TO: X3T9.2 Membership X3T9.2/93-081r0

FROM: J. Stai

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Subject: Comment for SPI rev 13

I would like to commend my colleagues in X3T9.2 for their good work in developing the SCSI-3 Parallel Interface. I respectfully request the consideration by X3T9.2 of these comments on X3T9.2/855D revision 13, as forwarded for public review. All of these comments refer to clause 10.

1) Ref 10.1.1 Bus free request, "...the PIA shall release all SCSI bus signals within a [delay]." Within a delay of what event?

I would propose the following wording to replace this sentence: "When a bus free request is received the PIA shall release the BSY signal and the SEL signal, and shall release any other asserted SCSI signals within a [delay] of the release of the BSY signal and SEL signal."

2) Ref 10.1.2 Bus free indication. The definition in the second sentence (also paragraph) is wrong. Very wrong.

I would propose the following wording to replace the second sentence: "The PIA shall generate a bus free indication when the SEL and BSY signals are both continuously false for at least a bus settle delay. The PIA shall continue to generate this indication as long as the SEL and BSY signals remain false."

3) Ref 10.3.1 Selection request. In the third paragraph, there is apparently a mixed message here. Step 1) does not refer to the bus free indication, even though that seems appropriate. Steps 2) & 3) then refer to "detecting the bus free", even though the term "bus free" has not been defined in this context. This is further carried into the following note, where it refers (erroneously, I think) to the "BUS FREE service".

Is the intent to avoid the use of bus free indication? Or is the intent to use bus free services here? It seems that to be consistent with the layering here, the bus free services should NOT be referenced.

I would propose the following wording to replace steps 2) & 3):

2) not assert any SCSI BUS signal with a [delay] of step 1);
3) assert the BSY signal...no sooner than a [delay] and no later than a [delay] of step 1);

Further, the note should remove any reference to "BUS FREE service". The first sentence of the note should end: "...as long as the SEL and BSY signals remain false."

4) Ref 10.3.1 Selection request, top of page 36. Step 2) of the selection steps should read: "2) assert its assigned SCSI ID, assert the requested SCSI ID..."

5) Ref 10.3.3 Selection response. Option a) in paragraph 2 refers to a "selection event". Where is that event defined? It seems that the "event" is really equivalent to the conditions of the selection indication.

I would propose the following wording to replace option a): "a) assert the BSY signal within a [time] of the when the target last detected that the SEL signal and the SCSI ID bit assigned to the target PIA were true, and the BSY and I/O signals were false."

6) Ref 10.3.4 Selection confirmation. Paragraph 3 has a parenthetical note that seems to imply that the initiator PIA shall validate that the target has asserted BSY after a bus settle delay. The correct statement is that the initiator should delay that long before looking.

I would propose the following wording to replace the first sentence of paragraph 3:

"The initiator PIA shall wait at least a bus settle delay from the completion of the selection request before examining the BSY signal. When the initiator PIA detects the BSY signal asserted by the target within a selection timeout delay of the selection request, it shall:...".

7) Ref 10.3.4 Selection confirmation. This section gives various ways to confirm a selection, depending on what went on before. Paragraph 2 deals with lost arbitration. Paragraph 3 deals with a successful selection. Paragraphs 4 & 5 deal with the selection timeout procedure.

What isn't clear is that paragraphs 4 & 5 are related to each other. Paragraph 5 needs to be more closely linked to paragraph 4, and paragraph 5 needs to get some of the words more closely related to its meaning. I would propose the following wording to replace paragraphs 4 & 5:

> When the initiator PIA has not detected the BSY signal asserted within a selection timeout it shall continue asserting the SEL and I/O signals and shall release all DATA BUS signals. If the initiator PIA has not detected the BSY signal to be true within at least a [time] of releasing the DATA BUS signals, it shall:
>
> 1) release the SEL and I/O signals;
> 2) clear the selection won flag;
> 3) set the selection time-out flag;
> 4) generate a selection confirmation.
>
> If the initiator PIA does detect the BSY signal to be true within at least a [time] of releasing the DATA BUS signals as described in the previous paragraph, it shall:
>
> 1) release the SEL signal after two system deskew delays;
> 2) set the selection won flag;
> 3) clear the selection time-out flag;
> 4) generate a selection confirmation."

8) Ref 10.4 Reselection service. Needless to say, items 1 through 7 should also be applied to the appropriate clauses in clause 10.4.

9) Ref 10.4.4 Reselection confirmation. The second occurance of the word "target" in paragraph 3 should be "initiator".

10) Ref 10.5.3, 10.6.3, 10.7.3, 10.8.3, 10.9.3, 10.10.3 numerous responses. In step 3) of all of these responses, the word "asserting" should in fact be "negating".

11) Ref 10.6.1 Data out request. In paragraph 1, the word "offset" should be "REQ/ACK offset" to be consistent with the other sections.

12) Ref 10.11 Information transfer. Paragraph 6 uses a term "control signals" that is not defined anywhere except in the heading of Table 12.

I would propose that a definition for "control signals" be added to clause 3.1.

13) Ref 10.11.1 Async info transfer. The first paragraph enumerates the requests which shall transfer asynchronously. This is not the complete list.

I would propose the following wording to replace paragraph 1: "COMMAND requests, STATUS requests, MESSAGE IN requests, MESSAGE OUT requests, and DATA IN requests and DATA OUT requests which...".

14) Ref 10.11.3 Wide data transfer. This clause has evolved into a clause which actually (almost) discusses all transfer widths, since 8-bit transfers are a sort of special case on the P Cable.

First, I would propose that the clause be renamed "Data transfer width". Second, I would propose the following wording be added as paragraph 2:

During 8-bit data transfers, the logical data byte for each data service shall be transferred across the DB(7-0,P) signals on the P cable. The DB(15-8,P1) signals are undefined, and parity is not valid on those signals. Subsequent data bytes are likewise transferred across the P cable.

15) Ref 10.11.3 Data transfer width. In two places, the reference "DB(15-8, P2)" should be "DB(15-8, P1)".

16) Ref 10.11.3 Data transfer width. In the second paragraph on page 48, the word "command" is used. I believe this will be confused with the Command service. Perhaps returning to the convention of capitalizing the services will be helpful in cases like this:

COMMAND service
COMMAND response
command

Again, I would like to thank X3T9.2 for their acceptance of my comments.

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