

Agenda
P1394b Working Group
October 12, 1999

1. Review Agenda
 2. Review of August Meeting Minutes
 3. Procedures
 - 3.1. Voting
 - 3.2. Price/Pricing
 - 3.3. Call for Patents
 4. Review of Old Action Items
 - 4.1. Page Turner October 28th & 29th, Scotts Valley (Zayante)
 5. Presentations
 - 5.1. IEEE P1394b - Report to the 16th DVB-IHDN meeting (18th May 1999) [Colin Whitby-Strevens]
 - 5.2. Copper Heads [Max Bassler]
 - 5.3. 'C-Code' Update [Colin Whitby-Strevens]
 - 5.4. PHY/Link [Sean Killeen]
 - 5.5. Hybrid Buses and the Border PHY - A P1394a Approach [Jerry Hauck]
 - 5.6.
 - 5.7.
 6. Actions: Submit Specification to IEEE for First Ballot
 7. Review of Action Items
 8. Adjournment
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MEETING MINUTES

SCAT:

33 Done

11 CLOSED

9 Agreed In Principle

9 Work in progress

3 Open

65 Total entries

Review of Action Items from previous meetings:

ACTION ITEM LIST (From August Meeting):

Al#2 David Wooten - Will write up a description of how to implement galvanic isolation as a informative portion of (say) clause three. [10/12/99: "Half-Done" - Still need galvanic isolations 'pictures' for the PIL/FOP model; 8/24: Not yet done]

Al#1: David Wooten will form the ballot body (BB). [10/12/99: David has "pestered" them and they have not yet responded; Work continues to be "in progress"; 8/24: Still in progress; David has sent the request to the IEEE)].

Review of agenda and call for agenda additions.

Accept previous meeting minutes: Eric Hannah moved to accept, seconded by Max Bassler. Passed without objection.

Voting, price/pricing, Call for Patents - all presented in the usual, professional manner by the group chair.

There are 19 folks present that are eligible to vote.

Presentations:

IEEE P1394b - Report to the 16th DVB-IHDN meeting (18th May 1999) [Colin Whitby-Strevens - Zayante, Inc.]

This presentation was provided to the plenary membership. It was first presented on May 18th to the DVB-IHDN group in London. It is available on the P1394b website (ZAYANTE, INC.). For your personal copy, please reference the following URL: <http://www.zayante.com/p1394b>

Upon concluding the presentation, the membership expressed appreciation with a warm and enthusiastic applause (a first)!

Copperheads - [Max Bassler - Molex]

Max delivered the presentation he first gave at the SCAT meeting held yesterday. The Secretary encourages the reader to reference the SCAT-Minutes-11th-October-99 for a copy of that presentation (Max's presentation was included in those minutes).

'C-Code' UPDATE [Colin Whitby-Stevens - Zayante, Inc.]

Colin presented a brief overview of things that have changed since the group met at the Portland (August) Plenary.



P1394b C Code update

Colin Whitby-Stevens
Zayante Inc

Summary

- Modifications made to incorporate recent decisions
 - connection management
 - more robust connection debounce
 - – loop free build
 - – standby/restore improvements
 - – reverse bit ordering before encoding
 - – arbitration corner cases
 - now use a concept of “senior border”
 - – don’t try to be clever on loss of synchronization
 - all combined into one chapter
 - correct bugs identified by simulation and implementer evaluation
- Not done
 - re-organization of the header files
 - identification of the code subset for a B-only PHY

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10/12/99



Connection Management Update

- Improved connection debounce
 - Beta mode no longer uses DC connection
- • Standby/restore
- • Loop free build
-
-
-
-

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10/12/99





Port chapter update

- Reversed the bit order for encoding
 - encode 5 most significant bits first, then less significant 3 bits
 - possible improvement on presentation of encoding table



Colin displayed two table formats for Valid Data Characters. One table was ordered H through A and the other ordered A through H. Colin sought informal feedback from the group as to which would be the best table to include in the specification. Note: this is NOT a change in technical content, rather, a simple choice between documentation. No conclusion was reached - not a problem (it is an editorial item).

PHY/Link - [Sean Killeen - Silicon Systems Limited (SSL)]

Sean gave an overview of the PHY/Link section of the Draft specification...



Beta PHY-Link Interface Summary

- **Interface Requirements**
- **Evolution from 1394a / Legacy**
- **Data Transfer Mechanism**
- **Requests**
- **Status Transfers**
- **PHY Register Map**
- **Integrated PHY & Link --- Fan-out PHY model**
- **Electricals**

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Beta PHY-Link Interface Requirements

- bi-directional 1394 packet data transfer at S100, S200, S400 & S800 speeds (parallel) and up to S3200 (serial interface)
- mechanism for status information transfer from the PHY to the Link
- mechanism for the Link to access a register space within the PHY
- means for the Link to request services from the PHY
- means for the PHY to interrupt the Link during an operation
- supports an optional isolation interface allowing separate PHY & Link power supplies
- supports operation by a Legacy-compliant link device
- supports a minimum distance of 20 cm between PHY & Link devices (parallel interface)

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Evolution from 1394a PHY-Link Interface

- Same basic transfer mechanism - 2 Control Lines, 8 Data Lines, Link Request (LREQ)
- New PHY communication mechanism - PHY Interrupt (PINT)
- Super-set of 1394a signals - therefore can support legacy interface operation
- New rules for Link Requests - goal to allow pipelining, more operations in parallel
- New types of Link Request & Grant - new arbitrations, new facilities etc.
- New Status Transfer mechanism
 - packet-related status issued in-band over D[0:7]
 - other status issues out-of-band over PINT
- New Facilities - interface resets, Link & PHY notifications, in-band Link request etc.
- New Electricals - supporting reach & speed requirements

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Data Transfer Mechanisms

- 100 MHz, Single-Edge Clocking Scheme, Source Synchronous (PCLK & LCLK)
- LCLK derived from PCLK
- 8-bit Data Path mandatory
- Supports transfers @ S100, S200, S400, S800 over discrete interface
- Supports S100 - S400 by data padding

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Link Requests & Notifications

- Asynchronous, Immediate, Isochronous, Cycle Start transmission requests
- PHY Register Read/Write requests
- Interface Reset request
- Cycle Start-related Link notifications

- Requests not cancelled or queued
- Beta-Only Vs 'Legacy' requests
- Even & Odd asynchronous & isochronous phase
- In-Band Link Request at end of transmit format

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PHY Status & Notifications

- Serial-Bus packet-related status - In-Band (over D[0:7])
 - Bus Reset
 - Arbitration Gap
 - Subaction Gap
 - Cycle Start
 - PHY Reset
 - Similar to Legacy status transfer mechanism
- Other PHY status - Out-of-Band (over PINT)
 - PHY Interrupt
 - PHY Register Reads
 - Bus Initialization with / without Reset
 - Serial transfer over PINT

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PHY Register Map

- Some minor changes & additions to PHY register map (thanks to Colin)
- Details of changes not very interesting in this forum (see draft)
- Further minor changes possible as draft reaches completion

- Other information ?

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Integrated PHY/Link & Fan-out PHY (PIL-FOP)

- Uses 'standard' Serial Bus connection between PHY & Link - no side-bands
- Means of overcoming limitations on discrete, parallel PHY-Link interface
- Allows S3200 data transfers (not currently defined in the specification)
- Supports 4.5m between PHY & Link, implicitly supports isolation
- Model designed to be transparent to software (single Node ID etc.)

- Needed some new invention - inter-packet packet format - 'LREQ/PINT-like'
- Needs some significant word-smithing to describe operating scenarios
 - standard packet transfers
 - interface initialization & start-up
 - operation of standby/restore, suspend/resume, other features....
- Draft 0.91 will include more details in the run up to Release Draft 1.0

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PHY-Link Electricals

- Confining discrete PHY-Link to S800 makes the discrete electricals 'manageable'
- Electricals for this interface type derived from Legacy electricals
- PHY-Link electricals now 'owned' by David Wooten for review

- Serial Bus PHY-Link interface electricals exactly the same as standard Beta

- Review of the discrete PHY-Link electricals strongly recommended.....

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PHY-Link Status Summary

- Interface protocol issues now largely resolved - word-smithing remains
- PIL-FOP model issues now largely resolved - needs documenting
- Electrical issues largely resolved - discrete electricals need review

- More 'informative' detail to be added to specification on operating models

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Comments ?
Questions ?

Hybrid Buses and the Border PHY - A P1394a Approach [Jerry Hauck - Zayante, Inc.]

Jerry Hauck delivered an update on border node. The original presentation was given at the June, 1999 meeting. The updated presentation has not been

included in these meeting. The reader is encouraged to access the P1394b web site and obtain their own, personal, copy. See URL: <http://www.zayante.com/p1394b>

Colin Whitby-Strevens moved that IEEE P1394b draft revision 0.90 as amended to incorporate the decisions of the SCAT meeting held on 11th October 1999 and to be held on 13th October 1999 and by the forth coming page turner on 10/28/99 and 10/29/99 be forwarded to sponsor ballot. Seconded by Eric Hannah.

John Fuller was recognized by the chair and called to question. The chair called for objection to call to question. There was one objection. A vote was taken for call to question:

10 favor to call to question 3 opposed

A vote was taken on the motion:

16 in favor 0 opposed 2 abstentions

Steve Bard moved to give the chair latitude to choose, **upon polling plenary membership**, individuals whom he feels best suited to serve as ballot review committee members. Seconded by Colin Whitby-Strevens

18 in favor, 0 opposed, 1 abstention

Colin Whitby-Strevens expressed the appreciation of the group for the efforts David Wooten has applied to the success of IEEE P1394b to which the crowd present went wild in support!

David, in kind, began a long litany of expressions of appreciation - keeping the crowd held in anticipation for at least the next three hours (er... minutes)... Special Kudos to the Zayante team, the "Irish" team and ESPECIALLY Colin!

The plenary meeting was adjourned with sine die: 5:30 PM

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