

Date: December 5, 1988

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From: Jim McGrath, Quantum

X3T9.2/88-159

To: X3T9.2

Subject: Re: Power-on and Reset Response

While I agree that it is important to define time limits for reset activities to take place, the proposal is too broad. The original necessity was to define such a time limit in order to make auto-configuration work. However, for this purpose it is only necessary that a target be able to respond to selection (the response can always be cleared without the need of further target activity by a reset). In addition to this, the proposed wording makes two additional demands that have no relation to auto-configuration requirements, and have several practical problems:

- 1) The first two sentences of the text for item A imply that all internal reset and test operations must take place within the specified time limit of 10 seconds. This is clearly unnecessary - many operations, especially response to selection for the purposes of auto-configuration, can be enabled before all testing is completed. Similarly, many operations that involve power on testing cannot be completed in any reasonable period of time. The classic

example is buffer ram testing. For a high power caching controller, at least 256K bytes, and up to 16 Mbytes, of cache memory is common. At 10 ns per byte, this translates to 2.5 to 160 seconds. Since almost all operations can proceed when only a small portion of this memory has been tested, the remainder being tested after operations have begun, requiring testing to be completed within the 10 second timeout is unreasonable.

2) What constitutes "response to selection" and "response to a request" must be sharply defined and limited. Here my primary concern is not with the 10 second time limit for POR, but rather the 250 ms time limit for a bus reset. Since we require that such items as the saved mode parameters be restored as the current parameters before a reset is completed, a 250 ms time limit encompassing the entire reset period (I am assuming you cannot respond to a request with status before a reset has been completed) is impossible for many devices which must perform one or more writes and reads

to complete to meet. Once again, only a response to selection (i.e. asserting BSY) is required for auto-configuration, an activity which can easily be handled entirely within the protocol chip. Finally, including any requirement to respond with status in a timeout situation is in error, since we currently have no command execution timing requirements in SCSI, nor do we wish to establish them. That is, if the first command is a READ or FORMAT, then it is currently target unique as to when and how status is returned.

Given these objections, I would like to offer the following alternative wording (for section 4.9):

It is recommended that a device that has target capability respond to selection within 10 seconds of the application of power to the device. Although the device must respond to a subsequent RESET condition, no other phase changes from the SELECTION phase are required within this time limit. While the application of power to a device must be precisely

defined for specific systems, the intent is that at this time the device has enough power to perform the required response to selection.

In addition, replace the proposed wording for section 5.2.2 with the following:

It is recommended that a device that has target capability respond to selection within 250 ms of the detection of the end of a RESET condition. Although the device must respond to a subsequent RESET condition, no other phase changes from the SELECTION phase are required within this time limit. [The end of a reset condition is not precisely defined at this point.]