Dynamic Rx Test Justification

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Experimental Results
Previously Reported
**PIE-D variation w polarization for OSL**

2.5 dB variation on this sample fiber, peaking at **8.3 dB PIE-D**

From Balemarthy_1_0105
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.

From King_1_1104

58: precursor
59: split symm
60: post cursor
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.