400G-SWDM4.2 choices

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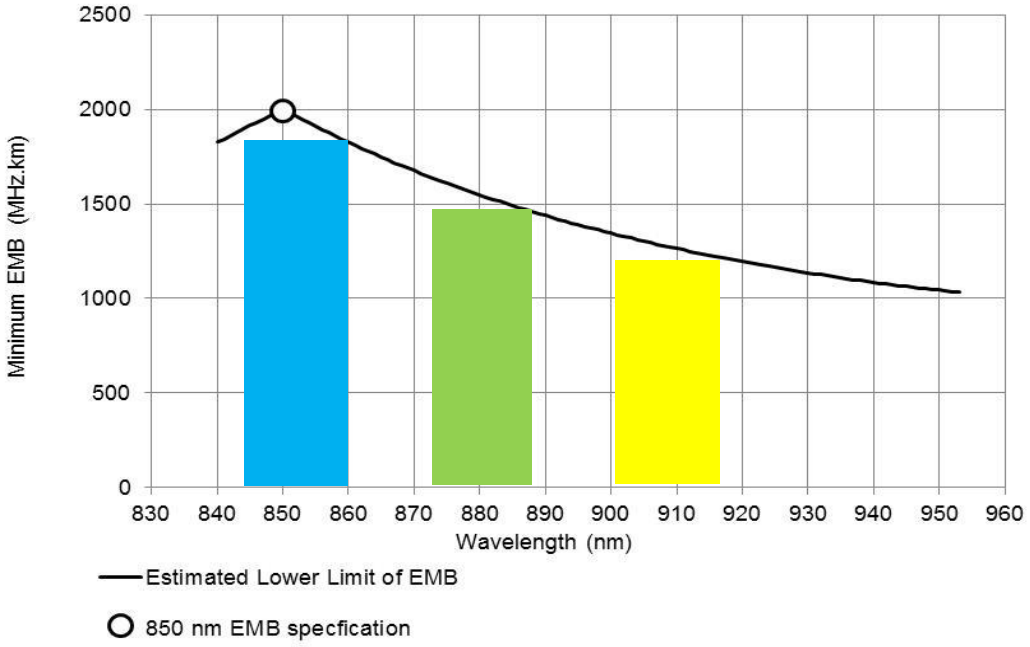
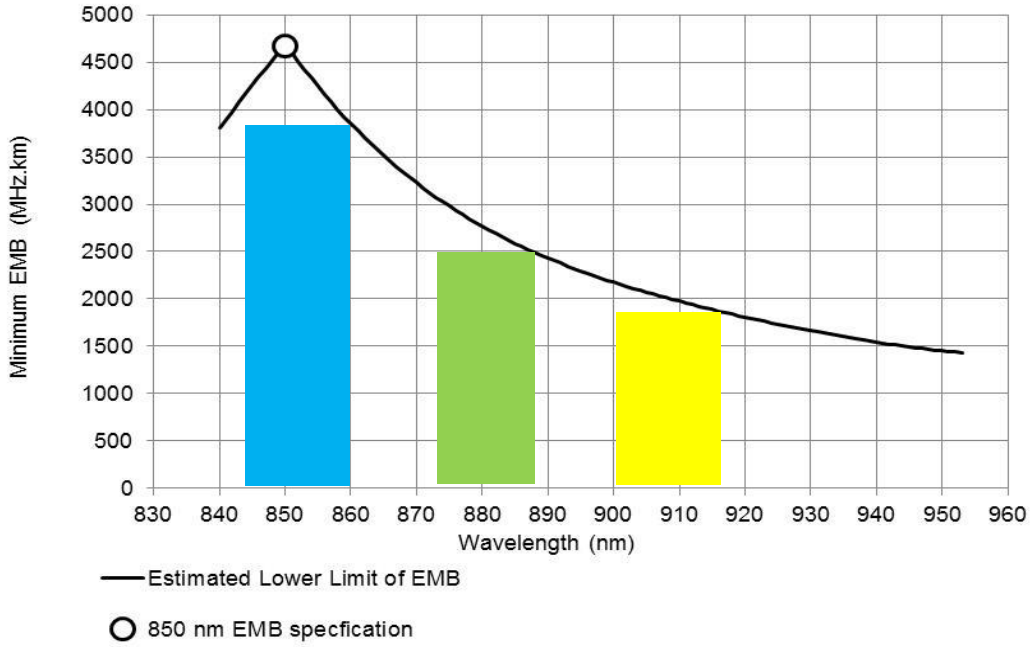
Options for 400G-SWDM4.2

- 2 wavelengths/fibre x 50 Gb/s PAM4 per wavelength = 400 Gb/s
- Choices:
  - Wavelengths
    - 850 nm and 880 nm, or 850 nm and 910 nm
  - Directionality
    - Co-directional (4 fibres per direction: 4 transmit fibres and 4 receive fibres)
    - Bi-directional (8 fibres with both directions on each)

Choice of wavelengths: EMB of OM3 and OM4 vs Wavelength

- Example channels: 844 nm to 858 nm; 874 nm to 888 nm; 900 nm to 916 nm
- Informative non-binding minimum EMB from IEC 60793-2-10



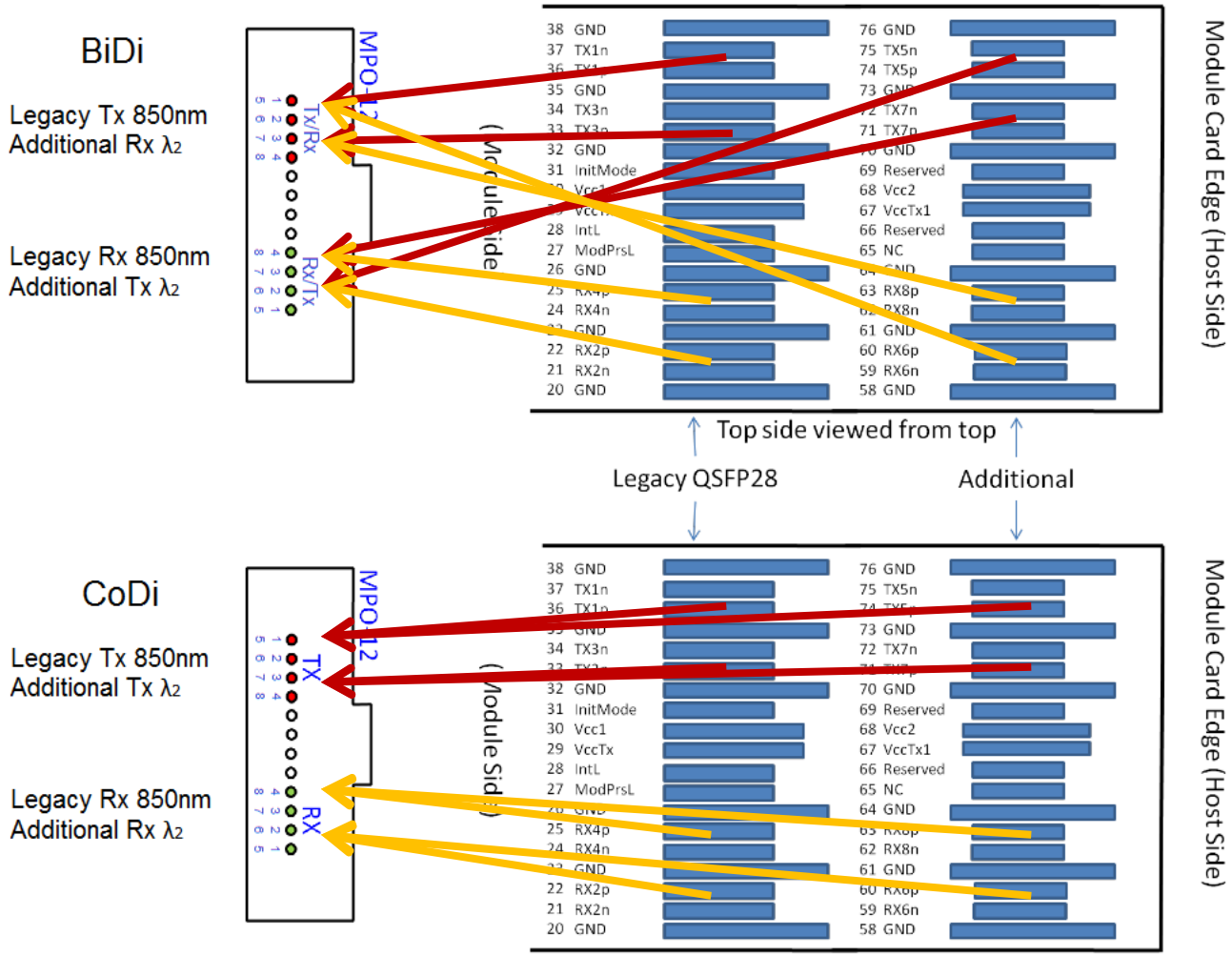


- 910 nm channel sees less chromatic dispersion than 880 nm, but more ISI due to the lower EMB.
- Result: for 100 m worst case OM4, a 910 nm channel has ~0.7 dB more ISI penalty than an 880 nm channel

CoDi vs BiDi: on board routing

Assumptions:

- Legacy lane mapping from QSFP will not be changed
- Legacy lanes must operate at 850nm wavelength
- Additional optical lane 5 maps to legacy 1, 6 to 2, 7 to 3, 8 to 4



- CoDi has simpler layout, enables a common manufacturing platform with 400G-SR8
- BiDi needs lane cross overs – significant signal integrity challenge, and higher cost PCB

Summary

- 4 fibres, 2 wavelengths/fibre x 50 Gb/s PAM4 per wavelength
- With
  - 850 nm and 880 nm wavelengths *for best link budget margin*

  and
  - Co-directional (4 transmit fibres and 4 receive fibres) *for lowest cost*