Long and Fast Wavelengths

For 25GBase and 50GBase BR20, BR40, and BR40+ PMDs

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Things to consider in wavelength choice

- The width of the bands influences if cooling is required and/or what the laser yield will be (keeping in mind that the two ends may have different temperature environments (ONU is outdoors, OLT indoors).
- The separation of the bands determines what diplexer filter tech is possible, and the ultimate isolation possible (keeping in mind that the Rx is likely to have a “clean up” filter right in front of it, so the diplexer does not need to be perfect).
- The placement of the bands determines the dispersive penalties one will suffer (again, depending on Tx technology).

Plan of Record (in draft D1.0 as placeholder)

- Upstream is 1290 ± 8nm, Downstream is 1310 ± 8nm

- Advantages
  - Is very close to the CWDM normal wavelength assignments
  - Passband wide enough to allow uncooled Tx
  - Upstream is entirely in negative dispersion region
- Disadvantages
  - Guard band between channels is only 4 nm (4x less than passband)

Proposal from Shuai_3cp_01_1909

- Upstream is 1294 ± 2nm, Downstream is 1308 ± 2nm

- Advantages
  - Guard band is 10 nm (2.5x more than passband)
  - Reuses wavelengths from LR4 PMDs
- Disadvantages
  - Will require Tx cooling

Possible optimization

- Upstream is 1288 ± 8nm, Downstream is 1312 ± 8nm

- Advantages
  - Guard band is 8 nm (2x less than passband, which is like CWDM filters)
  - Passband wide enough to allow uncooled Tx
  - Upstream is entirely in negative dispersion region
  - The Shuai plan fits entirely inside of these bands
- Disadvantages
  - Somewhat nonstandard wavelengths