



OMA and Extinction Ratio for Serial PMDs

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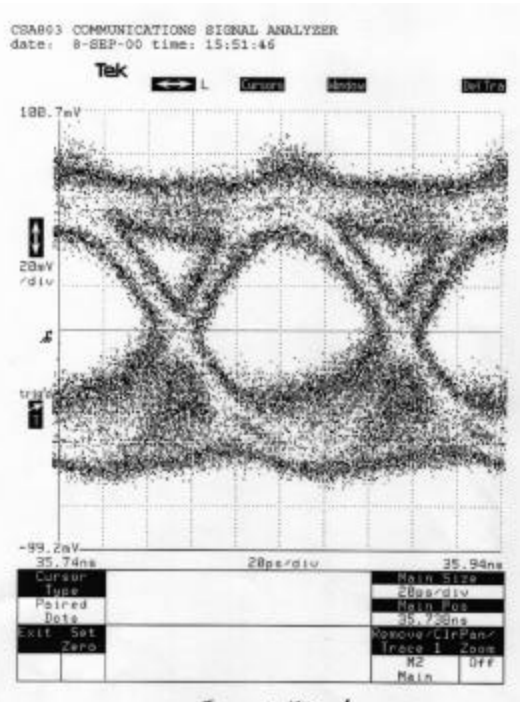
Motivations:

- Lower extinction ratio improves Direct Modulated Laser performance
- Extinction ratio not critical if link not attenuation limited
- OMA simpler concept, provides simpler control loops

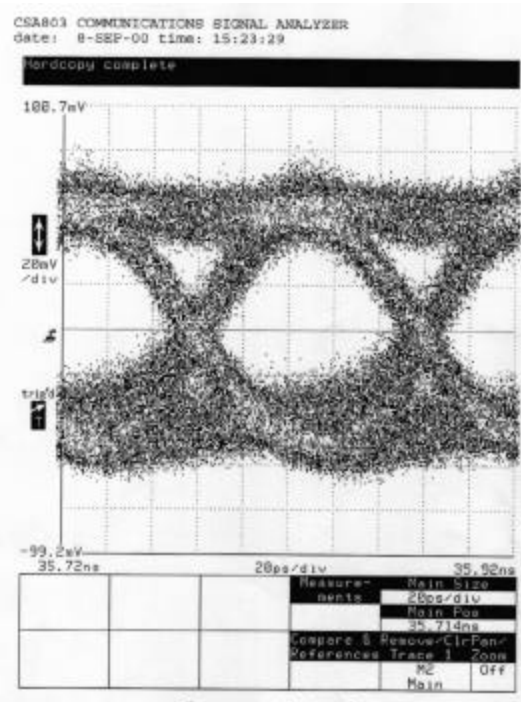
DFB, 1.3um: Eye Diagrams vs. Extinction Ratio



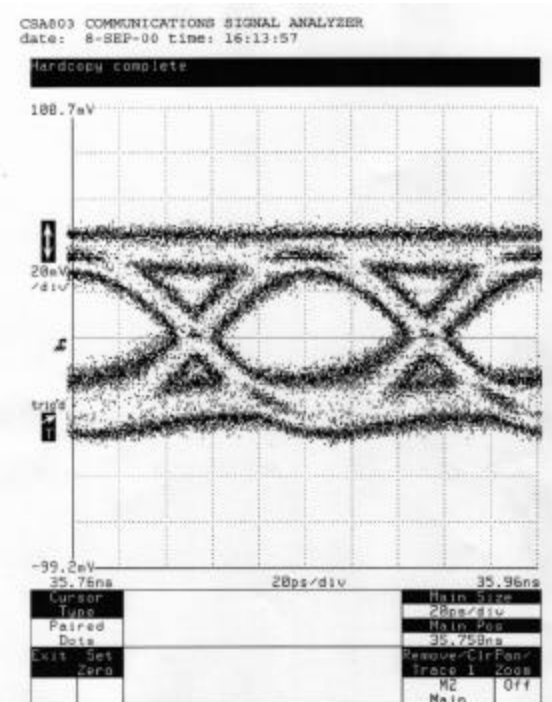
T = 50°C, D = 10km, R = -20dB



I_f = 40mA
I_{dc} = 39mA
E_r > 8.2dB

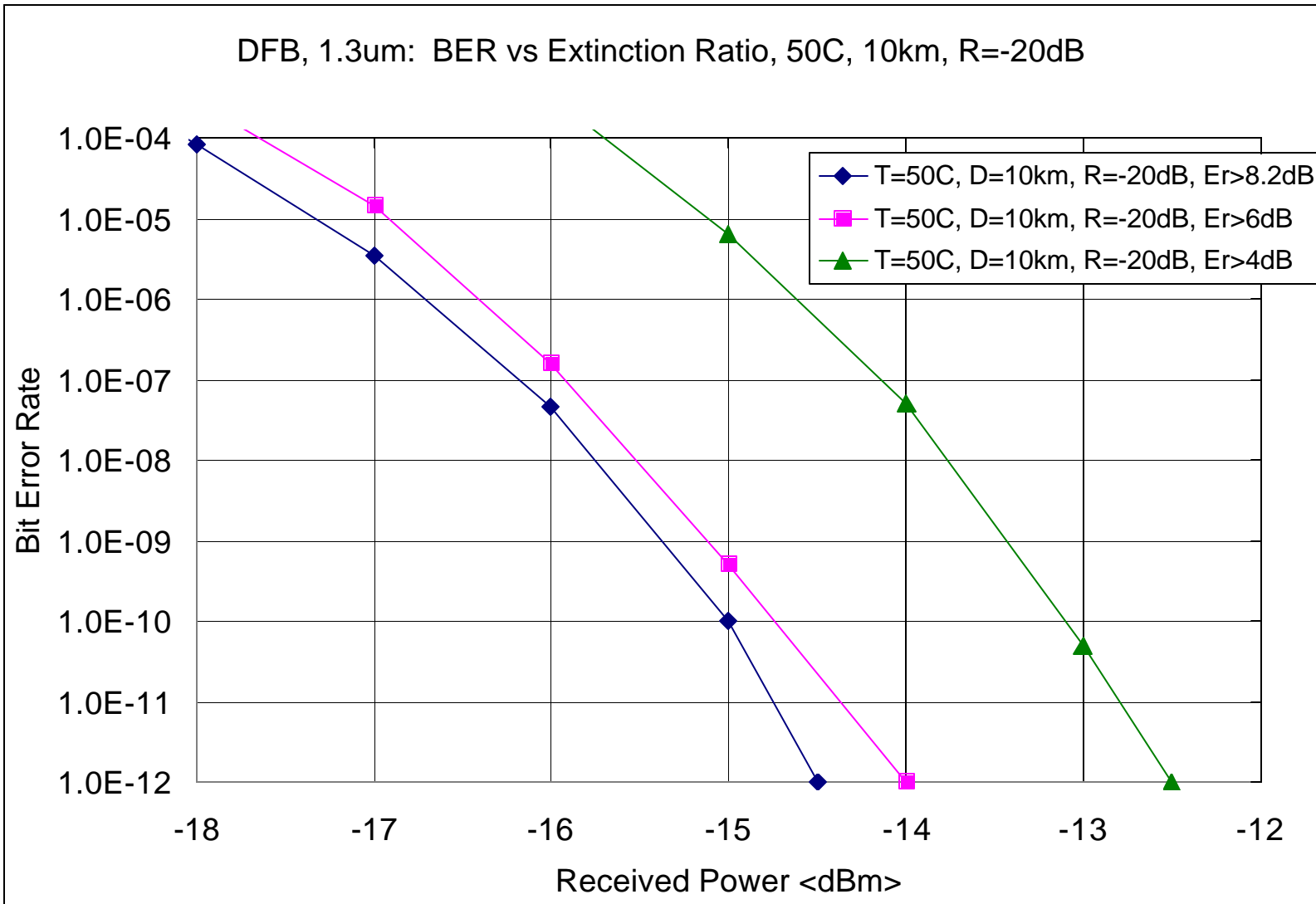


I_f = 40mA
I_{dc} = 41mA
E_r > 6dB

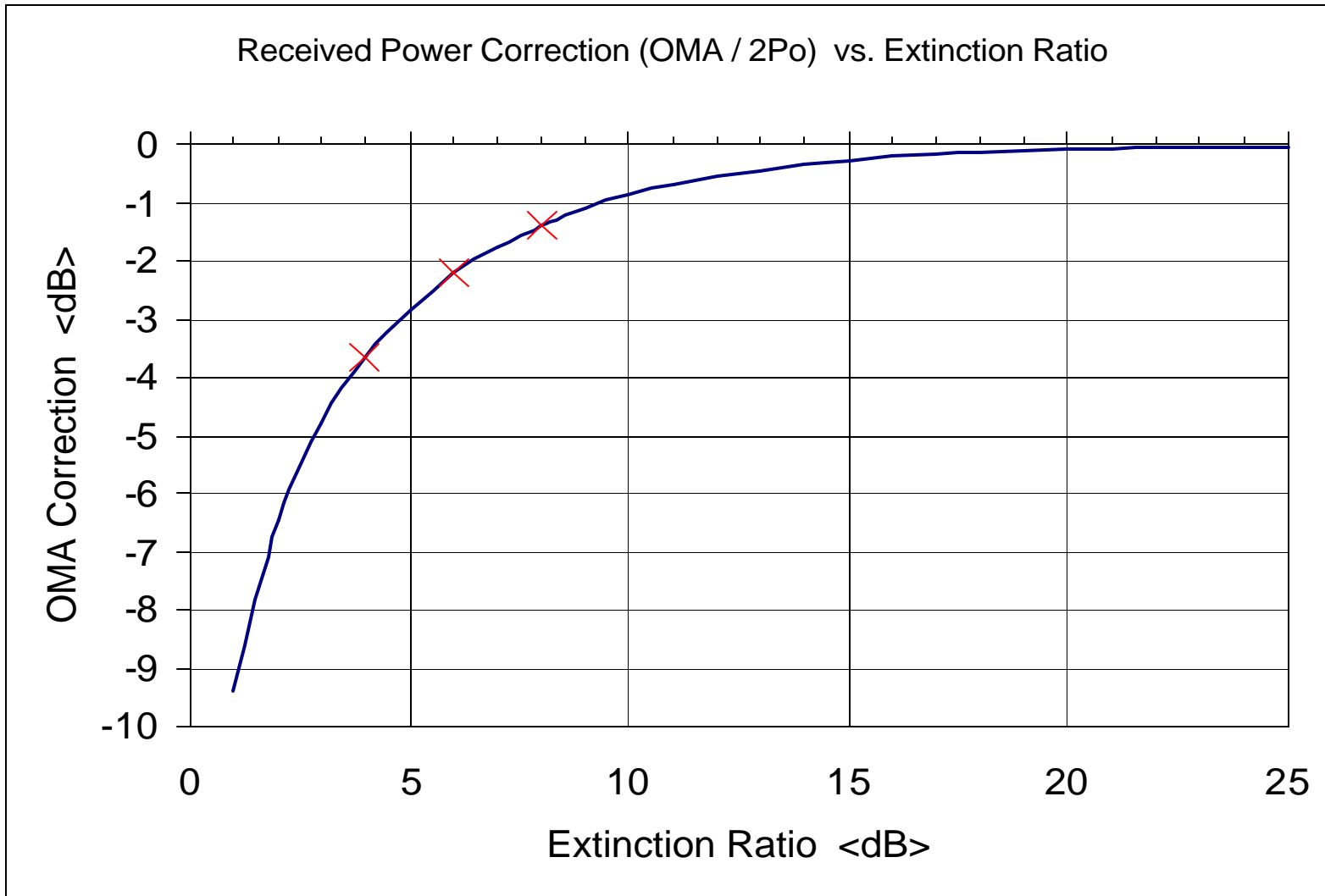


I_f = 40mA
I_{dc} = 54mA
E_r > 4dB

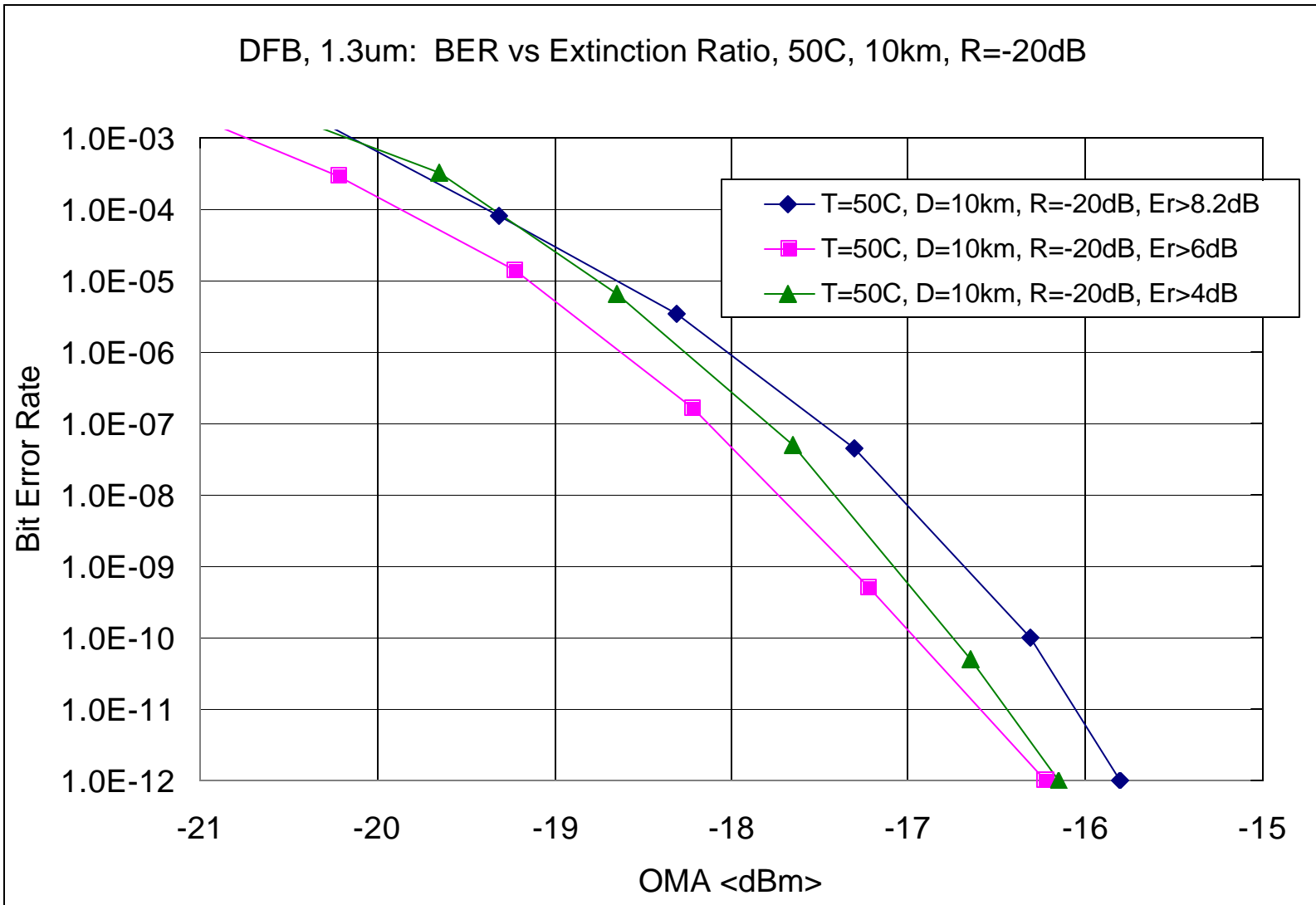
BER vs Received Power for Three Extinction Ratios



Received Power Correction for OMA



BER vs OMA for Three Extinction Ratios



Flexibility in ER might be advantageous

- Lowering Extinction ratio to 6 dB slightly improved absolute sensitivity
- Lowering extinction ratio to 4 dB slightly decreased absolute sensitivity

For long distance:

- Unspecified or too low an ER might cause problems in amplified links

OMA is OK as long as we don't overload receiver