To : T10 Technical Committee
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Subject : Exception Handling and Streaming Transfers

Attention Condition on a Data Stream Information Unit

Section 12.2 (Attention condition) states:

"*g) If the attention condition is detected during an information unit transfer, the target shall enter MESSAGE OUT phase at the completion of the current SPI information unit.*"

In case the negotiated offset happens to be greater than the size of the SPI data stream information unit, the word "current SPI information unit" is ambiguous. Does "current SPI information unit" refer to the one for which REQs are being sent or the one for which ACKs are being received? Also, paragraph 10 of section 14.3.4 in SPI-4 rev4:

"*In the event that the SPI data stream information unit size is smaller than the negotiated offset the target may continue the sequence of SPI data stream information units across two SPI data stream information units but shall not continue across three.*"

is inconsistent with the requirement g) stated in section 12.2 as the target cannot stop at the current SPI IU boundary (assuming "current" means "all ACKs received from the initiator for the SPI data stream IU") since it has already sent REQs for the "next" SPI data stream IU. Hence, we propose that g) in section 12.2 be reworded as follows:

"*g) If the attention condition is detected during an information unit transfer other than a SPI data stream information unit, the target shall enter MESSAGE OUT phase at the completion of the current SPI information unit, i.e. after receiving all the ACKs from the initiator for the current SPI information unit. If the attention condition is detected during the transfer of a SPI data stream information unit, the target shall terminate the current stream by entering into MESSAGE OUT phase at the end of any SPI data stream information unit in the current stream.*"

This would make it similar to the way a target handles iuCRC errors during streaming where it can send the SPI L_Q/Status information unit pair before sending another SPI L_Q for a data transfer (section 10.8.3.3.4. paragraph 3. In fact, paragraph 3 of 10.8.3.3.4. is worded erroneously as it says " *… before sending another SPI L_Q information unit, switch to a DT DATA IN phase and send a SPI L_Q …*" as it precludes the target from sending another SPI L_Q information unit, but also requires the target to send a SPI L_Q information unit!?!?!. The statement needs to be modified to only preclude the target from sending a SPI L_Q information unit with the TYPE field set to a code other than 08h.).

Asserting P_CRCA to Indicate End of Stream

The paragraph preceding Table 30 (in SPI4 rev4) says:

"*When information unit transfers are enabled the target and initiator shall use the P_CRCA signal as indicated in table 30*"

This becomes a difficulty (because of the "shall" in the aforementioned statement) when an ATN condition or a CRC error is detected on a data stream information unit. Moreover, this statement, in a way, is in conflict with paragraphs 4 and 6 of section 14.3.4 which state, in no uncertain terms, that stream transfers can end with any changes to C/D, I/O or MSG signals. However, paragraphs 4 and 6 of section 14.3.4 fail to mention the state of the P_CRCA on the last data stream information unit before the phase change, the absence of which necessitates implementers to adhere to the requirements stated in the statement immediately preceding table 30. We propose changes that would require the target to adhere to the requirements of table 30 ONLY for streaming transfers that did not have exceptions (i.e. ATN condition or CRC errors). We propose that the statement immediately preceding table 30 in SPI-4 rev4 be replaced with the one shown below:

"*When information unit transfers are enabled the target and initiator shall use the P_CRCA signal as indicated in table 30 on all streaming transfers during which the target does not detect an attention condition (see 12.2) or an iuCRC error during the stream. If the target detects an attention condition or an iuCRC error on any data stream information unit during the stream, it may choose to use the P_CRCA as indicated in table 30 or continuously negate it and end the stream by changing the C/D, I/O or MSG signals.*"

This would give the flexibility for the targets to either use the P_CRCA signal or just change phase and end the stream on exceptions.