Transmit waveform tests

6th January 2005

Nick Weiner, Phyworks

following conversations and email exchanges with

Tom Lindsay, ClariPhy

Introduction

802.3aq Draft 1.0 includes two transmitter waveform tests:

i. **Eye Mask; and**

ii. **Transmitter waveform dispersion penalty (TWDP) test.**

A compliant transmitter waveform must be compliant with BOTH tests.

- **The TWDP test serves to narrow the class of compliant transmitters (with respect to the class that is compliant with the eye mask test alone).**

The question arises as to the characteristics of waveforms that are:

a. **Compliant with the Eye Mask test; but**

b. **Rejected by the TWDP test (i.e. do not meet the requirements of the budget).**

Reviewing the examples presented to date…

Tom and Lew have presented eye diagrams for a selection of waveforms, together with TWDP results.

lindsay_2_1104 shows eye diagrams (without masks):

- **Of the waveforms that look mask compliant, two - G12 and E03 - have poorer TWDP.**
- **G12 has slower edges**

Lew presented six eye diagrams, with masks, for the TP2 conf. call of 23rd December 2004:

- **All of the waveforms that are mask compliant (Cases 1, 2, 3 and 6) have low (i.e. good) TWDP;**
- **One waveform (Case 4) is mask test marginal and has poor TWDP.**
- **This case (Case 4) has slower edges**

Observation and questions

From this small sample set …

For those waveforms that are mask test compliant:

- **Edge speed appears a reasonable predictor of TWDP**

Questions:

- **What about E03 from lindsay_2_1104? Tom, Is this an example of a waveform that is rejected by the TWDP test but not by an edge speed test? Do such waveforms occur?**
- **If not, can we specify that transmit waveform must be mask compliant and also have rise and fall time ≤ 47ps? Is this safe?**