Update on G.652 fiber chromatic dispersion, and how to do 200 Gb/s

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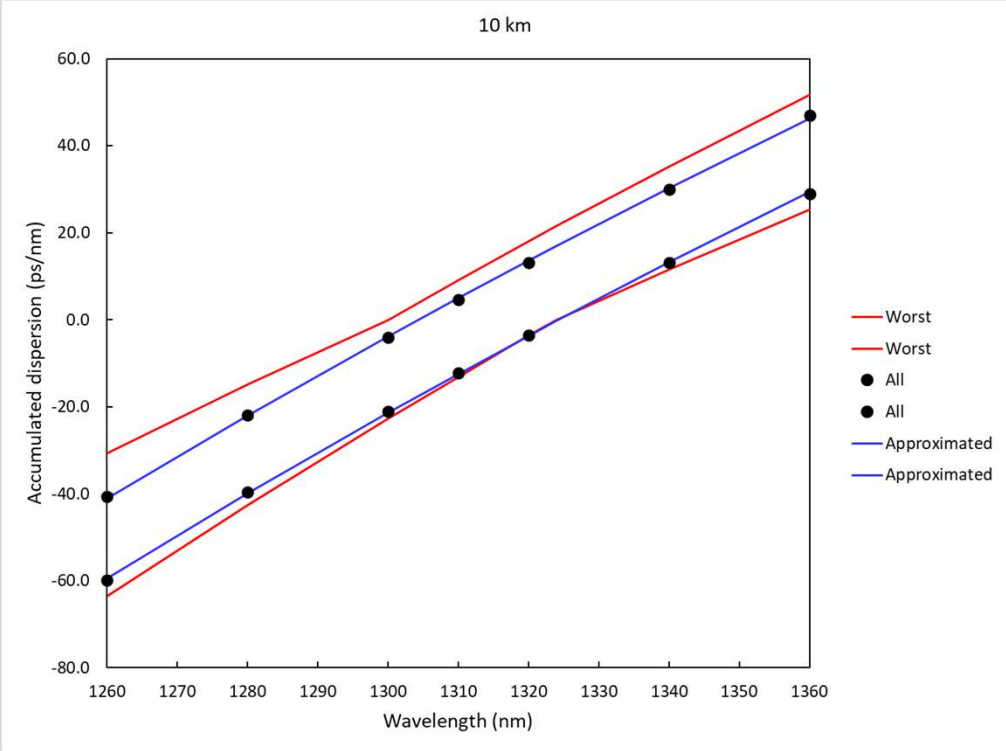
Simplest way to 200 Gb/s – 2x the channel

- The 100 Gb/s links are using the 800 GHz channels at 1304.5 and 1309 nm
- The most straightforward way to get to 200 Gb/s would be to find two more channels
- Staying on the 800 GHz grid, the likely suspects: 1300 and 1313.5 nm (actually, the minimum wavelength is 1299, and the max is 1314.5 nm)

Correspondence activity on G.652 CD

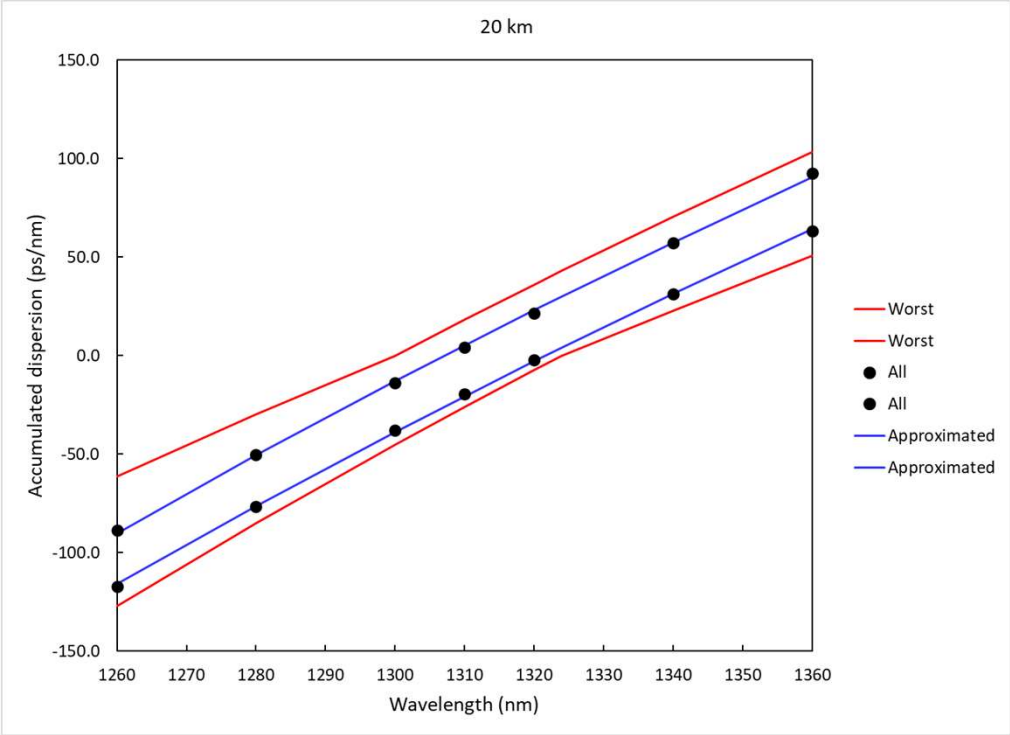
- It is known that real fiber links do not have the worst-case dispersion as predicted by the min and max CD values from G.652
  - Manufactured fiber has a truncated gaussian distribution of CD parameters
  - Longer fiber links are generally composed of several lengths of cable, each of which exhibits CD parameters that are largely uncorrelated with each other
- ITU-T Q2/15, Q5/15, and Q6/15 have collected data from the eight major fiber manufacturers to better understand these factors
  - The results on the following pages give the min and max CD (ps/nm) for 10, 20, and 40 km fiber links
  - NOTE: This is preliminary data, displayed here for the purposes of evaluating the feasibility of the 200 Gb/s bidi PMDs. This is NOT A FORMAL LIAISON!
    - It is expected that liaison activity will occur in the near future

10 km CD limits for 0.01% confidence



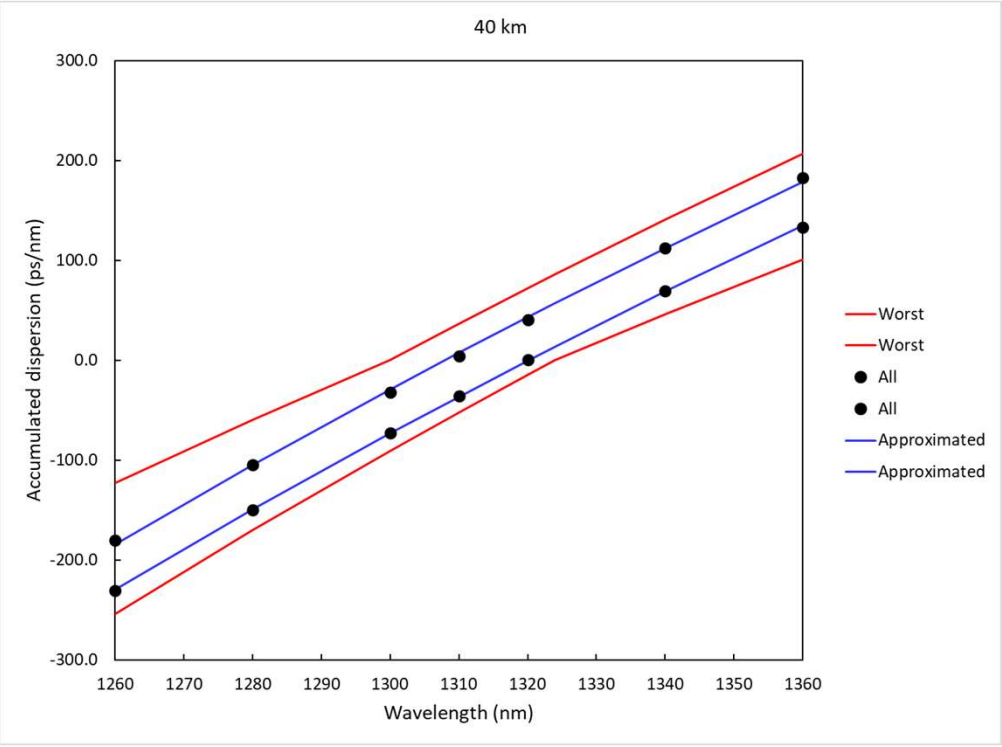
1299 nm min CD = -22.2 ps/nm
1314.5 nm max CD = 8.3 ps/nm

20 km CD limits for 0.01% confidence



1299 nm min CD = -42.23 ps/nm
1314.5 nm max CD = 14.75 ps/nm

40 km CD limits for 0.01% confidence



1299 nm min CD = -78.3 ps/nm
1314.5 nm max CD = 22.45 ps/nm

-60 ps/nm = 1304 nm
+30 ps/nm = 1316.5 nm

Options for 40 km wavelength plan

- Sticking with the usual Ethernet wavelengths isn't possible
- One option would be to move to a 400 GHz grid
  - 1304.5, 1306.75, 1309, 1311.25 nm
  - This leaves practically no guard band for the optical filters
- Another option is 600 GHz grid
  - 1304.5, 1307.5, 1311.5, 1313.5 nm
  - This has 1 nm guard band – maybe possible
- Of course, there is always the 50 Gb/s/channel scheme, where dispersion is not a big factor

Thank you

Any questions?