferred until Adam gave following presentation and discussion.

Presentation #18

Title – Channel Model Ad Hoc Report
By – Adam Healey, Agere
See healey_01_0105.pdf

Discussion

10GBASE-KR Issues

- 10.3125 Gbaud +/- 100 ppm
 - no voiced disagreement

Motion # 1 General Session Motion

Description: Move to amend the agenda to accept motions from the floor.

Motion Type: Procedural 50 % required
Moved By: Pat Thaler, Agilent
Seconded By: Brad Booth, Intel
Results: All Yes – 46 No – 0 Abstain – 2
P/F **Motion Passes**

Motion # 2 General Session Motion
Description: Move that the Task Force adopt the following as part of the baseline for 10GBASE-KR.

- 10.3125 GBaud
- 1 bit/symbols
- Adaptive transmitter and start-up protocol per brink_01_0105, as mandatory to implement and optional to use.

Motion Type: Technical, 75% required
Moved By: Brian Von Herzen, Rapid Prototypes
Seconded By: Justin Gaither, Xilinx
Results: All Yes – 39 No – 0 Abstain – 2
P/F **Motion Passes**

Motion # 3 General Session Motion
Description: Move that the Task Force adopt thaler_01_0105, including 49th bit to remove periodicity
Motion Type: Technical, 75% required
Moved By: Pat Thaler, Agilent
Seconded By: Justin Gaither, Xilinx
Results: All Yes – 32 No – 0 Abstain – 5
P/F **Motion Passes**

Straw Poll #1
Description: Adopt gaither_01_0105 as the basis for 10GBASE-KR

Yes - 15
No - 15

Motion # 4 General Session Motion (Motion #4 split into Motions #6 and #7 by Motion #5)
Description: Move that the Task Force adopt the electrical specifications (Slides 12, 13, 16, 17, 18, 19, 20) from gaither_01_0105, as the basis for 10GBASE-KR.
Motion Type: Technical, 75% required
Moved By: Justin Gaither, Xilinx
Seconded By: Brian Seemann, Xilinx
Results: All Yes – No – Abstain –
P/F **Motion Divided by Motion #5**

Discussion

- Discussion regarding the normative channel model.

Motion # 5 General Session Motion
Description: Move to divide Motion #4

- Slide 20
- Slides 12, 13, 16, 17, 18, 19

Motion Type: Procedural, 50% required
Moved By: Pat Thaler, Agilent
Seconded By: Aniruddha Kundu, Intel
Results: All Yes – 20 No – 9 Abstain – 12
P/F **Motion Passes**

Motion # 6 General Session Motion
Description: Move that the Task Force adopt the electrical specifications (Slides 12, 13, 16, 17, 18, 19) from gaither_01_0105, as the basis for 10GBASE-KR.
Motion Type: Technical, 75% required
Moved By: Justin Gaither, Xilinx
Seconded By: Brian Seemann, Xilinx
Results: All Yes – 38 No – 0 Abstain – 2
P/F **Motion Passes**

Motion # 7 General Session Motion
Description: Move that the Task Force adopt Slide 20 from gaither_01_0105, as the basis for 10GBASE-KR.
Motion Type: Technical, 75% required
Moved By: Justin Gaither, Xilinx
Seconded By: Brian Seemann, Xilinx
Results: All Yes – 32 No – 1 Abstain – 6
802.3 Yes - 16 No - 0 Abstain - 7
P/F **Motion Passes**

Break at 3:15pm
Reconvened at 3:30pm

Comment Resolution Continued

Motion # 8 General Session Motion (Comment #31)
Description: Change the upper limit for 1000BASE-KX to 3.3V
Motion Type: Technical, 75% required
Moved By: Graeme Boyd, PMC-Sierra
Seconded By: Mike Lerer, Rapid Prototypes
Results: All Yes – 2 No – 18 Abstain – 15
P/F **Motion Fails**

Motion # 9 General Session Motion (Comment #16)
Description: Move that auto-negotiation be mandatory to implement, optional to use for 802.3ap PHY devices and parallel detect be provided for legacy connect.
Motion Type: Technical, 75% required
Moved By: Pat Thaler, Agilent
Seconded By: Jeff Lynch, IBM
Results: All Yes – 15 No – 3 Abstain – 21
802.3 Yes - 9 No - 1 Abstain - 14
P/F **Motion Passes**

Motion # 10 General Session Motion (Comment #20)
Description: Move that Tx_Disable, Loopback Mode, Transmit Fault, PMD Receive Fault, be made to be consistent with 10GBASE-CX4.
Motion Type: Technical, 75% required
Moved By: Ilango Ganga, Intel
Seconded By: Charles Moore, Agilent
Results: All Yes – 21 No – 1 Abstain – 14
P/F **Motion Passes**

Meeting Broke For Day at 5:15pm

Meeting Reconvened on January 26, 2005 8:45 am

Motion #11 General Session Motion
Description: Move that 1000BASE-KX common-mode voltage be changed to align with the 10GBASE-KX4 (-0.4 to 1.9V).
Motion Type: Technical, 75% required
Moved By: Graeme Boyd, PMC-Sierra
Seconded By: Charles Moore, Agilent
Results: All Yes – 22 No – 0 Abstain – 13
P/F **Motion Passes**

Motion #12 General Session Motion
Description: Move to adopt Slide 7 and 8 of gaither_01_0105, as the basis for 10GBASE-KR Tx.
Motion Type: Technical, 75% required
Moved By: Justin Gaither, Xilinx
Seconded By Majid Barazande-Pour, Vitesse
Results: All Yes – 18 No – 17 Abstain – 5
802.3 Yes - 13 No - 10 Abstain - 2
P/F **Motion Fails**

Discussion

- Concerns were raised that this motion defeats the work of the Signaling Ad Hoc since it essentially selects the coding scheme. It wasn't felt that it encompasses PR-4.
- Some feel that passing this motion will allow focus on the architecture while others feel the conversation will happen anyways.

Motion #13 General Session Motion
Description: Move that the Task Force include the verbiage in moore_01_0105.pdf as an informative annex to Clause 72.
Motion Type: Technical 75 % required
Moved By: Charles Moore, Agilent
Seconded By Joe Abler, IBM
Results: All Yes – 19 No – 3 Abstain – 15
802.3 Yes - 13 No - 2 Abstain - 7
P/F **Motion Passes**

Discussion

- Discussion regarding whether this was an informative or normative annex. This motion does not provide any linkage between the clause 72 text and the informative annex.

Presentation #19

Title – Proposal for Methodology for Determining Informative TP1 – TP4 SDD21 Model
By – John D'Ambrosia, Tyco Electronics
See dambrosia_03_0105.pdf

Motion #14 General Session Motion
Description: Move that the Task Force use the methodology proposed in dambrosia_03_0105 as the basis for determining an informative SDD21 channel model for TP1-TP4.
Motion Type: Technical 75 % required
Moved By: John D'Ambrosia, Tyco Electronics
Seconded By Matt Hendrick, Intel
Results: All Yes – 35 No – 0 Abstain – 3
P/F **Motion Passes**

Discussion

- John D'Ambrosia to provide draft verbiage for inclusion into the draft.

Discussion

- Discussion regarding further work by the Signaling Ad Hoc
 - Determining common IC package models
 - Determining what crosstalk files go with which forward channels
 - Setting a schedule
 - Two meetings
 - One to align (Proposed Date – 2/4, 7:30 – 9:30 am PST)
 - Simulation results due – Monday, 2/28
 - Channel related issues
 - Issues with Molex channels need to clarify what xtalk goes with which forward channels. Molex will provide clarification.
 - Intel to review its contributed channels and highlight approximately 6 files.
 - Charles will update Joel's single-ended models only.

Meeting Break – 10:00am

Meeting reconvened – 10:20am

- Channel Ad Hoc
 - Normative tool – time or frequency domain methodology
 - There was disagreement in this area.

Motion #15 General Session Motion

Description: Move that normative channel specification be defined in the time domain (applies to analysis and not necessarily measurement).

Motion Type: Technical 75 % required

Moved By: Charles Moore, Agilent

Seconded By Stephen Anderson, Xilinx

Results:

All	Yes – 23	No – 2	Abstain – 9
802.3	Yes - 13	No – 1	Abstain - 7

P/F **Motion Passes**

Motion #16 General Session Motion

Description: Direct the channel model ad hoc to include reference transmitter, receiver, terminations (package and IC), and TP4-TP5 segment in the normative channel specification.

Motion Type: Technical 75 % required

Moved By: Justin Gaither, Xilinx

Seconded By John D'Ambrosia, Tyco Electronics

Results:

All	Yes – 25	No – 1	Abstain – 10
802.3	Yes - 16	No – 0	Abstain - 7

P/F **Motion Passes**

- Channel Model Ad Hoc Meeting
 - Methodology to derive time-domain data
 - Identify time-domain parameters
 - Correlation with frequency-domain parameters
 - Proposed 1st Meeting – Methodology to derive time-domain data. (Thursday Feb. 10)

- Proposed 2nd meeting – Identify time-domain parameters. (Wednesday Feb. 23)
- Proposal (Wednesday, March 2)
 - Correlation with frequency-domain parameters

Motion #17 General Session Motion

Description: Accept proposed comment resolutions and direct editor to create Draft 0.8 based on comment resolutions and adopted proposals and submit to the Task Force for review.

Motion Type: Technical 75 % required

Moved By: Tom Palkert, Xilinx

Seconded By Mike Altmann, Tyco Electronics

Results: All Yes – 37 No – 0 Abstain – 0

P/F **Motion Passes**

- New Baseline Text needed by February 9
 - Contributors
 - Rob Brink – 10GBASE-KR Startup
 - John D'Ambrosia – Informative Channel
 - Luke Chang / Ilango Ganga – Auto-Negotiation
 - Justin Gaither – 10GBASE-KR Electricals
 - Charles Moore – Receiver Interference Tolerance
 - Pat Thaler – Auto-Negotiation Signaling
 - Please get text to Schelto by Feb 9
- Ballot open February 16
- Big ticket items
 - Pre-coder decision
 - Guidance from simulation results
 - Normative channel specification
 - Populate informative channel specification values
- March 2005 Plenary
 - Date – March 13 to March 18, 2005
 - Location – Atlanta, GA
- May 2005 Interim

Motion to adjourn approved via voice vote without objection.
Meeting adjourned at 11:30am.