

Proposal for Base Line Wander Test Pattern for 100BaseFX(SMF)

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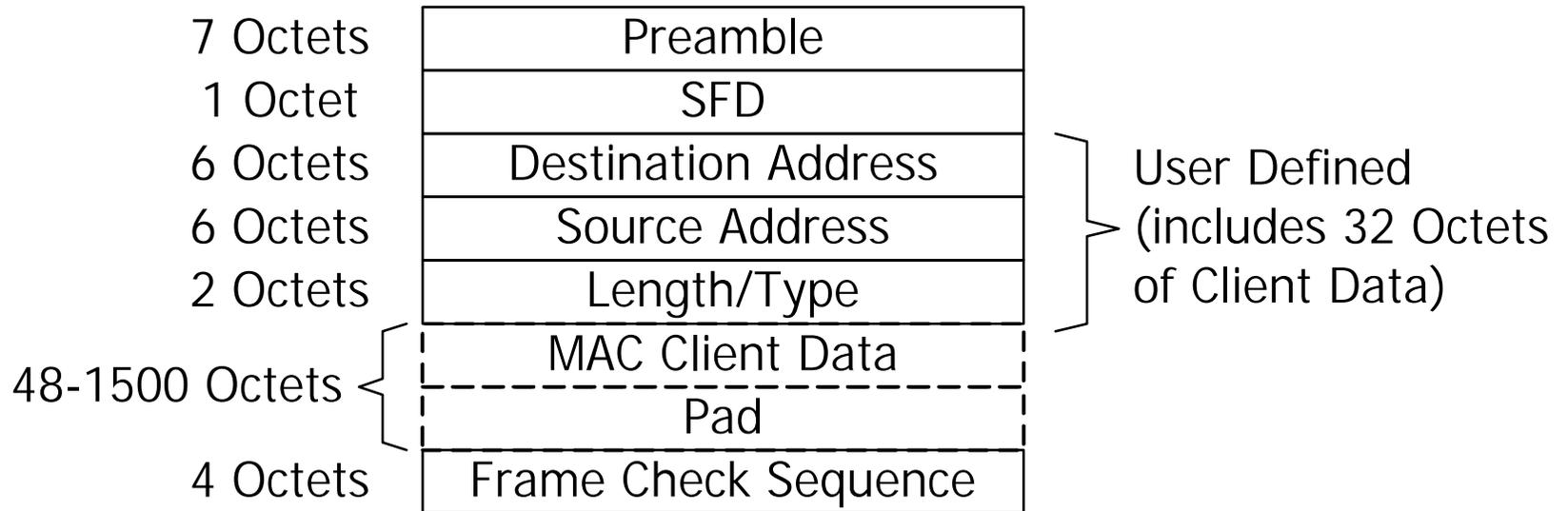
Introduction

- The 100BaseFX uses a PMD based on the FDDI LED interface
 - In contrast to 1GbE and 10GbE, FDDI uses an unbalanced 4B/5B NRZI code
- This code will result in baseline wander in a data stream
 - Pattern density may vary between 40% and 60%
 - AC coupled receivers may be upset (Known in FDDI)
 - Laser average power control circuits may be affected (Not an issue in FDDI)
- A test pattern is needed to assess the effects of the code on interface performance

Test Pattern Characteristics

- A widely used FDDI baseline wander test pattern is available
 - 90,000 bits long (720 μ s), 45,000 bits at 60% density, 45,000 bits at 40% density
 - Major baseline frequency shift at 1,389KHz
- While this is a good component level test, the lack of packet structure makes it un-acceptable to a system level interface
- This proposal is for a packetized test pattern with very similar wander characteristics
 - The packet structure allows for individual tailoring for specific implementations

Ethernet Frame Structure



Reference: 802.3, Clause 3

Proposed Test Sequence

- A sequence of three maximum length packets with a 1500 octet data field and a minimum Inter Frame Gap (IFG)
- The first 32 octets of the Client Data are user defined
 - Allow for proprietary implementations
- The remaining 1468 octets contain symbols with an even number of ones in the 4B/5B encoded data prior to NRZI transmission
 - Candidate nibbles are 0,1,2,4,7,8,B,D,F. These will give either 40% or 60% density depending on starting phase
 - For example:
 - 0 will code as 11110 in 4B/5B
 - NRZI Transmission will give either ..0/10100/.. Or ..1/01011/..
 - Opportunity for either fixed pattern or jitter stress pattern

Proposed Test Sequence (Cont.)

- The first 32 octets of the Client Data shall be set so that:
 - The content of the packet is acceptable to the equipment under test. This might include:
 - VLAN Tags
 - Internet Protocol
 - User Datagram Protocol
 - For the first two packets there shall be an even number of ones in the packet after 4B/5B encoding
 - For the third packet there shall be an odd number of ones
 - The ones count shall be over the full frame, from Preamble to FCS field
- The result will be three valid packets at 40% ones density and three valid packets at 60% ones density

Characteristics of Proposed Pattern

- The pattern allows complete flexibility in interface implementation
 - Source and destination MAC addresses
 - Content of the early octets of the Client Data
- The user specified information is less than 6% of the packet
 - Will not materially affect the baseline wander
 - Would be interchangeable with the familiar FDDI test pattern at component level test
- Compatible with existing Ethernet test equipment