Voting Results on T10 Letter Ballot 05-125r0 on
Forwarding SAS-1.1 to First Public Review
Ballot closed: 2005/04/19 12:00 noon MDT

Organization	Name	S	Vote	Add'l Info
Adaptec, Inc.	Tim Symons	P	Yes	
Agilent Technologies	Pat Thaler	P	Yes	
Amphenol Interconnect	Michael Wingard	P	Yes	
Broadcom Corp.	Paul Griffith	P	Yes	
Brocade	Robert Snively	P	Abs	Cmnts
Cisco Systems, Inc.	Claudio DeSanti	P	Abs	Cmnts
CNT	David Peterson	P	Yes	
Crossroads Systems, Inc.			DNV	
Dallas Semiconductor	James A. Lott, Jr.	P	Yes	
Dell, Inc.	Kevin Marks	P	No	Cmnts
EMC Corp.	David Black	A	Yes	
Emulex	Robert H. Nixon	P	No	Cmnts
ENDL	Ralph O. Weber	P	Yes	
FCI	Douglas Wagner	P	Yes	
Foxconn Electronics	Elwood Parsons	P	Yes	
Fujitsu	Mike Fitzpatrick	P	Yes	
General Dynamics	Nathan Hastad	P	Yes	
Hewlett Packard Co.	Rob Elliott	P	No	Cmnts
Hitachi Cable Manchester	Zane Daggett	P	Yes	
Hitachi Global Storage Tech.	Dan Colegrove	P	Yes	
IBM Corp.	George O. Penokie	P	No	Cmnts
Intel Corp.	Robert Sheffield	P	No	Cmnts
Iomega Corp.	David Hawks	P	Yes	
Lexar Media, Inc.	Martin Furuhjelm	A	Yes	
LSI Logic Corp.	John Lohmeyer	P	No	Cmnts
Maxtor Corp.	Mark Evans	P	No	Cmnts
Microsoft Corp.	Jeff Mastro	A	Yes	
Molex Inc.	Jay Neer	P	No	Cmnts
Nvidia Corp.			DNV	
Panasonic Technologies, Inc	Terence J. Nelson	P	Yes	
Philips Electronics	William P. McFerrin	P	Yes	
Pivot3, Inc.	Bill Galloway	P	Yes	
PMC-Sierra	Bill Lye	A	Yes	Cmnts
QLogic Corp.	Craig W. Carlson	A	Yes	Cmnts
Quantum Corp.	Paul Entzel	P	Yes	
Seagate Technology	Gerald Houlder	P	No	Cmnts
Sierra Logic, Inc.	William Martin	P	Yes	Cmnts
Storage Technology Corp.	Erich Oetting	P	Yes	
Sun Microsystems, Inc.	Vit Novak	P	Yes	
Texas Instruments	Paul D. Aloisi	P	Yes	
Toshiba	Yutaka Arakawa	P	Yes	
TycoElectronics	Ashlie Fan	P	No	Cmnts
Veritas Software	Roger Cummings	P	Abs	Cmnts
Vitesse Semiconductor	Gregory Tabor	P	Yes	
Western Digital	Curtis Stevens	P	Yes	
Xiotech Corp.	Jeff Williams	P	Yes	

Ballot totals: (31:10:3:2=46)

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 31 Yes
 10 No
  3 Abstain
  2 Organization(s) did not vote
 46 Total voting organizations
 16 Ballot(s) included comments
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This 2/3rds majority ballot passed.
31 Yes are more than half the membership eligible to vote minus abstentions
  [greater than 21] AND
31 Yes are at least 28 (2/3rds of those voting, excluding abstentions [41])
AND
31 Yes are equal to or exceed a quorum [15]

Key:
```
P        Voter is principal member
A        Voter is alternate member
Abs      Abstain vote
DNV      Organization did not vote
Cmnts    Comments were included with ballot
NoCmnts No comments were included with a vote that requires comments
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**************************************************************
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Comments attached to Abs ballot from Robert Snively of
Brocade:

This is outside the area of interest of Brocade Communications


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**************************************************************
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Comments attached to Abs ballot from Claudio DeSanti of
Cisco Systems, Inc.:

I don't know enough this technology.


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**************************************************************
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Comments attached to No ballot from Kevin Marks of
Dell, Inc.:

DELL comment number 1
Page=40 Subtype=Highlight Author=Kevin_Marks
Comment=
1 Scope
Figure 1 - SCSI document relationships

Change
"Protocols"
to
"SCSI Transport Protocols"

DELL comment number 2

Page=40 Subtype=Highlight Author=Kevin_Marks
Comment=
1 Scope

In Figure 1 - SCSI document relationships
Change
"Primary command set"
to
"Primary Command Set"

DELL comment number 3
Page=41 Subtype=Highlight Author=Kevin_Marks
Comment=
1 Scope

In Figure 2 - ATA document relationships

Change
"Primary command set"
to
"Primary Command Set"

DELL comment number 4
Page=41 Subtype=Highlight Author=Kevin_Marks
Comment=
1 Scope

In Figure 2 - ATA document relationships

Change
"ATA/ATAPI register set
(ATA/ATAPI-7 Volume 1)"
to
"ATA/ATAPI Logical register set
(ATA/ATAPI-7 Volume 1)"

DELL comment number 5
Page=43 Subtype=Highlight Author=Kevin_Marks
Comment=
2.3 References under development

Because of the inclusion of 05-107r1 (overlap command handling), does SAM-4
need to be included?

DELL comment number 6
Page=43 Subtype=Highlight Author=Kevin_Marks
Comment=
2.4 Other References

Change
"(SATA2-PHY)"
to
"(SATAII-PHY)"

There is already enough industry confusion between SATA2 and SATAII.

DELL comment number 7
Page=43 Subtype=Highlight Author=Kevin_Marks
Comment=
2.4 Other references
change
"http://www.serialata.org"
to
"http://www.sata-io.org"

DELL comment number 8
Page=43 Subtype=Highlight Author=Kevin_Marks
Comment=
2.4 Other references

Change "Internal Serial Attachment Connector"
to
"Unshielded Dual Port Serial Attachment Connector"

DELL comment number 9
Page=43 Subtype=Highlight Author=Kevin_Marks
Comment=
2.4 Other References

Change
"(SATA2-EXT)"
to
"(SATAII-EXT)"

DELL comment number 10
Page=43 Subtype=Highlight Author=Kevin_Marks
Comment=
2.4 Other References

Change
"(SATA2-PS)"
to
"(SATAII-PS)"

DELL comment number 11
Page=43 Subtype=Highlight Author=Kevin_Marks
Comment=
2.4 Other references

for SFF-8484
change
"Multi Lane Internal Serial Attachment Connector"
to
"Multi Lane Unshielded Serial Attachment Connector"

DELL comment number 12
Page=46 Subtype=Highlight Author=Kevin_Marks
Comment=
3.1.23 clock data recovery (CDR)
change

"The function is provided by the receiver circuit ..."
to
"A function provided by the receiver circuit ..."

DELL comment number 13
Page=46 Subtype=StrikeOut Author=Kevin_Marks
Comment=
3.131 connector

Remove
"Connectors may introduce physical disturbances to the transmission path
due to impedance mismatch, crosstalk, etc. These disturbances may introduce
jitter and other forms of signal degradation under certain conditions."

Although true, does not belong in the definition of connector..

DELL comment number 14
Page=50 Subtype=Highlight Author=Kevin_Marks
Comment=
3.1.88 identification sequence

change
"See 4.4."
to
"See 4.1.2" or "See 7.9"

This is where the identification sequence is first talked about.

DELL comment number 15
Page=50 Subtype=Highlight Author=Kevin_Marks
Comment=
3.1.98 idle dword

change (Global)
"vendor-specific"
to
"vendor specific"

vendor specific is a keyword and does not contain a dash. Through out draft
the dash is used.

DELL comment number 16
Page=52 Subtype=Highlight Author=Kevin_Marks
Comment=
3.1.118 media

Change
"...part of connectors."
to
"...part of connectors or a plural of medium."

Because the word media is used multiple times in the power conditions state
machine, .i.e. rotating media. This may additionally add a definition for
medium as

"medium: The material on which data is stored (e.g., a magnetic disk)."

DELL comment number 17
Page=54 Subtype=Highlight Author=Kevin_Marks
Comment=
3.1.164 SAS Address

Change
"unique name assigned"
to"
"unique name or identifier assigned"

SAS Ports do not have names, only identifiers.

DELL comment number 18
Page=55 Subtype=Highlight Author=Kevin_Marks
Comment=
3.1.188 SCSI port

Change"
3.1.188 SCSI port: A SCSI initiator port or a SCSI target port. See SAM-3."
to
"3.1.188 SCSI port: A SCSI initiator port, a SCSI target port or a SCSI
target/initiator port. See SAM-3."

DELL comment number 19
Page=55 Subtype=Highlight Author=Kevin_Marks
Comment=
3.1.182 SATA port selector:
Change
"(see SATA2-PS)."
to
"(see SATAII-PS)."

DELL comment number 20
Page=56 Subtype=Highlight Author=Kevin_Marks
Comment=
3.1.196 Serial Management Protocol (SMP)

Change
"... used by SAS devices to communicate management information with other
SAS devices in a SAS domain."
to
".. used by SMP initiator ports to communicate with SMP target ports for
the purpose of communicating management information in a SAS domain."

DELL comment number 21
Page=70 Subtype=Text Author=Kevin_Marks
Comment=
Figure 9 - State machine conventions

Many of the state machines in the standard contain only a single state.
When the State designator:State_Name format is used, the text never
references this state, and a search for this State designator:State_Name
would only hit the state machine state on the figure.

I propose that for state machines that only have a single state, that the
state name be left off and a sentence that follows be added to the
paragraph after Figure 9. "For state machines that only contain a single
state, only the state designator may be used."

DELL comment number 22
Page=71 Subtype=Highlight Author=Kevin_Marks
Comment=
3.7 Bit and byte ordering

Change
"NOTE 5 - SATA numbers bits within fields the same as this standard, but
uses little-endian byte ordering."
to
"NOTE 5 - SATA numbers bits within fields are the same as in this standard,
but uses little-endian byte ordering.

DELL comment number 23
Page=73 Subtype=Highlight Author=Kevin_Marks
Comment=
4.1 Architecture

Change
".... one SMP port."
to
"... one SMP target port."

DELL comment number 24
Page=77 Subtype=StrikeOut Author=Kevin_Marks
Comment=
4.1.2 Physical links and phys

Second paragraph, first sentence after Figure 12.

Remove

"(i.e., the transceiver)"
The phy consists of more that the transceiver.

DELL comment number 25
Page=90 Subtype=Highlight Author=Kevin_Marks
Comment=
4.1.9 Pathways
1st Paragraph, 3rd Sentence

change
"phy, there are multiple potential pathways, each"
to
"phy, there may be multiple potential pathways, each"

DELL comment number 26
Page=91 Subtype=Highlight Author=Kevin_Marks
Comment=
4.1.9 Pathways

Last Paragraph

change

"A partial pathway is blocked when path resources it requires are held by
another partial pathway (see 7.12)."

to

"A partial pathway is blocked when path resources it requires are held by
another partial pathway or pathway (see 7.12)."

DELL comment number 27
Page=91 Subtype=Highlight Author=Kevin_Marks
Comment=
4.1.10 Connections
5th Paragraph,1st Sentence

Change
"One connection may be active on a physical link at a time"
to
"Only one connection may be active on a physical link at a time."

DELL comment number 28
Page=93 Subtype=Highlight Author=Kevin_Marks
Comment=
4.2.1 Names and identifiers overview

1st Sentence

Change
"Device names are worldwide unique names for devices within a transport
protocol (see SAM-3)."
to
"Device names are worldwide unique names for devices within a SCSI
transport protocol (see SAM-3)."

DELL comment number 29
Page=93 Subtype=StrikeOut Author=Kevin_Marks
Comment=
4.2.1 Names and identifiers overview.

Remove 2nd Sentence

"Port names are worldwide unique names for ports within a transport
protocol."

Since port names are not used in SAS, why define their uniqueness in
relation to SAM-3.

DELL comment number 30
Page=95 Subtype=Highlight Author=Kevin_Marks
Comment=
4.2.5 Port names

1st Sentence

Change
"SCSI"
to
"the SCSI Architectural Model"
or
"SAM-3"

DELL comment number 31
Page=99 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 32

Change
"SSP_TC (transmit credit) state machine"
to
"SSP_TC (transmit credit control) state machine"

DELL comment number 32
Page=99 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 32
Change
"SSP_TF (transmit frame) state machine"
to
"SSP_TF (transmit frame control) state machine"

DELL comment number 33
Page=111 Subtype=Highlight Author=Kevin_Marks
Comment=
4.6.2 Expander ports
5 Paragraph, 1st Sentence
Change
"with a peripheral device type of SCSI enclosure services (SES))."
to
"with a peripheral device type of enclosure services device (SES))."

To match SPC-3 type 0dh.

DELL comment number 34
Page=111 Subtype=Highlight Author=Kevin_Marks
Comment=
4.6.2 Expander ports
6th Paragraph, 1st Sentence
Change
"... internal SMP port using ..."
to
"... internal SMP target port using ..."

DELL comment number 35
Page=111 Subtype=StrikeOut Author=Kevin_Marks
Comment=
4.6.3 Expander connection manager (EMC)
b) list

Remove
"addressing"

DELL comment number 36
Page=116 Subtype=Highlight Author=Kevin_Marks
Comment=
Table 12 - ECM to expander phy confirmations (part 2 of 2)

Message Row - (Arb Reject (Bad Destination)

change

"...the EM has not chosen to return Arb..."
to
"...the ECM has not chosen to return Arb..."

DELL comment number 37
Page=118 Subtype=Highlight Author=Kevin_Marks
Comment=
Table 15 - Expander phy to BPP requests

Table Row - Broadcast Event Notify (Phy Not Ready)

Change
"or because a virtual phy has been disabled (see 10.4.3.10). See 7.11."
to
"or because a phy or virtual phy has been disabled (see 10.4.3.10). See
7.11."

I do not believe that when a phy is disabled via SMP PHY CONTROL, that it
would transition to the SP0:OOB_COMINIT state. I would think that the SP
state machine would be stopped, waiting on a link or hard reset to
re-enable it.

DELL comment number 38
Page=122 Subtype=Highlight Author=Kevin_Marks
Comment=
4.7.1 Discovery process overview

Last Sentence

Change
"The discover process may be aborted prior to completion if there is an
indication that it may be based on incorrect information (e.g., arrival of
a BROADCAST (CHANGE))."
to
"The discover process may be aborted and need to be restarted prior to
completion if there is an indication that it may be based on incorrect
information (e.g., arrival of a BROADCAST (CHANGE))."

DELL comment number 39
Page=122 Subtype=Text Author=Kevin_Marks
Comment=Unmarked set by Kevin_Marks

DELL comment number 40
Page=123 Subtype=Highlight Author=Kevin_Marks
Comment=
4.7.3 discover process optimization
5th Paragraph, list a)

"a) when an OPEN_REJECT (NO DESTINATION) is received for a connection
request to a SAS address that is expected to be in an existing expander
device route table;"

Add an example for what is an expected SAS address to be present or remove
a).

This whole section is so vendor specific, that an example might help.

DELL comment number 41
Page=123 Subtype=Highlight Author=Kevin_Marks
Comment=
4.7.3 discover process optimization
6th Paragraph, 1st Sentence

"...detects an inconsistency in the expander route tables..."

What is defined as an inconsistency, add example?

DELL comment number 42
Page=132 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 50 - SAS internal cabled environments
Top figure

Change
"SATA-style signal cable receptacle"
to
"SATA-style signal cable receptacle connector"

DELL comment number 43
Page=132 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 50 - SAS internal cabled environments
Bottom figure

Change
"SATA-style signal cable receptacle"
to
"SATA-style signal cable receptacle connector"

DELL comment number 44
Page=132 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 50 - SAS internal cabled environments

Bottom figure

Change

"SATA-style signal cable receptacle"
to
"SATA-style signal cable receptacle connector"

DELL comment number 45
Page=133 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 52 - SAS external cabled environment

change
"(SAS external cable connects the Tx signal pins to
the Rx signal pins on each physical link)"
to
"(the cable connects the Tx signal pins to
the Rx signal pins on each physical link)"

This removes reference to whether it is compact or not.

DELL comment number 46
Page=133 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 53 - Internal wide cabled environment - controller to backplane -
symmetric cable

change
"(symmetric SAS internal wide cable connects the Tx signal pins to the Rx
signal pins
within each physical link)"
to
"(the cable connects the Tx signal pins to the Rx signal pins
within each physical link)"

This removes reference to whether it is compact or not.

DELL comment number 47
Page=133 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 53 - Internal wide cabled environment - controller to backplane -
symmetric cable
under Controller

change
"SAS internal wide plug or internal compact wide receptacle (4 physical
links)"
to
"SAS internal wide plug or internal compact wide receptacle connector (4
physical links)"

DELL comment number 48
Page=134 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 54 - Internal wide cabled environment - controller to controller -
symmetric cable

change

"(SAS internal wide cable connects the Tx signal pins to the Rx signal pins within each physical link)"
to
"(the cable connects the Tx signal pins to the Rx signal pins within each physical link)"

This removes reference to whether it is compact or not.

DELL comment number 49
Page=139 Subtype=Highlight Author=Kevin_Marks
Comment=
Table 23 - SAS internal connector pin assignments

Note c

Change
"(see SATA2-EXT)."
to
"(see SATAII-EXT)"

DELL comment number 50
Page=142 Subtype=StrikeOut Author=Kevin_Marks
Comment=
5.2.3.3.5 SAS external compact cable plug connector

1st Sentence

Remove
"with latch"

Since no other option is defined in SFF-8088.

DELL comment number 51
Page=142 Subtype=Highlight Author=Kevin_Marks
Comment=
5.2.3.3.5 SAS external compact cable plug connector
2nd Sentence
change
"SFF-8086 defines the circuit board, which is common ...."
to
"SFF-8086 defines the circuit board layout, which is common ...."

DELL comment number 52
Page=142 Subtype=Text Author=Kevin_Marks
Comment=
5.2.3.3.5 SAS external compact cable plug connector

SFF-8086 define 4 different circuit board layout sizes(26,36,50,68). No where in the SAS external compact cable plug or receptacle sections does it indicate that the 26 ckt version is used. It can only be inferred by looking at table 25, adding up A1-A13 and B1-B13. Need to add that it uses 26 ckt version in 8086.

DELL comment number 53
Page=142 Subtype=StrikeOut Author=Kevin_Marks

Comment=
5.2.3.3.5 SAS external compact cable plug connector
2nd paragraph, 1st and 2nd sentences

Remove
"The SAS external compact cable plug connector shall not include keys and
may include key slots. Key slots are not defined by this standard."

As keying is defined.

DELL comment number 54
Page=143 Subtype=Text Author=Kevin_Marks
Comment=
Figure 63 - SAS external compact cable plug connector

Add text indicating A1 is on bottom, or add B1 indicator coming from top.

DELL comment number 55
Page=143 Subtype=Highlight Author=Kevin_Marks
Comment=
5.2.3.3.6 SAS external compact receptacle connector
1st paragraph, 2nd sentence

change
"... interface (the receptacle body is common to both internal and
external connectors)"
to
"... interface layout (the receptacle body is common to both internal and
external connectors)"

DELL comment number 56
Page=143 Subtype=Text Author=Kevin_Marks
Comment=
5.2.3.3.6 SAS external compact receptacle connector

SFF-8086 define 4 different mating interface layout sizes(26,36,50,68). No
where in the SAS external compact cable plug or receptacle sections does it
indicate that the 26 ckt version is used. It can only be inferred by
looking at table 25, adding up A1-A13 and B1-B13. Need to add that it uses
26 ckt version in 8086.

DELL comment number 57
Page=143 Subtype=Highlight Author=Kevin_Marks
Comment=
5.2.3.3.6 SAS external compact receptacle connector

Insert two paragraphs below before
"Table 25 (see 5.2.3.3.7) defines the pin assignments."

text to be inserted:
A SAS external compact receptacle connector may be used by one or more SAS
devices (e.g., one SAS device using "physical links 0 and 3, another using
physical link 1, and a third using physical link 2).

A SAS external compact receptacle connector shall be used by only one
expander device at a time, and all physical links shallbe used by the same
expander port (i.e., all the expander phys shall have the same routing
attribute (e.g., subtractive or table) (see 4.6.2))."

DELL comment number 58
Page=143 Subtype=StrikeOut Author=Kevin_Marks
Comment=
5.2.3.3.6 SAS external compact receptacle connector
2nd Paragraph, 1st and 2nd Sentence

Remove
"The SAS external compact receptacle connector shall not include keys and
may include key slots. Key slots are not defined by this standard."

Keying is defined.

DELL comment number 59
Page=144 Subtype=Text Author=Kevin_Marks
Comment=
Figure 64 - SAS external compact receptacle connector

Add text indicating A1 is on bottom, or add B1 indicator coming from top.

DELL comment number 60
Page=145 Subtype=Text Author=Kevin_Marks
Comment=Update per T10/05-138r0.

DELL comment number 61
Page=145 Subtype=Text Author=Kevin_Marks
Comment=
SFF-8088 currently defines 5 different key and slot locations. Need to
explicitly add which locations are used for each version.

3 on receptacle
1 for table route or enclosure out port on receptacle and 1-3 for plug
5 for subtractive or enclosure in port on receptacle and 3-5 for plug

DELL comment number 62
Page=146 Subtype=Text Author=Kevin_Marks
Comment=
Figure 65 - SAS external compact connector keys for end devices

Remove plug picture, and add text above figure that table (enclosure out
port) and subtractive (enclosure in port) plug both plug into end device
receptacle.

Suggest putting end device figure last, so that the two subtractive and
table plugs are defined.

DELL comment number 63
Page=146 Subtype=Text Author=Kevin_Marks
Comment=
Figure 66 - SAS external compact connector keys for expander device table
routing phys

Receptacle only needs key in position 1.

DELL comment number 64
Page=146 Subtype=Highlight Author=Kevin_Marks
Comment=
5.2.3.3.8 External compact connector keying
1st Sentence after Figure 65.
Change
"...used by expander device table routing phys, and the key slots..."
to
"...used by expander device table routing phys (e.g. Enclosure out port),
and the key slots..."

DELL comment number 65
Page=147 Subtype=Text Author=Kevin_Marks
Comment=
Figure 67 - SAS external compact connector keys for expander device
subtractive routing phys

Receptacle only needs key in position 5.

DELL comment number 66
Page=147 Subtype=Highlight Author=Kevin_Marks
Comment=
5.2.3.3.8 External compact connector keying
1st Sentence after Figure 66.
change
"....used by expander device subtractive routing phys, and the key
slots..."
to
"....used by expander device subtractive routing phys (e.g. Enclosure in
port), and the key slots..."

DELL comment number 67
Page=147 Subtype=Highlight Author=Kevin_Marks
Comment=
5.2.3.4.1 SAS internal wide connectors overview
2nd Paragraph, 1st Sentence

change
"...expander devices with external ports shall use..."
to
"...expander devices with internall ports shall use..."

DELL comment number 68
Page=147 Subtype=Text Author=Kevin_Marks
Comment=
Reject proposed changes in T10/05-139r0 unless modified to change:

1. If using Alternate Table 26Z -- Controller SAS internal pin assignments
and physical link usage - does not define pin assignments, only signal
usage for link widths.
2. In the statement "The use of the sideband signals by a backplane is

vendor-specific. One implementation of the sideband signals by a backplane
is an SGPIO target interface (see SFF-8485). Other implementations shall be
compatible with the signal levels defined in SFF-8485." - SFF-8485 does not
currently define a mapping for the external compact version of the cable,
and because there are 8 sidebands, the mapping is not obvious.
Additionally, I question the "shall be compatible with the signal levels",
because the mapping of the signals to sidebands in SFF-8485 is in an
informative section.
3. If removing the tables defining the signal to pin mapping and relying on
the cabling diagrams, then the external cable should use the same delivery
style, i.e. remove table and add diagram of cabling.
4. Add that the internal compact wide cable plug connector uses the 36 pin
version of SFF-8086 and the circuit board layout is common, and not the
circuit board.
5. Add that the internal compact wide receptacle connector uses the 36 pin
version of SFF-8086 and the the receptacle mating interface layout is
common, and not the receptacle mating interface.

DELL comment number 69
Page=150 Subtype=Text Author=Kevin_Marks
Comment=
5.2.3.4.5 SAS internal compact wide cable plug connector

SFF-8086 define 4 different circuit board layout sizes (26,36,50,68). No
where in the SAS external compact cable plug or receptacle sections does it
indicate that the 36 ckt version is used. It can only be inferred by
looking at table 28, adding up A1-A18 and B1-B18. Need to add that it uses
36 ckt version in 8086.

DELL comment number 70
Page=150 Subtype=Highlight Author=Kevin_Marks
Comment=
5.2.3.4.5 SAS internal compact wide cable plug connector
1st paragraph, 2nd sentence
change
"SFF-8086 defines the circuit board, which is common to both internal...."
to
"SFF-8086 defines the circuit board layout, which is common to both
internal...."

DELL comment number 71
Page=151 Subtype=Text Author=Kevin_Marks
Comment=
5.2.3.4.6 SAS internal compact wide receptacle connector

SFF-8086 define 4 different receptacle mating interface layout
sizes(26,36,50,68). No where in the SAS internal compact wide cable plug or
receptacle sections does it indicate that the 36 ckt version is used. It
can only be inferred by looking at table 28, adding up A1-A18 and B1-B18.
Need to add that it uses 36 ckt version in 8086.

DELL comment number 72
Page=151 Subtype=Highlight Author=Kevin_Marks
Comment=
5.2.3.4.6 SAS internal compact wide receptacle connector

1st paragraph, 2nd sentence
change
"SFF-8086 defines the receptacle mating interface, which is common to...."
to
"SFF-8086 defines the receptacle mating interface layout, which is common
to...."

DELL comment number 73
Page=151 Subtype=Text Author=Kevin_Marks
Comment=
Figure 70 - SAS internal compact wide cable plug connector

Add text indicating A1 is on bottom, or add B1 indicator coming from top.

DELL comment number 74
Page=152 Subtype=Text Author=Kevin_Marks
Comment=
Figure 71 - SAS internal compact wide receptacle connector

Add text indicating A1 is on bottom, or add B1 indicator coming from top.

DELL comment number 75
Page=156 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 72 - SAS single-port internal cable assembly and destination pin
assignments
on SAS initiator device or expander device

Change
"GROUND 7
RP+ 6
RP- 5
GROUND 4
TP- 3
TP+ 2
GROUND 1"
to
"GROUND 7
RX+ 6
RX- 5
GROUND 4
TX- 3
TX+ 2
GROUND 1"

DELL comment number 76
Page=157 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 73 - SAS dual-port internal cable assembly and destination pin
assignments
On both SAS initiator device or expander device

Change

"GROUND 7

```
RP+ 6
RP- 5
GROUND 4
TP- 3
TP+ 2
GROUND 1"
to
"GROUND 7
RX+ 6
RX- 5
GROUND 4
TX- 3
TX+ 2
GROUND 1"
```

DELL comment number 77
Page=158 Subtype=Text Author=Kevin_Marks
Comment=
5.2.4.2 SAS external cables

If T10/05-139r0 is approved, would like to see diagrams of signal pin
mapping for the 3 defined external cables a),b) and c), like figure 74.

DELL comment number 78
Page=158 Subtype=Text Author=Kevin_Marks
Comment=
5.2.4.3.1 SAS internal wide cables overview

If T10/05-139r0 is approved, would like to see a diagram of signal pin
mapping for option c) under symmetric cables, similar to figure 74.

DELL comment number 79
Page=162 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 77 - SAS internal wide cable with SAS internal compact wide cable
plug connectors attaching controller to controller

Whether the sidebands are correct or not, the text for the sideband should
be in black and not in italic.

DELL comment number 80
Page=167 Subtype=Text Author=Kevin_Marks
Comment=
Figure 82 - SAS internal wide cable with SAS internal compact wide cable
plug connectors with two key slots

this figure should be added to the external keying section. This should be
the only keyed version of the cable. One end fits end devices or
subtractive and the other end fits end device or table.

DELL comment number 81
Page=167 Subtype=StrikeOut Author=Kevin_Marks
Comment=
5.2.4.3.5 SAS internal compact wide cable keying

Remove all of section 5.2.4.3.5 or change all internal "references" to
"external", as on further review, this section looks like it is for the
external keying.

Phy working group did not ask for keying on internal cables and additionaly
plugs are the external versions

DELL comment number 82
Page=168 Subtype=StrikeOut Author=Kevin_Marks
Comment=
device subtractive routing phys. The cable should include the SAS icons
described in figure M.7 at each end
(see M.2.3). " and Figure 93.
This is a continuation from previous cross-out

DELL comment number 83
Page=184 Subtype=Highlight Author=Kevin_Marks
Comment=
5.3.3 General electrical characteristics
5th Paragraph, b) list
change
"...levels (see SATA2-PHY) but..."
to
"...levels (see SATAII-PHY) but..."

DELL comment number 84
Page=186 Subtype=Highlight Author=Kevin_Marks
Comment=
Table 36 - Receiver device general electrical characteristics

In note a
change
"...V3 and SATA2-PHY)."
to
"...V3 and SATAII-PHY)."

DELL comment number 85
Page=192 Subtype=Highlight Author=Kevin_Marks
Comment=
5.3.7.3 Transmitter device signal output characteristics as measured with
each test load

Table 38 - Transmitter device signal output characteristics as measured
with each test load at transmitter device compliance points IT and CT

IT column for row:
1. Maximum peak to peak voltage (i.e., 2 x Z2) if a SATA device can be
attached
2. Minimum eye opening (i.e., 2 x Z1), if a SATA device can be attached

change

"see SATA2-PHY"
to
"see SATAII-PHY"

DELL comment number 86
Page=192 Subtype=Highlight Author=Kevin_Marks
Comment=
Table 38 - Transmitter device signal output characteristics as measured
with each test load at transmitter device compliance points IT and CT
In note g:

change

"...0) dwords (see SATA2-PHY)."
to
"...0) dwords (see SATAII-PHY)."

DELL comment number 87
Page=192 Subtype=Highlight Author=Kevin_Marks
Comment=
5.3.7.3 Transmitter device signal output characteristics as measured with
each test load

Table 38 - Transmitter device signal output characteristics as measured
with each test load at transmitter device compliance points IT and CT

IT column for row:
"Minimum OOB burst amplitude d, if attaching a SATA device is supported"
Change
"225^f 225^g"
to
"see SATAII-PHY ^e"

DELL comment number 88
Page=193 Subtype=Highlight Author=Kevin_Marks
Comment=
5.3.7.5 Transmitter device signal output levels for OOB signals

1st sentence.
change
"...signal levels (see SATA2-PHY) during..."
to
"...signal levels (see SATAII-PHY) during..."

DELL comment number 89
Page=193 Subtype=Highlight Author=Kevin_Marks
Comment=
5.3.7.5 Transmitter device signal output levels for OOB signals
1st Paragraph, 5th Sentence
Change
"...COMINIT at SATA 1.0 signal levels..."
to
"...COMINIT at SATA Gen1i or Gen2i signal levels..."

DELL comment number 90
Page=193 Subtype=Highlight Author=Kevin_Marks
Comment=
5.3.7.5 Transmitter device signal output levels for OOB signals

3rd Paragraph, 1st Sentence
Change
"...voltage levels and repeat the OOB sequence."
to
"...voltage levels and restart the OOB sequence."

DELL comment number 91
Page=194 Subtype=Highlight Author=Kevin_Marks
Comment=
5.3.8.2 Delivered signal characteristics

In Table 40 - Delivered signal characteristics as measured with the zero
length test load at receiver device compliance points IR and CR (part 1 of
2)

IR column, row - Maximum peak to peak voltage (i.e., 2 x Z2) if a SATA
device is
attached

change
"see SATA2-PHY"
to
"see SATAII-PHY"

DELL comment number 92
Page=194 Subtype=Highlight Author=Kevin_Marks
Comment=
5.3.8.2 Delivered signal characteristics

In Table 40 - Delivered signal characteristics as measured with the zero
length test load at receiver device compliance points IR and CR (part 1 of
2)

Remove
"or Gen1x levels"
from
Row "Minimum eye opening (i.e., 2 x Z1), if a SATA device using Gen1i or
Gen1x levels is attached and the interconnect is characterized with the
TCTF test load (see 5.3.2.3)"

The SATAII, Electrical Specification does not define a usage model or allow
for having the Gen1x or Gen2x phy electrical specification on a SATA
device.

DELL comment number 93
Page=194 Subtype=StrikeOut Author=Kevin_Marks
Comment=
5.3.8.2 Delivered signal characteristics

In Table 40 - Delivered signal characteristics as measured with the zero
length test load at receiver device compliance points IR and CR (part 1 of
2)

Remove row
"Minimum eye opening (i.e., 2 x Z1), if a SATA device using Gen2x levels is

attached and the interconnect is characterized with the TCTF test load (see
5.3.2.3)"

The SATAII, Electrical Specification does not define a usage model or allow
for having the Gen1x or Gen2x phy electrical specification on a SATA
device.

DELL comment number 94
Page=195 Subtype=Highlight Author=Kevin_Marks
Comment=
Table 40 - Delivered signal characteristics as measured with the zero
length test load at receiver device compliance points IR and CR (part 2 of
2)

In note g

change
"...ALIGN (0) dwords (see SATA2-PHY)."
to
"...ALIGN (0) dwords (see SATAII-PHY)."

DELL comment number 95
Page=197 Subtype=Highlight Author=Kevin_Marks
Comment=
5.3.9 Spread spectrum clocking
2nd Paragraph, 1st Sentence
change
"clocking (see ATA/ATAPI-7 V3 and SATA2-PHY)."
to
"clocking (see ATA/ATAPI-7 V3 and SATAII-PHY)."

DELL comment number 96
Page=198 Subtype=Highlight Author=Kevin_Marks
Comment=
5.4 READY LED signal electrical characteristics

Note 15

change
"....staggered spin-up disable (see SATA2-EXT). The output..."
to
"....staggered spin-up disable (see SATAII-EXT). The output..."

DELL comment number 97
Page=207 Subtype=Highlight Author=Kevin_Marks
Comment=
Table 47 „ Control characters

Make blue text black in table.

DELL comment number 98
Page=208 Subtype=Highlight Author=Kevin_Marks
Comment=
Table 49 „ Delayed code violation example

Make blue text black in table and not underlined.

DELL comment number 99
Page=215 Subtype=Highlight Author=Kevin_Marks
Comment=
6.6.4 Transmitting the SATA port selection signal
1st paragraph, 1st sentence
Change
"...the active phy (see SATA2-PS)."
to
"...the active phy (see SATAII-PS)."

DELL comment number 100
Page=216 Subtype=Highlight Author=Kevin_Marks
Comment=
6.7.2.1 SATA OOB sequence
1st paragraph, 2nd sentence
Change
"...and SATA2-PHY for detailed requirements."
to
"...and SATAII-PHY for detailed requirements."

DELL comment number 101
Page=216 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 109 „ SATA OOB sequence

Seems to be missing SATA device Calibrate and COMWAKE, as this is part of
the SATA OOB.

DELL comment number 102
Page=217 Subtype=Highlight Author=Kevin_Marks
Comment=
6.7.2.2 SATA speed negotiation sequence
1st Paragraph, 2nd Sentence

change
"...and SATA2-PHY for detailed requirements."
to
"...and SATAII-PHY for detailed requirements."

DELL comment number 103
Page=217 Subtype=StrikeOut Author=Kevin_Marks
Comment=
6.7.3 SAS to SATA phy reset sequence

5th Paragraph, 2nd Sentence

Remove "initiate" from sentence.

DELL comment number 104
Page=223 Subtype=Highlight Author=Kevin_Marks
Comment=
6.7.4.2 SAS speed negotiation sequence

1st Paragraph, 2nd Sentence after Table 114
Change

"...reported in the PHY RESET PROBLEM field in..."
to
"...reported in the PHY RESET PROBLEM COUNT field in..."

DELL comment number 105
Page=224 Subtype=Highlight Author=Kevin_Marks
Comment=
6.7.5 Phy reset sequence after devices are attached
3rd Sentence, B) in a,b,c list

change
"b) SAS initiator phys should originate a new phy reset sequence after
every hot-plug timeout; and"
to
""b) SAS initiator phys should originate a new phy reset sequence after
every hot-plug timeout, if implemented; and"

hot-plug timeout timer is optional in SAS initiators.

DELL comment number 106
Page=228 Subtype=Text Author=Kevin_Marks
Comment=
Figure 117 - SP (phy layer) state machine - OOB sequence states

The SP7:OOB_AwaitCOMSAS state in Figure 117 is missing the SATA Spinup Hold
confirmation to the link layer, based on text for transition to
SP26:SATA_SpinupHold.

I do not believe the text is correct, the SATA Spinup Hold confirmation to
the link layer belongs in the entry to the SP26:SATA_SpinupHold state as is
currently indicated in Figure 121.

DELL comment number 107
Page=231 Subtype=Highlight Author=Kevin_Marks
Comment=
6.8.3.9.2 Transition SP7:OOB_AwaitCOMSAS to SP2:OOB_NoCOMSASTimeout
1st Sentence
Change
"This transition shall occur if the phy does not support SATA and the
COMSAS Detect Timeout timer expires."
to
"This transition shall occur if the phy does not support attachment to a
SATA device and the COMSAS Detect Timeout timer expires."

DELL comment number 108
Page=232 Subtype=Highlight Author=Kevin_Marks
Comment=
6.8.3.9.4 Transition SP7:OOB_AwaitCOMSAS to SP16:SATA_COMWAKE
1st Sentence, a) in a,b,c list

change
"a) the phy supports attachment to SATA devices;"

to
"a) the phy supports attachment to a SATA device;"

DELL comment number 109
Page=232 Subtype=Highlight Author=Kevin_Marks
Comment=
6.8.3.9.5 Transition SP7:OOB_AwaitCOMSAS to SP26:SATA _SpinupHold

1st Paragraph, 1st Sentence

Change
"This state shall send a SATA Spinup Hold confirmation to the link layer
and perform this transition if."
to
"This transition shall occur if:"

The SATA Spinup Hold confirmation to the link layer belongs in the entry in
to SP26:SATA_SpinupHold.

If this is not accepted, need a colon after if.

DELL comment number 110
Page=234 Subtype=Highlight Author=Kevin_Marks
Comment=
6.8.4.2.3 Transition SP8:SAS_Start to SP9:SAS_RateNotSupported

1st Sentence
change
"This transition shall occur after the RCDT timer expires if the current
speed negotiation window rate is not supported."
to
"This transition shall occur after the RCDT timer expires and the current
speed negotiation window rate is not supported."

DELL comment number 111
Page=234 Subtype=Highlight Author=Kevin_Marks
Comment=
6.8.4.2.4 Transition SP8:SAS_Start to SP10:SAS_AwaitALIGN
1st Sentence
change
"This transition shall occur after the RCDT timer expires if the current
speed negotiation window rate is supported."
to
"This transition shall occur after the RCDT timer expires and the current
speed negotiation window rate is supported."

DELL comment number 112
Page=243 Subtype=Highlight Author=Kevin_Marks
Comment=
6.8.7.1 State description
1st Paragraph, 2st Sentence

change if not removed by previous comment.
"...upon detection of a COMSAS detect timeout if the phy supports SATA, the
phy supports SATA spinup hold, and..."

to
"...upon detection of a COMSAS detect timeout and the phy supports
attachment to a SATA device, the phy supports SATA spinup hold, and..."

DELL comment number 113
Page=243 Subtype=Text Author=Kevin_Marks
Comment=
Figure 121 - SP (phy layer) state machine - SATA spinup hold state

Based on text in the OOB state machine, the SATA Spinup Hold confirmation
to the link layer belongs in SP7:OOB_AwaitCOMSAS.

I believe this is incorrect and is correct as shown.

DELL comment number 114
Page=243 Subtype=StrikeOut Author=Kevin_Marks
Comment=
6.8.7.1 State description

1st Paragraph, 2nd Sentence

Remove
"This state shall be entered from the SP7:OOB_AwaitCOMSAS state upon
detection of a COMSAS detect timeout if the phy supports SATA, the phy
supports SATA spinup hold, and the MgmtReset state machine variable is set
to zero."

This sentence proposed for removal is redundant, and described in the
SP7:OOB_AwaitCOMSAS to SP26:SATA_SpinupHold state transition.

Add
"This state shall send a SATA Spinup Hold confirmation to the link layer."

DELL comment number 115
Page=243 Subtype=Highlight Author=Kevin_Marks
Comment=
6.8.7.2 Transition SP26:SATA_SpinupHold to SP0:OOB_COMINIT
1st Paragraph,2nd Sentence
change
"...a Management Reset Request from the..."
to
"...a Management Reset request from the..."

DELL comment number 116
Page=249 Subtype=Highlight Author=Kevin_Marks
Comment=
6.10 Spin-up

2nd Paragraph, 1st sentence

change
"...SATA spin-up rules (see ATA/ATAPI-7 V3 and SATA2-EXT)."
to
"...SATA spin-up rules (see ATA/ATAPI-7 V3 and SATAII-EXT)."

DELL comment number 117
Page=249 Subtype=Highlight Author=Kevin_Marks
Comment=
6.10 Spin-up

Note 19
Change
"NOTE 19 - Enclosures supporting both SATA devices and SAS target devices
may need to sequence power to each attached device to avoid excessive power
consumption during power on, since the SATA devices may spin-up
automatically after power on."
to
"NOTE 19 - Enclosures supporting both SATA devices and SAS target devices
may need to sequence power to each attached device to avoid excessive power
consumption during power on, since the SATA devices may spin-up
automatically after power on if staggered spin-up is not implemented (see
SATAII-EXT)."

DELL comment number 118
Page=249 Subtype=Highlight Author=Kevin_Marks
Comment=
6.10 Spin-up

2nd Paragraph, 1st Sentence

"If a SAS target device supporting SATA does not receive COMSAS during the
reset sequence, it shall follow SATA spin-up rules (see ATA/ATAPI-7 V3 and
SATA2-EXT)."

Sentence seems confusing. What is a SAS target device supporting SATA? Is
this a device supporting STP target protocol. Clarify or remove sentence.

DELL comment number 119
Page=265 Subtype=Highlight Author=Kevin_Marks
Comment=
7.2.5.4 BROADCAST
4th Paragraph,1st Sentence after Table 71.

change
"....logical units with peripheral device types of SCSI enclosure services
(SES) in the SAS domain."
to
"....logical units with peripheral device type of enclosure services device
(SES) in the SAS domain."

The peripheral device type for SES is enclosure services device.

DELL comment number 120
Page=267 Subtype=Highlight Author=Kevin_Marks
Comment=
7.2.5.9 NOTIFY
Note 22 after 2nd Paragraph after Table 73
change
"...configured by a NVROM programming..."
to

"...configured by a NVRAM programming..."

DELL comment number 121
Page=289 Subtype=Highlight Author=Kevin_Marks
Comment=
7.9.1 Identification and hard reset sequence overview
8th Paragraph, 1st Sentence

change
"If a phy receives a HARD_RESET, it shall be considered a reset event and
cause a hard reset (see 4.4.2) of the port containing that phy."
to
"If a phy receives a HARD_RESET following a phy reset sequence, it shall be
considered a reset event and cause a hard reset (see 4.4.2) of the port
containing that phy."

DELL comment number 122
Page=291 Subtype=Highlight Author=Kevin_Marks
Comment=
7.9.5.1 SL_IR state machines overview
In Figure 136 - SL_IR (link layer identification and hard reset) state
machines

change bottom state machine title "IDENTIFY and HARD_RESET Control"
to "Identification and hard reset control" to make it match text.

DELL comment number 123
Page=291 Subtype=Highlight Author=Kevin_Marks
Comment=
7.9.5.1 SL_IR state machines overview
In Figure 136 - SL_IR (link layer identification and hard reset) state
machines

change bottom state machine state SL_IR_IRC1:Idle message Enable Disable
SAS Link (Disable) send to "SL" to "SL or XL" to make it match text.

DELL comment number 124
Page=295 Subtype=Highlight Author=Kevin_Marks
Comment=
7.10 Power management

The 1st Paragraph, 1st Sentence "SATA interface power management is not
supported in SAS." seems to contradict section 6.8.5.1 SATA host emulation
states overview, which states that SATA PM may be used on SAS initiators
directly connect to SATA devices.

From 6.8.5.1
"The power management states defined in this standard are for SAS initiator
devices that support being attached to SATA devices; expander devices
attached to SATA devices do not support power management in this standard."

Add paragraph from 6.8.5.1 to 7.10.

DELL comment number 125
Page=296 Subtype=Highlight Author=Kevin_Marks

Comment=
7.11 SAS domain changes

NOTE 30 - This occurs when the expander phy is reset or disabled with the
SMP PHY CONTROL function DISABLE, LINK RESET, HARD RESET, or TRANSMIT SATA
PORT SELECTION SIGNAL phy operations (see 10.4.3.10) as well as when dword
synchronization is unexpectedly lost;

Remove references to disable as transitions to SP0:OOB_COMINIT should not
happen if the phy is disabled. BROADCAST (CHANGE) caused by disabling the
phy in handled by b) in list with the next comment..

DELL comment number 126
Page=296 Subtype=Highlight Author=Kevin_Marks
Comment=
7.11 SAS domain changes
3rd Paragraph b) in a,b,c list

Change
"b) after a virtual phy has been disabled with the SMP PHY CONTROL function
DISABLE phy operation or internally begun reset with the LINK RESET or HARD
RESET phy operations (see 10.4.3.10);"
to
"b) after a phy or virtual phy has been disabled with the SMP PHY CONTROL
function DISABLE phy operation or virtual phy has internally begun reset
with the LINK RESET or HARD RESET phy operations (see 10.4.3.10);"

DELL comment number 127
Page=296 Subtype=Highlight Author=Kevin_Marks
Comment=
7.11 SAS domain changes
1st Paragraph, 1st Sentence
Change
"After power on or receiving BROADCAST (CHANGE), an application client in
each SAS..."
to
"After power on or receiving BROADCAST (CHANGE), the management application
client in each SAS..."

DELL comment number 128
Page=299 Subtype=StrikeOut Author=Kevin_Marks
Comment=
7.12.3 Arbitration fairness
Remove "NOTE 1" from NOTE 31.

DELL comment number 129
Page=310 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 141 - SL (link layer for SAS phys) state machines (part 1)

change state machine title from "Connection Control (part 1)" to
"connection control (part 1)" to match text.

DELL comment number 130
Page=311 Subtype=Highlight Author=Kevin_Marks

Comment=
Figure 142 - SL (link layer for SAS phys) state machines (part 2)

change state machine name from "Connection Control " to "connection control
(part 2)" to match text and figure 141..

DELL comment number 131
Page=311 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 142 - SL (link layer for SAS phys) state machines (part 2)

change state machine name from "Receive OPEN Address Frame" to "receive
OPEN address frame" to match text.

DELL comment number 132
Page=311 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 142 - SL (link layer for SAS phys) state machines (part 2)

In Receive OPEN Address Frame state machine, change
"SL_RA1:RxOpen"
to
"SL_RA" as it is the only state as proposed in note on Figure 9.

DELL comment number 133
Page=335 Subtype=Highlight Author=Kevin_Marks
Comment=
7.16.5 Interlocked frames

I question why the Interlock Frames section is in the link layer material,
when the SSP link layer state machines do not seem to directly deal with
"interlocked-ness" other than ACK/NAK balance issues. The Transport Layer
would seem more appropriate for the material, since this is where it seems
to enforce it along with the PL_OC.

DELL comment number 134
Page=340 Subtype=Text Author=Kevin_Marks
Comment=
Figure 151 - SSP (link layer for SSP phys) state machines (part 1 - frame
transmission)

In figure 151, change state machine names to low case to match text.

DELL comment number 135
Page=340 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 151 - SSP (link layer for SSP phys) state machines (part 1 - frame
transmission)

In Transmit Interlocked Frame Monitor

Change "SSP_TIM:Tx_Interlock_Monitor" state name to "SSP_TIM" as it is a
single state state machine as proposed in a note on Figure 9.

DELL comment number 136
Page=340 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 151 - SSP (link layer for SSP phys) state machines (part 1 - frame
transmission)

In Transmit Frame Credit Monitor

Change "SSP_TCM:Tx_Credit_Monitor" state name to "SSP_TCM" as it is a
single state state machine as proposed in a note on Figure 9.

DELL comment number 137
Page=340 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 151 - SSP (link layer for SSP phys) state machines (part 1 - frame
transmission)

In DONE Control

Change "SSP_D:DONE_Wait" state name to "SSP_D" as it is a single state
state machine as proposed in a note on Figure 9.

DELL comment number 138
Page=341 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 152 - SSP (link layer for SSP phys) state machines (part 2 - frame
reception)

In Transmit ACK/NAK Control state machine
Change "SSP_TAN:Tx_ACK/NAK Control" state name to "SSP_TAN" as it is a
single state state machine as proposed in note on Figure 9.

DELL comment number 139
Page=341 Subtype=Text Author=Kevin_Marks
Comment=
Figure 152 - SSP (link layer for SSP phys) state machines (part 2 - frame
reception)

In figure 152, change state machine names to low case to match text.

DELL comment number 140
Page=341 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 152 - SSP (link layer for SSP phys) state machines (part 2 - frame
reception)

In Receive Frame Control

Change "SSP_RF:Rcv_Frame" state name to "SSP_RF" as it is a single state
state machine as proposed in note on Figure 9.

DELL comment number 141
Page=341 Subtype=Highlight Author=Kevin_Marks
Comment=

Figure 152 - SSP (link layer for SSP phys) state machines (part 2 - frame reception)

In Receive Frame Credit Monitor

Change "SSP_RCM:Rcv_Credit_Monitor" state name to "SSP_RCM" as it is a single state state machine as proposed in note on Figure 9.

DELL comment number 142
Page=341 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 152 - SSP (link layer for SSP phys) state machines (part 2 - frame reception)

In Transmit Credit Control

Change "SSP_TC:Tx_Credit_Control" state name to "SSP_TC" as it is a single state state machine as proposed in a note on Figure 9.

DELL comment number 143
Page=341 Subtype=Highlight Author=Kevin_Marks
Comment=

Figure 152 - SSP (link layer for SSP phys) state machines (part 2 - frame reception)

In Receive Interlocked Frame Monitor

Change "SSP_RIM:Rcv_Interlock_Monitor" state name to "SSP_RIM" as it is a single state state machine as proposed in a note on Figure 9.

DELL comment number 144
Page=344 Subtype=Highlight Author=Kevin_Marks
Comment=
7.16.7.6.1 SSP_TF state machine overview

Add

"This state machine shall start in the SSP_TF1:Connected_Idle state." after the a,b,c list.

DELL comment number 145
Page=347 Subtype=Highlight Author=Kevin_Marks
Comment=
7.16.7.7 SSP_RF (receive frame control) state machine

5th paragraph b) list.
change
"SSP_TAN1:Idle state"
to
"SSP_TAN"

to match state machine name in state diagram, and since it is a single state state machine.

DELL comment number 146
Page=347 Subtype=Highlight Author=Kevin_Marks
Comment=
7.16.7.7 SSP_RF (receive frame control) state machine

6th paragraph c) list.
change
"SSP_TAN1:Idle state"
to
"SSP_TAN"

to match state machine name in state diagram, and since it is a single
state state machine.

DELL comment number 147
Page=347 Subtype=Highlight Author=Kevin_Marks
Comment=
7.16.7.7 SSP_RF (receive frame control) state machine

7th paragraph, 1st sentence

change
"SSP_TAN1:Idle state"
to
"SSP_TAN"

to match state machine name in state diagram, and since it is a single
state state machine.

DELL comment number 148
Page=347 Subtype=Highlight Author=Kevin_Marks
Comment=
7.16.7.7 SSP_RF (receive frame control) state machine

7th paragraph c) list.
change
"SSP_TAN1:Idle state"
to
"SSP_TAN"

to match state machine name in state diagram, and since it is a single
state state machine.

DELL comment number 149
Page=358 Subtype=Highlight Author=Kevin_Marks
Comment=
In Figure 158.

Change
"SMP_IP (link layer for SMP initiator ports) state machine"
to
"SMP_IP (link layer for SMP initiator phys) state machine"

DELL comment number 150
Page=359 Subtype=Highlight Author=Kevin_Marks

Comment=
7.18.4.4 SMP_TP (link layer for SMP target ports) state machine

Change section heading to

"7.18.4.4 SMP_TP (link layer for SMP target phys) state machine"

DELL comment number 151
Page=360 Subtype=Highlight Author=Kevin_Marks
Comment=
In Figure 159
Change
"SMP_TP (link layer for SMP target ports) state machine"
to
"SMP_TP (link layer for SMP target phys) state machine"

DELL comment number 152
Page=360 Subtype=StrikeOut Author=Kevin_Marks
Comment=
7.18.4.4.2.1 State description
3rd Paragraph, 1st Sentence

remove

"If this state receives an Invalid Dword Received message or an ERROR
Received message after receiving an SOF Received message and before
receiving an EOF Received message, then this state shall discard the Data
Dword Received messages received before the subsequent SOF
Received message."

Sentence is incorrect, and case of INVALID DWORD or ERROR received is
covered in the 5th paragraph.

DELL comment number 153
Page=373 Subtype=Highlight Author=Kevin_Marks
Comment=
8.2.2.3.8 Transition PL_OC2:Overall_Control to PL_OC1:Idle
1st Paragraph, 1st Sentence -a) in a,b list

Change
"a) sending a HARD_RESET Received confirmation to the link layer; or"
to
"a) sending a HARD_RESET Received confirmation to the transport layer; or"

DELL comment number 154
Page=373 Subtype=Text Author=Kevin_Marks
Comment=
8.2.3.1 PL_PM state machine overview

Add Arbitration Wait Time Timer to Table 106 - PL_PM state machine timers,
as this timer is created, initialized and set to the value received as an
argument in Tx Open message in the PL_PM state machine.

DELL comment number 155
Page=386 Subtype=Highlight Author=Kevin_Marks

Comment=
9.2.2.1 COMMAND information unit
2nd Paragraph,1st Sentence after Table 110 - Command information unit

change
"...that the SSP target port shall transfer first burst data..."
to
"...that the SSP initiator port shall transfer first burst data..."

DELL comment number 156
Page=386 Subtype=Highlight Author=Kevin_Marks
Comment=
9.2.2.1 COMMAND information unit
2nd Paragraph,2st Sentence after Table 110 - Command information unit
Change
"...specifies that the SSP target port shall not transfer first burst
data..."
to
"...specifies that the SSP initiator port shall not transfer first burst
data..."

DELL comment number 157
Page=388 Subtype=Text Author=Kevin_Marks
Comment=
9.2.2.2 TASK information unit

In Table 113 - TASK MANAGEMENT FUNCTION field

Remove the "Uses LOGICAL UNIT NUMBER field" column in table.

It provides no value, as they are all yes.

DELL comment number 158
Page=389 Subtype=Highlight Author=Kevin_Marks
Comment=
9.2.2.3 XFER_RDY information unit
2nd Paragraph, 1st Sentence after Table 114 - XFER_RDY information unit
change
"If the ENABLE FIRST BURST field in the COMMAND frame (see 9.2.2.1) was set
to one, then in the initial XFER_RDY frame for the command, the SSP target
port shall set the REQUESTED OFFSET field to the value indicated by the
FIRST BURST SIZE field in the Disconnect-Reconnect mode page (see
10.2.7.1.5)."
to
"f the ENABLE FIRST BURST field in the COMMAND frame (see 9.2.2.1) was set
to one, then in the initial XFER_RDY frame for the command, the SSP target
port shall set the REQUESTED OFFSET field to the value indicated by the
FIRST BURST SIZE field (i.e., the amount of write data in 512-byte
increments times the value in the FIRST BURST SIZE field) in the
Disconnect-Reconnect mode page (see 10.2.7.1.5)."

DELL comment number 159
Page=392 Subtype=Highlight Author=Kevin_Marks
Comment=
9.2.2.5.3 RESPONSE information unit RESPONSE_DATA format

2nd Paragraph, 1st Sentence

Change
"Table 118 defines the RESPONSE DATA field, which contains information
describing protocol failures detected during processing of a request
received by the SSP target port."
to
"Table 118 defines the RESPONSE DATA field, which contains information
describing protocol failures detected during processing of a request
received by the SSP target port or the completion status of a task
management function.
"

DELL comment number 160
Page=396 Subtype=Highlight Author=Kevin_Marks
Comment=
9.2.4.1 SSP transport layer handling of link layer errors overview
2nd Paragraph, 1st Paragraph

Change
"...in the Protocol Specific Logical Unit..."
to
"...in the Protocol-Specific Logical Unit..."

DELL comment number 161
Page=396 Subtype=Highlight Author=Kevin_Marks
Comment=
9.2.4.2 COMMAND frame - handling of link layer errors
6th Paragraph, 1st Sentence

"An SSP initiator port should retransmit each COMMAND frame that does not
receive an ACK at least one
time." - seems to contradict the statements above in section 9.2.4.2, in
that if the SSP initiator port receives a XFER_RDY, showing that the
command was received, why would it re-send the command and cause an
overlapped condition? A better statement may be

"If the SSP initiator port does not receive an ACK, XFER_RDY frame or
RESPONSE frame for a COMMAND frame sent, it should retry the COMMAND frame
at least once."

DELL comment number 162
Page=399 Subtype=Highlight Author=Kevin_Marks
Comment=
9.2.4.5.3 DATA frame without transport layer retries

Last sentence

Change
"If an SSP initiator port transmits a write DATA frame and receives a NAK
for that frame, the device server aborts the command (see 10.2.2)."
to
 "If an SSP initiator port transmits a write DATA frame and receives a NAK
for that frame, the application client aborts the command (see 10.2.2)."

37

"Device server" contradicts 10.2.2, which says that SSP initiator port will
abort the command with an ABORT TASK when a NAK is received. Unless the
reference to 10.2.2 should be 10.2.3 (device server error handling), but
this does not seem to make sense, because the write data could be for
another command's XFER_RDY, so the device server does not know which
command to abort and is discarded in the link layer The application client
should abort the task with ABORT TASK.

DELL comment number 163
Page=399 Subtype=Highlight Author=Kevin_Marks
Comment=

9.2.4.5.3 DATA frame without transport layer retries

2nd to last paragraph

Change
"2) the device server aborts the command (see 10.2.2)."
to
"2) the application client aborts the command (see 10.2.2)."

Since it is Write Data, the ACK could have been lost forcing ACK/NAK
Timeout. The application client should abort the command on the next
connection, not the device, as it has no knowledge of the lost ACK.

DELL comment number 164
Page=399 Subtype=Highlight Author=Kevin_Marks
Comment=
9.2.4.6 RESPONSE frame - handling of link layer errors
4th Paragraph, 2nd Sentence
Change
"If the ST_TFR state machine and the ST_TTS state machine not previously
received the RESPONSE frame, they considers the RESPONSE frame to be the
valid RESPONSE frame."
to
"If the ST_TFR state machine and the ST_TTS state machine have not
previously received the RESPONSE frame, they shall consider the RESPONSE
frame to be the valid RESPONSE frame."

DELL comment number 165
Page=400 Subtype=Highlight Author=Kevin_Marks
Comment=
9.2.5.3 SSP target port error handling summary
4th Paragraph, end of sentence.
Change
"(see 10.2.1.3)."
to
"(see 10.2.1.4)"

Seems more appropriate that this would reference Send Command Complete
than SCSI Command Received, as Send Command Complete has the service
response argument for reporting status.

DELL comment number 166
Page=400 Subtype=Highlight Author=Kevin_Marks

Comment=
9.2.5.3 SSP target port error handling summary
5th Paragraph

Change
"If an SSP target port receives:
  a) a COMMAND frame with a tag that is already in use for a task
management function; or
  b) a TASK frame with a tag that is already in used for a command or
another task management function,
the ST_TFR state machine may process this as an I_T nexus loss event (see
9.2.6.3.2)."
to
"If an SSP target port receives:
  a) a COMMAND frame with a tag that is already in use for a task
management function; or
  b) a TASK frame with a tag that is already in used for a command or
another task management function,
the device server may return a RESPONSE frame with the DATAPRES field set
to RESPONSE_DATA and the RESPONSE CODE field set to OVERLAPPED TAG
ATTEMPTED (see ?????)."

Depending on if the target port receives a) or b), the (see ?????) could be

a) (see 10.2.1.4)
b) (see 10.2.1.14)

based on incorporation of 05-107r1.

DELL comment number 167
Page=403 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 168 - ST_I (transport layer for SSP initiator ports) state machines

In ST_IFR (initiator frame router)

Change "ST_IFR:Initiator_Frame_Router" state name to "ST_IFR" as it is a
single state state machine as proposed in a note on Figure 9.

DELL comment number 168
Page=405 Subtype=StrikeOut Author=Kevin_Marks
Comment=
9.2.6.2.2 ST_IFR (initiator frame router) state machine
14th Paragraph, 1st Sentence

Remove
"based on the content of the DATAPRES and RESPONSE DATA fields"

Depending on whether the RESPONSE frame was for a command or task
management function the RESPONSE DATA field may not exits (i.e. zero
bytes).

DELL comment number 169
Page=405 Subtype=Highlight Author=Kevin_Marks
Comment=

9.2.6.2.2 ST_IFR (initiator frame router) state machine
14th Paragraph, 1st Sentence
"items"
s/b
"fields"

DELL comment number 170
Page=405 Subtype=Highlight Author=Kevin_Marks
Comment=
9.2.6.2.2 ST_IFR (initiator frame router) state machine
15th Paragraph, 1st Sentence
"items"
s/b
"fields"

DELL comment number 171
Page=405 Subtype=Highlight Author=Kevin_Marks
Comment=
9.2.6.2.2 ST_IFR (initiator frame router) state machine
17th Paragraph, 1st Sentence
"items"
s/b
"fields"

DELL comment number 172
Page=407 Subtype=Text Author=Kevin_Marks
Comment=
9.2.6.2.3.3.1 State description

Used thru out ST_ITS and ST_TTS state machines:

"...send a Transmit Frame (Interlocked) request to the port layer."

Transmit Frame(Interlocked) request does not seem to be a request that is
received or mentioned in the in the port layer. This would also applies to
Transmit Frame (Non-interlocked) request used through out this clause.
Understandably this would turn into TX Frame (Balanced Required) or Tx
Frame (Balanced Not Required) request to the link layer.

DELL comment number 173
Page=409 Subtype=Highlight Author=Kevin_Marks
Comment=
9.2.6.2.3.3.1 State description

In Table 121 - Messages sent to the ST_IFR state machine based on port
layer confirmations
1st Row, 1st Column

Change
"Transmission Status (ACK Received"
to
"Transmission Status (ACK Received)"

DELL comment number 174
Page=412 Subtype=Highlight Author=Kevin_Marks

Comment=
9.2.6.2.3.5.2 Transition ST_ITS4:Prepare_Task to
ST_ITS2:Initiator_Send_Frame

Section header needs to be in Bold.

DELL comment number 175
Page=415 Subtype=Highlight Author=Kevin_Marks
Comment=
Figure 169 - ST_T (transport layer for SSP target ports) state machines

In ST_TFR (target frame router)

Change "ST_TFR:Target_Frame_Router" state name to "ST_TFR" as it is a
single state state machine as proposed in a note on Figure 9.

DELL comment number 176
Page=417 Subtype=Highlight Author=Kevin_Marks
Comment=
9.2.6.3.2 ST_TFR (target frame router) state machine
14th Paragraph, 1st Sentence
"items"
s/b
"fields"

DELL comment number 177
Page=417 Subtype=Highlight Author=Kevin_Marks
Comment=
9.2.6.3.2 ST_TFR (target frame router) state machine
15th Paragraph, 1st Sentence
"items"
s/b
"fields"

DELL comment number 178
Page=417 Subtype=Highlight Author=Kevin_Marks
Comment=
9.2.6.3.2 ST_TFR (target frame router) state machine
20th Paragraph, 1st Sentence
"items"
s/b
"fields"

DELL comment number 179
Page=417 Subtype=Highlight Author=Kevin_Marks
Comment=
9.2.6.3.2 ST_TFR (target frame router) state machine
16th Paragraph, 1st Sentence
"items"
s/b
"fields"

DELL comment number 180
Page=429 Subtype=Highlight Author=Kevin_Marks
Comment=

9.4.1 SMP transport layer overview

In Table 128 - SMP FRAME TYPE field

Change
"9.4.2"
to
"10.4.3.1"

as 9.4.2 is proposed for removal below.

DELL comment number 181
Page=429 Subtype=Highlight Author=Kevin_Marks
Comment=
9.4.1 SMP transport layer overview

In Table 128 - SMP FRAME TYPE field

Change
"9.4.3"
to
"10.4.3.2"

as 9.4.3 is proposed for removal below.

DELL comment number 182
Page=430 Subtype=StrikeOut Author=Kevin_Marks
Comment=
Remove Section 9.4.2 - SMP_REQUEST FRAME as it is redundant with 10.4.3.1

The removal of this section may cause a golbal change to SMP_REQUEST to SMP
REQUEST.

DELL comment number 183
Page=430 Subtype=StrikeOut Author=Kevin_Marks
Comment=
9.4.2 SMP_REQUEST frame

Remove Table 129, as it is redundant to Table 167.

DELL comment number 184
Page=430 Subtype=StrikeOut Author=Kevin_Marks
Comment=
Remove Section 9.4.3 - SMP_RESPONSE frame as it is redundant with 10.4.3.2
and seems to have a slightly different format than 10.4.3.2.

The removal of this section may cause a golbal change to SMP_RESPONSE to
SMP RESPONSE.

DELL comment number 185
Page=432 Subtype=Highlight Author=Kevin_Marks
Comment=
9.4.5.2.2.1 State description

Add text

"This state is the initial state of the MT_IP state machine."

DELL comment number 186
Page=432 Subtype=Highlight Author=Kevin_Marks
Comment=
9.4.5.2.2.1 State description
1st Paragraph
change
"This state waits for a Send SMP Function Request request, which includes
the following arguments:
  a) connection rate;
  b) destination SAS address; and
  c) request bytes."
to
"This state waits for a Send SMP Function Request request, which includes
the following arguments:
  a) connection rate;
  b) destination SAS address;
  c) function; and
  d) additional request bytes."

per proposed removal of SMP_REQUEST table 129.

DELL comment number 187
Page=432 Subtype=Highlight Author=Kevin_Marks
Comment=
9.4.5.2.2.2 Transition MT_IP1:Idle to MT_IP2:Send
1st Paragaph
change
"This transition shall occur after a Send SMP Function Request request is
received. This transition shall
include the following arguments:
  a) connection rate;
  b) destination SAS address; and
  c) request bytes."
to
"This transition shall occur after a Send SMP Function Request request is
received. This transition shall
include the following arguments:
  a) connection rate;
  b) destination SAS address;
  c) function; and
  d) additional request bytes."

per proposed removal of SMP_REQUEST table 129.

DELL comment number 188
Page=433 Subtype=Highlight Author=Kevin_Marks
Comment=
9.4.5.2.3.1 State description
1st Paragraph
Change
"This state constructs an SMP_REQUEST frame using the following arguments
received with the transition

into this state:
  a) request bytes;"
to
"This state constructs an SMP_REQUEST frame using the following arguments
received with the transition
into this state:
  a) function; and
  b) additional request bytes;"

per proposed removal of SMP_REQUEST table 129.

DELL comment number 189
Page=434 Subtype=Highlight Author=Kevin_Marks
Comment=
9.4.5.3.2.1 State description

Add text

"This state is the initial state of the MT_TP state machine."

DELL comment number 190
Page=435 Subtype=Highlight Author=Kevin_Marks
Comment=
9.4.5.3.3.1 State description
1st Paragraph
Change
"This state waits for a Send SMP Response request, which includes the
following arguments:
  a) response bytes."
to
"This state waits for a Send SMP Response request, which includes the
following arguments:
  a) function;
  b) function result; and
  c) response bytes."

per proposed removal of SMP_RESPONSE table 130.

DELL comment number 191
Page=437 Subtype=Highlight Author=Kevin_Marks
Comment=
Table 132 - SCSI architecture mapping

Remove table note b and references..

"b SCSI initiator port Data Transfer transport protocol services are not
specified by SAM-3."

SAM-3 does contain the Terminate Data Transfer protocol service and Data-In
and Data-Out Delivery Service.

DELL comment number 192
Page=438 Subtype=Highlight Author=Kevin_Marks
Comment=
10.2.1.3 SCSI Command Received transport protocol service

"SCSI Command Received (IN (I_T_L_Q Nexus, CDB, Task Attribute, [Task
Priority], [Command
Reference Number]))"

SCSI Command Received is missing First Burst Enabled argument.

DELL comment number 193
Page=442 Subtype=Highlight Author=Kevin_Marks
Comment=
10.2.1.7 Data-In Delivered transport protocol service

"Data-In Delivered (IN (I_T_L_Q Nexus))"

Add Delivery Results argument as defined in Table 138.

DELL comment number 194
Page=443 Subtype=Highlight Author=Kevin_Marks
Comment=
10.2.1.9 Data-Out Received transport protocol service

Data-Out Received (IN (I_T_L_Q Nexus))

Add Delivery Results argument as defined in Table 140..

DELL comment number 195
Page=443 Subtype=Highlight Author=Kevin_Marks
Comment=
10.2.1.10 Terminate Data Transfer transport protocol service

In Table 141 - Receive Data-Out transport protocol service arguments
SAS SSP implementation of the Nexus

Change
"I_T nexus, I_T_L nexus, or I_T_L_Q nexus, specifying the scope of the data
transfer(s) to terminate."
to
"I_T_L nexus, or I_T_L_Q nexus, specifying the scope of the data
transfer(s) to terminate."

The statement above the table says "The device server uses the Terminate
Data Transfer ...."
The device server of one LU should not be able to affect/terminate data
transfers to other LU.

DELL comment number 196
Page=444 Subtype=Highlight Author=Kevin_Marks
Comment=
10.2.1.11 Data Transfer Terminated transport protocol service

In Table 142 - Data-Out Received transport protocol service arguments
SAS SSP implementation of the Nexus argument.

Change
"I_T nexus, I_T_L nexus, or I_T_L_Q nexus indicated by the preceding

Terminate Data Transfer () call."
to
"I_T_L nexus, or I_T_L_Q nexus indicated by the preceding Terminate Data
Transfer () call."

per previous comment, because I_T nexus should not be allowed as a
argument, I_T Nexus should not be allowed as a returned indication.

DELL comment number 197
Page=447 Subtype=Highlight Author=Kevin_Marks
Comment=
10.2.2 Application client error handling
1st sentence

"delivers"
s/b
"returns"

DELL comment number 198
Page=448 Subtype=StrikeOut Author=Kevin_Marks
Comment=
10.2.3 Device server error handling
1st Paragraph, 1st Sentence

Remove
"management functions"

from
"...device server(s) shall abort all task management functions received on
that I_T nexus..."

DELL comment number 199
Page=448 Subtype=Highlight Author=Kevin_Marks
Comment=
10.2.3 Device server error handling
2nd Paragraph, 1st Sentence

Should Receive Data-Out () be Data-Out Received ()?

DELL comment number 200
Page=448 Subtype=Highlight Author=Kevin_Marks
Comment=
10.2.4 Task router and task manager error handling
1st Paragraph c) in second a,b,c list

Change
"c) call Task Management Function Executed () with the Service Response set
to FUNCTION REJECTED - Overlapped Tag Attempted (i.e., requesting that the
target port set the DATAPRES field to RESPONSE_DATA and the RESPONSE CODE
field to OVERLAPPED TAG ATTEMPTED)."
to
"
c) call Send Command Complete () with a with the Service Response set to
SERVICE DELIVERY OR TARGET FAILURE (i.e., requestingthat the target port
set the DATAPRES field to RESPONSE_DATA and the RESPONSE CODE field to

OVERLAPPED TAG ATTEMPTED) if the SCSI command received caused the
overlapped tag condition; or

call Task Management Function Executed () with the Service Response set to
FUNCTION REJECTED - Overlapped Tag Attempted (i.e., requesting that the
target port set the DATAPRES field to RESPONSE_DATA and the RESPONSE CODE
field to OVERLAPPED TAG ATTEMPTED) if the SCSI task management function
received caused the overlapped tag condition"

Seems that if it was a command that was received last, that cause the
overlapped tag condition, that the response would be for that command, and
not the task management function that was already in the task set.

DELL comment number 201
Page=448 Subtype=Highlight Author=Kevin_Marks
Comment=
10.2.4 Task router and task manager error handling
1st Paragraph, b) in first a,b list

Remove extra "calls" in sentence.
"b) an SSP target port calls calls Task Management Request Received () with
a tag already in use by a SCSI command or SCSI task management function in
any logical unit,"

DELL comment number 202
Page=450 Subtype=Highlight Author=Kevin_Marks
Comment=
10.2.7.1.1 Disconnect-Reconnect mode page overview
3rd Paragraph, 1st Sentence

"ILLEGAL FIELD IN PARAMETER LIST."

Should this be "INVALID FIELD IN PARAMETER LIST", else it does not have a
assigned ASC/ASCQ in SPC-3.

It is also incorrect in SPC-3 for Disconnect-Reconnect mode page.

DELL comment number 203
Page=453 Subtype=Text Author=Kevin_Marks
Comment=
10.2.7.2.1 Protocol-Specific Port mode page overview

On I_T NEXUS LOSS TIME

Add note or text that the SSP initiator port should also use the I_T NEXUS
LOSS TIME value in the Protocol-specific port mode page for reporting I_T
nexus loss for that SSP target port.

DELL comment number 204
Page=455 Subtype=Highlight Author=Kevin_Marks
Comment=
10.2.7.2.3 Protocol-Specific Port mode page - Phy Control And Discover
subpage

In Table 154 - SAS phy mode descriptor

Change Byte 2 to "Reserved" from "Restricted (for SMP PHY CONTROL
function's PHY OPERATION field)"

DELL comment number 205
Page=460 Subtype=Highlight Author=Kevin_Marks
Comment=
10.2.9.1 Protocol-Specific diagnostic page
2rd Paragraph, 1st Sentence

"ILLEGAL FIELD IN PARAMETER LIST."

Should this be "INVALID FIELD IN PARAMETER LIST", else it does not have a
assigned ASC/ASCQ in SPC-3.

DELL comment number 206
Page=467 Subtype=Highlight Author=Kevin_Marks
Comment=
10.2.11 SCSI vital product data (VPD)
In Table 165 - Device Identification VPD page required identification
descriptors

Association row
Change

"ASSOCIATION   1h (i.e., SCSI target port)   1h (i.e., SCSI target
port)"
to
"ASSOCIATION   01b (i.e., SCSI target port)   01b (i.e., SCSI target
port)"

DELL comment number 207
Page=467 Subtype=Highlight Author=Kevin_Marks
Comment=
10.2.11 SCSI vital product data (VPD)
In Table 165 - Device Identification VPD page required identification
descriptors

Code Set row
Change
"1b (i.e., binary)"
to
"1h (i.e., binary)"

DELL comment number 208
Page=468 Subtype=Highlight Author=Kevin_Marks
Comment=
10.2.11 SCSI vital product data (VPD)
2nd Paragraph after Table 165 - Device Identification VPD page required
identification descriptors

"Logical units may include additional identification descriptors than those
required by this standard (e.g., SCSI target devices with SCSI target ports
using other SCSI transport protocols may return additional target device
names for those other SCSI transport protocols)."

48

Sentence seems to be an artifact from SAS-1, when the SCSI device name was required. Propose removing everything following with the e.g..

DELL comment number 209
Page=474 Subtype=StrikeOut Author=Kevin_Marks
Comment=
10.4.3.2 SMP function response frame format

In Table 170 - FUNCTION RESULT field (part 2 of 2) - Code value 16h (PHY VACANT) - Description

Remove
"The phy specified by the PHY IDENTIFIER field in
the SMP request frame does not exist or"

This statement is the same as Code value 10h (PHY DOES NOT EXIST). Do not agree that return 10h and 16h are the same.

DELL comment number 210
Page=477 Subtype=Highlight Author=Kevin_Marks
Comment=
10.4.3.3 REPORT GENERAL function

9th Paragraph, 2nd Sentence after Table 172 - REPORT GENERAL response

Add sentence
"Devices other than expander devices shall not support this bit"
before
"Changes in this bit from one to zero result in a BROADCAST (CHANGE) being originated."

DELL comment number 211
Page=477 Subtype=Highlight Author=Kevin_Marks
Comment=
10.4.3.3 REPORT GENERAL function
10th Paragraph, 2nd Sentence after Table 172 - REPORT GENERAL response

Add sentence
"Devices other than expander devices shall not support this bit"
after
"An expander device without a configurable route table shall have the CONFIGURABLE ROUTE TABLE bit set to zero."

DELL comment number 212
Page=478 Subtype=Highlight Author=Kevin_Marks
Comment=
10.4.3.4 REPORT MANUFACTURER INFORMATION function

In Table 174 - REPORT MANUFACTURER INFORMATION response - Byte 8

Make 1.1 in SAS-1.1 FORMAT, SMALL CAPS, as it is part of the field name and not the value of the field..

DELL comment number 213

Page=479 Subtype=Highlight Author=Kevin_Marks
Comment=
10.4.3.4 REPORT MANUFACTURER INFORMATION function

4th Paragraph, 1st and 2nd Sentences after In Table 174 - REPORT
MANUFACTURER INFORMATION response

"A SAS-1.1 FORMAT bit set to..."

Make 1.1 in SAS-1.1 FORMAT, SMALL CAPS, as it is part of the field name.

DELL comment number 214
Page=483 Subtype=StrikeOut Author=Kevin_Marks
Comment=
10.4.3.5 DISCOVER function

In Table 178 - NEGOTIATED PHYSICAL LINK RATE field, 1st Sentence -Code
Value 2h

Remove

"(either SAS or SATA)"

SATA does not do fall back test (final negotiation window.)

DELL comment number 215
Page=483 Subtype=StrikeOut Author=Kevin_Marks
Comment=
10.4.3.5 DISCOVER function

In Table 178 - NEGOTIATED PHYSICAL LINK RATE field, 4st Sentence - Code
Value 4h

Remove

"2h,"

Per comment above on 2h code value, SATA phy should not end up in code 2h,
as it does not support fall back test or change i.e. in 2h description to
e.g.

DELL comment number 216
Page=485 Subtype=Highlight Author=Kevin_Marks
Comment=
10.4.3.5 DISCOVER function

11th Paragraph after Table 179 - ATTACHED SATA PORT SELECTOR and ATTACHED
SATA DEVICE bits
Change

"The ATTACHED SAS ADDRESS field shall be updated:
   a) after the identification sequence completes, if a SAS device or
expander device is attached; or
   b) at SATA spinup hold time (see 6.10), if a SATA device is attached."
to

"The ATTACHED SAS ADDRESS field shall be updated:
   a) after the identification sequence completes, if a SAS device or
expander device isattached; or
   b) at SATA spinup hold time (i.e. COMSAS detect timeout expires), if a
SATA device is attached."

A phy (STP bridge) may not support SATA spinup hold, so the COMSAS detect
timeout expires clarifies the time.

DELL comment number 217
Page=486 Subtype=Highlight Author=Kevin_Marks
Comment=
10.4.3.6 REPORT PHY ERROR LOG function
1st Paragraph,1st Sentence
Change
"This SMP function may implemented by any SMP target port."
to
"This SMP function may be implemented by any SMP target port.

DELL comment number 218
Page=488 Subtype=Highlight Author=Kevin_Marks
Comment=
10.4.3.6 REPORT PHY ERROR LOG function

5th Paragraph after Table 184 - REPORT PHY ERROR LOG response

Change

"The INVALID DWORD COUNT field indicates the number of invalid dwords (see
3.1.98) that have been received outside of phy reset sequences (i.e.,
between when the SP_DWS state machine (see 6.9) sends a Phy Layer Ready
(SAS) confirmation and when it sends a Phy Layer Not Ready confirmation to
the link layer). The count shall stop at the maximum value."
to
"The INVALID DWORD COUNT field indicates the number of invalid dwords (see
3.1.98) that have been received outside of phy reset sequences (i.e.,
between when the SP state machine (see 6.8) sends a Phy Layer Ready (SAS)
confirmation and when it sends a Phy Layer Not Ready confirmation to the
link layer). The count shall stop at the maximum value."

Do these counters not apply to SATA? If so, need to add or Phy Layer Ready
(SATA) confirmation.

DELL comment number 219
Page=489 Subtype=Highlight Author=Kevin_Marks
Comment=
10.4.3.6 REPORT PHY ERROR LOG function

6th Paragraph after Table 184 - REPORT PHY ERROR LOG response

"The LOSS OF DWORD SYNCHRONIZATION COUNT field indicates the number of
times the phy has lost dword synchronization and restarted the link reset
sequence (see 6.8) of phy reset sequences. The count shall stop at the
maximum value."

Is the LOS SYNC COUNT only incremented if a the link reset sequence
happens? Several SP states allow for a Start DWS message to prevent a link
reset sequence, such as SP15:SAS_PHY_Ready. If this LOS is defined as DWS
Loss, then remove "and restarted the link reset sequence (see 6.8) of phy
reset sequences."

DELL comment number 220
Page=491 Subtype=Highlight Author=Kevin_Marks
Comment=
8th Paragraph after Table 186 - REPORT PHY SATA response

Change
"...link reset sequence (see ATA/ATAPI-7 V3 and SATA2-EXT)."
to
"...link reset sequence (see ATA/ATAPI-7 V3 and SATAII-EXT)."

DELL comment number 221
Page=496 Subtype=Highlight Author=Kevin_Marks
Comment=
10.4.3.10 PHY CONTROL function
1st Paragraph, 2nd Sentence
Change
"This SMP function may implemented by any SMP target port."
to
"This SMP function may be implemented by any SMP target port."

DELL comment number 222
Page=498 Subtype=Highlight Author=Kevin_Marks
Comment=
10.4.3.10 PHY CONTROL function
In Table 192 - PHY OPERATION field (part 1 of 2)

Code value 01h (LINK RESET) Row
Change 2nd Paragraph, 2nd Sentence in description column

"The phy shall bypass the SATA spinup hold state."
to
"The phy shall bypass the SATA spinup hold state, if attached to a SATA
device."

DELL comment number 223
Page=500 Subtype=Highlight Author=Kevin_Marks
Comment=
10.4.3.11 PHY TEST FUNCTION function
1st Paragraph, 2nd Sentence
Change
"This SMP function may implemented by any SMP target port."
to
"This SMP function may be implemented by any SMP target port."

DELL comment number 224
Page=502 Subtype=Highlight Author=Kevin_Marks
Comment=
10.4.3.11 PHY TEST FUNCTION function

In Table 196 - PHY TEST FUNCTION field

Code value 01h - Description column- 1st Sentence
Change
"MAXIMUM PHYSICAL LINK RATE"
to
"PHY TEST PATTERN PHYSICAL LINK RATE"

DELL comment number 225
Page=504 Subtype=Highlight Author=Kevin_Marks
Comment=
A.1 Jitter tolerance pattern (JTPAT)

Change blue text to black in Table A.1 „ JTPAT for RD+.

DELL comment number 226
Page=505 Subtype=Highlight Author=Kevin_Marks
Comment=
A.1 Jitter tolerance pattern (JTPAT)

Change blue text to black in Table A.2 „ JTPAT for RD

DELL comment number 227
Page=541 Subtype=Highlight Author=Kevin_Marks
Comment=
G.1 STP differences from Serial ATA (SATA)

change
"...device using an active/standby mode called affiliations..."
to
"...device using a reserve/release style mechanism called affiliations..."

Active/standby seems more like a Port selector or failover mechanism.

DELL comment number 228
Page=541 Subtype=Highlight Author=Kevin_Marks
Comment=
G.2 STP differences from Serial ATA II

Remove
"c) staggered device spinup;"

SATA Spinup Hold seems and phy reset are methods to control staggered
spinup.

DELL comment number 229
Page=542 Subtype=Highlight Author=Kevin_Marks
Comment=
G.4 SATA port selector considerations
1st paragraph,1st sentence

change
"...SATA port selector (see SATA2-PS) in a SAS..."
to
"...SATA port selector (see SATAII-PS) in a SAS..."

DELL comment number 230
Page=574 Subtype=Text Author=Kevin_Marks
Comment=
L.1 Discover process example implementation overview

Through out comments in source code, "will" and "must" are used. Although
an informative annex, recommend changing instances of "will" and "must" to
"should"/"shall".

****

Comments attached to No ballot from Robert H. Nixon of
Emulex:

PDF page numbers are used
(i.e., a single number sequence for the whole document)

Emulex concurs with the following issue identified by Intel:
Page: 124; Author: rlsheffi;
Comment: There is no place in the standard that specifies when (if
ever) the ATTACHED SAS ADDRESS is set to zero.

Page 231, 6.8.3.3.2 para 2 line 3
COMWAKE_Recieved s/b COMWAKE_Received

Emulex concurs with the following issue identified by Intel:
Page: 296; Author: rlsheffi;
Comment: 7.9.5.5.3 SL_IR_IRC2:Wait state 7.9.5.5.3.1 State description
There is a problem that there is currently no definition for how a phy
associated with an STP/SATA bridge becomes enabled.

****

Comments attached to No ballot from Rob Elliott of
Hewlett Packard Co.:

HPQ comment number 1
Page=95 Subtype=Text Author=relliott
Comment=
4.2.6 Port identifiers

Comment received from Doug Gilbert (linux):
Section 4.2.6 on Port identifiers says: "Each SAS initiator
port, target port and target/initiator port shall include
a SAS address (see 4.2.2) as its port identifier. The
selected SAS address shall be used for no other name or
identifier."

Current HBAs (4 or 8 phy) can have multiple initiator
ports in different SAS domains each with the same SAS port
identifier. IMO that doesn't sit well with the second sentence

fromdraft shown above (namely the unqualified "... or
identifier" part.

Or perhaps I am misunderstanding what a SAS HBA should
publish as its port identifier for its second and
subsequent ports?

My reply: Good point. The initiator device certainly is allowed to use
that port identifier in another domain (causing another port to be
created).

It's trying to ensure that the identifier is not used as (for targets or
initiators) a device name or (for targets) a logical unit name.

HPQ comment number 2
Page=108 Subtype=Text Author=relliott
Comment=
4.4.2 Hard reset

Clarify what "hard reset" means or does not mean in an expander. This
still causes confusion.

HPQ comment number 3
Page=154 Subtype=Text Author=relliott
Comment=
5.2.3.4.7 SAS internal compact wide connector pin assignments
Table 29 - Backplane pinout

The A to Rx, B to Tx mapping does not match figure 76, which shows A's
carrying the Rx lines and B's carrying the Tx lines. This table is probably
incorrect.

HPQ comment number 4
Page=161 Subtype=Text Author=relliott
Comment=
5.2.4.3.2 SAS internal wide symmetric cables
Figure 76 - controller to backplane cable
On the right side (backplane pinout), the A to Rx, B to Tx mapping does not
match table 29, which has A's carrying the Tx lines and B's carrying the Rx
lines. This figure is probably correct.

HPQ comment number 5
Page=161 Subtype=Text Author=relliott
Comment=
5.2.4.3.2 SAS internal wide symmetric cables
Figure 76 - controller to backplane cable

This figure is identical to the following figure 77 (controller to
controller), except the "backplane" vs "connector" label on the right. If
that is truly the case, then there should not be a special "backplane"
pinout. (it's possible that the SIDEBAND signal names are different - if
so, then they are indeed different)

HPQ comment number 6
Page=161 Subtype=Text Author=relliott

Comment=
5.2.4.3.2 SAS internal wide symmetric cables
Figure 76 - controller to backplane cable

The left side (controller) has SIDEBAND0 on A8, while table 29 has it on
B8.

HPQ comment number 7
Page=164 Subtype=Text Author=relliott
Comment=
5.2.3.4.2 SAS internal wide symmetric cables
(general comment on all cable figures)

The depiction of the grounds is misleading in these cable figures.

Show grounds going into a cylinder with dotted lines. Show paddle boards
for the crossovers of the signals where needed rather than just crossing
the lines in space.

Alternatively, just show the grounds going into circles at each end (not
full cylinders) labeled "twinaxial dual drain shield" and don't show them
connected from one side to theother.

HPQ comment number 8
Page=170 Subtype=Highlight Author=relliott
Comment=
5.2.6 Impedance and media specifications
Table 31 external cables

The specification of:
Maximum intra-pair skew (h, k): 20 ps

is barely achievable by commodity cables and may not be that important (it
causes the corners of the eye diagram to become rounded off). See 05-098.
Either raise the number or eliminate it.

HPQ comment number 9
Page=171 Subtype=Highlight Author=relliott
Comment=
5.2.6 Impedance and media specifications
Table 32 - internal wide cables

The number:
Maximum intra-pair skew: 10 ps

may not be needed (see comment on table 31 for external cables).

If this row remains, then footnotes h and k from table 31 which describe
the measurement techniques should be copied here.

HPQ comment number 10
Page=190 Subtype=Text Author=relliott
Comment=
5.3.6.4 Receiver device jitter tolerance eye mask

In January phy WG, was asked to add precalculated Z1tol values somewhere.
Need specifics on what to do.

HPQ comment number 11
Page=193 Subtype=Text Author=relliott
Comment=
5.3.7.5 Transmitter device signal output levels for OOB signals

The toggling algorithm is bogus and should not be used if SATA device
attachment is supported. It leads to overdriving signals into the SATA
device, which might have a 600 - 700 mV maximum expectation.

Instead, a SAS phy supporting SATA device attachment needs to always use
SATA compatible levels for COMINIT, only switching to SAS levels if it
receives a COMSAS. A SAS receiver (if a SAS drive is attached) should have
no problem receiving the lower levels - no more of a problem than a SATA
device in that same position. If it cannot work with lower levels, then a
SATA device would not be able to work either and it's not really an
attachment point that supports SATA device attachment.

SAS phys not concerned with SATA device attachment (e.g. phys attached to
external cable connectors) need to use their normal SAS levels.

Proposals discussing this topic include 05-019 and 05-077.

HPQ comment number 12
Page=229 Subtype=Highlight Author=relliott
Comment=
6.8.3.2.1 SP0:OOB_COMINIT state description

"SMP Reset request" is not defined anywhere.

HPQ comment number 13
Page=237 Subtype=Text Author=relliott
Comment=
6.8.4.9 SP15:SAS_PHY_Ready and
6.8.5.8 SP22:SATA_PHY_Ready

need to clarify how COMINIT Detected works in SP15 and SP22 (and maybe
other states). If the differential voltage level drops below 120 mV
multiple times meeting COMINIT timing, is that enough? Or is the voltage
drop ignored until dword sync is declared lost by SP_DWS? DWS Reset Timeout
is 1 ms; COMINIT idle time is 525 ns. So, COMINIT Detected will be seen
before DWS is declared lost.

HPQ comment number 14
Page=239 Subtype=Highlight Author=relliott
Comment=
6.8.5.4.2 Transition SP18 to SP0

"Transition SP187" s/b "Transition SP18"

HPQ comment number 15
Page=243 Subtype=StrikeOut Author=relliott
Comment=

6.8.7.2 Transition SP26 to SP0

Delete "upon entry to SP0:OOB_COMINIT."

HPQ comment number 16
Page=243 Subtype=Text Author=relliott
Comment=
6.9.1 SP_DWS state machine

When SP_DWS declares DWS Lost but not DWS Reset, that could be interpreted
as "loss of dword sync" which is a reason an expander would forward BREAK.
The intent was that only happens if there is loss of dword sync resulting
in the OOB sequence restarting. Clarify throughout.

HPQ comment number 17
Page=270 Subtype=Text Author=relliott
Comment=
7.2.5.1 OPEN_REJECT

For SAS phys (not expander phys), consider dropping the priority list in
favor of the 1)2)3) list in the SL_CC:Selected state, the only one that
uses it.

For expander phys, the decision is not made by XL (in XL4:Open_Reject),
it's made by the ECM (choosing which Arb Reject to send). I don't know if
there's a better place for the list than its current location since we
don't define ECM state machines.

There are two candidates:
a) 4.6.6.3 defines the Arb Rejects.
b) 7.12.4.1 has the arbitration rules, but does not have an ordered list
right now enforcing the priority.

HPQ comment number 18
Page=299 Subtype=Text Author=relliott
Comment=
7.12.3 Arbitration fairness

should point to port layer section dealing with AWT stopping here.

don't want to imply that this "should not" rule overrides the port layer
normal stopping of AWT when it has no more frames to send.

HPQ comment number 19
Page=325 Subtype=Text Author=relliott
Comment=
7.15.3 XL0:Idle state

Comment from Expert I/O (in 05-141r0):

Expander - Backoff Reverse Path
Problem
Expander Port 0 forwards an open to Expander Port 1, which causes Expander
Port 0 to transition to XL3:Open_Confirm_Wait. Expander Port 1 receives an
open address frame from the device it is connected. The received open

address frame wins according to arbitration rules and thus causes Expander
Port 1 to issue a Backoff Reverse Path message destined to Expander Port 0.
The specification indicates that upon reception of the backoff reverse path
message, Expander Port 0 should transition to XL5:Forward_Open. The
specification goes on to say upon entry into XL5:Forward_Open, the expander
port should transmit an open address frame based on the arguments of the
oaf coincident with the state transition. However, in the case of the
backoff reverse path message, there is no mechanism detailed to provide the
Expander Port with the open address frame arguments along with the message.

Solution
This problem could be solved by having the expander port that received the
backoff reverse path message transition to XL0:Idle rather than XL5:Forward
Open. This will enable the expander port to be ready to accept the forward
open message that will follow the backoff reverse path message and proceed
as described in the specification.
Alternatively, the backoff reverse path message could include the arguments
for the open address frame along with the message. However, this option
seems more intrusive than the first option

HPQ comment number 20
Page=326 Subtype=Text Author=relliott
Comment=
7.15.4 XL1:Request_Path state

Comment from Expert I/O in 05-141r0:

Expander - Request Path Handling
Problem
The specification should clarify what should occur in the following
condition: Expander Port 1 issues a request path message which will route
to Expander Port 0 resources. Expander Port 1 wins arbitration and proceeds
to issue a forward open message that will go to Expander Port 0.
Coincidentally (or any time up to receiving the forward open message from
Expander Port 1), an open address frame is received by Expander Port 0.
This causes Expander Port 0 to transition to XL1:Request_Path. While
Expander Port 0 is in XL1:Request_Path the forward open message is
received. It is not clear what the expander link should do from this point
forward. If the open address frame received by Expander Port 0 is greater,
ultimately a backoff retry or backoff reverse path message should be issued
to Expander Port 1. If the open address frame received by the forward open
message is greater, the requestpath message to the ECM should be negated.
Neither of these methods is explained.
Solution
A possible solution requires modification in both the XL1:Request_Path
section of the specification and the request path handling in the ECM. In
the XL1:Request_Path section, the contents of the received open address
frame could be kept. Upon receiving a forward open message while in
XL1:Request_Path, the expander link uses arbitration rules to determine if
a backoff retry message or backoff reverse path message should be issued
while remaining in the same state. If either of these messages is issued,
then no further modifications are necessary since the request path message
from Expander Port 0 will control the state operation of Expander Port 0.
If the forward open message wins arbitration over the received open address
frame by Expander Port 0, the state transition to XL5:Forward_Open would

take place as described. The only modification in this case would be that
the ECM would ignore the request path messagealready issued by Expander
Port 0.
As a note, the cases are covered if the open address frame is received
while Expander Port 0 is in XL5:Forward_Open and XL6:Open_Confirm_Wait. The
only case missing in the specification is the case described

HPQ comment number 21
Page=337 Subtype=Text Author=relliott
Comment=
7.16.6 Closing an SSP connection

Point to 7.12.8 (Breaking a connection) somewhere in 7.16, since some SSP
specific rules are hidden there

HPQ comment number 22
Page=340 Subtype=Text Author=relliott
Comment=
7.16.7.1 SSP state machines

Figure 151 - SSP part 1

Request Close and Request Break also go to all the other SSP state machines
(in other figures), which is not mentioned in the figure.

In this figure, it is shown as an input on the right, but not shown coming
from SSP_D state which is also on this page.

HPQ comment number 23
Page=352 Subtype=Text Author=relliott
Comment=
7.17.4 Affiliations

What happens when clear affiliation attempted while a connection open?

vendor specific choice of:
reject, accept and do it at the end of the connection, accept but do
nothing

HPQ comment number 24
Page=366 Subtype=Text Author=relliott
Comment=
8.2.2.2 PL_OC1:Idle state

Should be clarified that the pools of requests exist even while OC is in
OC1.
Going from OC2 to OC1 doesn't empty them. It's debatable whether new
requests should be
accepted while in OC1. The port might just be momentarily offline while its
phy(s) are performing a
link reset sequence.

HPQ comment number 25
Page=366 Subtype=Text Author=relliott
Comment=

8.2.2.2 PL_OC1:Idle

The I_T Nexus Loss timer should continue to run after OC has moved into OC1
because all its phys become disabled. If they are disabled for too long
while the OC has any useful
work for them to do, it should be treated as an I_T nexus loss. This makes
it work the same as if a
remote physical link went down and connections requiring that physical link
start returning OPEN
REJECT (NO DESTINATION).

HPQ comment number 26
Page=378 Subtype=Text Author=relliott
Comment=
9.2.3.4 PL_PM3 Connected state

Comment from Expert I/O in 05-141r0:

Port Layer - Frame Transmitted Handshake
Problem
Due to the architectural freedom of having multiple SSP Transports running
concurrently on top of a single Port Layer, multiple frames with different
tags may be queued to the port layer. The port layer section of the
specification does not describe any restriction for issuing multiple
transmit frame messages to the link layer as long as the protocol,
connection rate, and destination address match. However, the SSP Link Layer
state machine is specified such that it can only accept one transmit frame
message at a time. This creates an environment where a frame could be
implicitly dropped if the transmit frame message is issued by the Port
Layer while the SSP Link Layer is not in a state that recognizes the
message.
Solution
The description of a handshake should be added to the Port Layer section of
the specification. Specifically in the PL_PM3:Connected state should
specify that a new transmit frame message can only be issued if there are
no outstanding frame transmitted confirmations from the SSP Link Layer.

HPQ comment number 27
Page=395 Subtype=Text Author=relliott
Comment=
9.2.3 Sequences of SSP frames

Should explicitly state that, for the same command, the target port may
send DATA frames for the read direction at the same time it is receiving
DATA frames for the write
direction. The ST_I and ST_T state machines might not be able to do that as
written.

HPQ comment number 28
Page=396 Subtype=Text Author=relliott
Comment=
9.2.4.2 COMMAND frame link layer errors

Missing "(see 9.4.3.x)" references in most of these paragraphs

HPQ comment number 29
Page=396 Subtype=Text Author=relliott
Comment=
9.2.4.2 COMMAND frame link layer errors

May be missing a DATA paragraph (per 9.2.6.3.3.2.6)

HPQ comment number 30
Page=396 Subtype=Highlight Author=relliott
Comment=
9.2.4.2 COMMAND frame link layer errors

After "ACK" add "or RESPONSE, XFER_RDY, or DATA frame" to comprehend all
the implicit ACK conditions just discussed. May be best to reword
altogether.

The purpose of this kind of rule should be to guide the OS drivers not to
give up after just one error.

10.2.2 has all the rules with more detail.

HPQ comment number 31
Page=399 Subtype=Highlight Author=relliott
Comment=
9.2.5.2 SSP initiator port error handling summary

Change "error handling" to "transport layer error handling"

HPQ comment number 32
Page=400 Subtype=Highlight Author=relliott
Comment=
9.2.5.2 SSP initiator port [transport layer] error handling summary

Explain "data offset that was not expected" in more detail.

DATA OFFSET field not sequential in the normal case, or not earlier that
the current value if CHANGING DATA POINTERS is set to 1.

HPQ comment number 33
Page=400 Subtype=Highlight Author=relliott
Comment=
9.2.5.3 SSP target port error handling summary

Change "error handling" to "transport layer error handling"

HPQ comment number 34
Page=400 Subtype=Text Author=relliott
Comment=
9.2.5.2 SSP initiator port error handling summary

More reason that "data offset that was not expected" needs to be more
specific.

Comment from Rich Deglin, Vitesse:
Initiator   Target

```
  <=== DATA frame
  <=== DATA frame w/CRC error
  <=== DATA frame CHANGING DATA POINTERS=0
     ...
            ACK ===>
            NAK ===>
            ACK ===>
     ...
  <=== DATA frame CHANGING DATA POINTERS=1
```

Due to the non-interlocked nature of data transfer, the target may have
continued to transmit DATA frames for some time before it discovers that
one of them was NAK'ed. Meanwhile the initiator has seen an "unexpected"
data offset, but CHANGING DATA POINTERS=0. I believe the initiator is
compelled to abort the command at this point.

HPQ comment number 35
Page=401 Subtype=Highlight Author=relliott
Comment=
9.2.5.3 SSP target port [transport layer] error handling summary

Explain "data offset that was not expected" in more detail.

DATA OFFSET field not sequential in the normal case, or not earlier if
CHANGING DATA POINTERS is set to 1.

HPQ comment number 36
Page=402 Subtype=Text Author=relliott
Comment=
9.2.6.2.1 ST_I state machines

Comment from ExpertIO in 05-141r0:

SSP Transport Layer - Ack Transmitted Confirmation Needs Tag Argument
Problem
When an ack transmitted confirmation is received by the SSP Transport
layer, it is not known for which frame the ack transmitted confirmation is
associated. For instance, in the case of a wide link where a single
transport layer is servicing commands for multiple tags simultaneously, the
ST layer needs to know which ack transmitted confirmation is associated
with which received frame.
Solution
The port layer has access to the information regarding which tag is
associated with which confirmation. The specification should detail that
the transmission status and the ack transmitted message should include an
argument of the tag associated with the confirmation.

HPQ comment number 37
Page=410 Subtype=Highlight Author=relliott
Comment=
9.2.6.2.3.2.1 ST_ITS2:Initiator_Send_Frame

Explain "requested offset is not expected"

HPQ comment number 38
Page=411 Subtype=Text Author=relliott
Comment=
9.2.6.2.3.3.6 ST_ITS2 to ST_ITS6

Note 53 is not reflected in 9.2.4.2 the error summary.

The note says that read DATA frames are honored even though the COMMAND has
not been ACKed.

add para to 9.2.4.2 for read DATA frames that points here

HPQ comment number 39
Page=412 Subtype=Highlight Author=relliott
Comment=
9.2.6.2.3.7.1 ST_ITS6:Receive_Data_In

Expand explanation of "not expected"

HPQ comment number 40
Page=412 Subtype=Text Author=relliott
Comment=
9.2.6.2.3.6 ST_ITS5:Prepare_Data_Out

Comment from Expert I/O in 05-141r0:

SSP Transport Layer - Balance Counter
Problem
The specification is very detailed in the description of the ITS state
transitions. A section particularly describes how the ITS cannot transition
out of PREPARE_DATA_OUT until it has received as many ack received
confirmations as data frames it has sent out. This wording implies a
counter that is not explained.
Solution
The specification should describe a balance counter (similar to ones
described in the Link Layer) that increments on every frame transmitted
transmission status confirmation and decrements on every ack received
transmission status confirmation

HPQ comment number 41
Page=426 Subtype=Highlight Author=relliott
Comment=
9.2.6.3.3.6.1 ST_TTS5:Receive_Data_Out

Regarding:
"data offset was not expected (i.e., the CHANGING DATA POINTER bit is set
to one and the value in the DATA OFFSET field is not set to the data offset
associated with the XFER_RDY frame, or the CHANGING DATA POINTER bit is set
to zero and the value in the DATA OFFSET field is not set to the value in
the DATA OFFSET FIELD in the previous write DATA information unit plus the
number of bytes in that information unit)"

The i.e. list in 1) is incomplete. If an initiator violates the NUMBER OF
FILL BYTES rules, it could send a DATA OFFSET that is
a) not a multiple of 4 - violating the alignment rule; or

b) is a multiple of 4 - leaving a gap and violating another rule.

Change to e.g. and discuss the alignment rule too.

HPQ comment number 42
Page=477 Subtype=Highlight Author=relliott
Comment=
10.4.3.3 REPORT GENERAL function

After "virtual phys" add "and any vacant phys"

HPQ comment number 43
Page=478 Subtype=Highlight Author=relliott
Comment=
10.4.3.4 REPORT MANUFACTURER INFORMATION Table 174
10.4.3.5 DISCOVER Table 175 and 176
10.4.3.6 REPORT PHY ERROR LOG Table 183 and 184
10.4.3.7 REPORT PHY SATA Table 185 and 186
10.4.3.8 REPORT ROUTE INFORMATION Table 187 and 188
10.4.3.9 CONFIGURE ROUTE INFORMATION Table 189
10.4.3.10 PHY CONTROL Table 191
10.4.3.11 PHY TEST FUNCTION Table 195

Change Ignored to Reserved. There is no reason an expander cannot mask off
these bits for reads and ignore them for writes.

HPQ comment number 44
Page=482 Subtype=Text Author=relliott
Comment=
10.4.3.5 DISCOVER function
Table 177 - ATTACHED DEVICE TYPE field

Add:
111b Phy vacant (no device ever attached)

HPQ comment number 45
Page=483 Subtype=Text Author=relliott
Comment=
10.4.3.5 DISCOVER function
Table 178 - NEGOTIATED PHYSICAL LINK RATE field

Add 7h or Fh as "Phy vacant (phy is never going to be enabled)"

HPQ comment number 46
Page=484 Subtype=Text Author=relliott
Comment=
10.4.3.5 DISCOVER function
After table 179 - ATTACHED SATA PORT SELECTOR and ATTACHED SATA DEVICE bits

Add:
If either the ATTACHED SATA PORT SELECTOR bit or the ATTACHED SATA DEVICE
bit is
set to one, then all the ATTACHED SSP/STP/SMP INITIATOR/TARGET PORT bits
shall be set to zero (and
vice-versa).

HPQ comment number 47
Page=488 Subtype=Highlight Author=RElliott
Comment=
10.4.3.6 REPORT PHY ERROR LOG function

The Phy Layer Ready confirmation really comes from SP not SP_DWS

HPQ comment number 48
Page=574 Subtype=Text Author=relliott
Comment=
L.3 Discover process C code

Update to detect when two table route phys are connected together and
ignore the connection beyond the initiator. The current code loops
continuously when a table to table connection is made.

****

Comments attached to No ballot from George O. Penokie of
IBM Corp.:

IBM comment number 1
Page=32 Subtype=Text Author=George Penokie
Comment=The revision information needs to be removed.

IBM comment number 2
Page=43 Subtype=Highlight Author=George Penokie
Comment=
2.4 Other references
This << OMG Unified Modeling Language (UML) Specification. Version 1.5,
March 2003. >> should be << OMG Unified Modeling Language (UML)
Specification. Version 2.0, October 2004. >>

IBM comment number 3
Page=48 Subtype=Highlight Author=George Penokie
Comment=
3.1.52 duty cycle distortion (DCD):
This << width of a '1' pulse or a '0' pulse and >> should be << width of a
1 pulse or a 0 pulse and >> or << width of a one pulse or a zero pulse and
>>

IBM comment number 4
Page=48 Subtype=Highlight Author=George Penokie
Comment=
3.1.58 enclosure:
Add << An enclosure is not a SAS or SCSI class. >>

IBM comment number 5
Page=50 Subtype=Text Author=George Penokie
Comment=
The glossary is not the place to define everything there is to know about
jitter. It should only have a short definition of relevant terms. The

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details should be in a section of the standard that describes jitter. It is
a bad sign when a term is only used in the glossary section and nowhere
else.

IBM comment number 6
Page=50 Subtype=Text Author=George Penokie
Comment=
3.1.100 jitter, data dependent (DDJ):
This glossary entry has way too much information for a glossary entry. Also
the only place where DDJ is used in other glossary entries. Everything
after the first sentence should be in a section in the body of the
standard.

IBM comment number 7
Page=50 Subtype=Highlight Author=George Penokie
Comment=
3.1.100 jitter, data dependent (DDJ):
This << (one ISI mechanism). >> should be << (i.e., one ISI mechanism). >>

IBM comment number 8
Page=50 Subtype=Highlight Author=George Penokie
Comment=
3.1.100 jitter, data dependent (DDJ):
This << mechanisms such as reflections, and transfer functions of coupling
circuits and other mechanisms such as ground bounce. >> should be
<<mechanisms (e.g., reflections,transfer functions of coupling circuits,
and ground bounce). >>

IBM comment number 9
Page=50 Subtype=Highlight Author=George Penokie
Comment=
3.1.100 jitter, data dependent (DDJ):
This << For example, when using media that attenuates the peak amplitude of
the bit sequence consisting of repeating 0101b patterns more than peak
amplitude of the bit sequence consisting of repeating 00001111b patterns,
the time required to reach the receiver threshold with the 0101b patterns
is less than required from the 00001111b patterns. The run length of 4
produces a higher amplitude that takes more time to overcome when changing
bit values and therefore produces a time difference compared to the run
length of 1 bit sequence. >> should be << (e.g., when using media that
attenuates the peak amplitude of the bit sequence consisting of repeating
0101b patterns more than peak amplitude of the bit sequence consisting of
repeating 00001111b patterns, the time required to reach the receiver
threshold with the0101b patterns is less than required from the 00001111b
patterns. The run length of four produces a higher amplitude that takes
more time to overcome when changing bit values and therefore produces a
time differencecompared to the run length of one bit sequence). >>

IBM comment number 10
Page=50 Subtype=Highlight Author=George Penokie
Comment=
3.1.100 jitter, data dependent (DDJ):
This << pattern. For example, DDJ may be caused by the time differences
required for the signal to arrive at the receiver threshold when starting
from different places in bitsequences (symbols). >> should be << pattern

(e.g., DDJ may be caused by the time differences required for the signal to arrive at the receiver threshold when starting from different places in bit sequences (i.e., symbols)). >>

IBM comment number 11
Page=50 Subtype=StrikeOut Author=George Penokie
Comment=
3.1.96 intersymbol interference (ISI):
This << Important mechanisms that produce ISI are
dispersion, reflections, and circuits that lead tobaseline wander. >>
should be deleted as it has no value to the standard.

IBM comment number 12
Page=50 Subtype=Highlight Author=George Penokie
Comment=
3.1.96 intersymbol interference (ISI):
This << Neighboring means close enough to have significant >> should be <<
Neighboring pulses are pulses that are close enough to have significant >>

IBM comment number 13
Page=50 Subtype=Highlight Author=George Penokie
Comment=
3.1.96 intersymbol interference (ISI):
This << pulses - many bit times may separate the pulses especially in the case of
reflections. >> should be << pulses (i.e., many bit times may separate the pulses especially in the case of reflections). >>

IBM comment number 14
Page=50 Subtype=Highlight Author=George Penokie
Comment=
3.1.94 insertion loss, differential (SDD21):
This << measured at port 2.>> should be << measured at port two.>>

IBM comment number 15
Page=50 Subtype=Highlight Author=George Penokie
Comment=
3.1.94 insertion loss, differential (SDD21):
This << measured at port 1.>> should be << measured at port one.>>

IBM comment number 16
Page=50 Subtype=Highlight Author=George Penokie
Comment=
3.1.93 insertion loss (S21):
This << The ratio (expressed in dB) of delivered power >> should be << The ratio, expressed in dB, of delivered power >>

IBM comment number 17
Page=51 Subtype=Highlight Author=George Penokie
Comment=
3.1.110 jitter tolerance for receiver devices:
This << See also signal tolerance. >> is not a valid cross reference and needs to be fixed.

IBM comment number 18

Page=51 Subtype=Text Author=George Penokie
Comment=
3.1.110 jitter tolerance for receiver devices:
Just about everything after the first sentence should not be in a glossary
but should be included in a section on jitter.

IBM comment number 19
Page=51 Subtype=Text Author=George Penokie
Comment=
3.1.109 jitter tolerance at transmit device compliance points:
Just about everything after the first sentence should not be in a glossary
but should be included in a section on jitter.

IBM comment number 20
Page=51 Subtype=Highlight Author=George Penokie
Comment=
3.1.109 jitter tolerance at transmit device compliance points:
This << See also signal tolerance. >> is not a valid cross reference and
needs to be fixed.

IBM comment number 21
Page=51 Subtype=Highlight Author=George Penokie
Comment=
3.1.107 jitter, total (TJ):
It is not clear what this statement << (1 - jitter eye opening) >> relates
to or what information it is tryingto convey. This needs to be fixed.

IBM comment number 22
Page=51 Subtype=Highlight Author=George Penokie
Comment=
3.1.106 jitter, random, (RJ):
This << distribution and is unbounded. Examples of mechanisms that can
cause RJ include PLL jitter in transmitter devices, electronic switching
noise, and analog amplifiers. >> should be << distribution and is unbounded
(e.g., may be caused by PLL jitter in transmitter devices, electronic
switching noise, and analog amplifiers). >>

IBM comment number 23
Page=52 Subtype=StrikeOut Author=George Penokie
Comment=
3.1.127 object diagram:
This << ; a special case of a class diagram >> should be deleted as it is
not really accurate. The remaining is good enough.

IBM comment number 24
Page=54 Subtype=Highlight Author=George Penokie
Comment=
3.1.156 retimer:
This << In the context of jitter methodology, a retimer resets the
accumulation of jitter such that the output of a retimer has the jitter
budget of a compliant transmitter device. All SAS receiverdevices shall be
retimers. >> should be moved to a section on jitter. Putting requirements
in a glossary enter is a very bad idea.

IBM comment number 25

Page=56 Subtype=Highlight Author=George Penokie
Comment=
3.1.202 signal tolerance:
None of this belongs in the glossary and should in placed in the main body
of the standard possibly in a jitter section. << Signal tolerance is
measured by the amount of jitter required toproduce a specified bit error
ratio at a specified signal amplitude andother signal properties. The
signal tolerance performance depends on the frequency content of the jitter
and on the amplitude of the signal. Since detection of bit errors is
required to determine the signal tolerance, receiver circuits embedded in a
SAS protocol chips require that the protocol chip be capable of reporting
bit errors. For receiver circuits that are not embedded in a SAS protocol
chip the bit error detection and reporting may be accomplished by
instrumentation attached to the output of the receiver circuit. Signal
tolerance is measured using the minimum allowed applied signal eye opening
for both horizontal and vertical directions unless otherwise specified. >>

IBM comment number 26
Page=61 Subtype=Highlight Author=George Penokie
Comment=
3.2 Symbols and abbreviations
This should be deleted << SP_DWS phy layer dword synchronization state
machine (see 6.9) >> as it is the name of a state machine which we should
not be adding into this list as it isnot an abbreviation.

IBM comment number 27
Page=62 Subtype=Highlight Author=George Penokie
Comment=
3.3.6 need not:
This should not be a keyword. It should be deleted and all usages replaced
with. << is not required to >>

IBM comment number 28
Page=63 Subtype=Highlight Author=George Penokie
Comment=
3.4 Editorial conventions
Global
This << Western-Arabic >> should be <<< Arabic >> per the ISO part 2
version 5 style guide.

IBM comment number 29
Page=63 Subtype=StrikeOut Author=George Penokie
Comment=
3.3.11 shall:
This << (equivalent to "is required to"). >>should be deleted as it adds
nothing and is not used in other standards whendefining the shall keyword.

IBM comment number 30
Page=74 Subtype=Highlight Author=George Penokie
Comment=
4.1.1 Architecture overview
Figure 10
This << 1..* >> should be << 1.. 65 353>>

IBM comment number 31

Page=74 Subtype=Highlight Author=George Penokie
Comment=
4.1.1 Architecture overview
Figure 10
This << 1..* >> should be << 1.. 65 353>>

IBM comment number 32
Page=78 Subtype=Text Author=George Penokie
Comment=
4.1.3 Ports (narrow ports and wide ports)
Having all this space between the start of a sentence and the end of the
sentence is not a good idea. Move the table anchor to it's own paragraph
and this will not be a problem.

IBM comment number 33
Page=78 Subtype=Highlight Author=George Penokie
Comment=
4.1.3 Ports (narrow ports and wide ports)
This <<can>> should be <<are able to>>

IBM comment number 34
Page=78 Subtype=Highlight Author=George Penokie
Comment=
4.1.3 Ports (narrow ports and wide ports)
This << need not >> should be changed to << are not required to >>

IBM comment number 35
Page=79 Subtype=Text Author=George Penokie
Comment=
4.1.3 Ports (narrow ports and wide ports)
Having all this space between the start of a list and the end of the list
is not a good idea. Movethe table anchor to it's own paragraph and this
will not be a problem.

IBM comment number 36
Page=83 Subtype=Text Author=George Penokie
Comment=
4.1.5 Expander devices (edge expander devices and fanout expander devices)
Having all this space between the start of a list and the end of the list
is not a good idea. Move the table anchor to it's own paragraphand this
will not be a problem.

IBM comment number 37
Page=90 Subtype=Highlight Author=George Penokie
Comment=
4.1.8.3 Expander device topologies
Figure 26
Figure 26 is identical to figure 23. Delete figure 26 and change the
references to figure 26 to reference figure 23.

IBM comment number 38
Page=93 Subtype=Highlight Author=George Penokie
Comment=
4.1.10 Connections
Figure 28

Change << Notes >> to << Note >>

IBM comment number 39
Page=94 Subtype=Highlight Author=George Penokie
Comment=
4.2.2 SAS addresses
This << Information about IEEE company identifiers may be obtained from the
http://standards.ieee.org/regauth/oui web site. >> should be made into a
note.

IBM comment number 40
Page=108 Subtype=Highlight Author=George Penokie
Comment=
4.5 I_T nexus loss
This << An I_T nexus loss based on the aforementioned conditions handled by
the port layer state machine (see
8.2.2.3). >> does not make sense even after changing << aforementioned >>
to << inthis subclause >>. Maybe << conditions handled by >> should be <<
conditions is handled by >>

IBM comment number 41
Page=108 Subtype=Highlight Author=George Penokie
Comment=
4.4.2 Hard reset
This << SCSI application
layer (see 10.2.5); the SCSI device shall perform the >> should be << SCSI
application
layer (see 10.2.5) and the SCSI device shall perform the >>

IBM comment number 42
Page=108 Subtype=Highlight Author=George Penokie
Comment=
4.5 I_T nexus loss
This << SCSI application layer (see 10.2.5); the SCSI device shall perform
>> should be << SCSI application layer (see 10.2.5) and the SCSI device
shall perform >>

IBM comment number 43
Page=119 Subtype=Highlight Author=George Penokie
Comment=
4.6.7.2 Connection request routing
This << (i.e., the DISCOVER function reports a NEGOTIATED PHYSICAL LINK
RATE field set to 8h or 9h) >> should change to an << (e.g., ..) >>
because in the future, when we go to higher speeds who is going to remember
to add the new speed here?

IBM comment number 44
Page=121 Subtype=Text Author=George Penokie
Comment=
4.7.1 Discover process overview
Figure 45
The note in this figure implies that all the phys are indicated by numbers.
However, there are several places were there appear to be multiple links
but only one phy number. There also appears to be unconnected phys that
are not numbered. This all needs to be fixed.

IBM comment number 45
Page=121 Subtype=Text Author=George Penokie
Comment=
4.7.1 Discover process overview
Figure 45
This figure needs to indicate where the expander device set boundaries are.
Otherwise it this couldbe interpreted as allowing illegal topologies.

IBM comment number 46
Page=122 Subtype=Highlight Author=George Penokie
Comment=
4.7.1 Discover process overview
This << need not >> should be changed to << is not required to >>

IBM comment number 47
Page=124 Subtype=Highlight Author=George Penokie
Comment=
4.7.4 Expander route index order
This << If the phy is not attached to an edge expander device, every >>
would be clearer stated as << If theedge expander device phy is not
attached, every >>

IBM comment number 48
Page=124 Subtype=Highlight Author=George Penokie
Comment=
4.7.4 Expander route index order
This << phy (in either a fanout expander device or an
edge expander device) that >> should be << phy, in either a fanout expander
device or an
edge expander device, that >>

IBM comment number 49
Page=131 Subtype=Highlight Author=George Penokie
Comment=
5.2.1 SATA cables and connectors
This << SAS initiator device; a SATA device is analogous to a SAS target
device. >> should be << SAS initiator device and a SATA device is analogous
to a SAS target device. >>

IBM comment number 50
Page=133 Subtype=Highlight Author=George Penokie
Comment=
5.2.2 SAS cables and connectors
Figure 53
This << (symmetric SAS internal wide cable connects the Tx signal pins to
the Rx signal pins within each physical link) >> should be << NOTE:
symmetric SAS internal widecable connects the Tx signal pins to the Rx
signal pins within each physical link. >>

IBM comment number 51
Page=133 Subtype=Highlight Author=George Penokie
Comment=
5.2.2 SAS cables and connectors
Figure 52

This << (SAS external cable connects the Tx signal pins to
the Rx signal pins on each physical link) >> should be << NOTE: SAS
external cable connects the Tx signal pins to the Rx signal pins on each
physical link. >>

IBM comment number 52
Page=134 Subtype=Highlight Author=George Penokie
Comment=
5.2.2 SAS cables and connectors
Figure 55
This << (the cable connects the Tx signal pins to the Rx signal pins within
each physical link) >> should be << NOTE: the cable connects the Tx signal
pins to the Rx signal pins within each physical link. >>

IBM comment number 53
Page=134 Subtype=Highlight Author=George Penokie
Comment=
5.2.2 SAS cables and connectors
Figure 54
This << (SAS internal wide cable connects the Tx signal pins to the Rx
signal pins within each physical link) >> should be << NOTE: SAS internal
wide cable connects the Tx signal pins to the Rx signal pins within each
physical link. >>

IBM comment number 54
Page=135 Subtype=Highlight Author=George Penokie
Comment=
5.2.2 SAS cables and connectors
Figure 55
This << (the cable connects the Tx signal pins to the Rx signal pins within
each physical link) >> should be << NOTE: The cable connects the Tx signal
pins to the Rx signal pins within each physical link. >>

IBM comment number 55
Page=137 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.2.2 SAS internal cable receptacle connector
This << receptacle connector on the SAS target device end. The SAS internal
cable receptacleconnectors are defined in SFF-8482. >> should be <<
receptacle connector (see SFF-8482) on the SAS target device end.>> to make
the word consistent with other sections.

IBM comment number 56
Page=137 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.2.1 SAS plug connector
This << plug connector. The SAS plug connector is defined in SFF-8482. It
>> should be << plug connector (see SFF-8482). It >> to make the word
consistent with other sections.

IBM comment number 57
Page=140 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.3.3 SAS external receptacle connector
This << The SAS external receptacle connector is defined in SFF-8470 as the

four lane fixed (receptacle) connector with jack screws. >> should be <<
The SAS external receptacle connector (see SFF-8470) is a four lane fixed
(receptacle)connector with jack screws. >>

IBM comment number 58
Page=140 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.3.2 SAS external cable plug connector
This << The SAS external cable plug connector is defined in SFF-8470 as the
four lane free (plug) connector with jack screws. >> should be << The SAS
external cable plug connector (see SFF-8470) is a four lane free (plug)
connector with jack screws. >>

IBM comment number 59
Page=141 Subtype=Text Author=George Penokie
Comment=
5.2.3.3.4 SAS external connector pin assignments
More of those needless broken up sentences that should be fixed.

IBM comment number 60
Page=142 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.3.5 SAS external compact cable plug connector
This << Key slots are not defined by this standard. >> is not correct and
should be deleted. The last paragraph states there are defined key slots.

IBM comment number 61
Page=142 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.3.5 SAS external compact cable plug connector
This << The SAS external compact cable plug connector with latch is defined
in SFF-8088 asthe free (plug) cable connector. >> should be << The SAS
external compact cable plug connector with latch (see SFF-8088) is a free
(plug)cable connector. >>

IBM comment number 62
Page=143 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.3.6 SAS external compact receptacle connector
This << Key slots are not defined by this standard. >> is not correct and
should be deleted. The last paragraph states there are defined key slots.

IBM comment number 63
Page=143 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.3.6 SAS external compact receptacle connector
This << SFF-8086 defines the receptacle mating interface (the receptacle
body is common to both internal and external connectors). >> should be <<
SFF-8086 defines the receptacle mating interface in which the receptacle
body is common to both internal and external connectors. >>

IBM comment number 64
Page=143 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.3.6 SAS external compact receptacle connector

This << The SAS external compact connector is defined in SFF-8088 as the
fixed (receptacle) right angle connector. >> should be << The SAS external
compact connector (see SFF-8088) is a fixed (receptacle) right angle
connector.>>

IBM comment number 65
Page=144 Subtype=Text Author=George Penokie
Comment=
5.2.3.3.7 SAS external compact connector pin assignments
More of those needless broken up sentences that should be fixed.

IBM comment number 66
Page=146 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.3.8 External compact connector keying
This should be deleted <<Editor's Note 2: keys may be incorrect >> as the
figure is correct.

IBM comment number 67
Page=146 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.3.8 External compact connector keying
This should be deleted <<Editor's Note 1: keys may be incorrect >> as the
figure is correct.

IBM comment number 68
Page=147 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.4.2 SAS internal wide cable receptacle connector
This << The SAS internal wide cable receptacle connector is defined in
SFF-8484.
The SAS internal wide cable receptacle connector attaches to a SAS internal
wide plug connector, >> should be << The SAS internal wide cable receptacle
connector (see SFF-8484) attaches to a SAS internal wide plug connector, >>

IBM comment number 69
Page=147 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.3.8 External compact connector keying
This should be deleted <<Editor's Note 3: keys may be incorrect >> as the
figure is correct.

IBM comment number 70
Page=148 Subtype=Text Author=George Penokie
Comment=
5.2.3.4.4 SAS internal wide connector pin assignments
More of those needless broken up sentences that should be fixed.

IBM comment number 71
Page=148 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.4.3 SAS internal wide plug connector
This << The SAS internal wide plug connector is defined in SFF-8484.
The SAS internal wide plug connector attaches to a SAS internal wide cable
receptacle connector, >> should be << The SAS internal wide plug connector

(see SFF-8484) attaches to a SAS internal wide cable receptacle connector,
>>

IBM comment number 72
Page=150 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.4.5 SAS internal compact wide cable plug connector
This << The SAS internal compact wide cable plug connector assembly is
defined in SFF-8087 as the fixed >> should be << The SAS internal compact
wide cable plug connector assembly (see SFF-8087) is a fixed >>

IBM comment number 73
Page=151 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.4.6 SAS internal compact wide receptacle connector
This << The SAS internal compact wide receptacle connector is defined in
SFF-8087 as the fixed (receptacle) right >> should be << The SAS internal
compact wide receptacle connector (see SFF-8087) is a fixed (receptacle)
right >>

IBM comment number 74
Page=152 Subtype=Text Author=George Penokie
Comment=
5.2.3.4.7 SAS internal compact wide connector pin assignments
More of those needless broken up sentences that should be fixed.

IBM comment number 75
Page=153 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.4.7 SAS internal compact wide connector pin assignments
This << Editor's Note 4: signal assignments may be incorrect >> should be
deleted as the information in the table is correct.

IBM comment number 76
Page=154 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.4.7 SAS internal compact wide connector pin assignments
Table 29
All the pin positions are incorrect in this table. Recommend adopting
05-139 as solution.

IBM comment number 77
Page=154 Subtype=Highlight Author=George Penokie
Comment=
5.2.3.4.7 SAS internal compact wide connector pin assignments
This << Editor's Note 5: signal assignments may be incorrect >> should be
deleted as the information in the table is correct.

IBM comment number 78
Page=155 Subtype=Text Author=George Penokie
Comment=
5.2.4.1 SAS internal cables
The shall in this section relating to the internal connectors gives the
impression that all internal cables are required to have SATA style cable
receptacles. This is not the case as thewide internal cables do not have

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that requirement. This needs to be fixed but either clearly labeling this
as a specific kind of internal cableor removing the shall altogether.

IBM comment number 79
Page=158 Subtype=Highlight Author=George Penokie
Comment=
5.2.4.3.1 SAS internal wide cables overview
This << other end (e.g., a Tx + of one connector shall connect to an Rx +
of the other connector.The physical link number of the signal depends on
the application - controller-to-controller and controller-to-backplane
differ). >> should be<< other end (e.g., a Tx + of one connector shall
connect to an Rx + of the other connector). The physical link number of the
signal depends on the application (e.g., controller-to-controller and
controller-to-backplane differ). >>

IBM comment number 80
Page=160 Subtype=Square Author=George Penokie
Comment=
5.2.4.3.2 SAS internal wide symmetric cables
This << NOTE 9 - For controller to controller uses, all four physical links
should be used, because one controllers physical link 0 is attached the
other controllers physical link 3. If both controllers used only physical
link 0, they would not communicate. >> should be << NOTE 9 - For controller
to controller uses, all four physical links should be used, because one
controllers physical link 0 is attached the other controller's physical
link 3. If both controllers used only physical link 0, then communication
is not possible. >>

IBM comment number 81
Page=161 Subtype=Highlight Author=George Penokie
Comment=
5.2.4.3.2 SAS internal wide symmetric cables
This << Editor's Note 6: signal assignments may be incorrect >> should be
deleted as the information in the figure is correct.

IBM comment number 82
Page=162 Subtype=Highlight Author=George Penokie
Comment=
5.2.4.3.2 SAS internal wide symmetric cables
This << Editor's Note 7: signal assignments may be incorrect >> should be
deleted as the information in the figure is correct.

IBM comment number 83
Page=165 Subtype=Highlight Author=George Penokie
Comment=
5.2.4.3.3 SAS internal wide controller-based fanout cables
This << Editor's Note 8: signal assignments may be incorrect >> should be
deleted as the information in the figure is correct.

IBM comment number 84
Page=166 Subtype=Highlight Author=George Penokie
Comment=
5.2.4.3.4 SAS internal wide backplane-based fanout cables
This << Editor's Note 9: signal assignments may be incorrect >> should be
deletedas the information in the figure is correct.

IBM comment number 85
Page=167 Subtype=Highlight Author=George Penokie
Comment=
5.2.4.3.5 SAS internal compact wide cable keying
This <<Editor's Note 10: keys may be incorrect >> should be deleted as the
figure is correct.

IBM comment number 86
Page=168 Subtype=Highlight Author=George Penokie
Comment=
5.2.4.3.5 SAS internal compact wide cable keying
This <<Editor's Note 11: keys may be incorrect >> should be deleted as the
figure is correct.

IBM comment number 87
Page=169 Subtype=Highlight Author=George Penokie
Comment=
Global
Many of the footnote references overlay the table header line separators.
This needs to be fixed as many of the b's and d's could be misinterpreted
to be a's.

IBM comment number 88
Page=177 Subtype=Highlight Author=George Penokie
Comment=
5.3.1 Compliance points
This << device is attached; SATA defines >> should be << device is attached
because SATA defines >>

IBM comment number 89
Page=180 Subtype=Highlight Author=George Penokie
Comment=
5.3.2.1 Test loads overview
There is no definition or description for the term << Gen2i >> this needs
to be fixed.

IBM comment number 90
Page=186 Subtype=Highlight Author=George Penokie
Comment=
5.3.3 General electrical characteristics
This << impedance dip (amplitude as ρ, the reflection coefficient, and
duration in time) caused >> should be << impedance dip (i.e., amplitude as
ρ,
the reflection coefficient, and duration in time) caused >>

IBM comment number 91
Page=187 Subtype=Highlight Author=George Penokie
Comment=
5.3.4 Transmitter and receiver device transients
This << GROUND on the test loads shown in figure 98 (for the transmitter
device) and figure99 (for the receiver device) during all power state and
mode transitions. >> should be << GROUND on the test loads for the
transmitter device (see figure 98) and for the receiver device (figure 99)
during allpower state and mode transitions. >>

IBM comment number 92
Page=188 Subtype=Text Author=George Penokie
Comment=
5.3.6.3 Receiver device eye mask
Having all this space between the start of a sentence and the end of the
sentence is not a good idea. Move the table anchor to it's own paragraph
and this will not be a problem.

IBM comment number 93
Page=190 Subtype=Square Author=George Penokie
Comment=
5.3.6.4 Receiver device jitter tolerance eye mask
The << d) >> and << e) >> should be deleted. This is not an unordered list.

IBM comment number 94
Page=191 Subtype=Text Author=George Penokie
Comment=
5.3.7.3 Transmitter device signal output characteristics as measured with
each test load
Having all this space between the start of a sentenceand the end of the
sentence is not a good idea. Move the table anchor to it's own paragraph
and this will not be a problem.

IBM comment number 95
Page=192 Subtype=Highlight Author=George Penokie
Comment=
5.3.7.3 Transmitter device signal output characteristics as measured with
each test load
Figure 38
This << Serial ATA >> should be <<SATA>>

IBM comment number 96
Page=192 Subtype=Highlight Author=George Penokie
Comment=
5.3.7.3 Transmitter device signal output characteristics as measured with
each test load
Figure 38
This << Serial ATA >> should be <<SATA>>

IBM comment number 97
Page=192 Subtype=Highlight Author=George Penokie
Comment=
5.3.7.3 Transmitter device signal output characteristics as measured with
each test load
Table 38
This <<cannot>> should be <<is not able to>>

IBM comment number 98
Page=192 Subtype=Highlight Author=George Penokie
Comment=
5.3.7.3 Transmitter device signal output characteristics as measured with
each test load
Table 38
This <<cannot>> should be <<is not able to>>

IBM comment number 99
Page=192 Subtype=Highlight Author=George Penokie
Comment=
5.3.7.3 Transmitter device signal output characteristics as measured with
each test load
Table 38
This <<can>> should be <<is able to>>

IBM comment number 100
Page=192 Subtype=Highlight Author=George Penokie
Comment=
5.3.7.3 Transmitter device signal output characteristics as measured with
each test load
Table 38
This <<can>> should be <<is able to>>

IBM comment number 101
Page=193 Subtype=Highlight Author=George Penokie
Comment=
5.3.7.4 Transmitter device maximum jitter
There is no definition or description for the term << Gen1i >> this needs
to be fixed.

IBM comment number 102
Page=194 Subtype=Highlight Author=George Penokie
Comment=
5.3.8.1 Receiver device characteristics overview
This << The figure given assumes that any external >> should be << The
value given assumes that any external >>

IBM comment number 103
Page=194 Subtype=Highlight Author=George Penokie
Comment=
5.3.8.1 Receiver device characteristics overview
This << The jitter tolerance figure is listed in figure 102 for all >>
should be << The jitter tolerance value is listed in figure 102 for all >>

IBM comment number 104
Page=195 Subtype=Highlight Author=George Penokie
Comment=
5.3.8.2 Delivered signal characteristics
Figure 40
This << Serial ATA >> should be <<SATA>>

IBM comment number 105
Page=195 Subtype=Highlight Author=George Penokie
Comment=
5.3.8.2 Delivered signal characteristics
Figure 40
This << Serial ATA >> should be <<SATA>>

IBM comment number 106
Page=196 Subtype=Text Author=George Penokie
Comment=

5.3.8.4 Receiver device jitter tolerance
Having all this space between the start of a sentence and the end of the
sentence is not a good idea.Move the table anchor to it's own paragraph and
this will not be a problem.

IBM comment number 107
Page=197 Subtype=Highlight Author=George Penokie
Comment=
5.3.10 Non-tracking clock architecture
This << need not >> should be changed to << are not required to >>

IBM comment number 108
Page=197 Subtype=Highlight Author=George Penokie
Comment=
5.3.9 Spread spectrum clocking
This << need not >> should be changed to << are not required to >>

IBM comment number 109
Page=200 Subtype=Square Author=George Penokie
Comment=
6.2.3 8b10b coding notation conventions
The list after the << where >> should not be an a,b,c list. It should be
indented and start with the named variable followed by a description with
some space between See Style Guide (o5-085) for examples.

IBM comment number 110
Page=201 Subtype=StrikeOut Author=George Penokie
Comment=
6.3.3 Data and control characters
Move this << Otherwise >> to end of item b).

IBM comment number 111
Page=201 Subtype=Highlight Author=George Penokie
Comment=
6.3.3 Data and control characters
This << four-bit sub-block is 1100b. >> should be << four-bit sub-block is
1100b; otherwise >>

IBM comment number 112
Page=201 Subtype=Highlight Author=George Penokie
Comment=
6.3.3 Data and control characters
This << four-bit sub-block is 0011b. >> should be << four-bit sub-block is
0011b; >>

IBM comment number 113
Page=208 Subtype=Highlight Author=George Penokie
Comment=
6.4 Dwords, primitives, data dwords, and invalid dwords
This << which are used in SAS during STP connections >> should be << which
are only used in SAS during STP connections >>

IBM comment number 114
Page=213 Subtype=Highlight Author=George Penokie
Comment=

6.6.3 Receiving OOB signals
This << detected; another COMINIT may follow). >> should be << detected
after which another COMINIT may follow).>>

IBM comment number 115
Page=217 Subtype=StrikeOut Author=George Penokie
Comment=
6.7.2.2 SATA speed negotiation sequence
This <<Figure 110 shows the speed negotiation sequence between a SATA host
and SATA device. >> along with figure 110, table 57, and the text between
the figure and table should be deleted as it is information that is (or
should be) defined in the referenced standards.

IBM comment number 116
Page=217 Subtype=Highlight Author=George Penokie
Comment=
6.7.2.2 SATA speed negotiation sequence
This << defined by SATA; see ATA/ATAPI-7 V3 and SATA2-PHY for detailed
requirements. >> should be << defined by SATA (see ATA/ATAPI-7 V3 and
SATA2-PHY for detailed requirements). >>

IBM comment number 117
Page=226 Subtype=StrikeOut Author=George Penokie
Comment=
6.8.1 SP state machine overview
This << A COMWAKE Detected message received in SP0:OOB_COMINIT or
SP1:OOB_AwaitCOMX shall set the COMWAKE_Received state machine variable to
one. Any transition to SP0:OOB_COMINIT shall set the COMWAKE_Received state
machine variable to zero. >> should be deleted and, if not already there,
be placed in the relevant state transitions.

IBM comment number 118
Page=226 Subtype=Highlight Author=George Penokie
Comment=
6.8.1 SP state machine overview
This << Any transition out of SP7:OOB_AwaitCOMSAS shall set the MgmtReset
state machine variable to zero. >> seems to contradict when is currently in
SP0 and implies that the MgntResedt is always set to zero when SP0 is
exited. This seems to nullify it usefulness. I think the sentence should be
deleted.

IBM comment number 119
Page=226 Subtype=Highlight Author=George Penokie
Comment=
6.8.1 SP state machine overview
This is a mess << The SP state machine shall maintain a MgmtReset state
machine variable to indicate whether SP0:OOB_COMINIT was last entered due
to a Management Reset, or a defined transition from another state (see
6.8.3.2.1). If SP0:OOB_COMINIT was last entered due to a Management Reset,
it shall set the MgmtReset statemachine variable to one. If SP0:OOB_COMINIT
was last entered by a defined transition from another state, it shall set
the MgmtReset state machine variable to zero. >>. I think it should be
restated like this << TheSP state machine shall maintain a MgmtReset state
machine variable to indicate whether when Management Reset request is
received. Any SP state that receives a Management Reset request shall set

the MgmtReset state machine variable to one before making the transition to
the SP7:OOB_AwaitCOMSAS state. Any SP state that receives a power on, or a
hard reset shall set the MgmtReset state machine variable to one the
transition to the SP7:OOB_AwaitCOMSAS state. >> Note that the other cases
that case theMgmtRest variable to be set to zero are not global and
therefore have to be handled in the state were the action occurs in the
description of the transition.

IBM comment number 120
Page=227 Subtype=Highlight Author=George Penokie
Comment=
6.8.2 SP transmitter and receiver
This << SP transmitter transmits idle time. >> should be << SP transmitter
transmits idle dwords.>>

IBM comment number 121
Page=228 Subtype=Text Author=George Penokie
Comment=
6.8.3.1 OOB sequence states overview
Figure 117
The transition into SP0 from SP26 is missing. This needs to be fixed.

IBM comment number 122
Page=228 Subtype=Text Author=George Penokie
Comment=
6.8.3.1 OOB sequence states overview
Figure 117
All the comments on the state to state transitions within this figure
should be deleted.

IBM comment number 123
Page=229 Subtype=Text Author=George Penokie
Comment=
6.8.3.2.4 Transition SP0:OOB_COMINIT to SP4:OOB_COMSAS
Add into this section << The state machine shall set the MgmtReset state
machine variable to zero before the transition. >>

IBM comment number 124
Page=229 Subtype=Text Author=George Penokie
Comment=
6.8.3.2.3 Transition SP0:OOB_COMINIT to SP3:OOB_AwaitCOMINIT_Sent
Add into this section << The state machine shall set the MgmtReset state
machine variable to zero before the transition. >>

IBM comment number 125
Page=229 Subtype=Square Author=George Penokie
Comment=
6.8.3.2.1 State description
The behavior defined in this paragraph <<The state machine shall set the
MgmtReset state machine variable to one if this state is entered due to a
Management Reset request or SMP Reset request. The state machine shall set
the MgmtReset state machine variableto zero if this state is entered due to
a power on, a hard reset, DWS Lost message received, or COMINIT received.
>> should be deleted as it isduplicate information. Part of the information
that covers global SP behavior is in the SP state machine. The remaining

part has to be place into the state at which the event occurs before making
the transition to SP0.

IBM comment number 126
Page=229 Subtype=StrikeOut Author=George Penokie
Comment=
6.8.3.2.1 State description
This << or SMP Reset request. >> should be deleted as there is not sure
thing as an SMP Reset in SAS.

IBM comment number 127
Page=229 Subtype=Highlight Author=George Penokie
Comment=
6.8.3.3.1 State description
This << machine variable to one; and then if the value of the ATTACHED SATA
PORT >> should be << machine variableto one, and if the value of the
ATTACHED SATA PORT >>

IBM comment number 128
Page=230 Subtype=Highlight Author=George Penokie
Comment=
6.8.3.6.1 State description
This << DISCOVER response, it shall set the ATTACHED >> should be <<
DISCOVER response, this state shall set the ATTACHED >>

IBM comment number 129
Page=231 Subtype=Text Author=George Penokie
Comment=
6.8.3.8.2 Transition SP6:OOB_AwaitNoCOMSAS to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machinevariable to zero before the transition. >>

IBM comment number 130
Page=231 Subtype=Highlight Author=George Penokie
Comment=
6.8.3.8.3 Transition SP6:OOB_AwaitNoCOMSAS to SP8:SAS_Start
So what is the point of this statement <<The COMSAS Completed message may
be received before this state is entered. >>? There is a implication that
the state is supposed to remember it this occurred which is impossible. So
what is supposed to happen is the message is missed?

IBM comment number 131
Page=231 Subtype=Highlight Author=George Penokie
Comment=
6.8.3.6.3 Transition SP4:OOB_COMSAS to SP6:OOB_AwaitNoCOMSAS
This << send a SATA Port Selector Change confirmation to the link layer. >>
should be << send a SATA Port Selector Change confirmation to the link
layer before the transition. >>

IBM comment number 132
Page=231 Subtype=Highlight Author=George Penokie
Comment=
6.8.3.6.2 Transition SP4:OOB_COMSAS to SP5:OOB_AwaitCOMSAS_Sent
This << response and send a SATA Port Selector Change confirmation to the
linklayer. >> should be << response and send a SATA Port Selector Change

confirmation to the link layer before the transition. >>

IBM comment number 133
Page=232 Subtype=Highlight Author=George Penokie
Comment=
6.8.3.9.5 Transition SP7:OOB_AwaitCOMSAS to SP26:SATA _SpinupHold
This << This state shall send a SATA Spinup Hold confirmation to the link
layer and perform this transition if. >> should be << This transition shall
occur if: >> Also after the a.b.c list the following should be added <<
This state shall send a SATA Spinup Hold confirmation to the link layer
before the transition. >>

IBM comment number 134
Page=232 Subtype=Highlight Author=George Penokie
Comment=
6.8.3.9.3 Transition SP7:OOB_AwaitCOMSAS to SP6:OOB_AwaitNoCOMSAS
This << shall send a SATA Port Selector Change confirmation to the link
layer. >> should be << shall send a SATA Port Selector Change confirmation
to the link layer before the transition. >>

IBM comment number 135
Page=232 Subtype=Highlight Author=George Penokie
Comment=
6.8.3.9.3 Transition SP7:OOB_AwaitCOMSAS to SP6:OOB_AwaitNoCOMSAS
This <<state machine variable to zero. >> should be << state machine
variable to zero before the transition. >>

IBM comment number 136
Page=233 Subtype=Text Author=George Penokie
Comment=
6.8.4.1 SAS speed negotiation states overview
Figure 118
All the comments on the state to state transitions within this figure
should be deleted.

IBM comment number 137
Page=234 Subtype=Text Author=George Penokie
Comment=
6.8.4.2.2 Transition SP8:SAS_Start to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machine variable to zero before the transition. >>

IBM comment number 138
Page=234 Subtype=Text Author=George Penokie
Comment=
6.8.4.4.2 Transition SP10:SAS_AwaitALIGN to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machine variable to zero before the transition. >>

IBM comment number 139
Page=234 Subtype=StrikeOut Author=George Penokie
Comment=
6.8.4.2.1 State description
This <<This allows time required for a transmitter to switch to either the
next higher or next lower supported speed >> contains no useful information

and should be deleted. Any information it does have has already been stated
in the description of the speednegotiation sequence above.

IBM comment number 140
Page=235 Subtype=Text Author=George Penokie
Comment=
6.8.4.6.2 Transition SP12:SAS_AwaitSNW to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machine variable to zero before the transition. >>

IBM comment number 141
Page=235 Subtype=Text Author=George Penokie
Comment=
6.8.4.5.2 Transition SP11:SAS_AwaitALIGN1 to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machine variable to zero before the transition. >>

IBM comment number 142
Page=235 Subtype=StrikeOut Author=George Penokie
Comment=
6.8.4.5.4 Transition SP11:SAS_AwaitALIGN1 to SP14:SAS_Fail
This << This indicates that the other phy has not been able to lock at the
current rate. >> should be deleted. Any information it does have has
already been stated in the description of the speed negotiation sequence
above

IBM comment number 143
Page=236 Subtype=Text Author=George Penokie
Comment=
6.8.4.7.2 Transition SP13:SAS_Pass to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machine variable to zero before the transition. >>

IBM comment number 144
Page=237 Subtype=Text Author=George Penokie
Comment=
6.8.4.9.2 Transition SP15:SAS_PHY_Ready to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machine variable to zero before the transition. >>

IBM comment number 145
Page=238 Subtype=Text Author=George Penokie
Comment=
6.8.5.1 SATA host emulation states overview
Figure 119
All the comments on the state to state transitions within this figure
should be deleted.

IBM comment number 146
Page=239 Subtype=Text Author=George Penokie
Comment=
6.8.5.4.2 Transition SP187:SATA_AwaitNoCOMWAKE to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machine variable to zero before the transition. >>

IBM comment number 147
Page=239 Subtype=Text Author=George Penokie
Comment=
6.8.5.3.2 Transition SP17:SATA_AwaitCOMWAKE to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machine variable to zero before the transition. >>

IBM comment number 148
Page=239 Subtype=Text Author=George Penokie
Comment=
6.8.5.5.2 Transition SP19:SATA_AwaitALIGN to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machine variable to zero before the transition. >>

IBM comment number 149
Page=240 Subtype=Text Author=George Penokie
Comment=
6.8.5.8.2 Transition SP22:SATA_PHY_Ready to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machine variable to zero before the transition. >>

IBM comment number 150
Page=240 Subtype=Text Author=George Penokie
Comment=
6.8.5.7.2 Transition SP21:SATA_TransmitALIGN to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machine variable to zero before the transition. >>

IBM comment number 151
Page=240 Subtype=Text Author=George Penokie
Comment=
6.8.5.6.2 Transition SP20:SATA_AdjustSpeed to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machinevariable to zero before the transition. >>

IBM comment number 152
Page=241 Subtype=Text Author=George Penokie
Comment=
6.8.5.10.2 Transition SP24:SATA_PM_Slumber to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machinevariable to zero before the transition. >>

IBM comment number 153
Page=241 Subtype=Text Author=George Penokie
Comment=
6.8.5.9.2 Transition SP23:SATA_PM_Partial to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machine variable to zero before the transition. >>

IBM comment number 154
Page=242 Subtype=Highlight Author=George Penokie
Comment=
6.8.6.3 Transition SP25:SATA_PortSelectionSignalPending to
SP1:OOB_AwaitCOMX
This transition shall occur when the phy completes transmission of the SATA

port selection signal (SATA Port Selection Signal Transmitted). >> should
be << This transition shall occur after receiving a SATA Port Selection
Signal Transmitted message. >>

IBM comment number 155
Page=242 Subtype=Highlight Author=George Penokie
Comment=
6.8.6.2 Transition SPx:<any state> to SP25:SATA_PortSelectionSignalPending
This << The phy shall transmit the SATA port selection signal.
Thistransition shall set the ATTACHED SATA PORT SELECTOR bit in the
DISCOVER response to zero. >> should be placed in the states overview and
changed to << Upon entry into this state, this state shall:
a) send a SATA port selection signal to the SP transmitter; and
b) set the ATTACHED SATA PORT SELECTOR bit in the DISCOVER response to
zero. >>

IBM comment number 156
Page=242 Subtype=StrikeOut Author=George Penokie
Comment=
6.8.6.2 Transition SPx:<any state> to SP25:SATA_PortSelectionSignalPending
This << If the phy supports attachment of a SATA device and attachment of a
SATA Port Selector, a transition shall occur from any SP state to this
state upon receipt of an SMP PHY CONTROL function for the phy specifying a
phy operation of TRANSMIT SATA PORT SELECTION SIGNAL. >> willbe redundant
(see general comment on this section) and should be deleted.

IBM comment number 157
Page=242 Subtype=Text Author=George Penokie
Comment=
6.8.6.1 State description
This section is not properly formatted and as such is different that any
other state description section is SAS. This has be fixed. For one thing
there should only be one state shown. The SPx representation is not
correct. The SMP Phy Control request should be handled lke the Power on or
hard reset or Management Reset request. And it should be placed in all the
SP state machine figures not just this one.
There is no description of the transmitter and receiver signals.
The SPx to SP25 transition should not be here. It should be handled in the
same fashion as the Power on or hard reset or Management Reset request.
There are other points that I have not described that also need fixing. In
general make it look like it belongs in SAS.

IBM comment number 158
Page=242 Subtype=Text Author=George Penokie
Comment=
6.8.6.1 State description
Figure 120
All the comments on the state to state transitions within this figure
should be deleted.

IBM comment number 159
Page=243 Subtype=Circle Author=George Penokie
Comment=
6.8.7.1 State description
Figure 121

There is no description as to under what conditions the << (in expander
phys) SATA Spinup Hold >> confirmation is sent. This needs to be fixed.

IBM comment number 160
Page=243 Subtype=StrikeOut Author=George Penokie
Comment=
6.8.7.1 State description
Figure 121
This << Reset or >> on the transitions to SP0 should be deleted as it is
handled in the general description of the power on or hard reset or
Management Reset description in theSP overview.

IBM comment number 161
Page=243 Subtype=Text Author=George Penokie
Comment=
6.8.7.2 Transition SP26:SATA_SpinupHold to SP0:OOB_COMINIT
Add into this section << The state machine shall set the MgmtReset state
machine variable to zero before the transition. >>

IBM comment number 162
Page=243 Subtype=StrikeOut Author=George Penokie
Comment=
6.8.7.2 Transition SP26:SATA_SpinupHold to SP0:OOB_COMINIT
This << a Management Reset request from the management layer, a hard reset,
or a power on. If this transition is caused by a Management Reset Request
from the management layer, the state machine shall set the MgmtReset state
machine variable to one upon entry to SP0:OOB_COMINIT. Otherwise, the state
machine shall set the MgmtReset state machine variable to zero upon entry
to SP0:OOB_COMINIT. >> should be deleted as it is duplicate information
that is stated in the general description of the Reset or Power on or hard
reset or Management Reset request.

IBM comment number 163
Page=243 Subtype=Square Author=George Penokie
Comment=
6.8.7.1 State description
Figure 121
The << Reset or Power on or hard reset or Management Reset >> request
should be handled in this figure the same way it is in all the other SP
figures.

IBM comment number 164
Page=243 Subtype=StrikeOut Author=George Penokie
Comment=
6.8.7.1 State description
This << This state shall be entered from the
SP7:OOB_AwaitCOMSAS state upon detection of a COMSAS detect timeout if the
phy supports SATA, the
phy supports SATA spinup hold, and the MgmtReset state machine variable is
set to zero. >> should be deleted as it is already defined in the SP7 to
SP26 description. The convention is to only specify the transition rule on
the out not on the in.

IBM comment number 165
Page=250 Subtype=Highlight Author=George Penokie

Comment=
7.2.1 Primitives overview
This << Primitives are not considered big-endian or
little-endian; they are just >> should be << Primitives are not considered
big-endian or
little-endian, they are just >>

IBM comment number 166
Page=275 Subtype=Highlight Author=George Penokie
Comment=
7.5.1 CRC overview
note 27
This << one's complement of R(x); this equation is specifying
that the R(x) is inverted before it is transmitted. >> should be << one's
complement of R(x) resulting in this equation specifying
that the R(x) is inverted before it is transmitted. >>.

IBM comment number 167
Page=277 Subtype=Highlight Author=George Penokie
Comment=
7.5.1 CRC overview
This << Thus, the first byte contains the least-significant bit. >> should
be << As a result, the first byte contains the least-significant bit. >>

IBM comment number 168
Page=287 Subtype=Highlight Author=George Penokie
Comment=
7.8.3 OPEN address frame
This << connection rate; the SAS target port should not close the
connection just to reopen the connection at the saved connection rate. >>
should be << connection rate (i.e., the SAS target port should not close
the connection just to reopen the connection atthe saved connection rate).
>>

IBM comment number 169
Page=299 Subtype=Highlight Author=George Penokie
Comment=
7.12.3 Arbitration fairness
This << NOTE 31 - NOTE 1 Connection responses that are conclusively from
the destination >> should be << NOTE 31 -Connection responses that are
conclusively from the destination >>

IBM comment number 170
Page=302 Subtype=Highlight Author=George Penokie
Comment=
7.12.5.2 Edge expander devices
This << OPEN_REJECT (BAD DESTINATION); it should reply with OPEN_REJECT (NO
DESTINATION). >> should be <<OPEN_REJECT (BAD DESTINATION). In this case
the edge expander device should reply with OPEN_REJECT (NO DESTINATION). >>

IBM comment number 171
Page=303 Subtype=Text Author=George Penokie
Comment=
7.12.6 Aborting a connection request
Seemed to me there should be some wording here about the new BREAK stuff we

just added in.

IBM comment number 172
Page=303 Subtype=Highlight Author=George Penokie
Comment=
7.12.6 Aborting a connection request
This is not at all clear << Table 96 lists the responses to a BREAK being
transmitted before a connectionresponse has been received.>> I believe it
should be << Table 96 lists the responses to a BREAK being received before
a connection response hasbeen received.>>

IBM comment number 173
Page=303 Subtype=Highlight Author=George Penokie
Comment=
7.12.5.3 Fanout expander devices
This << OPEN_REJECT (BAD DESTINATION); it should reply with OPEN_REJECT (NO
DESTINATION). >> should be <<OPEN_REJECT (BAD DESTINATION). In this case
the fanout expander device should reply with OPEN_REJECT (NO DESTINATION).
>>

IBM comment number 174
Page=305 Subtype=Highlight Author=George Penokie
Comment=
7.12.7 Closing a connection
This in not clear << Table 97 lists the responses to a CLOSE being
transmitted. >> I believe it should be << Table 97 lists the responses to
a CLOSE being received.>>

IBM comment number 175
Page=306 Subtype=Highlight Author=George Penokie
Comment=
7.12.8 Breaking a connection
This statement in not at all clear << Table 98 lists the responses to a
BREAK being transmitted after a connection has been established. >> I
believe it should be changed to << Table 98 lists the responses to a BREAK
being received after a connection has been established. >>

IBM comment number 176
Page=306 Subtype=Highlight Author=George Penokie
Comment=
7.12.8 Breaking a connection
This is no longer correct << After transmitting BREAK, the originating phy
shall ignore all incoming dwords except for BREAKs. >> It should be <<
After transmitting BREAK, the originating phy shall ignore all incoming
dwords except for BREAKs and OPENs. >>

IBM comment number 177
Page=315 Subtype=Highlight Author=George Penokie
Comment=
7.14.4.3.3 Transition SL_CC1:ArbSel to SL_CC2:Selected
This << arbitration wait time argument to the Open Connection request for
>> should be << arbitration wait time argument from the Open Connection
request for >>

IBM comment number 178

Page=318 Subtype=Highlight Author=George Penokie
Comment=
7.14.4.6.1 State description
In the statement <<send a Transmit CLOSE (Normal) message or Transmit CLOSE
(Clear Affiliation) message to theSL transmitter; >> there is no indication
as to when which message is to be sent. This needs to be fixed.

IBM comment number 179
Page=319 Subtype=Highlight Author=George Penokie
Comment=
7.15.1 XL state machine overview
This << facilitated by the expander function - specifically the ECM and
ECR. >> should be << facilitated by the expander function (i.e., the ECM
and ECR). >>

IBM comment number 180
Page=319 Subtype=Highlight Author=George Penokie
Comment=
7.14.4.9.1 State description
In the statement <<send a Transmit CLOSE (Normal) message or Transmit CLOSE
(Clear Affiliation) message to theSL transmitter; >> there is no indication
as to when which message is to be sent. This needs to be fixed.

IBM comment number 181
Page=326 Subtype=Highlight Author=George Penokie
Comment=
7.15.4.1 State description
This << If the Partial Pathway Timeout timer expires, timeout status is
conveyed to the expander connection managervia the partial pathway timeout
status argument in the Request Path request. >> should be <<
If the Partial Pathway Timeout timer expires a Request Path request shall
be sent to the xxx with the partial pathway timeout status argument. >>

IBM comment number 182
Page=326 Subtype=Highlight Author=George Penokie
Comment=
7.15.4.1 State description
This << set to IGNORE AWT; otherwise, the Retry Priority Status argument
shall be set to NORMAL. >> should be << set to IGNORE AWT. If this state is
entered from any other state then the Retry Priority Status argument shall
be set to NORMAL. >>

IBM comment number 183
Page=329 Subtype=Highlight Author=George Penokie
Comment=
7.15.7.2 Transition XL4:Open_Reject to XL0:Idle
This << This transition shall occur after OPEN_REJECT has been transmitted.
>> should be << This transition shall occur after the OPEN_REJECT message
has been sent tothe XL transmitter. >>. Note that there is no response from
the XL transmitter in the XL state machine figure. So if you really want to
want until the OPEN_REJECT is transmitted then that will have to be added
into the figure and the XL transmitter section.

IBM comment number 184
Page=329 Subtype=Highlight Author=George Penokie

Comment=
7.15.6.6 Transition XL3:Open_Confirm_Wait to XL9:Break
This << This transition shall occur after sending a Forward Break request.
>> should be<< This transition shall occur after sending a Forward Break
request tothe ????. >>

IBM comment number 185
Page=330 Subtype=Highlight Author=George Penokie
Comment=
7.15.9.1 State description
This << ECR to a source phy, received by the source phy as confirmations:
>> should be << ECR to a source phy thatare received by the source phy as
confirmations: >>

IBM comment number 186
Page=330 Subtype=Highlight Author=George Penokie
Comment=
7.15.9.1 State description
Several of the items in this a,b,c list contain long confusing lists of
things written out in a single sentence. These should be made in A,B,C
lists so the rules are clear.

IBM comment number 187
Page=330 Subtype=Highlight Author=George Penokie
Comment=
7.15.9.1 State description
This << ECR to a source phy, received by the source phy as confirmations:
>> should be << ECR to a source phy thatare received by the source phy as
confirmations: >>

IBM comment number 188
Page=331 Subtype=Highlight Author=George Penokie
Comment=
7.15.9.6 Transition XL6:Open_Response_Wait to XL9:Break
This << This transition shall occur after sending a Forward Break response.
>> should be << This transition shall occur after sending a Forward Break
responseto the ????. >>

IBM comment number 189
Page=331 Subtype=Highlight Author=George Penokie
Comment=
7.15.9.5 Transition XL6:Open_Response_Wait to XL7:Connected
This << This transition shall occur after sending an Open Accept response.
>> should be << This transition shall occur after sending an Open Accept
response to the ????. >>

IBM comment number 190
Page=331 Subtype=Highlight Author=George Penokie
Comment=
7.15.9.4 Transition XL6:Open_Response_Wait to XL2:Request_Open
This << This transition shall occur after sending a Backoff Reverse Path
response. >> should be << This transition shall occur after sending a
Backoff Reverse Path response to the ???. >>

IBM comment number 191

Page=331 Subtype=Highlight Author=George Penokie
Comment=
7.15.9.3 Transition XL6:Open_Response_Wait to XL1:Request_Path
This << This transition shall occur after sending a Backoff Retry response,
after releasing path resources. >> should be << This transition shall
occurafter:
a) sending a Backoff Retry response it the ???: and
b) afterreleasing path resources. >>

IBM comment number 192
Page=331 Subtype=Highlight Author=George Penokie
Comment=
7.15.9.2 Transition XL6:Open_Response_Wait to XL0:Idle
This << This transition shall occur after sending an Open Reject response.
>> should be<< This transition shall occur after sending an Open Reject
response to the ????. >>

IBM comment number 193
Page=331 Subtype=Highlight Author=George Penokie
Comment=
7.15.9.1 State description
This << This state shall repeatedly send a Phy Status (Partial Pathway)
response to the ECM. >> should be << Thisstate shall repeatedly send a Phy
Status (Partial Pathway) response to the ECM until an AIP Received (Waiting
On Partial) message is received. >>

IBM comment number 194
Page=332 Subtype=Highlight Author=George Penokie
Comment=
7.15.11.2 Transition XL8:Close_Wait to XL0:Idle
This << This transition shall occur after sending a Forward Close
request.>> should be << Thistransition shall occur after sending a Forward
Close request to the ???.>>

IBM comment number 195
Page=332 Subtype=Highlight Author=George Penokie
Comment=
7.15.10.3 Transition XL7:Connected to XL9:Break
This <<This transition shall occur after sending a Forward Break request.
>> should be << Thistransition shall occur after sending a Forward Break
request to the ????. >>

IBM comment number 196
Page=333 Subtype=Highlight Author=George Penokie
Comment=
7.15.11.3 Transition XL8:Close_Wait to XL9:Break
This << This transition shall occur after sending a Forward Break request.
>> should be<< This transition shall occur after sending a Forward Break
request to the ????. >>

IBM comment number 197
Page=333 Subtype=Highlight Author=George Penokie
Comment=
7.15.13.1 State description
This << Upon entry into this state, this state shall send: >> should be <<

Upon entry into this state, this state shall: >>

IBM comment number 198
Page=344 Subtype=Highlight Author=George Penokie
Comment=
7.16.7.5 SSP_D (DONE control) state machine
This << the SSP transmitter is going to close the connection within 1 ms;
other DONE Received confirmations >> should be << the SSP transmitter is
going to close the connection within 1 ms. Other DONE Received
confirmations >>

IBM comment number 199
Page=348 Subtype=Highlight Author=George Penokie
Comment=
7.16.7.10 SSP_TC (transmit credit control) state machine
This << (e.g., if the Available argument indicates 5 RRDYs are to be
transmitted this state
machine sends 5 Transmit RRDY (Normal) messages to the SSP transmitter). >>
should be << (e.g., if the Available argument indicates five RRDYs are to
be transmitted this state machine sends five Transmit RRDY (Normal)
messages to the SSP transmitter). >>

IBM comment number 200
Page=348 Subtype=Highlight Author=George Penokie
Comment=
7.16.7.8 SSP_RCM (receive frame credit monitor) state machine
This <<(e.g., if this state machine has resources for 5 frames the maximum
number of Rx Credit Control requests with the Available argument
outstanding is 5). >> should be << (e.g., if this state machine has
resources for five frames the maximum number of Rx Credit Control requests
with theAvailable argument outstanding is five). >>

IBM comment number 201
Page=352 Subtype=StrikeOut Author=George Penokie
Comment=
7.17.4 Affiliations
This << This avoids confusing the SATA device, which only knows about one
SATA host. >> should be deleted as it has no value in a standard.

IBM comment number 202
Page=352 Subtype=Highlight Author=George Penokie
Comment=
7.17.3 STP flow control
This<< within 21 dwords (for a SATA physical link)>> Should be << within 21
dwords for a SATA physical link>>

IBM comment number 203
Page=352 Subtype=Highlight Author=George Penokie
Comment=
7.17.3 STP flow control
This << within 24 dwords (for a 1,5 Gbps physical link). >> should be <<
within 24 dwords for a 1,5 Gbps physical link. >>

IBM comment number 204
Page=352 Subtype=Highlight Author=George Penokie

Comment=
7.17.3 STP flow control
This << within 24 dwords (for a 1,5 Gbps physical link). >> should be <<
within 24 dwords for a 1,5 Gbps physical link. >>

IBM comment number 205
Page=359 Subtype=Highlight Author=George Penokie
Comment=
7.18.4.3.4 SMP_IP3:Receive_Frame state
This << this state receives fewer than 2 Data Dword Received messages after
an SOF Received message andbefore an EOF Received message. >> should be <<
this state receives fewer than two Data Dword Received messages after an
SOF Received message and before an EOF Received message. >>

IBM comment number 206
Page=361 Subtype=Highlight Author=George Penokie
Comment=
7.18.4.4.3 SMP_TP2:Transmit_Frame state
This << If this state receives a Tx Frame request, this state shall send a
Transmit Frame message to the SMP transmitter; then wait for a Frame
Transmitted message. >> shouldbe << If this state receives a Tx Frame
request, this state shall send a Transmit Frame message to the SMP
transmitter then wait for a Frame Transmitted message. >>

IBM comment number 207
Page=361 Subtype=Highlight Author=George Penokie
Comment=
7.18.4.4.2.1 State description
This << this state receives fewer than 2 Data Dword Received messages after
an SOF Received message and before an EOF Received message. >> should be <<
this state receives fewer than two Data Dword Received messages after an
SOF Received message and before an EOF Received message. >>

IBM comment number 208
Page=369 Subtype=Highlight Author=George Penokie
Comment=
8.2.2.3.3 PL_OC2:Overall_Control state connection established
This << stop the I_T Nexus Loss timer for the SAS address (if the timer has
been running); >> should be << if the timer has been running then stop
theI_T Nexus Loss timer for the SAS address ; >>

IBM comment number 209
Page=370 Subtype=Highlight Author=George Penokie
Comment=
8.2.2.3.4 PL_OC2:Overall_Control state unable to establish a connection
This << stop the I_T Nexus Loss timer (if the timer has been running); >>
should be << if the timer has been running then stop the I_T Nexus Loss
timer ; >>

IBM comment number 210
Page=378 Subtype=Highlight Author=George Penokie
Comment=
8.2.3.4.1 PL_PM3:Connected state description
This << If this state receives a Tx Frame message, this state shall send a
Tx Frame request to the link layer. >> should be << If this state receives

a Tx Frame message, then this state shall send a Tx Frame request to the
link layer. >>

IBM comment number 211
Page=378 Subtype=Highlight Author=George Penokie
Comment=
8.2.3.4.1 PL_PM3:Connected state description
This << stop the Bus Inactivity Time Limit timer, if it is running; >>
should be << if it is running then stop the Bus Inactivity Time Limit
timer; >>

IBM comment number 212
Page=379 Subtype=Highlight Author=George Penokie
Comment=
8.2.3.4.1 PL_PM3:Connected state description
This << or a Phy Disabled confirmation after sending a Transmission Status
(Frame Transmitted) confirmation, but before this state receives an ACK
Received or NAK Received confirmation, >> should be << or a Phy Disabled
confirmation aftersending a Transmission Status (Frame Transmitted)
confirmation, before this state receives an ACK Received or NAK Received
confirmation, >>

IBM comment number 213
Page=384 Subtype=Highlight Author=George Penokie
Comment=
9.2.1 SSP frame format
This << dataoffset >> should be in smallcaps.

IBM comment number 214
Page=385 Subtype=StrikeOut Author=George Penokie
Comment=
9.2.1 SSP frame format
This << This may be useful when the SSP target port has more than one
XFER_RDY frame outstanding (i.e., the SSP targetport has transmitted an
XFER_RDY frame for each of two or more commandsand has not yet received all
the write data for them). >> should be deleted as it has no value in a
standard.

IBM comment number 215
Page=386 Subtype=Highlight Author=George Penokie
Comment=
9.2.2.1 COMMAND information unit
This << target port comply with SAS-1.1 or later >> should be << target
port comply with this standard >>

IBM comment number 216
Page=387 Subtype=Highlight Author=George Penokie
Comment=
9.2.2.1 COMMAND information unit
This << (e.g., a six-byte CDB occupies the first six bytes of the CDB
field; the remaining ten bytes are ignored; and the ADDITIONAL CDB BYTES
field is not present).>> should be << (e.g., a six-byte CDB occupies the
first six bytes of the CDB field,the remaining ten bytes are ignored, and
the ADDITIONAL CDB BYTES fieldis not present).>>

IBM comment number 217
Page=388 Subtype=Highlight Author=George Penokie
Comment=
9.2.2.2 TASK information unit
This << The TARGET RESET task management function defined in SAM-3 is not
supported. >> is not correct as SAAM-3does not define target reset. SAM-2
does. I think this should be deleted rather than adding a reference to
SAM-2.

IBM comment number 218
Page=389 Subtype=Text Author=George Penokie
Comment=
9.2.2.3 XFER_RDY information unit
This statement << The information contained within a XFER_RDY shall be
maintained across connections. >> needs to be added into the 1st paragraph
of this section.

IBM comment number 219
Page=390 Subtype=Text Author=George Penokie
Comment=
9.2.2.5.1 RESPONSE information unit overview
Having all this space between the start of a sentence and the end of the
sentence is not a good idea. Move the table anchor to it's own paragraph
and this will not be a problem.

IBM comment number 220
Page=392 Subtype=StrikeOut Author=George Penokie
Comment=
9.2.2.5.3 RESPONSE information unit RESPONSE_DATA format
This << Other lengths are
reserved for future standardization; >> should be deleted as it states
nothing useful. All values that are reserved are reserved for future
standardization.

IBM comment number 221
Page=393 Subtype=Highlight Author=George Penokie
Comment=
9.2.2.5.4 RESPONSE information unit SENSE_DATA format
This << need not >> should be changed to << is not required to >>

IBM comment number 222
Page=399 Subtype=Highlight Author=George Penokie
Comment=
9.2.4.6 RESPONSE frame - handling of link layer errors
This << machine retransmits the RESPONSE frame at least one time with the
RETRANSMIT bit set to zero >> should be << machine retransmits the
RESPONSE frame atleast one time with the RETRANSMIT bit set to one >>

IBM comment number 223
Page=399 Subtype=Highlight Author=George Penokie
Comment=
9.2.4.6 RESPONSE frame - handling of link layer errors
This << same I_T_L_Q nexus, the ST_TFR state machine discards the extra
RESPONSE frame (see 9.2.6.3.2). >> should be << same I_T_L_Q nexus, the
ST_IFR state machine discards the extra RESPONSE frame (see x.x.x.x). >>

IBM comment number 224
Page=399 Subtype=Text Author=George Penokie
Comment=
9.2.5.2 SSP initiator port error handling summary
Add a then to all the if statements so they all read <<If ....then ... >>

IBM comment number 225
Page=399 Subtype=Highlight Author=George Penokie
Comment=
9.2.4.6 RESPONSE frame - handling of link layer errors
This << If the ST_TFR state machine and the ST_TTS state machine not
previously received the RESPONSE frame, they considers the RESPONSE frame
to be the valid RESPONSE frame. >> needs help how about << If the ST_IFR
state machine has not previously received the RESPONSE frame, the ST_IFR
should consider the RESPONSE frame to be the valid RESPONSE frame. >>

IBM comment number 226
Page=400 Subtype=Highlight Author=George Penokie
Comment=
9.2.5.3 SSP target port error handling summary
This << a TASK frame with a tag that is already in used for a command or
another task management function, >> should be << a TASK frame with a tag
that is already in use for a command or another task management function,
>>

IBM comment number 227
Page=400 Subtype=Highlight Author=George Penokie
Comment=
9.2.5.2 SSP initiator port error handling summary
This << If an SSP initiator port receives a read DATA frame with a data
offset that was not expected, the ST_ITS state machine discards that frame
and any subsequent read DATA frames received for that command >> would be
clearer if changed to << If an SSP initiator port receives a read DATA
frame with a data offset that was not expected (see 9.2.6.2.3.7.1), the
ST_ITS state machine discards that frame and any subsequent read DATA
frames receivedfor that command >>

IBM comment number 228
Page=400 Subtype=Highlight Author=George Penokie
Comment=
9.2.5.2 SSP initiator port error handling summary
This << If an SSP initiator port receives an XFER_RDY frame that is not 12
bytes long, he ST_IFR state machine >> should be << If an SSP initiator
port receives an XFER_RDY frame that is not 12 bytes long, the ST_IFR state
machine >>

IBM comment number 229
Page=400 Subtype=Text Author=George Penokie
Comment=
9.2.5.3 SSP target port error handling summary
Add a then to all the if statements so they all read <<If ....then ... >>

IBM comment number 230
Page=400 Subtype=Highlight Author=George Penokie

Comment=
9.2.5.3 SSP target port error handling summary
This << the ST_TFR state machine may process this as an I_T nexus >> should
be << then, the ST_TFR state machine may process this as an I_T nexus >>

IBM comment number 231
Page=400 Subtype=Highlight Author=George Penokie
Comment=
9.2.5.3 SSP target port error handling summary
This << the ST_TTS state machine returns a RESPONSE frame with the
DATAPRES>> should be << then, the ST_TTS state machine returns a RESPONSE
frame with the DATAPRES>>

IBM comment number 232
Page=401 Subtype=Text Author=George Penokie
Comment=
9.2.6 ST (transport layer for SSP ports) state machines
During review of SAS 1.1 transport layer state machine descriptions it
became apparent that the frame level retry description in the state
machines was not complete and that the states in state machines that
contained more than one state were not passing arguments. There appeared to
be an assumptionthat a state would always have the information it wanted
without regardas to where the information came from.
This proposal 05-143 addressesboth those problems.
The comments included with these comments, for the most part, are not
included in 05-143 and should be treated as independent of 05-143.

IBM comment number 233
Page=401 Subtype=Square Author=George Penokie
Comment=
9.2.6.1 ST state machines overview
Remove the << the >> from all the items in the a.b.c list. The items should
read as <<a) tag;
b) destination SAS address; and
c) source SAS address;

IBM comment number 234
Page=401 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.1 ST state machines overview
This << b) Frame Received;
include the following as arguments: >> should be << b) Frame Received.
The confirmations include the following as arguments: >>

IBM comment number 235
Page=403 Subtype=Text Author=George Penokie
Comment=
9.2.6.2.1 ST_I state machines overview
What happens if a cancel message is sent to the ST_ITS6 state if the state
machine is in the ST_ITS7 state. Under the current description it would be
missed. Is that OK?

IBM comment number 236
Page=403 Subtype=Text Author=George Penokie
Comment=

9.2.6.2.1 ST_I state machines overview
What happens if a cancel message is sent to the ST_ITS2 state if the state
machine is in the ST_ITS3, ST_ITS4, or ST_ITS5 states. Under the current
description it would be missed. Is that OK?

IBM comment number 237
Page=403 Subtype=Square Author=George Penokie
Comment=
9.2.6.2.1 ST_I state machines overview
Figure 168
The background around the << HARD_RESET Received (to all state machines) >>
confirmation should be changed from white to none.

IBM comment number 238
Page=405 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.2.2 ST_IFR (initiator frame router) state machine
This << If the frame type is XFER_RDY then this state machine shall check
the lengthof the information unit. If the length of the information unit is
not correct, then this state machine shall discard the frame >> needs to
have a << Service Delivery or Target Failure - XFER_RDY xxxxx to the SCSI
application layer >> added as the description in section 9.2.5.2 states <<
If an SSP initiator port receives an XFER_RDY frame that is not 12 bytes
long, he ST_IFR state machine discards the frame (see 8.2.6.2.2). The
application client may then abort the command (see 10.2.2).>>. Without the
added words there is no confirmation to the application layer that an abort
should occur.

IBM comment number 239
Page=405 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.2.2 ST_IFR (initiator frame router) state machine
This << a) the retry data frames bit;
b) the retransmit bit;
c) the target porttransfer tag; and
d) the information unit. >> should be << a) retry data frames bit;
b) retransmit bit;
c) target port transfer tag; and
d) information unit. >>

IBM comment number 240
Page=407 Subtype=Text Author=George Penokie
Comment=
9.2.6.2.3.3.1 State description
The 2nd paragraph tells what to do it the number of retrys for a COMMAND
has not been reached but there is nothing that states what to do if the
number of retrys for a COMMAND has been reached. This needs to be fixed.

IBM comment number 241
Page=409 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.2.3.3.1 State description
Table 121
This << (ACK Received >> should be << (ACK Received) >>

IBM comment number 242
Page=410 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.2.3.3.1 State description
This is in 05-143.
This << If this state machine receives an XFER_RDY Arrived message and the
requested offset is not expected, >> was carried over from SAS and looks
like it needs more clerification now that retries are allowed. It should
be changed to <<If this state machine receives an XFER_RDY Arrived
message, does not support transport layer retries of DATA frames, the RETRY
DATA FRAMES bit is set to zero, and the requested offset is not expected,
(e.g., the data offset is not set to a value in the DATA OFFSET field in
the previous XFER_RDY information unit plus the number of bytes transfered
as aresult of the previous XFER_RDY infomration unit.) >>

IBM comment number 243
Page=410 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.2.3.3.1 State description
This << ST_IPR state machine. >> should be << ST_IFR state machine. >>

IBM comment number 244
Page=410 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.2.3.3.1 State description
This << ST_IPR state machine. >> should be << ST_IFR state machine. >>

IBM comment number 245
Page=410 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.2.3.3.5 Transition ST_ITS2:Initiator_Send_Frame to
ST_ITS5:Prepare_Data_Out
This << NOTE 52 - This transition occurs even if this state has not
received a Transmission Status (ACK Received) for the COMMAND frame for the
write operation. >> should be moved to after item a)

IBM comment number 246
Page=410 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.2.3.3.1 State description
This << a) the destination SAS address; and
b) the tag. >> should be << a) destination SAS address; and
b) tag. >>

IBM comment number 247
Page=412 Subtype=Text Author=George Penokie
Comment=
9.2.6.2.3.7.1 State description
The 1,2,3 list does not look like is requires order. Change to an a,b,c
list.

IBM comment number 248
Page=412 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.2.3.6.1 State description

This << j) DATA OFFSET field set to the specified data offset, unless
otherwise specified in this subclause; and
k) in the information unit, DATA field set to the specified data.
l) fill bytes, if any. >> should be << j) DATA OFFSET field set to the
specified data offset, unless otherwise specified in this subclause;
k) in the information unit, DATA field set to the specified data; and
l) fill bytes, if any. >>. The << and >> is on the wrong item.

IBM comment number 249
Page=415 Subtype=Square Author=George Penokie
Comment=
9.2.6.3.1 ST_T state machines overview
Figure 169
The background around the << HARD_RESET Received (to all state machines) >>
confirmation should be changed from white to none.

IBM comment number 250
Page=419 Subtype=Text Author=George Penokie
Comment=
9.2.6.3.2 ST_TFR (target frame router) state machine
Having all this space between the start of a sentence and the end of the
sentence is not a good idea. Move the table anchor to it's own paragraph
and this willnot be a problem.

IBM comment number 251
Page=422 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.3.3.3.1 State description
This << a) the tag; and
b) the arguments received with the Transmission Status confirmation. >>
should be << a) tag; and
b) arguments received with the Transmission Status confirmation. >>

IBM comment number 252
Page=422 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.3.3.3.1 State description
This note << NOTE 55 - The XFER_RDY and RESPONSE frame rules ensure that
wide ports do not send an XFER_RDY orRESPONSE frame on a phy until all the
ACKs have been transmitted for write DATA frames on a different phy. In a
narrow port, the link layer ensures that ACK/NAKs are balanced before
transmitting an interlocked frame. >> is the wrong font size. It should be
9 point.

IBM comment number 253
Page=423 Subtype=Square Author=George Penokie
Comment=
9.2.6.3.3.3.1 State description
Table 125 row three
This << a) the Transmit Frame request was for a RESPONSE frame; and
b) the vendor-specific number of retries has been reached >> should be <<
The Transmit Frame request was for a RESPONSE frame and the vendor-specific
number of retries has been reached. >>

IBM comment number 254

Page=423 Subtype=Square Author=George Penokie
Comment=
9.2.6.3.3.3.1 State description
Table 125 row three
This << a) the Transmit Frame request was for a read DATA frame;
b) the number of databytes transmitted equal the request byte count; and
c) this state hasreceived a Transmission Status (ACK Received) confirmation
for each read DATA frame transmitted for the request >> should be << The
Transmit Frame request was for a read DATA frame and:
a) the number of data bytes transmitted equal the request byte count; and
b) this state has received a Transmission Status (ACK Received)
confirmation for each read DATA frame transmitted for the request.

IBM comment number 255
Page=423 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.3.3.3.1 State description
Table 125
Delete all the <<the>> from the beginning of each entry in the middle
column. It adds nothing and has the benefit of not having to argue about if
the <<the>> should be capitalized or not.

IBM comment number 256
Page=424 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.3.3.3.1 State description
Again, this << a) the destination SAS address; and
b) the tag. >> should be << a) destination SAS address; and
b) tag. >>

IBM comment number 257
Page=424 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.3.3.3.1 State description
This << a) the destination SAS address; and
b) the tag. >> should be << a) destination SAS address; and
b) tag. >>

IBM comment number 258
Page=425 Subtype=Text Author=kdbutt
Comment=
9.2.6.3.3.4.1 State description
In looking at the error recovery, I have noticed a few inconsistencies in
the document. It appears that when sections 9.2.4 and 9.2.5 were added,
the state diagrams were not updatedto match. Proposal 05-143 contains the
fixes for this problem.

9.2.6.3.3.5.1 states:
    i) TARGET PORT TRANSFER TAG field set to a vendor-specific value,
unless otherwise specified in this
      subclause;
and
    If this state is entered after the ST_TTS2:Target_Send_Frame state
received a Transmission Status (Frame
    Transmitted) confirmation and a confirmation other than Transmission

Status (ACK Received) for which a
    Transmission Complete message was not sent to the ST_TFRstate machine
(i.e., to retry transmitting a
    frame), then this state shall construct a new XFER_RDY frame using the
values from the previous

    XFER_RDY frame except:
      a) the RETRANSMIT bit shallbe set to one; and
      b) the value in the TARGET PORT TRANSFER TAGfield shall be set to a
different value than the value in the
  previous XFER_RDY frame. The new target port transfer tag value shallnot
conflict with any other
    target port transfer tag currently in use. If write data is
received for a subsequent XFER_RDY frame
  for a command, then all target port transfer tags used for
previous XFER_RDY frames for the
    command are no longer in use.

but the above does not match with
9.2.4.1 states:
    If the TRANSPORT LAYER RETRIES bit is set to one, the logical unit:
      d) selects a different value for the TARGET PORT TRANSFER TAG field
in each XFER_RDY frame than that
    used in the previous XFER_RDY frame for that I_T_L_Q nexus;

IBM comment number 259
Page=425 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.3.3.4.1 State description
This << j) DATA OFFSET field set as specified in this subclause; and >>
should be << j) DATA OFFSET field set as specified in this subclause; >>

IBM comment number 260
Page=426 Subtype=Text Author=kdbutt
Comment=
9.2.6.3.3.6.1 State description

 In looking at the error recovery, I have noticed a few inconsistencies in
the document. It appears that when sections 9.2.4 and 9.2.5 were added,
the state diagrams were not updated to match. Proposal 05-143 contains the
fixes for this problem.

9.2.6.3.3.6.1 states:
    1) If the data offset was not expected (i.e.,the CHANGING DATA POINTER
bit is set to one and the value in
   the DATA OFFSET field is not set to the data offset associated
with the XFER_RDY frame, or the
   CHANGING DATA POINTER bit is set to zero and the value in the DATA
OFFSET field is not set to the value
  in the DATA OFFSET FIELD in the previous write DATA information unit plus
the number of bytes in that
   information unit), then thisstate shall send a Reception Complete
(Data Offset Error) message to the
   ST_TFR state machine;

and then 9.2.6.3.2 table 124 states that
      Reception Complete (Data Offset Error)
translates to aSCSI application layer:
      Data-Out Received with the Delivery Result
      argument set to DELIVERY FAILURE - DATA
      OFFSET ERROR
Which will prohibit any recovery.

So, if recovery is possible, then 9.2.6.3.3.6.1 cannot send the Reception
Complete (Data Offset Error) message until recovery has been exhausted.
However, 9.2.6.3.3.6.1 does not mention recovery at all.

IBM comment number 261
Page=426 Subtype=Square Author=George Penokie
Comment=
9.2.6.3.3.6.1 State description
The 1,2,3 list does not appear to require ordering so it should be changed
to an a,b,c list.

IBM comment number 262
Page=426 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.3.3.5.1 State description
This << j) DATA OFFSET field set to zero; and >> should be << j) DATA
OFFSET field set to zero; >>

IBM comment number 263
Page=427 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.3.3.8.1 State description
This << h) TARGET PORT TRANSFER TAG field set to zero; >> should be << h)
TARGET PORT TRANSFER TAG field set to zero; and>>

IBM comment number 264
Page=427 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.3.3.7.1 State description
This << This state shall process the data received in the Data-Out Arrived
message using the Device Server Buffer (e.g., logical block address) to
which the data is to be transferred. >> should be << This state shall
process the SSP frame contents using the Device Server Buffer (e.g.,
logical block address) to which thedata is to be transferred. >>

IBM comment number 265
Page=427 Subtype=Highlight Author=George Penokie
Comment=
9.2.6.3.3.7.2 Transition ST_TTS6:Process_Data_Out to
ST_TTS5:Receive_Data_Out
This << state has processed the data received in a Data-Out Arrived
message.>> should be << has processed the SSP frame contents. >>

IBM comment number 266
Page=430 Subtype=Highlight Author=George Penokie
Comment=

9.4.3 SMP_RESPONSE frame
This << frame 1 032 bytes (1 024 bytes of data + 4 bytes of header + 4
bytes of CRC). >> should be << frame 1 032bytes (i.e., 1 024 bytes of
data + 4 bytes of header + 4 bytes of CRC).

IBM comment number 267
Page=430 Subtype=Highlight Author=George Penokie
Comment=
9.4.2 SMP_REQUEST frame
This << frame 1 032 bytes (1 024 bytes of data + 4 bytes of header + 4
bytes of CRC). >> should be << frame 1 032 bytes (i.e., 1 024 bytes of
data + 4 bytes of header + 4 bytes of CRC).

IBM comment number 268
Page=438 Subtype=Highlight Author=George Penokie
Comment=
10.2.1.3 SCSI Command Received transport protocol service
This << SCSI Command Received (IN (I_T_L_Q Nexus, CDB, Task Attribute,
[Task Priority], [Command Reference Number])) >> should be << SCSI Command
Received (IN (I_T_L_Q Nexus, CDB, Task Attribute, [Task Priority], [Command
Reference Number], [First Burst Enabled])) >>

IBM comment number 269
Page=447 Subtype=Highlight Author=George Penokie
Comment=
10.2.2 Application client error handling
This << it shall abort the command (e.g., by sending an ABORT TASK task
management function). >> should be << then the SSP initiator port shall
abort the command (e.g., by sending an ABORT TASK task management
function). >>

IBM comment number 270
Page=448 Subtype=Highlight Author=George Penokie
Comment=
10.2.3 Device server error handling
This << If the SCSI target device performs tag checking and an SSP target
port calls SCSI Command Received() with a tag already in use by another
SCSI command (i.e., an overlapped command) in any logical unit, the task
router and device server(s) shall abort all task management functions
received on that I_T nexusand shall respond to the overlapped command as
defined in SAM-3. >> should be changed to << If the SCSI target device
performs tag checking andan SSP target port calls SCSI Command Received ()
with a tag already in use by another SCSI command (i.e., an overlapped
command) in any logical unit, the task router and device server(s) shall
respond to the overlapped command as defined in SAM-3. >> as there are more
specific rules on aborting below in the second a.b.c list in section
10.2.4.

IBM comment number 271
Page=449 Subtype=Text Author=George Penokie
Comment=
10.2.7.1.1 Disconnect-Reconnect mode page overview
Having all this space between the start of a sentence and the end of the
sentence is not a good idea. Move the table anchor to it's own paragraph
and this will notbe a problem.

IBM comment number 272
Page=451 Subtype=Highlight Author=George Penokie
Comment=
10.2.7.1.4 MAXIMUM BURST SIZE field
This << the SSP target port shall prepare to close the connection after the
amount of data specified by the MAXIMUM >> should be << then, the SSP
target port shall prepare to close the connection after the amount of data
specified by the MAXIMUM >>

IBM comment number 273
Page=453 Subtype=Highlight Author=George Penokie
Comment=
10.2.7.2.2 Protocol-Specific Port mode page - short format
This << SPF field shall >> should be << SPF bit shall >>

IBM comment number 274
Page=454 Subtype=Highlight Author=George Penokie
Comment=
10.2.7.2.3 Protocol-Specific Port mode page - Phy Control And Discover
subpage
This << A SAS phy mode descriptor shall be included for each phy in the SAS
target device (not just the SAS target port), starting with the lowest
numbered phy and ending with the highest numbered phy. >> should be << A
SAS phy mode descriptor shall be included for each phy inthe SAS target
device, not just the SAS target port, starting with the lowest numbered phy
and ending with the highest numbered phy. >>

IBM comment number 275
Page=454 Subtype=Highlight Author=George Penokie
Comment=
10.2.7.2.3 Protocol-Specific Port mode page - Phy Control And Discover
subpage
This << SPF field shall >> should be << SPF bit shall >>

IBM comment number 276
Page=456 Subtype=Highlight Author=George Penokie
Comment=
10.2.7.3.2 Protocol-Specific Logical Unit mode page - short format
This << SPF field shall >> should be << SPF bit shall >>

IBM comment number 277
Page=458 Subtype=Highlight Author=George Penokie
Comment=
10.2.8.1 Protocol-Specific log page
This << control bits for >> should be << control bits and fields for >> as
TMC is a field not a bit.

IBM comment number 278
Page=458 Subtype=Highlight Author=George Penokie
Comment=
10.2.8.1 Protocol-Specific log page
This << control bits for >> should be << control bits and fields for >> as
TMC is a field not a bit.

IBM comment number 279
Page=460 Subtype=Text Author=George Penokie
Comment=
10.2.9.1 Protocol-Specific diagnostic page
Having all this space between the start of a sentence and the end of the
sentence is not a good idea. Move the table anchor to it's own paragraph
and this will not be a problem.

IBM comment number 280
Page=462 Subtype=Highlight Author=George Penokie
Comment=
10.2.10.2.1 SA_PC state machine overview
This << This state machine stall start in the SA_PC_0:Powered_On state
after power on. >> should be << This state machine shall start in the
SA_PC_0:Powered_On state after power on. >>

IBM comment number 281
Page=462 Subtype=Highlight Author=George Penokie
Comment=
10.2.10.1 SCSI power conditions overview
This << a) automatically spin-up after power on; and >> should be << a)
initiate spin-up after power on; and >>

IBM comment number 282
Page=467 Subtype=Square Author=George Penokie
Comment=
10.2.11 SCSI vital product data (VPD)
table 165
This <<PIV (PROTOCOL IDENTIFIER VALID) >> should be << PIV (protocol
identifier valid) >>

IBM comment number 283
Page=472 Subtype=Highlight Author=George Penokie
Comment=
10.4.3.1 SMP function request frame format
This << size of the frame 1 032 bytes (1 024 bytes of data + 4 bytes of
header + 4 bytes of CRC).>> should be << size of the frame 1 032 bytes
(i.e., 1 024 bytes of data + 4 bytes of header + 4 bytes of CRC). >>

IBM comment number 284
Page=473 Subtype=Square Author=George Penokie
Comment=
10.4.3.2 SMP function response frame format
table 170
This << The SMP target port does not support the requested SMP function;
the ADDITIONALRESPONSE BYTES field may be present but shall be ignored. >>
should be << The SMP target port does not support the requested SMP
function. The ADDITIONAL RESPONSE BYTES field may be present but shall be
ignored. >>

IBM comment number 285
Page=473 Subtype=Square Author=George Penokie
Comment=
10.4.3.2 SMP function response frame format
table 170

This <<The SMP target port supports the SMP function; the ADDITIONAL
RESPONSE BYTES field contains the requested information. >>   should be <<
The SMP target port supports the SMP function. The ADDITIONAL RESPONSE
BYTES field contains the requested information. >>

IBM comment number 286
Page=474 Subtype=Highlight Author=George Penokie
Comment=
10.4.3.2 SMP function response frame format
This << size of the frame 1 032 bytes (1 024 bytes of data + 4 bytes of
header + 4 bytes of CRC). >> should be << size of the frame 1 032 bytes
(i.e., 1 024 bytes of data + 4 bytes of header + 4 bytes of CRC). >>

IBM comment number 287
Page=476 Subtype=Highlight Author=George Penokie
Comment=
10.4.3.3 REPORT GENERAL function
This << need not >> should be changed to << is not required to >>

IBM comment number 288
Page=482 Subtype=Text Author=George Penokie
Comment=
10.4.3.5 DISCOVER function
Having all this space between the start of a sentence and the end of the
sentence is not a good idea. Move the table anchor to it's own paragraph
and this will not be a problem.

IBM comment number 289
Page=484 Subtype=Highlight Author=George Penokie
Comment=
10.4.3.5 DISCOVER function
This << NOTE 62 - Supports for SATA hosts is outside the scope of this
standard. >> should be << NOTE 62 - Support for SATA hosts is outside the
scope of this standard. >>

IBM comment number 290
Page=485 Subtype=Highlight Author=George Penokie
Comment=
10.4.3.5 DISCOVER function
This makes no sense <<
c) the phy identifier provided for the attached port if the attached port
is a SATA deviceport. >> If should be << c) the phy identifier provided for
the attached phy if the attached phy is contained in a SATA device port. >>

IBM comment number 291
Page=485 Subtype=Highlight Author=George Penokie
Comment=
10.4.3.5 DISCOVER function
This makes no sense << b) the phy identifier of the attached expander
device if the attached port is an expander port; >> It should be << b) the
phy identifier of the attached phy if the attached phy is contained in an
expander port; >>

IBM comment number 292
Page=485 Subtype=Highlight Author=George Penokie

Comment=
10.4.3.5 DISCOVER function
This makes no sense << a) the phy identifier of the attached SAS port if
the attached port is a SAS port; >>. It should be << a) the phy identifier
of the attached phy if the attached phy is contained in a SAS port; >>

IBM comment number 293
Page=486 Subtype=Highlight Author=George Penokie
Comment=
10.4.3.5 DISCOVER function
This << need not >> should be changed to << is not required to >>

IBM comment number 294
Page=488 Subtype=Text Author=George Penokie
Comment=
10.4.3.6 REPORT PHY ERROR LOG function
It appears that the counters defined in the log function are never reset to
zero. This does not seem like a good idea. At a minimum there should be a
statement that the counters are all reset on a power on.

IBM comment number 295
Page=492 Subtype=Highlight Author=George Penokie
Comment=
10.4.3.8 REPORT ROUTE INFORMATION function
This << The EXPANDER ROUTE INDEX field specifies the expander route index
for the expander route entry being requested (see 4.6.7.3). >> should be <<
The EXPANDER ROUTE INDEX field specifies the expander route index for the
expander route entry (see 4.6.7.3) of the phy indicated in the PHY
IDENTIFIER field. >>

IBM comment number 296
Page=493 Subtype=Highlight Author=George Penokie
Comment=
10.4.3.8 REPORT ROUTE INFORMATION function
This << The EXPANDER ROUTE INDEX field contains the expander route index
for the expander route entry being returned (see 4.6.7.3). >> should be <<
The EXPANDER ROUTE INDEX field contains the expander route index for the
expander route entry(see 4.6.7.3) of the phy indicated in the PHY
IDENTIFIER field. >>

IBM comment number 297
Page=495 Subtype=Highlight Author=George Penokie
Comment=
10.4.3.9 CONFIGURE ROUTE INFORMATION function
This << The EXPANDER ROUTE INDEX field specifies the expander route index
for the expander routeentry being configured (see 4.6.7.3). >> should be <<
The EXPANDER ROUTE INDEX field specifies the expander route index for the
expander route entry (see 4.6.7.3) of the phy indicated in the PHY
IDENTIFIER field. >>

IBM comment number 298
Page=499 Subtype=Highlight Author=George Penokie
Comment=
10.4.3.10 PHY CONTROL function
This paragraph << If the PHY IDENTIFIER field specifies the phy which is

being used for the SMP connection and a phy operation of LINK RESET, HARD
RESET, or DISABLE is requested, the SMP target port shall not perform the
requested operation and shall return a function result of SMP FUNCTION
FAILED in the response frame. >> should be moved up to the PHY IDENTIFIER
field description.

IBM comment number 299
Page=500 Subtype=Highlight Author=George Penokie
Comment=
10.4.3.10 PHY CONTROL function
This << in the response frame. If it does so, it shall not perform the
requested phy operation. >> should be <<in the response frame. If the SMP
target port returns an SMP FUNCTION FAILED then, it shall not perform the
requested phy operation. >>

IBM comment number 300
Page=502 Subtype=Text Author=George Penokie
Comment=
10.4.3.11 PHY TEST FUNCTION function
The PHY TEST FUNCTION is description is a duplicate of the description in
the protocol-specific diagnostic page. The description here should be
replaced with a reference to thatdescription.

IBM comment number 301
Page=506 Subtype=Square Author=George Penokie
Comment=
A.2 Compliant jitter tolerance pattern (CJTPAT)
I believe the a,b,c list should be ordered. Change it to a 1,2,3 list.

IBM comment number 302
Page=520 Subtype=Highlight Author=George Penokie
Comment=
B.9.3 Use of single-ended instrumentation in differential applications
This << denoted by the \217A'
subscript and reflected signals from the same port denoted by the \217B'
subscript. >> should be << denoted by the A
subscript and reflected signals from the same port denoted by the B
subscript. >>

IBM comment number 303
Page=520 Subtype=Highlight Author=George Penokie
Comment=
B.9.3 Use of single-ended instrumentation in differential applications
This << d) SCCij.. common-mode stimulus, >> should be << d) SCCij:
common-mode stimulus, >>

IBM comment number 304
Page=521 Subtype=Highlight Author=George Penokie
Comment=
B.9.3 Use of single-ended instrumentation in differential applications
This << VNA ports are all single-ended; the differential and common-mode
properties for differential ports are >> should be << VNA ports are all
single-ended. The differential and common-mode properties for differential
ports are >>

IBM comment number 305
Page=532 Subtype=Highlight Author=George Penokie
Comment=
E.2 Hash collision probability
This << One randomly chosen SAS address (representing a replacement unit)
with another unique >> should be <<One randomly chosen SAS address that
represents a replacement unit withanother unique >>

IBM comment number 306
Page=532 Subtype=Highlight Author=George Penokie
Comment=
E.2 Hash collision probability
This << One randomly chosen SAS address (representing a replacement unit)
with another unique >> should be <<One randomly chosen SAS address that
represents a replacement unit withanother unique >>

IBM comment number 307
Page=532 Subtype=Highlight Author=George Penokie
Comment=
E.2 Hash collision probability
This << each lot were assigned by 10 SAS address-writers, randomly drawn
from a pool of 4 096 possible >> should be << each lot were assigned by ten
SAS address-writers, randomly drawn from a pool of 4 096 possible >>

IBM comment number 308
Page=532 Subtype=Highlight Author=George Penokie
Comment=
E.2 Hash collision probability
This << within the lot were assigned by 10 SAS address-writers, randomly
drawn from a pool of 4 096 >> should be << within the lot were assigned by
ten SAS address-writers, randomly drawn from a pool of 4 096 >>

IBM comment number 309
Page=541 Subtype=Highlight Author=George Penokie
Comment=
G.3.1 Affiliation policies overview
This << connection to send a command (perhaps a read), and >> should be <<
connection to send a command(e.g., a read), and >>

    ****

Comments attached to No ballot from Robert Sheffield of
Intel Corp.:

INTEL #1
PDF Page: 48
Author: Bob Sheffield
Comment: 3.1.35 cumulative distribution function (CDF):
This may not be the correct definition - even as it applies to jitter
measurements. It is not cumulative over time, but rather cumulative
over a population of jitter measurement samples. Jitter samples are
measured as intervals of time, but this definition sounds like it's

based on absolute time, not sampled intervals. Suggest: "The integral
of the PDF (see 3.1.143) with limits from negative infinity to a
specified jitter value, or from a specified jitter value to positive
infinity."

INTEL #2
PDF Page: 54
Author: Bill Bissonette
Comment: 3.1 Definitions, symbols, abbreviations:
Add definition for 'probe point'. Could read something like, "Physical
positions in the test load where the signal properties are measured.
See Section 5.3.2.1."

INTEL #3
PDF Page: 119
Author: Bob Sheffield
Comment: 4.6.6.5 BPP interface - Table 15 Third Row (Identification
Sequence Complete):
"or because a virtual phy has been enabled (see 10.4.3.10)." s/b "
because an STP/SATA bridge received the initial Register - Device to
Host FIS (see 7.9.5.5.3 and 9.3.1), or because a virtual phy has been
enabled (see 10.4.3.10)."

INTEL #4
PDF Page: 123
Author: Bob Sheffield
Comment: 4.7.2 Allowed topologies Fifth paragraph:
This doesn't say what's intended. If the port of the expander device
being configured is a subtractive decode port, and the expander device
attached to that port has two or more ports with table-routing phys
attached to other expanders, then the management application will find
the SAS address of the port being configured in the ports of the other
expander devices which connect to the same expander device, but it is
not a routing loop.

INTEL #5
PDF Page: 124
Author: Bob Sheffield
Comment: There is no place in the standard that specifies when (if
ever) the ATTACHED SAS ADDRESS is set to zero. There probably should
be (perhaps on any transition to SP0:OOB_COMINIT?).

INTEL #6
PDF Page: 132
Author: Mark Seidel
Comment: 5.1 Physical overview 4th line:
"reference" => "references"

INTEL #7
PDF Page: 132
Author: Bill Bissonette
Comment: 5.2 Passive interconnect:
Figures 50 through 56 -- Arrows between plugs and receptacles imply
conductor length. These should all be removed and plugs/receptacles
show as mated.

INTEL #8
PDF Page: 134
Author: Bill Bissonette
Comment: 5.2.2 SAS cables and connectors:
Figures 52 through 56 --
Title embedded in Figure is redundant to figure title. Recommend
removing.

INTEL #9
PDF Page: 141
Author: Schelto VanDoorn
Comment: 5.2.3.3.2 SAS external cable plug connector - Figure 61 „ SAS
external cable plug connector Need:
to define the location of pin 1 (S1). Draw picture showing pinning.

INTEL #10
PDF Page: 142
Author: Schelto VanDoorn
Comment: 5.2.3.3.3 SAS external receptacle connector - Figure 62 - SAS
external receptacle connector:
Need to define the location of pin 1 (S1). Draw picture showing pinning.

INTEL #11
PDF Page: 142
Author: Bill Bissonette
Comment: 5.2.3.3.3 SAS external receptacle connector, text immediately
below figure 62:
Grammar -- "are" should be "is".

INTEL #12
PDF Page: 145
Author: Bob Sheffield
Comment: 5.2.3.3.6 SAS external compact receptacle connector Last
paragraph (after Figure 64):
"are" s/b "is"

INTEL #13
PDF Page: 154
Author: Bill Bissonette
Comment: 5.2.3.4.7 SAS internal compact wide connector pin assignments
- Table 28 „ Controller SAS ...:
Rows should be organized (ordered) like Table 25 -- External Wide Compact

INTEL #14
PDF Page: 154
Author: Bill Bissonette
Comment: 5.2.3.4.7 SAS internal compact wide connector pin assignments
- Table 28 „ Controller SAS ...:
TX+, TX- are swapped (known issue). This will cause interconnect
pinout definition to change (for the better).

INTEL #15
PDF Page: 155
Author: Bill Bissonette

Comment: 5.2.3.4.7 SAS internal compact wide connector pin assignments
- Table 29 „ Backplane SAS internal compact...:
Rows should be organized like Table 25.

INTEL #16
PDF Page: 157
Author: Bill Bissonette
Comment: 5.2.4.1 SAS internal cables, figure 72, 73:
Should be "RX" and "TX" (vs. "RP" AND "TP") on host connector since
there is no primary or secondary designations on host side. This may
apply to target connector as well since only one port used.

INTEL #17
PDF Page: 162
Author: Bill Bissonette
Comment: 5.2.4.3.2 SAS internal wide symmetric cables - Figure 76 „
SAS internal wide cable...:
Pin order on both connectors (A1, B1, A2, B2, . . .) will be the same
once the TX+/TX- pin assignments gets fixed. This figure must be
updated to reflect that.

INTEL #18
PDF Page: 163
Author: Bill Bissonette
Comment: 5.2.4.3.1 SAS internal wide cables overview, figure 77:
This figure is not correct: Signal/pin assignments on both connectors
must be the same (controller version of pinout) and RXO lane attaches
to TX3 lane, etc. Pin sequence on right-hand connector should be
changed to sequence used on left hand connector (only from top to
bottom). Once TX signal polarities get fixed, the interconnect lines
will straighten out. Should look like the wide 4x internal connector
(controller to controller) TxO<->Rx3, Tx1<->Rx2,....

INTEL #19
PDF Page: 164
Author: Bill Bissonette
Comment: 5.2.4.3.1 SAS internal wide cables overview, figure 78:
"RP"s and "TP"s should be "RX"s and "TX"s since there is no
primary/secondary designation here.

INTEL #20
PDF Page: 165
Author: Bill Bissonette
Comment: 5.2.4.3.1 SAS internal wide cables overview, figure 79, 81:
This figure needs to be corrected once TX+/TX- signal/pin assignments
get straightened out.

INTEL #21
PDF Page: 167
Author: Bill Bissonette
Comment: 5.2.4.3.1 SAS internal wide cables overview, Figure 81:
Pin sequence should match physical layout (like in Figure 79). Will
have better symmetry when the [RT]+/[RT]- gets fixed.

INTEL #22

PDF Page: 170
Author: Bob Sheffield
Comment: 5.2.5 Backplanes Table 30: Column heading:
Delete the 1.5 Gbps column. The assumption is that all
cables/connectors/backplanes are 3G capable, and so must pass the 3G
spec. Applies to tables 31 & 32 as well

INTEL #23
PDF Page: 170
Author: Bill Bissonette
Comment: 5.2.6 Impedance and media specifications, table 30, 31, 32:
Table title says 'media requirements', but implication from note 'b'
is that "Maximum TDR rise time" row is a requirement for measurement
procedure. These specs should be reflected in notes and this row
removed. Table footnotes a,b,c and d should all go with the
"Requirement" column heading". Only table footnote 'e' doesn't apply
to all rows.

INTEL #24
PDF Page: 172
Author: Bob Sheffield
Comment: 5.3.1 Compliance points First paragraph:
Delete, "that contain or comprise the candidate compliance point"

INTEL #25
PDF Page: 172
Author: Bob Sheffield
Comment: 5.3.1 Compliance points Second paragraph:
"Signal compliance is measured at physical positions denoted as probe
points inside a test load (see 5.3.2)." s/b "Signal compliance is
measured at physical positions in a test load that approximate
compliance points defined in a functional configuration (see 5.3.2)."
Note: This paragraph should concisely define the relationship between
a compliance point and a probe point (making it clear that a
measurement made at a probe point constitutes an acceptable value to
compare against the compliance values called out in the tables.
Subsequently, probe points should be discussed in reference to figures
to show measurements points, but not discussed in relation to the
tables which specify the compliance values.

INTEL #26
PDF Page: 185
Author: Bob Sheffield
Comment: 5.3.3 General electrical characteristics - fourth paragraph:
"exceed" s/b "exhibit a BER less than"

INTEL #27
PDF Page: 188
Author: Bill Bissonette
Comment: 5.3.5 Electrical TxRx connections First paragraph:
"connection individual" s/b "connection, individual"

INTEL #28
PDF Page: 188
Author: Bill Bissonette

Comment: 5.3.5 Electrical TxRx connections - first paragraph, second
line:
"materials, including" s/b "materials including"

INTEL #29
PDF Page: 192
Author: Bob Sheffield
Comment: 5.3.7.2, Table 37, 38, 39, 40 (parts 1 and 2), 41, 42:
delete "at probe point"

INTEL #30
PDF Page: 193
Author: Bill Bissonette
Comment: 5.3.7.3, Table 38 Table footnote (g):
SATA does not allow 3,0 Gbps aligns in OOB. It DOES allow 1.5 Gbps
OOB w/ 3,0 Gbps edge rates.   Delete ", or 3.0 Gbps ALIGN (0) dwords"

INTEL #31
PDF Page: 193
Author: Bob Sheffield
Comment: 5.3.7.2, Table 37, 38, 39, 40 (parts 1 and 2), 41, 42:
delete "at probe point"

INTEL #32
PDF Page: 193
Author: Bob Sheffield
Comment: Table 38 „ Transmitter device signal output
characteristics...:
Delete "as measured with each test load". It should be made clear this
applies to all measurements in subclause 5.3.1 and not reiterated
here.

INTEL #33
PDF Page: 194
Author: Bob Sheffield
Comment: Table 39 „ Transmitter device maximum jitter...:
Delete "as measured with each test load". It should be made clear this
applies to all measurements in subclause 5.3.1 and not reiterated
here.

INTEL #34
PDF Page: 194
Author: Bob Sheffield
Comment: 5.3.7.2, Table 37, 38, 39, 40 (parts 1 and 2), 41, 42:
delete "at probe point"

INTEL #35
PDF Page: 195
Author: Bob Sheffield
Comment: Table 40 „ Delivered signal characteristics...:
Delete "as measured with the zero-length test load". It should be made
clear this applies to all measurements in subclause 5.3.1 and not
reiterated here.

INTEL #36

PDF Page: 195
Author: Bob Sheffield
Comment: 5.3.7.2, Table 37, 38, 39, 40 (parts 1 and 2), 41, 42:
delete "at probe point"

INTEL #37
PDF Page: 196
Author: Bob Sheffield
Comment: Table 40 „ Delivered signal characteristics...:
Delete "as measured with the zero length test load".

INTEL #38
PDF Page: 196
Author: Bill Bissonette
Comment: 5.3.8.2 Delivered signal characteristics - Table 40 (part 2
of 2) - table footnote (g):
3 Gpbs OOB not allowed by SATA. Delete ", or 3.0 Gbps ALIGN (0) dwords
(see SATA2-PHY)"

INTEL #39
PDF Page: 196
Author: Bob Sheffield
Comment: 5.3.7.2, Table 37, 38, 39, 40 (parts 1 and 2), 41, 42:
delete "at probe point"

INTEL #40
PDF Page: 197
Author: Bob Sheffield
Comment: 5.3.7.2, Table 37, 38, 39, 40 (parts 1 and 2), 41, 42:
delete "at probe point"

INTEL #41
PDF Page: 198
Author: Bob Sheffield
Comment: 5.3.7.2, Table 37, 38, 39, 40 (parts 1 and 2), 41, 42:
delete "at probe point"

INTEL #42
PDF Page: 295
Author: Bob Sheffield
Comment: 7.9.5.4.3 SL_IR_RIF2:Receive_Identify_Frame state 7.9.5.4.3.1
State description - fifth paragraph:
"After receiving an EOAF Received message, this state shall check if
it the IDENTIFY address frame is valid."
s/b
"After receiving an EOAF Received message, this state shall check if
the received frame is a valid IDENTIFY address frame."

INTEL #43
PDF Page: 296
Author: Bob Sheffield
Comment: 7.9.5.5.3 SL_IR_IRC2:Wait state 7.9.5.5.3.1 State description:
There is a problem that there is currently no definition for how a phy
associated with an STP/SATA bridge becomes enabled. Add the following
as the last paragraph: "If this state receives an Initial FIS Received

message from the STP transport layer (see 9.3.1) it should send an
Enable Disable SAS Link (Enable) message to the XL state machine (see
7.15) in an expander phy indicating that the rest of the link layer
may start operation."

INTEL #44
PDF Page: 297
Author: Bob Sheffield
Comment: 7.11 SAS domain changes:
Add the following paragraph after the unordered list: "Expander
devices should transmit a BROADCAST (CHANGE) when an STP/SATA bridge
receives an initial Register - Device to host FIS (see 9.3.1)."

INTEL #45
PDF Page: 400
Author: Bob Sheffield
Comment: 9.2.5.2 SSP initiator port error handling summary:
Second paragraph Add the following text: An XFER_RDY or RESPONSE frame
received with a TAG corresponding to the TAG of a COMMAND or TASK
frame which has still not received an ACK, but is otherwise a valid
frame, shall be accepted as a valid frame.

INTEL #46
PDF Page: 429
Author: Bob Sheffield
Comment: 9.3.1 Initial FIS:
Add the following text as the second paragraph: "Upon receiving the
initial Register - Device to Host FIS, the STP transport layer should
send an Initial FIS Received message to the SL_IR state machine (see
7.9.5.5.3).   See 7.11 for BROADCAST (CHANGE) requirements related to
the initial FIS."

INTEL #47
PDF Page: 486
Author: Bob Sheffield
Comment: 10.4.3.5 DISCOVER function:
In the description of the ATTACHED SAS ADDRESS field, "The ATTACHED SAS
ADDRESS field shall be updated:"
Insert:
"a) when the SP state machine enters the SPO:OOB_COMINIT state (set to
zero\;")

INTEL #48
PDF Page: 512
Author: Bob Sheffield
Comment: Annex B:
"(normative)"
s/b
"(informative)"
There are many problems with this being a normative annex:
1) The terms are different. Nowhere is it evident the relationship
between CT, CR, IT, and IR compliance points in clause 5 and the
Transmit and Receive interoperability points identified in the annex,
and what the relationship might be to probe points described in
clause-5.

2) Annex B describes a method for "de-embedding" a test fixture,
presumably to mitigate the effects of the test load on the compliance
measurement. But there is nothing to correlate the compliance values
described in clause 5 with specific measurements described in Annex B.

The information in Annex B is quality information, but without
appropriate changes to correlate the measurement techniques described
in Annex B to the compliance values called out in clause 5. I.M.H.O.,
the bulk of LB comments that would be needed to reconcile the two
would constitute a very substantive change, and might represent just
cause to hold another LB to resolve. So I recommend making the annex
informative for now, and fix it in SAS-2.

INTEL #49
PDF Page: 543
Author: Bob Sheffield
Comment: Annex G: Add annex G.5 as follows:

G.5 Discovery of a SATA device

An expander phy with STP/SATA bridge in the SATA Spinup Hold state is
indicated in the DISCOVER response NEGOTIATED PHYSICAL LINK RATE field
(a value of 3h indicates the phy is enabled and a SATA device has been
detected, but it's in the spinup-hold state).

An expander device generates a BROADCAST (CHANGE) for the following
conditions:
a) the phy loses DWS sync and the SP state machine transitions to the
SP0:OOB_COMINIT state
b) the phy detects the removal or insertion of a SATA port selector
c) the phy sequences to the SATA Spinup Hold state
d) the phy initialization sequence completes (completes SATA speed
negotiation\
e) the phy receives an initial Register - Device to Host FIS.

Anytime the SMP management client detects a BROADCAST (CHANGE) from a
phy with a STP/SATA bridge, the SMP management client should issue a
DISCOVER command to determine the ATTACHED DEVICE TYPE, ATTACHED SAS
ADDRESS, and the NEGOTIATED PHYSICAL LINK RATE. If the NEGOTIATED
PHYSICAL LINK RATE is 3h, the phy is in the SATA Spinup Hold state,
and the SMP management client should issue an SMP PHY CONTROL command
with a PHY CONTROL FUNCTION of HARD RESET or LINK RESET to cause link
initialization to happen again
- this time bypassing the SATA Spinup Hold state.

After finding the NEGOTIATED PHYSICAL LINK RATE field set to 8h or 9h
(indicating that speed negotiation has completed at 1.5 Gbps or 3.0
Gbps, respectively), the SMP management client may issue the SMP
REPORT PHY SATA command to see if there's a signature FIS there yet or
not.

If the expander doesn't support the SATA SPINUP HOLD state, then the
NEGOTIATED PHYSICAL LINK rate field will sequence all the way to 8h or
9h - indicating speed negotiation has completed and the link is ready.
The "ATTACHED SATA DEVICE" bit in the DISCOVER response byte 15

indicates if the attached device is a SATA device - determined by
having transitioned to the SATA speed negotiation states rather than
to the SAS speed negotiation states (which it did because it got a
COMSAS timeout). If the initial FIS is not yet present, the SMP
management client should wait for the next BROADCAST (CHANGE) from the
STP/SATA bridge indicating receipt of the initial FIS, and then
reissue the DISCOVER and SMP REPORT PHY SATA command.

In some hot-plug cases, a SATA device may not send an initial Register
- Device to Host FIS (due to timing where the device does not see the
initial COMINIT). In this case the STP/SATA bridge will complete speed
negotiation, but will not receive an initial FIS. If this occurs, the
SMP management client should time-out after a vendor-specific interval
of time and then, after sending a SMP REPORT PHY SATA command that
does not report a received initial FIS, the SMP management client
should send an SMP PHY CONTROL command specifying a HARD RESET or LINK
RESET. This will send a COMINIT to the SATA device, and will cause the
SATA device to send the initial Register - Device to Host FIS
following link initialization.

So - at anytime following the link initialization sequence, it is
possible via DISCOVER and REPORT PHY SATA SMP commands to determine:
a) If there is a device attached;
b) Whether the device is SATA or SAS
c) Whether the SP state machine is in the SPINUP HOLD state;
d) Whether the SATA device has returned an initial REGISTER DEVICE TO
HOST FIS.

Using this information, it should be possible for the SMP management
client to force the device to transmit the initial FIS if need be
through sending an SMP PHY CONTROL command with a function code
specifying HARD RESET or LINK RESET.

****

Comments attached to No ballot from John Lohmeyer of
LSI Logic Corp.:

LSI comment number 1
Page=32 Subtype=Highlight Author=John Lohmeyer
Comment=
Revision Information

Remove this section prior to public review.

LSI comment number 2
Page=36 Subtype=Text Author=John Lohmeyer
Comment=
Add T10 List to Foreword (available at:
http://www.t10.org/ftp/pri/editors/t10-ansi.txt)

LSI comment number 3
Page=52 Subtype=Highlight Author=Tim Hoglund

Comment=
definition does not strictly match 4.1.9 text. Also partial pathway should
include case where an OPEN address frame has reached a SAS endpointbut no
response has been given (yet).

LSI comment number 4
Page=54 Subtype=Highlight Author=Brian Day
Comment=This word is not used elsewhere in the spec. Should it be deleted?

LSI comment number 5
Page=54 Subtype=Highlight Author=Brian Day
Comment=This word is not used elsewhere in the spec. Should it be deleted?

LSI comment number 6
Page=78 Subtype=Highlight Author=Tim Hoglund
Comment=
"same" could imply that port is created when phys receive an identical
address to what they transmitted during the identification sequence -- this
is misleading.
7.9.1 text is better

LSI comment number 7
Page=87 Subtype=Highlight Author=Tim Hoglund
Comment=definition needed for "root edge expander device"

LSI comment number 8
Page=87 Subtype=Highlight Author=Tim Hoglund
Comment=
should this statement be an informative note rather than "shall"? clarify
"sum of all SAS addresses addressable through the edge expander phymean"

LSI comment number 9
Page=90 Subtype=Highlight Author=Tim Hoglund
Comment=definition needed for "root edge expander device"

LSI comment number 10
Page=91 Subtype=Highlight Author=Tim Hoglund
Comment=
Text and reference for description of partial pathway not strictly
consistent with definition 3.1.131. Also partial pathway should include
case whereby OPEN address frame has reached the destination phy but no
response has been given (yet).

LSI comment number 11
Page=108 Subtype=Highlight Author=Tim Hoglund
Comment=remove OPEN_REJECT (WAITING FOR BREAK). see 05-145r0.

LSI comment number 12
Page=108 Subtype=Highlight Author=Brian Day
Comment=missing "is"

LSI comment number 13
Page=110 Subtype=Highlight Author=Tim Hoglund
Comment=be more specific, i.e. routing attribute value

LSI comment number 14
Page=121 Subtype=Highlight Author=Brian Day
Comment=There are a few dangling lines in the diagram

LSI comment number 15
Page=130 Subtype=Highlight Author=Tim Hoglund
Comment=
this section should also discuss Phy test functionality provided by the SMP
PHY TEST FUNCTION

LSI comment number 16
Page=146 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 2

Delete Editor's Note 2 (and fix keys if they are indeed incorrect)

LSI comment number 17
Page=146 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 1

Delete Editor's Note 1 (and fix keys if they are indeed incorrect)

LSI comment number 18
Page=147 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 3

Delete Editor's Note 3 (and fix keys if they are indeed incorrect)

LSI comment number 19
Page=153 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 4

Delete Editor's Note 4 (and fix signal assignments if they are indeed
incorrect)

LSI comment number 20
Page=154 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 5

Delete Editor's Note 5 (and fix signal assignments if they are indeed
incorrect)

LSI comment number 21
Page=161 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 6

Delete Editor's Note 6 (and fix signal assignments if they are indeed
incorrect)

LSI comment number 22
Page=162 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 7

Delete Editor's Note 7 (and fix signal assignments if they are indeed
incorrect)

LSI comment number 23
Page=165 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 8

Delete Editor's Note 8 (and fix signal assignments if they are indeed
incorrect)

LSI comment number 24
Page=166 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 9

Delete Editor's Note 9 (and fix signal assignments if they are indeed
incorrect)

LSI comment number 25
Page=167 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 10

Delete Editor's Note 10 (and fix keys if they are indeed incorrect)

LSI comment number 26
Page=168 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 11

Delete Editor's Note 11 (and fix keys if they are indeed incorrect)

LSI comment number 27
Page=252 Subtype=Highlight Author=Tim Hoglund
Comment=change back to OPEN_REJECT (RESERVED STOP 0). see 05-145r0.

LSI comment number 28
Page=256 Subtype=Highlight Author=Tim Hoglund
Comment=change back to OPEN_REJECT (RESERVED STOP 0). see 05-145r0.

LSI comment number 29
Page=256 Subtype=Highlight Author=Tim Hoglund
Comment=change back to OPEN_REJECT (RESERVED STOP 0). see 05-145r0.

LSI comment number 30
Page=269 Subtype=Highlight Author=Tim Hoglund
Comment=
remove clause b)
see 05-145r0

LSI comment number 31
Page=269 Subtype=Highlight Author=Tim Hoglund
Comment=change back to OPEN_REJECT (RESERVED STOP 0). see 05-145r0.

LSI comment number 32
Page=269 Subtype=Highlight Author=Tim Hoglund
Comment=change back to OPEN_REJECT (RESERVED STOP 0). see 05-145r0.

LSI comment number 33
Page=270 Subtype=Highlight Author=Brian Day
Comment=
Should this be an item 4) instead of combined together with item 3)?

LSI comment number 34
Page=315 Subtype=Highlight Author=Brian Day
Comment=
Need to pass up STP Resources Busy to match up with Table 107 in Port
Layer.

LSI comment number 35
Page=318 Subtype=Highlight Author=Tim Hoglund
Comment=
functional issue -- this behavior does not completely solve BREAK timing
problems. see 05-145r0 for further details.

LSI comment number 36
Page=327 Subtype=Highlight Author=Tim Hoglund
Comment=
...shall occur if:
a) a Forward_Open indication has not been received; and
b) a BREAK Received message is received

LSI comment number 37
Page=327 Subtype=Highlight Author=Tim Hoglund
Comment=
Remove dependency on BREAK Received message.

Honor the Forward Open indication and a pass both OPEN Address Frame
Received argument and BREAK Received argument in the transition to
XL5:Forward_Open.

LSI comment number 38
Page=333 Subtype=Highlight Author=Tim Hoglund
Comment=
functional issue -- this behavior does not completely solve BREAK timing
problems. see 05-145r0 for further details.

LSI comment number 39
Page=376 Subtype=Highlight Author=Brian Day
Comment=
Should be "Upon entry into this state,"
This state doesn't receive Tx Open messages. The Tx Open caused the PL_PM1
to PL_PM2 transition.

LSI comment number 40
Page=377 Subtype=Highlight Author=Brian Day
Comment=should be "Inbound"

LSI comment number 41
Page=377 Subtype=Highlight Author=Brian Day
Comment=should be "an"

LSI comment number 42
Page=380 Subtype=Highlight Author=Brian Day
Comment=
It is not possible to be in this state during a connection, as the
connection was never established.
Suggest something like "as the result of an SMP connection request".

LSI comment number 43
Page=380 Subtype=Highlight Author=Brian Day
Comment=
I think this needs to be Connection Closed(Transition to Idle)
specifically. Otherwise, PL_PM3 state will exit as soon as the first
Connection Closed happens.

LSI comment number 44
Page=396 Subtype=Highlight Author=Brian Day
Comment=
In addition to XFER_RDY being received, I thought during conference call we
were going to add DATA frame for a read command here as well.

LSI comment number 45
Page=399 Subtype=Highlight Author=Brian Day
Comment=
Unless section 9.2.5 is removed entirely, there should be a sentence here
that says transport layer retries are not included in the summary.

LSI comment number 46
Page=399 Subtype=Highlight Author=Brian Day
Comment=
Replace this sentence with:
If an SSP initiator port receives a RESPONSE frame with a RETRANSMIT bit
set to one, and it has not previously received a RESPONSE frame for the
same I_T_L_Q nexus, then the RESPONSE frame is valid.

LSI comment number 47
Page=400 Subtype=Highlight Author=Brian Day
Comment=should be "the"

LSI comment number 48
Page=406 Subtype=Highlight Author=Brian Day
Comment=
Relative to comment in section 9.2.6.2.3.7.1, this may need to be ACK/NAK
Timeout instead of Command Failed, Connection Failed.

LSI comment number 49
Page=408 Subtype=Highlight Author=Brian Day
Comment=

I think this is supposed to be a generic Transmission Complete, not
specifically a "Connection Failed", where the specific parameter is from
item a) in the list following this paragraph.

LSI comment number 50
Page=408 Subtype=Highlight Author=Brian Day
Comment=
I think need to add "or a COMMAND frame" if supporting retrying the COMMAND
frame at least once, per last sentence of 9.2.4.2

LSI comment number 51
Page=409 Subtype=Highlight Author=Brian Day
Comment=
I think this sentence conflicts with 9.2.4.2 and 10.2.2. After a command
transmission gets an ACK/NAK timeout, application layer is running a QUERY
TASK. At ACK/NAK Timeout, the ST_ITS sent up the Transmission
Complete(Command Failed, Connection Failed). IF XFER_RDY now comes in
before the response for the QUERY TASK, it is supposed to be valid.

LSI comment number 52
Page=409 Subtype=Highlight Author=Brian Day
Comment=
Need to add the retries case to not conflict with last sentence of 9.2.4.2.

"The Transmit Frame request was for a COMMAND frame, and the
vendor-specific number of retires has been reached."

LSI comment number 53
Page=410 Subtype=Highlight Author=Brian Day
Comment=should be "ST_IFR"

LSI comment number 54
Page=410 Subtype=Highlight Author=Brian Day
Comment=should be "ST_IFR"

LSI comment number 55
Page=413 Subtype=Highlight Author=Brian Day
Comment=
Based on previous paragraph comment, this paragraph may not be accurate.

LSI comment number 56
Page=413 Subtype=Highlight Author=Brian Day
Comment=
I think this should be ACK/NAK Timeout instead of Command Failed,
Connection Failed, to not conflict with 9.2.4.2 and 10.2.2 to allow command
frame retires.

LSI comment number 57
Page=413 Subtype=Highlight Author=Brian Day
Comment=should be "Reception"

LSI comment number 58
Page=422 Subtype=Highlight Author=Brian Day
Comment=
 think this is supposed to be a generic Transmission Complete, not

specifically a "Connection Failed", where the specific parameter is from
item b) in the list following this paragraph.

LSI comment number 59
Page=450 Subtype=Highlight Author=Brian Day
Comment=
I think values for anything 1 ms or greater may conflict with the port and
link layer state machines.
For connections that the target establishes, in section 8.2.2.3.5, the
PL_OC will close the connection, essentially bypassing the bus inactivity
timer. For connections, the initiator establishes:
1) the initiator may has sent DONE, an is running the DONE Timeout timer.
Not closing within 1ms results in BREAK.
2) The timer may never be started in this connection in section 8.2.3.4
PL_PM3, if the target doesn't have a frame to transmit.

LSI comment number 60
Page=477 Subtype=Highlight Author=Tim Hoglund
Comment=
informative note vs normative shall?
this is stated as an expander requirement but really is a capacity/topology
consideration for cascading multiple expanders...

LSI comment number 61
Page=565 Subtype=Highlight Author=Tim Hoglund
Comment=change back to OPEN_REJECT (RESERVED STOP 0). see 05-145r0.

LSI comment number 62
Page=613 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 13

Resolve this note.

LSI comment number 63
Page=613 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 12

Resolve this note.

LSI comment number 64
Page=614 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 16

Resolve this note.

LSI comment number 65
Page=614 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 15

Resolve this note.

LSI comment number 66
Page=614 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 14

Resolve this note.

LSI comment number 67
Page=615 Subtype=Highlight Author=John Lohmeyer
Comment=
Editor's Note 17

Resolve this note.

****

Comments attached to No ballot from Mark Evans of
Maxtor Corp.:

Summary of Comments on the Serial Attached SCSI 1.1 (SAS-1.1) Standard

Mark Evans
Maxtor Corporation

Maxtor comment # 1

Page: 1
Global: There are hundreds of occurrences of unclear pronoun references in
this document. While reviewing the document for letter ballot, I only had
time
to comment on the ones that I thought were the most unclear. The general
rule
for pronoun usage is: there shall be no other noun forms (noun, pronoun,
gerund, etc.) between a pronoun and the noun to which it is referring. The
editor should correct any unclear pronoun references by replacing the
unclear
pronoun with the correct noun as he discovers the occurrences. Hint: one
could
start this process by searching on "it", then move on by searching on
"they".

Maxtor comment # 2

Page: 4
2.3: SES-2 is mentioned in many places and should be included here.

Maxtor comment # 3

Page: 6
3.1.11: Change to: an I/O subsystem that is made up of one host, one or
more
devices, and a service delivery subsystem. [as defined by the T13 Technical

Committee.]

Maxtor comment # 4

Page: 7
3.1.28: Change to: Information passed from a lower layer state machine to a
higher layer state machine, usually responding to a request (see 3.1.153)
from
that higher layer state machine. See 3.6.

Maxtor comment # 5

Page: 9
3.1.52, item (a): Change, "ideal bit time" to "average bit time". [this
allows
for frequency tolerances.]

Maxtor comment # 6

Page: 9
3.1.66: Change to: An object within an expander device that contains one or
more phys and interfaces to the service delivery subsystem and to SAS ports
in
other devices (see x.x).

Maxtor comment # 7

Page: 10
3.1.67: Define "routed SAS address".

Maxtor comment # 8

Page: 10
3.1.71: Change "vs." to "versus".

Maxtor comment # 9

Page: 10
3.1.71, second sentence: Change to: Comparison of the measured eye contour
to
the jitter eye masks determines if a jitter eye mask violation has occurred
(see 5.3.6).

Maxtor comment # 10

Page: 10
3.1.73: Add "(See x.x)" where x.x is the number of the clause where this
device is described in detail.

Maxtor comment # 11

Page: 10
3.1.75: Change "e.g." to "i.e." in two places.

Maxtor comment # 12

Page: 10
3.1.84: Add "(See SAM-3)".

Maxtor comment # 13

Page: 10
3.1.86: Add "(See SAM-3)".

Maxtor comment # 14

Page: 11
3.1.87: Add "(See SAM-3)".

Maxtor comment # 15

Page: 11
3.1.91: Change to: Information passed from a lower layer state machine to a
higher layer state machine, usually relaying a request (see 3.1.153) from a
peer layer state machine. See 3.6.

Maxtor comment # 16

Page: 13
3.1.124: Change "after" to "as the result of".

Maxtor comment # 17

Page: 14
3.1.143: Change to: A mathematical representation of the likelihood of
occurrence of various events. When applied to a jitter event population, it
describes the histograph of measured jitter values.

Maxtor comment # 18

Page: 15
3.1.153: Change to: Information passed from a higher layer state machine to
a
lower layer state machine, usually to initiate some action. See 3.6.

Maxtor comment # 19

Page: 15
3.1.154: Change "from" to "in".

Maxtor comment # 20

Page: 15
3.1.155: Change to: Information passed from a higher layer state machine to
a
lower layer state machine, usually in response to an indication (see
3.1.91).
See 3.6.

Maxtor comment # 21

Page: 15
3.1.156: Delete the last sentence ("All SAS receiver devices shall be
retimers.").

Maxtor comment # 22

Page: 19
3.1.240: Change "A physical entity..." to "A physical entity contained in a
SAS port..."

Maxtor comment # 23

Page: 19
3.1.241: Change to: An electronic circuit that converts a logical signal to
an
analog serial output signal.

Maxtor comment # 24

Page: 26
3.5: Figure 3 is the first of many instances where it is difficult to
determine what all is included in the figure. In these cases it would be
helpful to put a box around all of the items in the figures, or somehow
group
them in some other way.

Maxtor comment # 25

Page: 32
3.6.3, third paragraph: Change, "...going to the top or bottom..." to,
"...going toward the top or bottom...".

Maxtor comment # 26

Page: 32
3.6.4: Change, "They are created..." to, "Counters, timers and variables are
created...".

Maxtor comment # 27

Page: 35
4.1.2, second paragraph: Change, "...which attaches to another physical
phy."
to, "which attaches to a physical phy in another device.".

Maxtor comment # 28

Page: 47
4.1.8.1: Change, "Some of them..." to, "Expander devices...".

Maxtor comment # 29

Page: 48
4.1.8.2, paragraph 7: Change to:

An edge expander device set may be attached to one other edge expander
device
set if:
a) the expander device set is the only other edge expander device set in the
SAS domain;
b) the expander device set is attached using expander phys with subtractive
routing attributes; and
c) there are no fanout expander devices in the SAS domain.

Maxtor comment # 30

Page:48
4.1.8.3, second sentence: Change to: A fanout expander device may be
attached
to up to 128 SAS ports.

Maxtor comment # 31

Page: 52
4.1.10, second paragraph: Change, "...when an OPEN_ACCEPT is returned to the
source phy." to, "...when an OPEN_ACCEPT is received by the source phy."

Maxtor comment # 32

Page: 67
4.4.1, first paragraph: Change "describes" to "illustrates".

Maxtor comment # 33

Page: 72
4.6.2, fourth paragraph: Change, "...within an expander port requests and
responds to connection requests..." to, "...within an expander port requests
connections and responds to connection requests...".

Maxtor comment # 34

Page: 72
4.6.2, fifth paragraph: Change "SES" to "see SES-2".

Maxtor comment # 35

Page: 76
Table 12, second column, fifth row (Arbitrating (Waiting On Connection)):
Change "block" to "blocked".

Maxtor comment # 36

Page: 77
Table 12, second column, eighth row (Arb Reject (Bad Destination)): Change
to:
Confirmation that the ECM has determined that:
a) the requested destination SAS address maps back to the requesting port;
b) the requesting port is using the direct routing method; or
c) the requesting port is using the table routing method, and the EM has not
chosen to return Arb Reject (No Destination) (see 7.12.5.2 and 7.12.5.3).

Maxtor comment # 37

Page: 83
4.7.2, fourth paragraph: Change, "...it shall disable the expander route
entry...", to, "...the management application client shall disable the
expander route entry...".

Maxtor comment # 38

Page: 105
5.2.3.3.6, fifth paragraph: Change, "Based on what device are using the
connector...", to, "Based on what device is using the connector...".

Maxtor comment # 39

Page: 107
Editor's Note 1: This is the first of many notes stating that something may
be
incorrect. Correct whatever is incorrect in each case and delete the note.

Maxtor comment # 40

Page: 119
5.2.4.2, lettered list: correct the lettering.

Maxtor comment # 41

Page: 119
5.2.4.3.1, second lettered list: correct the lettering.

Maxtor comment # 42

Page: 120
NOTE 8: Change "controller to backplane" to "controller-to-backplane".

Maxtor comment # 43

Page: 121
NOTE 9: Change "controller to controller" to "controller-to-controller".

Maxtor comment # 44

Page: 121
NOTE 10: Change "controller to controller" to "controller-to-controller".

Maxtor comment # 45

Page: 123
NOTE 13: Change "controller to controller" to "controller-to-controller".

Maxtor comment # 46

Page: 138
5.3.1, paragraph above figure 88: Change, "It also shows...", to, "Figure 88

also shows...".

Maxtor comment # 47

Page: 145
5.3.3, fourth paragraph: Change the first sentence to: The TxRx connection
shall have a BER that is less than the objective of 10-12.

Maxtor comment # 48

Page: 146
Table 34, note b: Change "i.e." to "e.g.".

Maxtor comment # 49

Page: 148
5.3.4, list item e: Change, "enabling and disabling pre-emphasis (i.e.,
de-emphasis)" to, "enabling pre-emphasis or disabling preemphasis (i.e.,
de-emphasis)".

Maxtor comment # 50

Page: 151
5.3.7.1, third paragraph: Delete "(i.e., de-emphasis)".

Maxtor comment # 51

Page: 153
Table 38, note d: Change "i.e." to "e.g.".

Maxtor comment # 52

Page: 156
Table 40, note d: Change "i.e." to "e.g.".

Maxtor comment # 53

Page: 162
6.3.3, seventh paragraph: Change the first sentence to: All sub-blocks with
equal numbers of zeros and ones have neutral disparity (i.e., the ending
disparity is the same as the beginning disparity) with the exceptions noted
above.

Maxtor comment # 54

Page: 171
6.6.1, first paragraph: In the first sentence, change "the phy" to "a phy".

Maxtor comment # 55

Page: 171
6.6.1, first paragraph: In the second sentence, change, "They consist
of...",
to, "OOB signals consist of..."

Maxtor comment # 56

Page: 172
6.6.2, third paragraph: Change, "It shall then transmit...", to, "The
transmitter device shall then transmit..."

Maxtor comment # 57

Page: 172
6.6.2, sixth paragraph: Change to: A SAS transmitter device:
a) should transmit ALIGNs at the G1 physical link rate to create the burst
portion of the OOB signal;
b) may transmit ALIGNs at the lowest physical link rate supported by the SAS
transmitter device if it is not able to transmit at the G1 physical link
rate; and
c) shall not transmit ALIGNs at a physical link rate faster than the lowest
physical link rate supported by the SAS transmitter device.

Maxtor comment # 58

Page: 174
6.6.5, fifth paragraph: Add the following sentence: A SAS receiver device is
not required to identify the ALIGNs in the burst.

Maxtor comment # 59

Page: 187
6.8.1. fourth paragraph: Change to: The SP state machine shall maintain a
MgmtReset state machine variable to determine whether SP0:OOB_COMINIT was
last
entered as the result of a Management Reset or a transition from another
state
(see 6.8.3.2.1). If SP0:OOB_COMINIT was last entered as the result of a
Management Reset, then the SP state machine shall set the MgmtReset state
machine variable to one. If SP0:OOB_COMINIT was last entered as the result
of
a transition from another state, then the SP state machine shall set the
MgmtReset state machine variable to zero. Any transition from
SP7:OOB_AwaitCOMSAS shall cause the SP state machine to set the MgmtReset
state machine variable to zero.

Maxtor comment # 60

Page: 187
6.8.1. fifth paragraph: Change to: If the phy supports attachment to a SATA
device (i.e., the phy is contained in an STP/SATA bridge), and the phy
supports attachment to a SATA port selector, then the SP state machine shall
maintain a COMWAKE_Received state machine variable to determine whether a
COMWAKE detected message was received in SP0:OOB_COMINIT or
SP1:OOB_AwaitCOMX
since the last time SP0:OOB_COMINIT was entered. A COMWAKE Detected message
received in SP0:OOB_COMINIT or SP1:OOB_AwaitCOMX shall cause the SP state
machine to set the COMWAKE_Received state machine variable to one. Any
transition to SP0:OOB_COMINIT shall cause the SP state machine to set the
COMWAKE_Received state machine variable to zero.

Maxtor comment # 61

Page: 188
6.8.2, third paragraph: Change "idle time" to "D.C. idle".

Maxtor comment # 62

Page: 190
6.8.3.2.1, fifth paragraph: Change to: If:
a) the phy supports attachment to a SATA device (i.e., the phy is contained
in
an STP/SATA bridge);
b) the phy supports attachment to a SATA port selector; and
c) this state receives a COMWAKE Detected message;
then this state shall set the COMWAKE_Received state machine variable to
one,
and, if the value of the ATTACHED SATA PORT SELECTOR bit in the DISCOVER
response is zero, this state shall:
a) set the ATTACHED SATA PORT SELECTOR bit in the DISCOVER response to one;
and
b) send a SATA Port Selector Change confirmation to the link layer.

Maxtor comment # 63

Page: 190
6.8.3.2.1, sixth paragraph: Change to: The state machine shall set the
MgmtReset state machine variable to one if this state is entered as the
result
of receiving a Management Reset request or an SMP Reset request. The state
machine shall set the MgmtReset state machine variable to zero if this state
is entered as the result of receiving:
a) a power on or hard reset request;
b) a DWS Lost message; or
c) a COMINIT Detected message.

Maxtor comment # 64

Page: 190
6.8.3.3.1, second paragraph: Change to: If:
a) the phy supports attachment to a SATA device (i.e., the phy is contained
in
an STP/SATA bridge);
b) the phy supports attachment to a SATA port selector; and
c) this state receives a COMWAKE Detected message;
then this state shall set the COMWAKE_Received state machine variable to
one,
and, if the value of the ATTACHED SATA PORT SELECTOR bit in the DISCOVER
response is zero, this state shall:
a) set the ATTACHED SATA PORT SELECTOR bit in the DISCOVER response to one;
and
b) send a SATA Port Selector Change confirmation to the link layer.

Maxtor comment # 65

Page: 191
6.8.3.3.2, second paragraph: Change to: If the phy supports attachment to a
SATA device (i.e., the phy is contained in an STP/SATA bridge) and supports
attachment to a SATA port selector, then the state machine shall check the
value of the COMWAKE_Recieved state machine variable prior to this
transition.
If the COMWAKE_Received state machine variable is set to zero and the
ATTACHED
SATA PORT SELECTOR bit in the DISCOVER response is set to one, then the
state
machine shall set the ATTACHED SATA PORT SELECTOR bit in the DISCOVER
response
to zero and shall send a SATA Port Selector Change confirmation to the link
layer.

Maxtor comment # 66

Page: 191
6.8.3.5.1, second paragraph: Change to: If:
a) this state receives COMWAKE Detected message;
b) the phy supports attachment to a SATA device (i.e., the phy is contained
in
an STP/SATA bridge);
c) the phy supports attachment to a SATA port selector; and
d) the value of the ATTACHED SATA PORT SELECTOR bit is zero in the DISCOVER
response;
then this state shall set the ATTACHED SATA PORT SELECTOR bit in the
DISCOVER
response to one and send a SATA Port Selector Change confirmation to the
link
layer.

Maxtor comment # 67

Page: 191
6.8.3.6.1, second paragraph: Change to: If:
a) this state receives COMWAKE Detected message;
b) the phy supports attachment to a SATA device (i.e., the phy is contained
in
an STP/SATA bridge);
c) the phy supports attachment to a SATA port selector; and
d) the value of the ATTACHED SATA PORT SELECTOR bit is zero in the DISCOVER
response;
then this state shall set the ATTACHED SATA PORT SELECTOR bit in the
DISCOVER
response to one and send a SATA Port Selector Change confirmation to the
link
layer.

Maxtor comment # 68

Page: 192
6.8.3.6.1, third paragraph: See the previous comment.

Maxtor comment # 69

Page: 192
6.8.3.6.2, second paragraph: Change "bit is one" to "bit is set to one" and
"bit is zero" to "bit is set to zero".

Maxtor comment # 70

Page: 192
6.8.3.6.3, second paragraph: Change "bit is one" to "bit is set to one" and
"bit is zero" to "bit is set to zero".

Maxtor comment # 71

Page: 195
6.8.4.2.1, second paragraph: Change item (a) to, 'initialize and start the
RCDT timer (this provides the time required for a transmitter to switch to
either the next higher or next lower supported speed negotiation window
rate);
and'

Maxtor comment # 72

Page: 195
6.8.4.2.1, third paragraph: Change to: The argument for the Set Rate message
shall be:
a) 1.5 Gbps (if the transition into this state was from the
SP6:OOB_AwaitNoCOMSAS state); or
b) the value of the SAS Speed Negotiation Window Rate argument.

Maxtor comment # 73

Page: 196
6.8.4.5.3: Change "lock" to "achieve dword synchronization".

Maxtor comment # 74

Page: 196
6.8.4.5.4: Change "lock" to "achieve dword synchronization".

Maxtor comment # 75

Page: 197
6.8.4.8.1, lettered list: Change "window" to "window rate" in three places.

Maxtor comment # 76

Page: 197
6.8.4.8.2, lettered list: Change "window" to "window rate" in two places.
Change "haven't" to "have not".

Maxtor comment # 77

Page: 197
6.8.4.8.3, lettered lists: Change "window" to "window rate" in five places.

Maxtor comment # 78

Page: 198
See previous comment.

Maxtor comment # 79

Page: 228
7.2.5.9, eighth paragraph: Change to: When a SAS target devices with
multiple SAS target ports receives a NOTIFY (ENABLE SPINUP) on any of its
SAS
target ports, the SAS target device transitions from the Active_Wait or
Idle_Wait state (see 10.2.10). For example, if a SAS target device contains
two SAS target ports (port A and port B), powers on in the Stopped state,
and
receives a START STOP UNIT command with the START bit set to one through
SAS
target port A, then a NOTIFY (ENABLE SPINUP) received on SAS target port B
causes the SAS target device to spin up its rotating media.

Maxtor comment # 80

Page: 238
7.5.3, second paragraph: In the last sentence, change "Mathematically,
the..."
to "The...".

Maxtor comment # 81

Page: 243
7.8.1, first paragraph: Change the second sentence to: An address frame is
delimited by a preceding SOAF and a following EOAF.

Maxtor comment # 82

Page: 250
7.9.3, first paragraph: Change the second sentence to be: The expander
device
may return OPEN_REJECT (NO DESTINATION) in response to OPEN address frames
until the expander device is ready to process connection requests.

Maxtor comment # 83

Page: 250
7.9.4, first paragraph: Change the second sentence to be: The expander
device
may return OPEN_REJECT (NO DESTINATION) in response to OPEN address frames
until the expander device is ready to process connection requests.

Maxtor comment # 84

Page: 257
7.11., lettered list, item b: Change to: 'after a virtual phy has been
disabled with the SMP PHY CONTROL function DISABLE phy operation or has
begun

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its internal reset as the result of receiving a LINK RESET or HARD RESET phy
operation (see 10.4.3.10);'

Maxtor comment # 85

Page: 257
7.11., lettered list, item g: Change to: 'after a virtual phy has been
enabled
or completed an internal reset as the result of receiving an SMP PHY CONTROL
function LINK RESET or HARD RESET phy operation (see 10.4.3.10);'

Maxtor comment # 86

Page: 258
7.12.1, first paragraph: Change "communication" to "SSP frame, SMP frame, or
SATA FIS transmission".

Maxtor comment # 87

Page: 258
7.12.2.1, third paragraph: Change the last sentence to: If the Open Timeout
timer expires before a connection response is received, the source phy shall
transmit BREAK to abort the connection request (see 7.12.6).

Maxtor comment # 88

Page: 262
7.12.4.4, first paragraph: Change the second sentence to: Pathway recovery
priority comparisons compare the values described in table 95 from the OPEN
address frames of the blocked connection requests.

Maxtor comment # 89

Page: 269
7.13, first paragraph after figure 140: Change, "A phy shall start inserting
ALIGNs and/or NOTIFYs for rate matching at the selected connection rate with
the first dword...", to, "A phy shall start inserting ALIGNs and/or NOTIFYs
for rate matching at the selected connection rate after the first dword..."

Maxtor comment # 90

Page: 291
7.15.9.1, fourth paragraph: Change the first sentence to: This state shall
send the following responses received by one phy through the ECR to a source
phy as confirmations:

Maxtor comment # 91

Page: 291
7.15.9.1, fifth paragraph: Change the first sentence to: This state shall
send
the following responses received by one phy through the ECR to a source phy
as
confirmations:

Maxtor comment # 92

Page: 294
7.15.13.1, second paragraph: Change, "Upon entry into this state, this state
shall send:", to, "Upon entry into this state, this state shall:".

Maxtor comment # 93

Page: 295
7.16.3, third paragraph: Change to: Receiving SSP phys shall acknowledge SSP
frames within 1 ms (if the frame was not discarded as described in
7.16.7.7).
The receiving phy shall send an ACK to acknowledge that the SSP frame was
received into a frame buffer without errors. The receiving phy shall send a
NAK (CRC ERROR) to acknowledge that the SSP frame was received with a CRC
error, an invalid dword, or an ERROR primitive.

Maxtor comment # 94

Page: 295
7.16.13, fourth paragraph: Change to: The transport layer (see 9.2.4) either
retries sending SSP frames that encounter a link layer error (e.g., are
NAKed
or create an ACK/NAK timeout), or the application layer aborts the SCSI
command associated with the SSP frame that encountered a link layer error.

Maxtor comment # 95

Page: 303
7.16.7.3, fourth paragraph: Change to: When the number of Frame Transmitted
messages received equals the number of ACK Received messages plus the number
of NAK Received messages received, then the ACK/NAK count is balanced, and
this state machine shall send a Tx Balance Status (Balanced) message to the
SSP_TF2:Tx_Wait state. When the number of Frame Transmitted messages
received
does not equal the number of ACK Received messages plus the number of NAK
Received messages received, then this the ACK/NAK count is not balanced and
this state machine shall send a Tx Balance Status (Not Balanced) message to
the SSP_TF2:Tx_Wait state.

Maxtor comment # 96

Page: 303
7.16.7.3, first lettered list: Change item (a) to: decrement the ACK/NAK
count
by one.

Maxtor comment # 97

Page: 303
7.16.7.3, second lettered list: Change item (a) to: decrement the ACK/NAK
count by one.

Maxtor comment # 98

Page: 309
7.16.7.9, third paragraph: Change, "...the number of the ACK Transmitted
messages and the number of NAK Transmitted messages..." to, "...the number
of
the ACK Transmitted messages plus the number of NAK Transmitted messages..."

Maxtor comment # 99

Page: 309
7.16.7.9, fourth paragraph: Change, "...the number of the ACK Transmitted
messages and the number of NAK Transmitted messages..." to, "...the number
of
the ACK Transmitted messages plus the number of NAK Transmitted messages..."

Maxtor comment # 100

Page: 333
8.2.2.3.6, last paragraph: Change to: If this state receives a Disable Tx
Frames message from a PL_PM state machine, then this state should send no
more
Tx Frame messages to that state machine until after a new connection is
established.

Maxtor comment # 101

Page: 338
8.2.3.3.4, third paragraph: Change, "...Incoming Connection Rejected
confirmation..." to, "...Inbound Connection Rejected confirmation...".

Maxtor comment # 102

Page: 340
8.2.3.4.1, twenty-fourth paragraph (the next to last paragraph on page 340):
Change, "...Connection Closed (Transition to Idle Confirmation)..." to,
"...Connection Closed (Transition to Idle) confirmation..."

Maxtor comment # 103

Page: 340
8.2.3.4.1, twenty-fifth paragraph (the last paragraph on page 340): Change,
"...Connection Closed (Transition to Idle Confirmation)..." to,
"...Connection
Closed (Transition to Idle) confirmation..."

Maxtor comment # 104

Page: 349
9.2.2.2, fourth paragraph: Change, "If TASK MANAGEMENT FUNCTION contains..."
to, "If the TASK MANAGEMENT FUNCTION field contains..."

Maxtor comment # 105

Page 349
9.2.2.2, fifth paragraph: Change, "If TASK MANAGEMENT FUNCTION is set..."
to,

"If the task management function is set..."

Maxtor comment # 106

Page: 350
9.2.2.3, fifth paragraph: Change "a XFER_RDY" to "an XFER_RDY".

Maxtor comment # 107

Page: 351
9.2.2.4, sixth paragraph: Change "a XFER_RDY" to "an XFER_RDY".

Maxtor comment # 108

Page: 351
9.2.2.4, tenth paragraph (the next to last paragraph in the clause): Change
to: The DATA OFFSET field shall be set to zero in the initial read DATA
frame
for a given command. If any additional read DATA frames are required for the
command and transport layer retries are not being used, then the DATA OFFSET
field shall be set to the data offset plus the data length of the previous
DATA frame for the command.

Maxtor comment # 109

Page: 351
9.2.2.4, eleventh paragraph (the last paragraph in the clause): Change to:
The
DATA OFFSET field shall be set to zero in the initial write DATA frame for a
given command. If any additional write DATA frames are required for the
command and transport layer retries are not being used, then the DATA OFFSET
field shall be set to the data offset plus the data length of the previous
DATA frame for the command.

Maxtor comment # 110

Page: 357
9.2.4.2, first paragraph: Change to: If an SSP initiator port transmits a
COMMAND frame and does not receive an ACK or NAK for that frame (e.g., times
out, or the connection is broken), then:
1) the SSP_TF state machine closes the connection with DONE (ACK/NAK
TIMEOUT)
(see 7.16.7.6.5);
2) the application client sends a Send Task Management protocol service
request for a QUERY TASK task management function to determine whether the
command was received (see 10.2.2);
3) the transport layer constructs a TASK frame containing the task
management
function and the TAG OF TASK TO BE MANAGED field set to the tag of the
COMMAND
frame; and
4) the SSP initiator port transmits the TASK frame in a new connection with
the SSP target port.

Maxtor comment # 111

Page: 358
9.2.4.3, first paragraph: Change to: If an SSP initiator port transmits a
TASK
frame and does not receive an ACK or NAK for that frame (e.g., times out, or
the connection is broken), then:
1) the SSP_TF state machine closes the connection with DONE (ACK/NAK
TIMEOUT)
(see 7.16.7.6.5);
2) the application client sends a Send Task Management protocol service
request for a the same task management function (see 10.2.2);
3) the transport layer constructs a TASK frame containing the task
management
function and the TAG OF TASK TO BE MANAGED field set to the tag of the
previous TASK frame; and
4) the SSP initiator port transmits the TASK frame in a new connection with
the SSP target port.

Maxtor comment # 112

Page: 358
9.2.4.3, third paragraph: Change to: If an SSP initiator port does not
receive
an ACK or a RESPONSE frame for a TASK frame, then the application client
should send a Send Task Management protocol service request for a the same
task management function and the SSP initiator port should transmit the TASK
frame in a new connection to the SSP target port at least once.

Maxtor comment # 113

Page: 358
9.2.4.4.2, first paragraph: Change to: If an SSP target port transmits an
XFER_RDY frame and does not receive an ACK or NAK for that frame (e.g.,
times
out, or the connection is broken), then:
1) the SSP_TF state machine closes the connection with DONE (ACK/NAK
TIMEOUT)
(see 7.16.7.6.5);
2) the ST_TTS state machine constructs a new XFER_RDY frame setting the
RETRANSMIT bit set to one and setting the value in the TARGET PORT TRANSFER
TAG field to a value that is different than the value in the TARGET PORT
TRANSFER TAG field in the previous XFER_RDY frame (see 9.2.6.3.3.5); and
3) the SSP target port transmits the XFER_RDY frame in a new connection with
the SSP initiator port.

Maxtor comment # 114

Page: 358
9.2.4.4.2, second paragraph: Change to: If an SSP target port transmits an
XFER_RDY frame and receives a NAK for that frame, then:
1) the ST_TTS state machine constructs a new XFER_RDY frame setting the
RETRANSMIT bit set to one and setting the value in the TARGET PORT TRANSFER
TAG field to a value that is different than the value in the TARGET PORT
TRANSFER TAG field in the previous XFER_RDY frame (see 9.2.6.3.3.5); and
2) the SSP target port transmits the XFER_RDY frame to the SSP initiator

port.

Maxtor comment # 115

Page: 358
9.2.4.4.2, third paragraph: Change the last sentence to: The ST_ITS state
machine does not send requests to transmit any additional write DATA frames
for the previous XFER_RDY frame after sending a request to transmit a write
DATA frame for the new XFER_RDY frame.

Maxtor comment # 116

Page:358
9.2.4.4.3, first paragraph: Change to: If an SSP target port transmits an
XFER_RDY frame and does not receive an ACK or NAK for that frame (e.g.,
times
out, or the connection is broken), then:
1) the SSP_TF state machine closes the connection with DONE (ACK/NAK
TIMEOUT)
(see 7.16.7.6.5);
2) the device server sends a Send Command Complete protocol service request
with CHECK CONDITION status for that command with the sense key set to
ABORTED
COMMAND and the additional sense code set to ACK/NAK TIMEOUT (see 10.2.3);
3) the transport layer constructs a RESPONSE frame containing the status,
sense key, and additional sense code; and
4) the SSP target port transmits the RESPONSE frame in a new connection with
the SSP initiator port.

Maxtor comment # 117

Page: 359
9.2.4.4.3, second paragraph: Change to: If an SSP target port transmits an
XFER_RDY frame and receives a NAK for that frame, then:
1) the device server sends a Send Command Complete protocol service request
with CHECK CONDITION status for that command with the sense key set to
ABORTED
COMMAND and the additional sense code set to ACK/NAK TIMEOUT (see 10.2.3);
2) the transport layer constructs a RESPONSE frame containing the status,
sense key, and additional sense code; and
3) the SSP target port transmits the RESPONSE frame to the SSP initiator
port.

Maxtor comment # 118

Page: 359
9.2.4.5.2, first paragraph: Change to: If an SSP target port transmits a
read
DATA frame and does not receive an ACK or NAK for that frame (e.g., times
out,
or the connection is broken), then:
1) the SSP_TF state machine closes the connection with DONE (ACK/NAK
TIMEOUT)
(see 7.16.7.6.5); and
3) the SSP target port retransmits, in a new connection with the SSP

initiator
port, all of the read DATA frames since a previous time when ACK/NAK balance
occurred (see 9.2.6.3.3.4).

Maxtor comment # 119

Page: 359
9.2.4.5.2, second paragraph: Change to: If an SSP target port transmits a
read
DATA frame and receives a NAK for that frame, then, in the same or in a new
connection, the SSP target port retransmits all of the read DATA frames
since
a previous time when ACK/NAK balance occurred (see 9.2.6.3.3.4).

Maxtor comment # 120

Page: 359
9.2.4.5.2, third paragraph: Change to: If an SSP initiator port transmits a
write DATA frame and does not receive an ACK or NAK for that frame (e.g.,
times out, or the connection is broken), then:
1) the SSP_TF state machine closes the connection with DONE (ACK/NAK
TIMEOUT)
(see 7.16.7.6.5); and
3) the SSP initiator port retransmits, in a new connection with the SSP
target
port, all of the write DATA frames since a previous time when ACK/NAK
balance
occurred (see 9.2.6.2.3).

Maxtor comment # 121

Page: 359
9.2.4.5.2, fourth paragraph: Change to: If an SSP initiator port receives
a
new XFER_RDY frame or a RESPONSE frame for a command while retransmitting or
preparing to retransmit write DATA frames for that command, then the ST_IFR
state machine and ST_ITS state machine stops sending requests to retransmit
the write DATA frames and processes the XFER_RDY frame or RESPONSE frame
(see
9.2.6.2.2 and 9.2.6.2.3). The ST_ITS state machine does not send a request
to
transmit a write DATA frame for the previous XFER_RDY frame after sending a
write DATA frame in response to the new XFER_RDY frame.

Maxtor comment # 122

Page: 359
9.2.4.5.2, fifth paragraph: Change to: If an SSP initiator port transmits a
write DATA frame and receives a NAK for that frame, then, in the same or in
a
new connection, the SSP initiator port retransmits all of the write DATA
frames since a previous time when ACK/NAK balance occurred (see
9.2.6.3.3.4).

Maxtor comment # 123

149

Page: 359
9.2.4.5.2, seventh paragraph: Change to: The ST_ITS state machine and ST_TTS
state machine send requests to retransmit each DATA frame that does not
receive an ACK at least one time (see 9.2.6.2.3 and 9.2.6.3.3). The number
of
times the state machines retransmit each DATA frame is vendor-specific.

Maxtor comment # 124

Page: 360
9.2.4.5.3, first paragraph: Change to: If an SSP target port transmits a
read
DATA frame and does not receive an ACK or NAK for that frame (e.g., times
out,
or the connection is broken), then:
1) the SSP_TF state machine closes the connection with DONE (ACK/NAK
TIMEOUT)
(see 7.16.7.6.5);
2) the device server sends a Send Command Complete protocol service request
with CHECK CONDITION status for that command with the sense key set to
ABORTED
COMMAND and the additional sense code set to ACK/NAK TIMEOUT (see 10.2.3);
3) the transport layer constructs a RESPONSE frame containing the status,
sense key, and additional sense code; and
4) the SSP target port transmits the RESPONSE frame in a new connection with
the SSP initiator port.

Maxtor comment # 125

Page: 360
9.2.4.5.3, second paragraph: Change to: If an SSP target port transmits a
read
DATA frame and receives a NAK for that frame, then:
1) the device server sends a Send Command Complete protocol service request
with CHECK CONDITION status for that command with the sense key set to
ABORTED
COMMAND and the additional sense code set to ACK/NAK TIMEOUT (see 10.2.3);
2) the transport layer constructs a RESPONSE frame containing the status,
sense key, and additional sense code; and
3) the SSP target port transmits the RESPONSE frame to the SSP initiator
port.

Maxtor comment # 126

Page: 360
9.2.4.5.3, third paragraph: Change to: If an SSP initiator port transmits a
write DATA frame and does not receive an ACK or NAK for that frame (e.g.,
times out, or the connection is broken), then:
1) the SSP_TF state machine closes the connection with DONE (ACK/NAK
TIMEOUT)
(see 7.16.7.6.5); and
2) the application client aborts the command (see 10.2.2).

Maxtor comment # 127

Page: 360
9.2.4.5.3, fourth paragraph: Change to: If an SSP initiator port transmits a
write DATA frame and receives a NAK for that frame, the application client
aborts the command (see 10.2.2).

Maxtor comment # 128

Page: 360
9.2.4.6, first paragraph: Change to: If an SSP target port transmits a
RESPONSE frame and does not receive an ACK or NAK for that frame (e.g.,
times
out, or the connection is broken), then:
1) the SSP_TF state machine closes the connection with DONE (ACK/NAK
TIMEOUT)
(see 7.16.7.6.5);
2) the ST_TTS state machine constructs a new RESPONSE frame using all of the
values from the previous frame, except the RETRANSMIT bit is set to one (see
9.2.6.3.3); and
4) the SSP target port transmits the RESPONSE frame in a new connection with
the SSP initiator port.

Maxtor comment # 129

Page: 360
9.2.4.6, second paragraph: Change to: If an SSP target port transmits a
RESPONSE frame and receives a NAK for that frame, the SSP target port
retransmits the RESPONSE frame at least one time with the RETRANSMIT bit set
to zero (see 9.2.6.3.3).

Maxtor comment # 130

Page: 360
9.2.4.6, third paragraph: Change to: An SSP target port retransmits each
RESPONSE frame that does not receive an ACK at least one time (see
9.2.6.3.3).
The number of times the SSP target port retransmits each RESPONSE frame is
vendor-specific.

Maxtor comment # 131

Page: 360
9.2.4.6, fourth paragraph: Change to: If an SSP initiator port receives a
new RESPONSE frame for an I_T_L_Q nexus with the RETRANSMIT bit set to one,
and that SSP initiator port has previously received a RESPONSE frame for the
same I_T_L_Q nexus, then the ST_TFR state machine discards the new RESPONSE
frame (see 9.2.6.3.2). If the ST_TFR state machine had not previously
received
a RESPONSE frame for the I_T_L_Q nexus, then the state machine considers the
new RESPONSE frame to be the valid RESPONSE frame for the I_T_L_Q nexus.

Maxtor comment # 132

Page: 361
9.2.5.2, third paragraph: Change, "...he ST_IFR state machine..." to,

"...the
ST_IFR state machine...".

Maxtor comment # 133

Page: 361
9.2.5.3, second paragraph: Change "the ST_TTS state machine" to "then the
SSP
target port".

Maxtor comment # 134

Page: 361
9.2.5.3, third paragraph: Change "the ST_TTS state machine" to "then the SSP
target port".

Maxtor comment # 135

Page: 361
9.2.5.3, fourth paragraph: Change "the device server" to "then the SSP
target
port".

Maxtor comment # 136

Page: 362
9.2.5.3, eighth paragraph: Change "the ST_TFR state machine" to "then the
SSP
target port".

Maxtor comment # 137

Page: 362
9.2.5.3, ninth paragraph: Change "the ST_TFR state machine" to "then the SSP
target port".

Maxtor comment # 138

Page: 362
9.2.5.3, eleventh paragraph: Change to: If an SSP target port receives a
write
DATA frame with a data offset that was not expected, then:
1) the ST_TTS state machine discards the frame (see 9.2.6.3.3.6.1);
2) the device server sends a Send Command Complete protocol service request
with CHECK CONDITION status for that command with the sense key set to
ABORTED
COMMAND and the additional sense code set to DATA OFFSET ERROR (see 10.2.3);
3) the transport layer constructs a RESPONSE frame containing the status,
sense key, and additional sense code; and
4) the SSP target port transmits the RESPONSE frame in the same or a new
connection with the SSP initiator port.

Maxtor comment # 139

Page: 362

9.2.5.3, twelfth paragraph: Change to: If an SSP target port receives a
write
DATA frame with more write data than expected (i.e., the write DATA frame
contains data in excess of that requested by an XFER_RDY frame or, for first
burst data, indicated by the FIRST BURST LENGTH field in the
Disconnect-Reconnect mode page), then:
1) the ST_TTS state machine discards the frame (see 9.2.6.3.3.6.1);
2) the device server sends a Send Command Complete protocol service request
with CHECK CONDITION status for that command with the sense key set to
ABORTED
COMMAND and the additional sense code set to TOO MUCH WRITE DATA (see
10.2.3);
3) the transport layer constructs a RESPONSE frame containing the status,
sense key, and additional sense code; and
4) the SSP target port transmits the RESPONSE frame in the same or a new
connection with the SSP initiator port.

Maxtor comment # 140

Page: 362
9.2.5.3, thirteenth paragraph: Change to: If an SSP target port receives a
zero length write DATA frame, then:
1) the ST_TTS state machine discards the frame (see 9.2.6.3.3.6.1);
2) the device server sends a Send Command Complete protocol service request
with CHECK CONDITION status for that command with the sense key set to
ABORTED
COMMAND and the additional sense code set to INFORMATION UNIT TOO SHORT (see
10.2.3);
3) the transport layer constructs a RESPONSE frame containing the status,
sense key, and additional sense code; and
4) the SSP target port transmits the RESPONSE frame in the same or a new
connection with the SSP initiator port.

Maxtor comment # 141

Page: 362
9.2.5.3, add the following as a last paragraph: If an ST_TFR state machine
receives any subsequent write DATA frames for a command that has been
aborted,
then the ST_TFR state machine discards those frames (see 9.2.6.3.2).

Maxtor comment # 142

Page: 373
9.2.6.2.3.5.2: Change the clause heading to be bold.

Maxtor comment # 143

Page: 400
Table 134 through 146: Change "specifies" and "indicates", as required, to
be
consistent with common practice.

Maxtor comment # 144

Page: 433
10.4.3.1, fourth paragraph: Change, "The ADDITIONAL REQUEST BYTES field
definition and length is based..." to, "The ADDITIONAL REQUEST BYTES field
definition and length are based...".

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Comments attached to No ballot from Jay Neer of
Molex Inc.:

1. The information in the ballot was translated incorrectly from the original

input for the tables and figures for the new Compact MultiLane connectors
and needs to be corrected by the editor.

2. I agree with the 05-139r0 document that the duplicate technical
information be removed for the new Compact MultiLane connector
documentation;
remove the tables and leave the figures.

3. I propose that the pin out proposed in 05-138r0 be used instead of the pin

out proposed in the ballot. This proposed pin out will more closely follow
the pin out requested by the committee at the last meeting and will
facilitate having a cable assembly that is easier to manufacture.

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Comments attached to Yes ballot from Bill Lye of
PMC-Sierra:

PMC #1
PDF Page 181
Section 5.3.2.2 Zero-length test load
Second Paragraph
"Figure 91" should be "Figure 92"

PMC #2
PDF Page 184
Section 5.3.2.4 Low-loss TCTF test load
Fourth Paragraph
The equation for this TCTF are specified differently than either of the
other two TCTF's, in that it specifies a smooth line from 50MHz to 5,0GHz
while the other two equations specify kinks at 3,0GHz (3Gbps operation)
or 1,5GHz (1.5Gbps operation). Should the Low-loss TCTF be similarly
specified with kinks at 1,5GHz and 3,0GHz? As it stands with the current
definition, the Low Loss TCTF actually allows more loss above 2,7GHz
than the 1.5Gbit/s Internal TCTF, and is allows slightly more loss at
5,0GHz than the 3.0Gbit/s Internal TCTF, which makes the term "Low Loss"
somewhat inaccurate. Although probably not relevant to this discussion,
this TCTF also allows more loss than that allowed by the corresponding

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SATA2 cable specification.

PMC #3
PDF Page 193
Table 38 - Transmitter device signal output....
Last line
Note f has been applied to the entry (225mV) for 1,5Gbps IT Minimum OOB
burst amplitude if attacing to a SATA device is supported. Note f allows
3,0Gbps ALIGN(0) dwords but does not allow 1,5 Gbps D24.3 characters.
Suggestion is to apply note g instead.

PMC #4
PDF Page 193
Table 38 - Transmitter device signal output....
Note g
The text "... or 3,0 Gbps ALIGN(0) dwords (see SATA2-PHY)." implies that
SATA2 may transmit 3,0 Gbps ALIGN(0) OOB bursts, when in fact SATA2 may
only transmit 1,5 Gbps D24.3 characters or 1,5 Gbps ALIGN(0) dwords.
Suggestion is to move the "(see SATA2-PHY)" to after "1,5 Gbps D24.3
characters".

PMC #5
PDF Page 196
Table 40 - Delivered signal characteristics as measured....
Last line
Note f has been applied to the entry (225mV) for 1,5Gbps IT Minimum OOB
burst amplitude if attacing to a SATA device is supported. Note f allows
3,0Gbps ALIGN(0) dwords but does not allow 1,5 Gbps D24.3 characters.
Suggestion is to apply note g instead.

PMC #6
PDF Page 196
Table 40 - Delivered signal characteristics as measured....
Note g
The text "... or 3,0 Gbps ALIGN(0) dwords (see SATA2-PHY)." implies that
SATA2 may transmit 3,0 Gbps ALIGN(0) OOB bursts, when in fact SATA2 may
only transmit 1,5 Gbps D24.3 characters or 1,5 Gbps ALIGN(0) dwords.
Suggestion is to move the "(see SATA2-PHY)" to after "1,5 Gbps D24.3
characters".

PMC #7
PDF Pages 513-514
Section B.2.2 Assumptions for the structure of the...
Second enumerated list
This list enumerates the individual components that a transmitter
device contains. It may be preferrable if the order of the list were
to better match what would normally be seen, i.e. a,b,e,f,g,c,d.

PMC #8
PDF Page 513-514
Section B.2.2 Assumptions for the structure of the...
Second enumerated list, last line
The text "possibly ESD devices" should be "possibly ESD protection
devices"

PMC #9
PDF Page 514
Section B.2.2 Assumptions for the structure of the...
Fourth enumerated list
This list enumerates the individual components that a receiver device
contains. It may be preferrable if the order of the list were to
better match what would normally be seen, i.e. a,b,e,f,g,c,d.

PMC #10
PDF Page 514
Section B.2.2 Assumptions for the structure of the...
Fourth enumerated list, last line
The text "possibly ESD devices" should be "possibly ESD protection
devices"

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Comments attached to Yes ballot from Craig W. Carlson of
QLogic Corp.:

Qlogic Corp #001
PDF page 328
7.15.4.5 Transition XL1:Request_Path to XL5:Forward_Open
The following changes eliminate confusion regarding the arguments associated

with the OPEN Address Frame received message.
In the last sentence of this section,
"This transition shall include an OPEN Address Frame Received argument
containing the arguments received in the Forward Open indication.",
replace "transition" with "state" and replace the end of the sentence
beginning
with "containing the arguments ..." with "with the transition.".

Qlogic Corp #002
PDF page 328
7.15.4.5 Transition XL1:Request_Path to XL5:Forward_Open
7.15.4.6 Transition XL1:Request_Path to XL9:Break
The following changes ensure that the Forward Open indication takes
precedence
over a simultaneous BREAK Received message.
In the first sentence of 7.15.4.5, strike-through ", a BREAK Received message

has not been received,".
Add the following as the last sentence in this section.
"If a BREAK Received message is received, this state shall include a BREAK
Received argument with the transition."
In 7.15.4.6, replace "after receiving a BREAK Received message" with "if a
BREAK
Received message is received and a Forward Open indication has not been
received".

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Comments attached to No ballot from Gerald Houlder of
Seagate Technology:

Comments are in document 05-147r0.

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Comments attached to Yes ballot from William Martin of
Sierra Logic, Inc.:

Sierra_Logic-001 Page 303 clause 7.16.7.3 4th paragraph last sentence '.
then this the ACK/NAK .' should be '. then the ACK/NAK .'
Sierra_Logic-002 Page 304 clause 7.16.7.3 last paragraph I believe that this

was intended to set the number of frames transmitted to zero, and the number

of ACKS and NAKS received to zero. At a minimum indicate that the number of

ACKs and NAKs received may be set to zero.
Sierra_Logic-004 Page 437 clause 10.4.3.3 Last sentence of paragraph on
EXPANDER CHANGE COUNT and first sentence of following paragraph - The first
sentence here requires incrementing under certain conditions specified in
7.11; however, the second sentence makes this requirement optional. While
there is the possibility of minimizing the number of BROADCAST(CHANGE)
transmissions, the process will require more than this qualified sentence to

make it correct for a normative reference. I would suggest removing the
second highlighted sentence.

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Comments attached to No ballot from Ashlie Fan of
TycoElectronics:

1) Table 31 (for External Cables), page 131: Maximum Intra-pair skew: 20ps
Comments: Compare to Table 32 (For Internal Wide Cables), 20ps is not
practically possible. External cable is expected to be several times longer
than internal cables, but the skew budget is not.
Suggest: Need to propose a reasonable budget or leave it off the spec until
a reasonable budget is determined

2) Table 31 and Table 32: Maximum Crosstalk
Comments: the descriptions of the requirements are not clear
Suggest: change description to match how the measurement should take place,
such as how many aggressor at one time and how many victim lines should be
considered and their position. If more than one victim line is measured, the

spec requirement is a total sum?

3) General comments: Cable, Media, Cable Assembly

Comments: Cable, Media and Cable Assembly have been used in this document.
They cause confusions
Suggest: Need more clarification about these terms: does 'cable' mean
'cable assembly'?does 'media' mean cable/backplane without connector and
termination? etc

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Comments attached to Abs ballot from Roger Cummings of
Veritas Software:

Not with our organization's area of interest

******************** End of Ballot Report ********************