

SYSTIMAX®
SOLUTIONS

Dynamic Rx Test Justification

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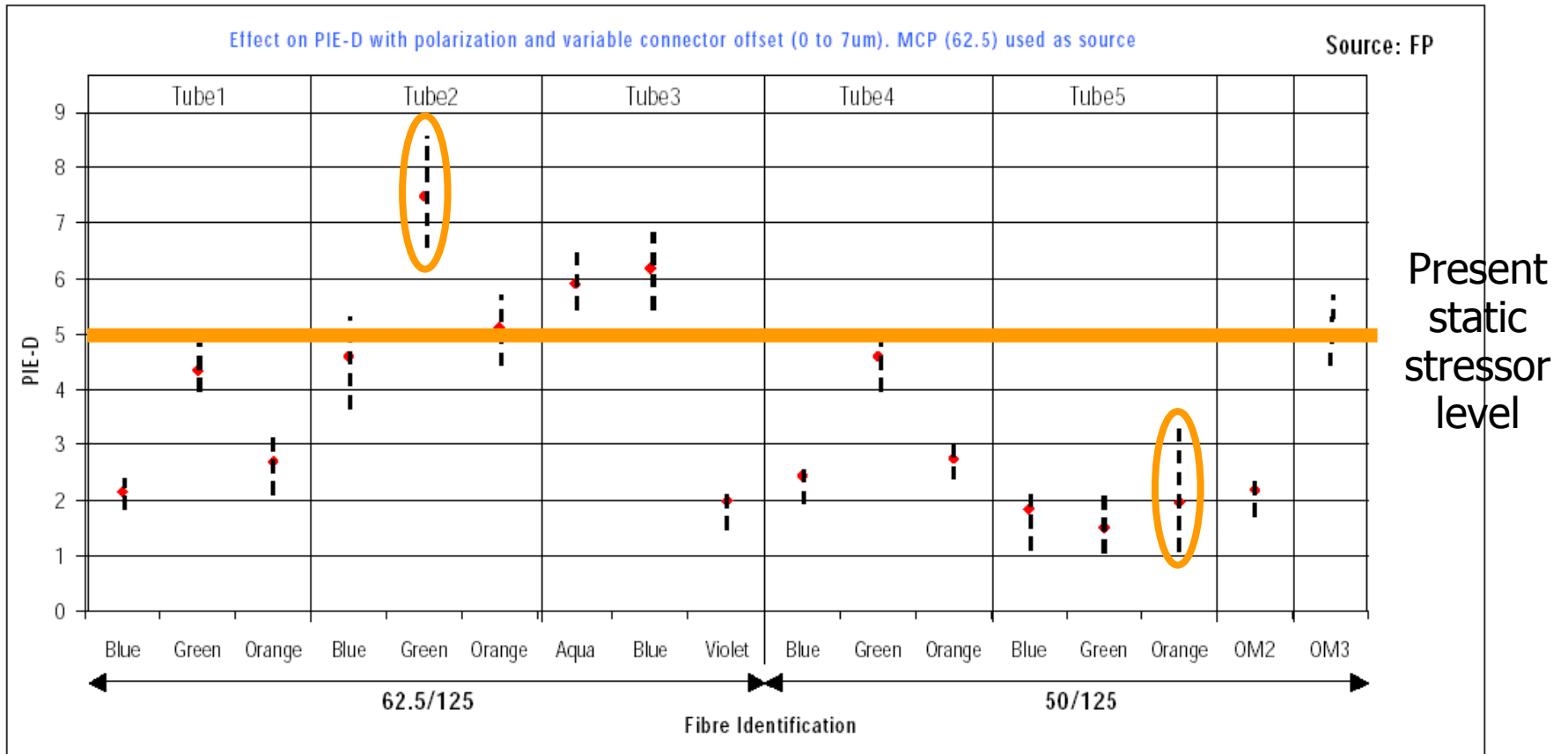
IEEE P802.3aq (10GBASE-LRM), May 2005

Experimental Results Previously Reported

PIE-D variation w polarization & offset

- > 2 dB variation seen in small 1996 TIA FO2.2 sample set for **offset launch**.
Peak PIE-D of 8.5 dB.

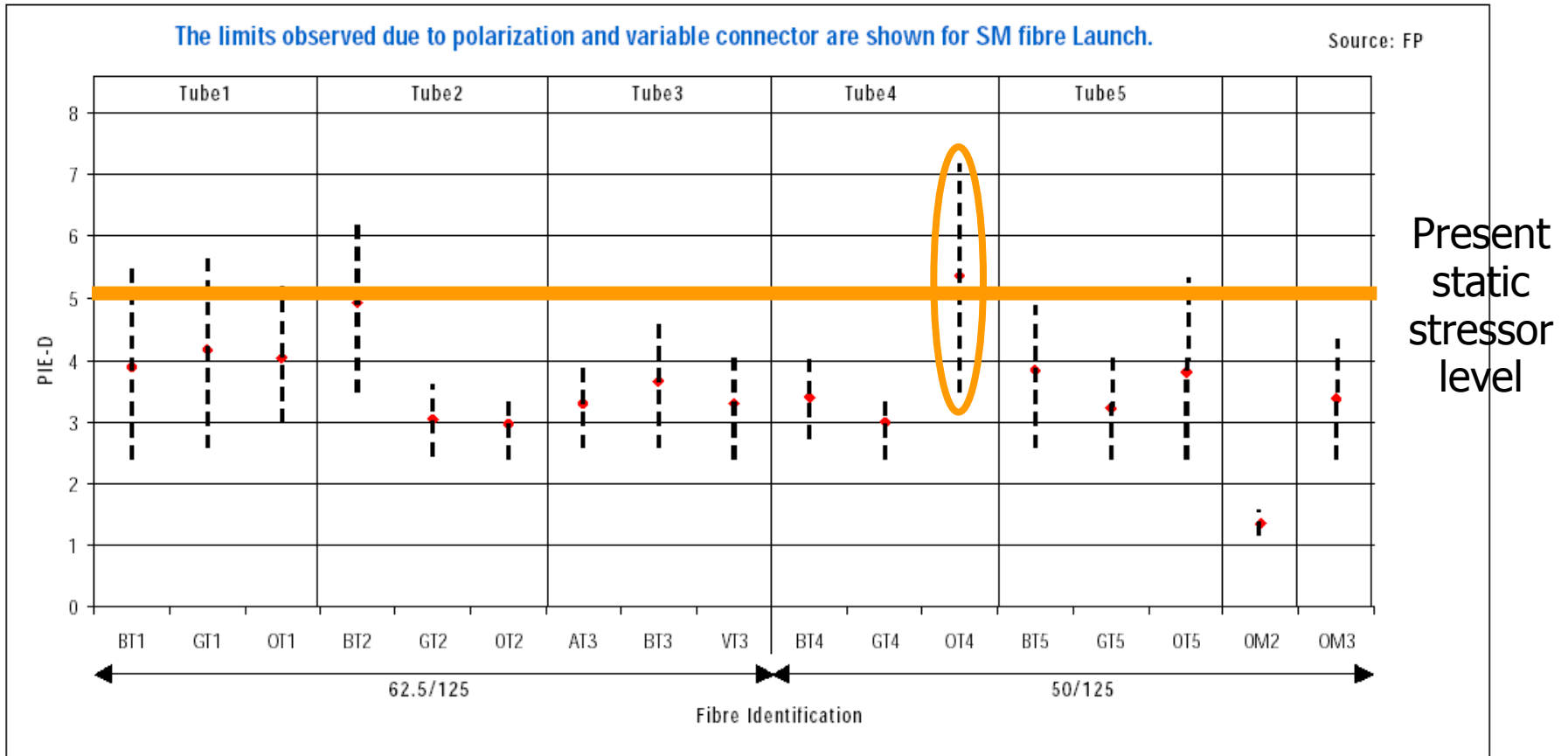
These fibers were not purposely selected for LRM stress testing.



From Meadowcroft_1_0105

PIE-D variation w polarization & offset

3.8 dB variation seen in small 1996 TIA FO2.2 sample set for **center launch**.
Peak PIE-D of 7.2 dB.

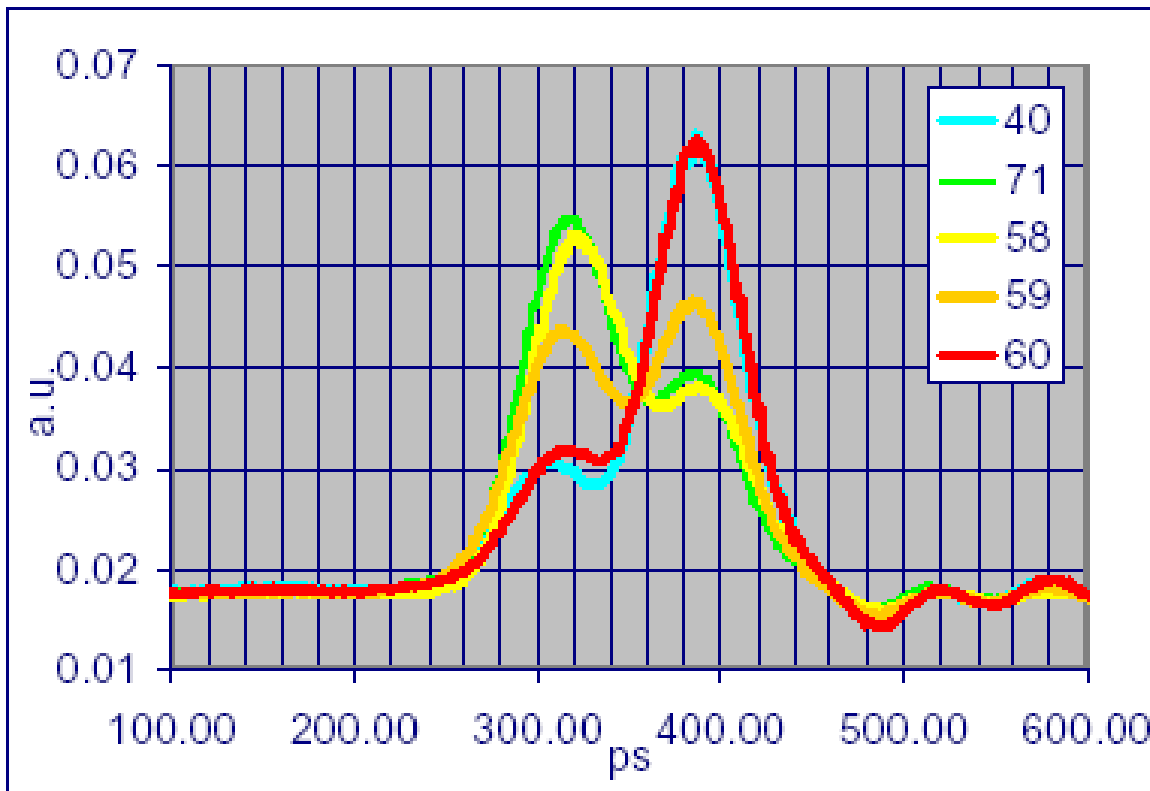


From Meadowcroft_1_0105

IPR variation with fiber movement

Full range of IPRs seen from same fiber with small fiber movements between adjacent positions 58, 59, 60.

Movements representative of perturbed patch cord.



58: precursor
59: split symm
60: post cursor

From King_1_1104

Monte Carlo Model Lacks Dynamics

- **Mode power distribution of launches is static**
 - Does not predict or account for dynamic effects
 - Underestimates required PIE-D
- **Can be remedied**
 - For launches of interest, arbitrarily vary MPDs for modes that carry more than $x\%$ of power (e.g. $x = 10$)
 - Find MPD that results in highest PIE-D for each fiber
 - Recalculate coverage curves with these MPDs
- **This would correspond King's IPR variations**

Current Rx Test Inadequate

- **No dynamic aspect with three static stressors**
- **Fails to test receiver's ability to dynamically adapt to actual channel variation that unquestionably exists**
- **Dynamic test checks several untested aspects**
 - **Stability of clock recovery**
 - **Tracking accuracy**
 - **Sufficiency of coefficient adjustment range**
 - **Tracking speed**
- **Without a dynamic test the standard cannot ensure a robust and interoperable solution**

Add Dynamic Test Methodology

- **Configuration of Figure 68-10 (comp. SRS test)**
- **ISI generator tap weights varied dynamically between waveforms while measuring BER**
- **Waveform states chosen to induce PIE-D increases above present static stressors of magnitude matching that of experimental results shown herein (i.e. 2.5 dB)**
- **Waveform passes repeatedly thru the three cases (i.e. Pre-Cursor thru Split Symmetric thru Post-Cursor) that represent present static test waveforms at a rate swept between 6 and 20 Hz.**