New Datacom Laser Source Standard

Market Focus Session 2 Wednesday 16:40 17:00 CET

9 December 2020

Chris Cole

Chair, CW-WDM MSA

https://cw-wdm.org/

ECOC 2020

CW-WDM MSA

Why New Wavelength Grid Standard for Datacom?

- Choices for increasing optical data rate:
  - Speed (Baud rate)
  - Spatial Channels (Parallel)
  - WDM (Wavelengths)
  - HOM (Higher Order Modulation)
- Up to 10GbE: single wavelength, NRZ
- 40GbE and 100GbE: four wavelengths, NRZ
- 200GbE and 400GbE: four wavelength, PAM4
- 800GbE expected to stay at four wavelengths, with modulation TBD
- Industry debate: WDM & Parallel vs. DSP & HOM
- CW-WDM MSA is providing higher WDM alternative for emerging applications

CW-WDM MSA Organization

- Website: https://cw-wdm.org/
- Formed: April 2020
- Chair: Chris Cole, II-VI
- Editor: Matt Sysak, Ayar Labs
- Associate Editor: David Lewis, Lumentum
- Marketing: Kristine Raabe, Ayar Labs
- First standard to specify 8, 16 and 32 λ CW laser sources
- No link specifications
- Optimized for photonic integration like SiPIC

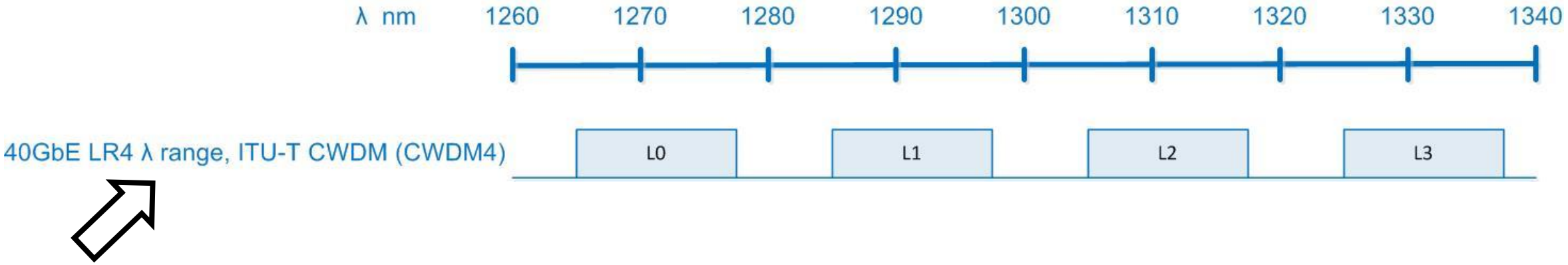
CW-WDM MSA Organization, cont.

- 11 Promoter Members:
  - signed CW-WDM MSA Document with standard legal obligations
  - develop the specifications
  - contribute and license IP
  - vote on the Standard
  - actively promote the MSA
- 28 Observer Members:
  - no legal or other obligations
  - receive MSA information on an ongoing basis
  - contribute to the specifications through Promoter Members

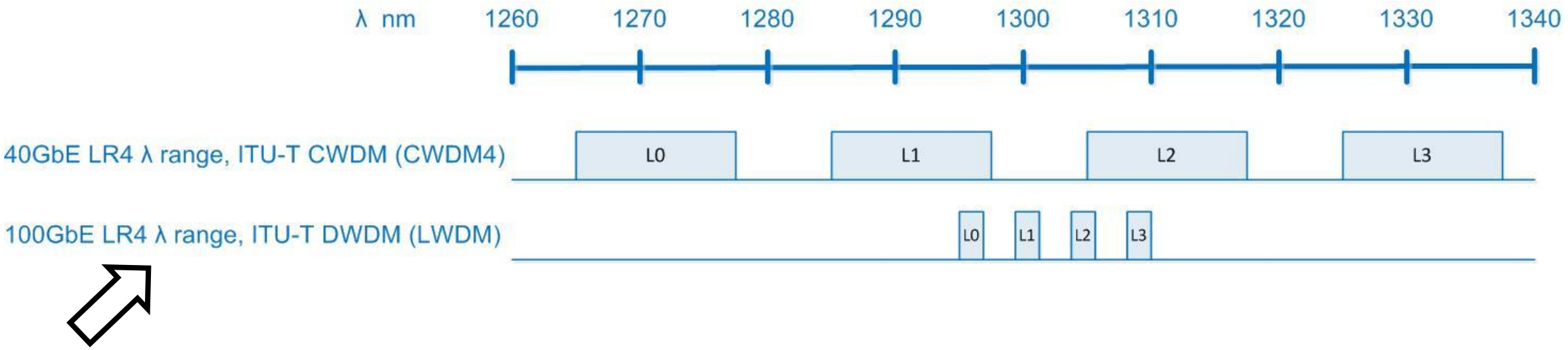
Promoter Members

Observer Members

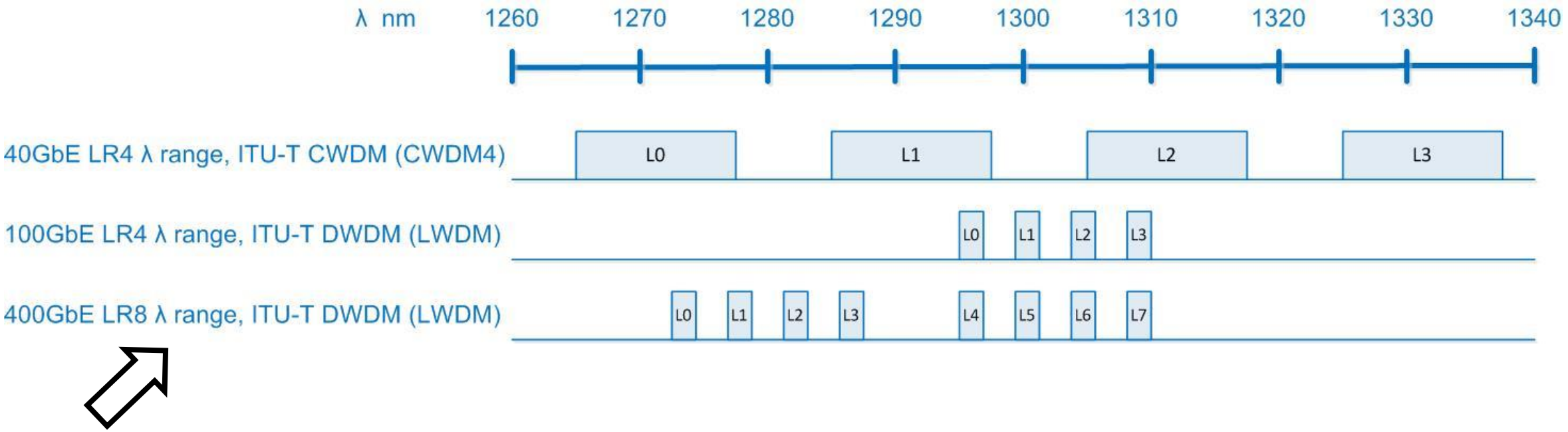
IEEE 802.3 40GbE LR4 λ Range (CWDM4)



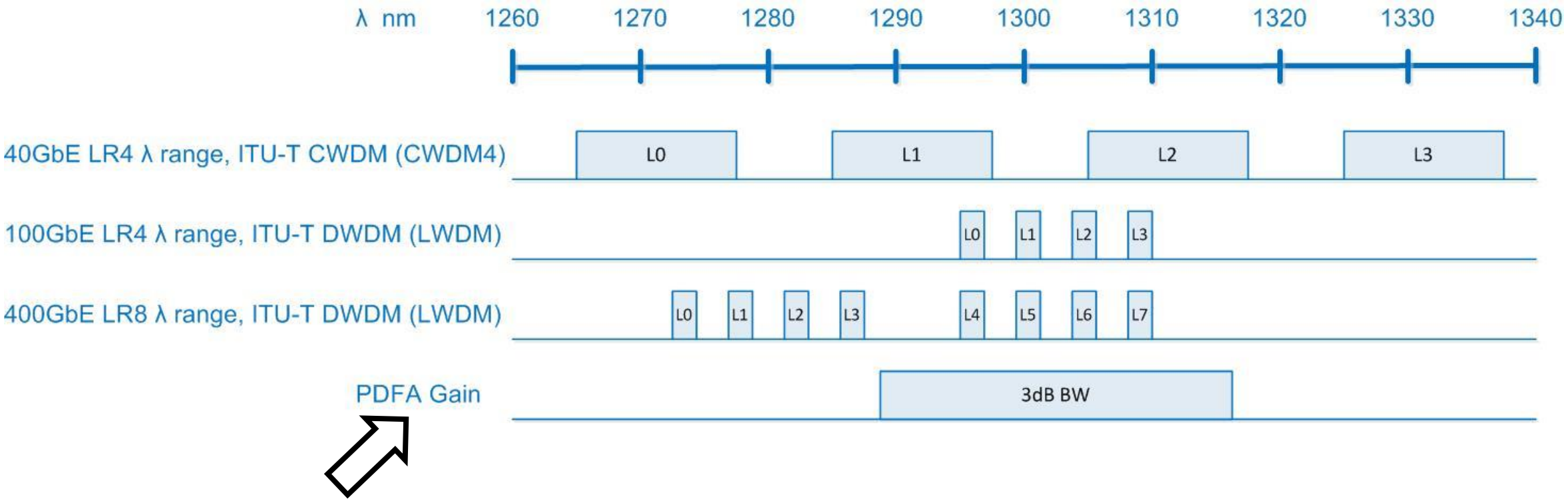
IEEE 802.3 100GbE LR4 λ Range (LWDM)



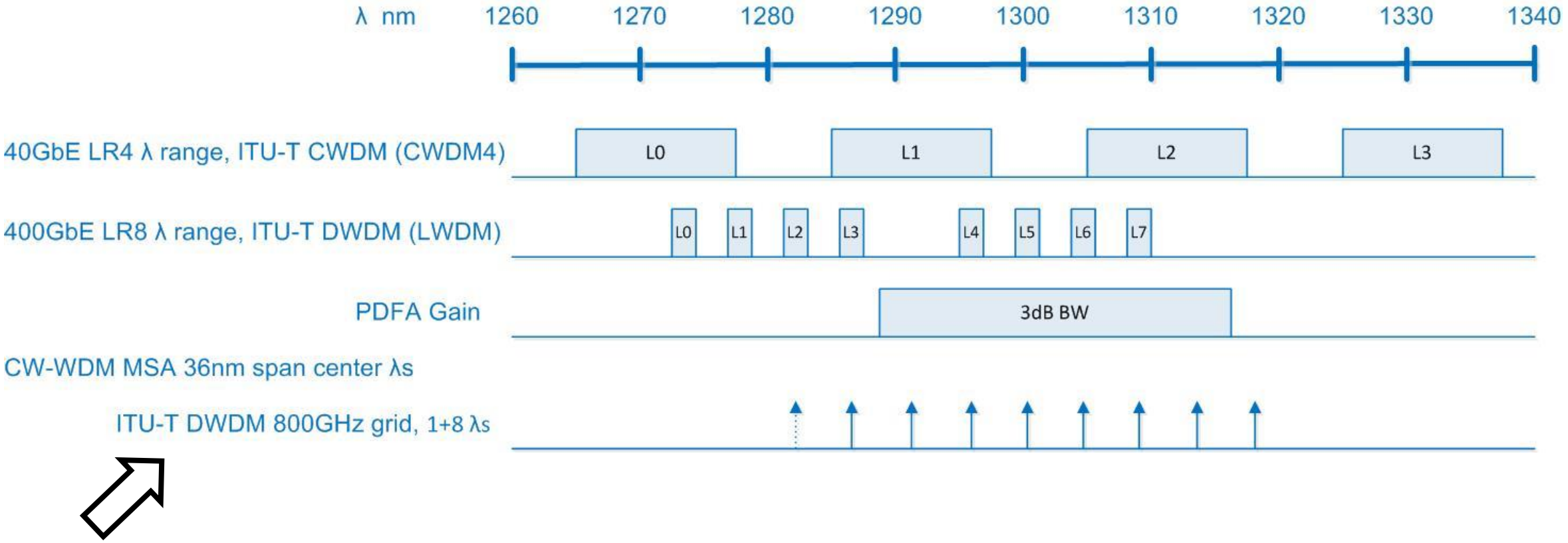
IEEE 802.3 400GbE LR8 λ Range (LWDM)



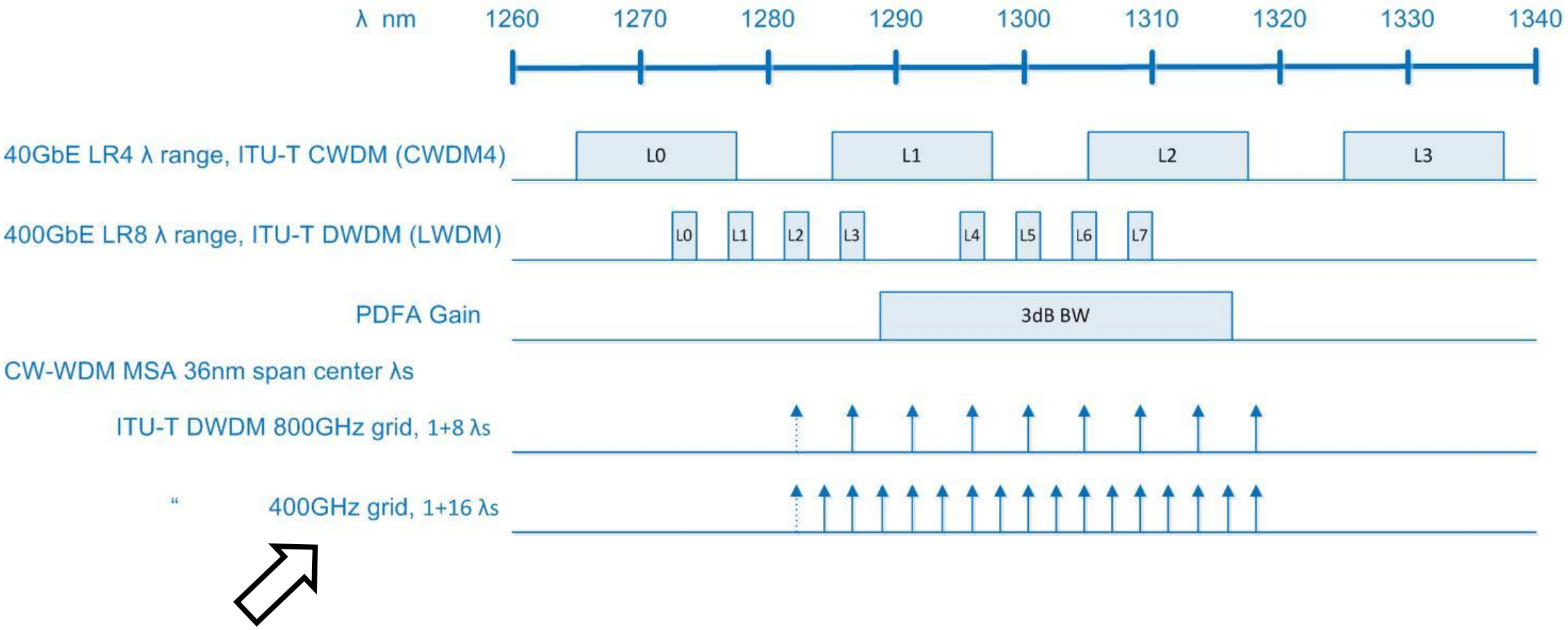
PDFA Gain Example 3dB Bandwidth



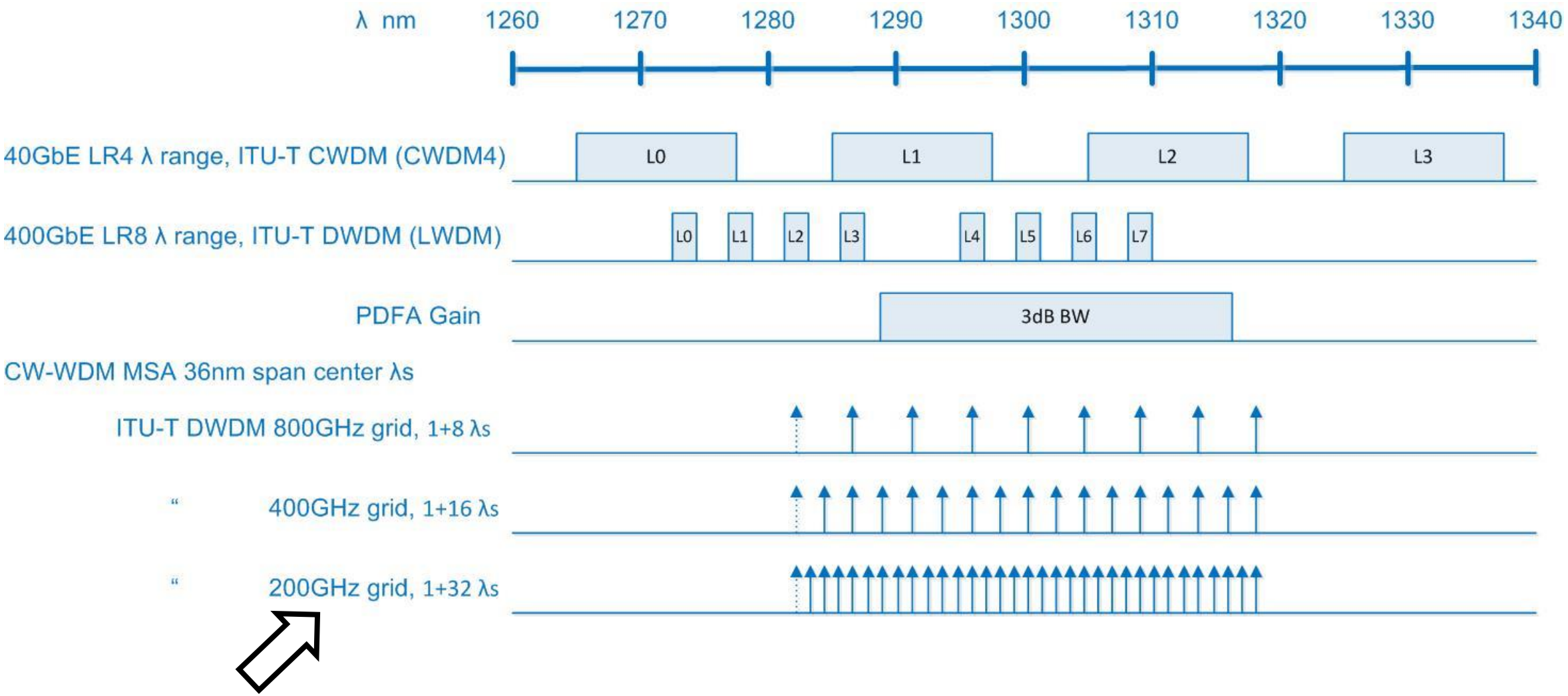
CW-WDM MSA 36nm Span Center λs, 800GHz Grid, 1+8 λs



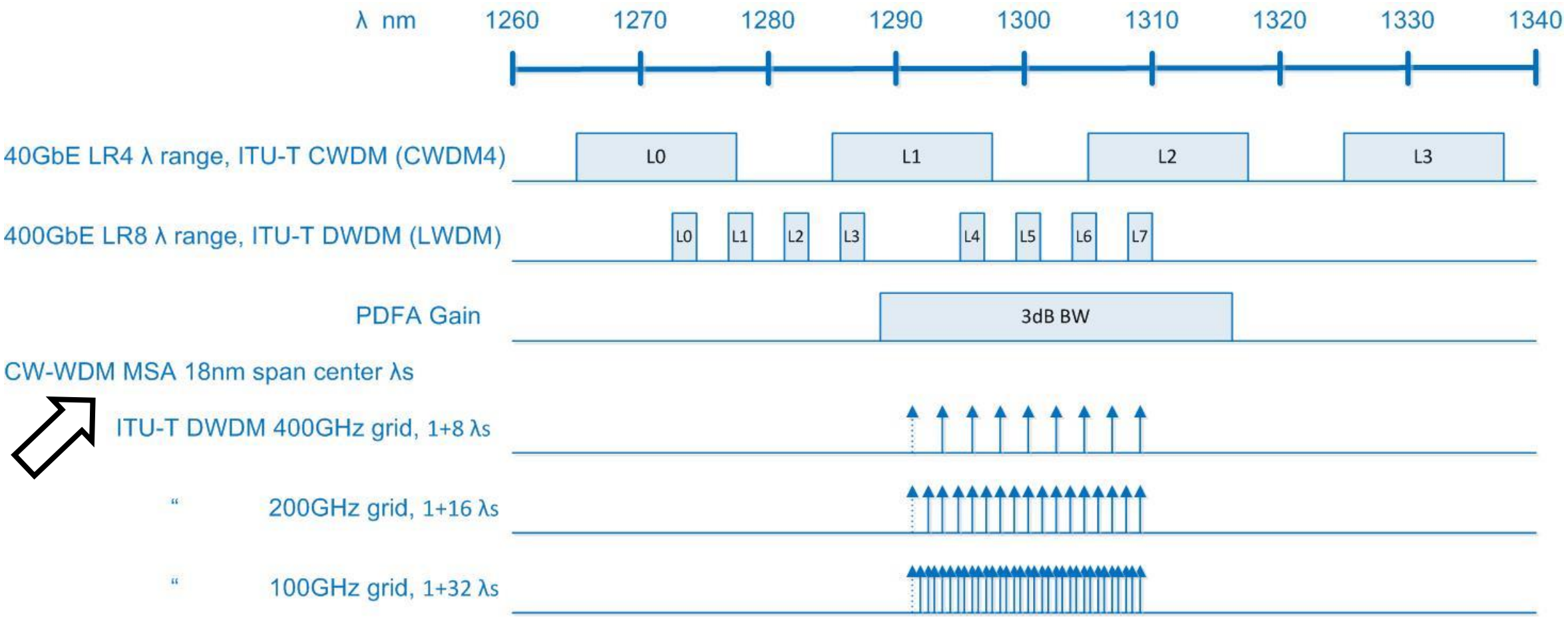
CW-WDM MSA 36nm Span Center λs, 400GHz Grid, 1+16 λs



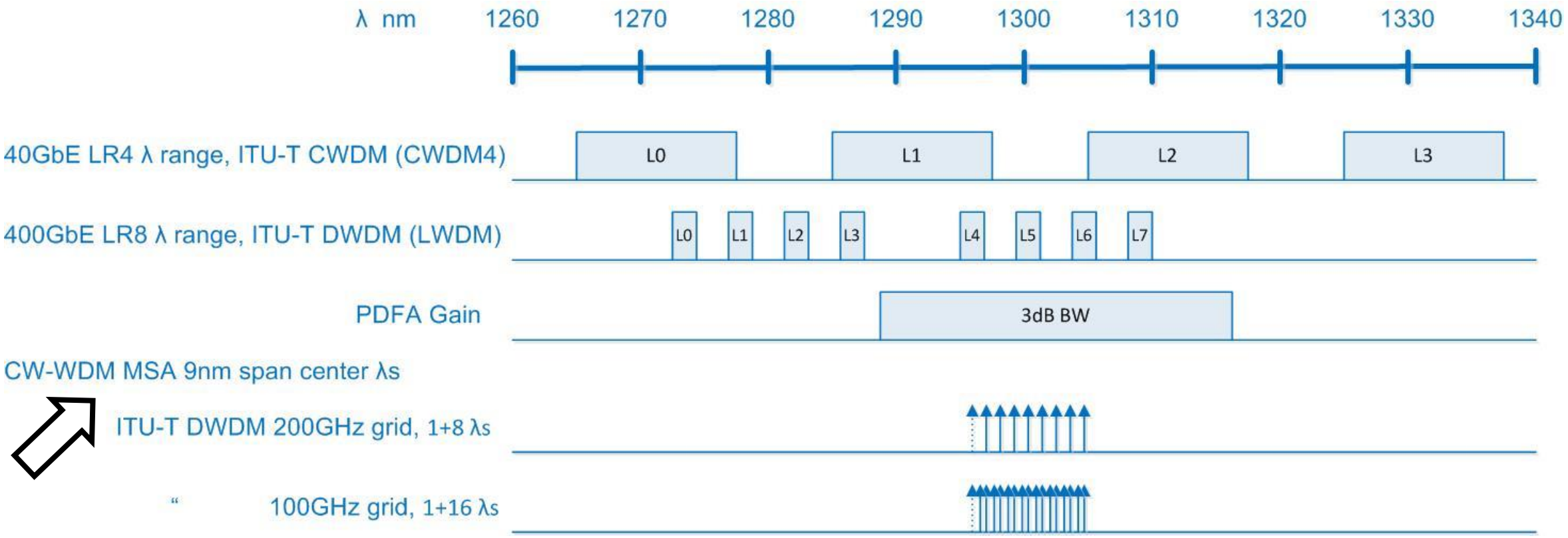
CW-WDM MSA 36nm Span Center λs, 200GHz Grid, 1+32 λs



CW-WDM MSA 18nm Span Center λs



CW-WDM MSA 9nm Span Center λs



Proposed Output Power of all Wavelengths in a Single Fiber

Output Power class	9 nm span AOP (max)	18 nm span AOP (max)	36 nm span AOP (max)	Units
Type 1 Eye Safety Limit	TBD	20	14	dBm
Type 2 Eye Safety Limit – 6dB	TBD	14	8	dBm
Type 3 Eye Safety Limit + 6dB	TBD	26	20	dBm

AOP: Average Optical Power

Proposed Wavelength Accuracy

Source Type	Center Wavelength Variation	Total Wavelength (Grid) Drift	Units
Type I > Grid Spacing	± 5.0	5.0	nm
Type II < Grid Spacing	± 0.5	0.5	nm

Status

- First public draft published on the MSA website:
  https://cw-wdm.org/?wpdmdl=2092
- Out for Promoter and Observer review and comment resolution
- Input from the entire community welcome
- Multiple technical issues open
- Target publication by OFC 2021 in June.

New Datacom Laser Source Standard

Thank you

9 December 2020

Chris Cole