Ultra640 SCSI Training Pattern Proposal

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Approach to Ultra640

- **Ultra640 SCSI can be achieved without major protocol changes**
- **However, improvements in some or all of the following *will* be required:**
  - **Cable plant specification**
  - **Receiver signal processing**
  - **Deskew margins**

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Training Pattern

- **The training pattern for Ultra320 SCSI already contains a rich variety of fields**

- **No new fields are required for Ultra640 SCSI**

- **However, we propose that the duration of each field be fixed in absolute time rather than number of pulses because:**

  - **Improved deskew accuracy required for Ultra640 may require more pulses than for Ultra320**

  - **Some signal processing (e.g., AAF boost, offset correction) have fixed time components independent of transfer rate**

Proposal for Training Pattern

- ## Ultra640 training pattern:

  - – **Each field shall be of the identical "type" as for Ultra320 (DC, 1010…, 11001100, etc.)**

  - – **Each field shall occur in the same order as for Ultra320**

  - – **Each field shall be the identical time duration as for Ultra320, consisting of double the number of transfer periods**

  - – **The modifications required for SPI-5 can be constructed to be consistent with what is specified in SPI-4 for Ultra320**

Modifications for SPI-5

- **SPI-4 specifies elements of the training pattern for Ultra320 in terms of number of pulses, and then provides examples of the time equivalent for the step**

- **By changing the order of the specifications and examples, this would then apply to both Ultra320 and Ultra640**

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Example of Modifications for SPI-5

Clause 10.7.4.2.2 DT DATA IN phase training pattern, Start of section A:, list item (3):

- SPI-4 reads:

"…wait the equivalent of 32 transfer periods (e.g., 200 ns at fast-160)…"

- Recommended for SPI-5:

"…wait 200 ns (e.g., the equivalent of 32 transfer periods at fast-160)…"