Modification Proposal for 500m using 8x50G NRZ

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- Modification
  - Use of cheaper un-cooled DFB and array
  - Use of cheaper OSA structure

Transmit Characteristics (Modification)

- The same as cole_3bs_01a_1114 except below
  - Extinction Ratio: TBD (to consider uncooled DFB)
  - Transmitter 3dB frequency: Not specified

Transmit Characteristics ~~(duplex SMF)~~ Remove

Description	500m NRZ		Unit
Signaling Rate, each lane	53.2		GBd
Operating BER	2.0E-04		
Total average launch power (max)	11.2		dBm
OMA, each lane (max)	2.0		dBm
OMA, each lane (min)	-3.3		dBm
Launch Power in OMA – TDP, each lane (min)	-4.3		dBm
Transmitter and dispersion penalty, (TDP) each lane (max)	1.8		dB
Extinction ratio (ER) (min)	~~4.5~~ TBD		dB
RIN OMA (max)	-130.0		dB/Hz
~~Transmitter 3dB frequency (min)~~	~~21~~		~~GHz~~ Remove
Optical return loss tolerance (max)	20.0		dB

Receive characteristics (Modification)

- The same as cole_3bs_01a_1114

Receive Characteristics ~~(PSM4)~~ Remove

Description	500m NRZ		Unit
Signaling Rate, each lane	53.2		GBd
Operating BER	2.0E-04		
Receiver reflectance (max)	-26.0		dB
Receiver Sensitivity (OMA), each lane (max)	-8.8		dBm
Receiver 3 dB electrical upper cutoff frequency, each lane (max)	42.0		GHz
Stressed receiver sensitivity (OMA), each lane (max)	TBD		dBm
Conditions of stressed receiver sensitivity test	TBD		

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Link Power Budget (Modification)

- The same as cole_3bs_01a_1114

Illustrative Link Power Budgets ~~(PSM4)~~ Remove

Parameter	500m NRZ		Unit
Power Budget (for maximum TDP)	6.3		dB
Operating Distance	2.0		km
Channel Insertion Loss	4.5		dB
Maximum Discrete Reflectance	-26.0		dB
Allocation for Penalties (for maximum TDP)	1.8		dB
Allocation for Modulation Penalties	0.0		dB

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Wavelengths (Modification)

- Modify as below
  - Agreement with both end-channel wavelengths in 40GbE_LR4
  - These wavelengths may change with another 40gbE_LR4 wavelengths

WDM Lane Assignments

Lane	Center Frequency THz	Center Wavelength nm	Wavelength Range nm
L0	~~233.8~~	~~1282.26~~	~~1277.89 to 1286.66~~
L1	~~229.8~~	~~1304.58~~	~~1300.05 to 1309.14~~

Below

	Center Wavwlwngth	Wavelength Range
L0	1270nm	1264.5 to 1277.5 nm
L1	1330nm	1324.5 to 1337.5 nm

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Dispersion for wavelength

- Fiber dispersion were calculated as below.
- 2.5km can be achievable based on commercial available 25Gbit/s CWDM DFB's that is capable for 10km, assuming the same α-parameter

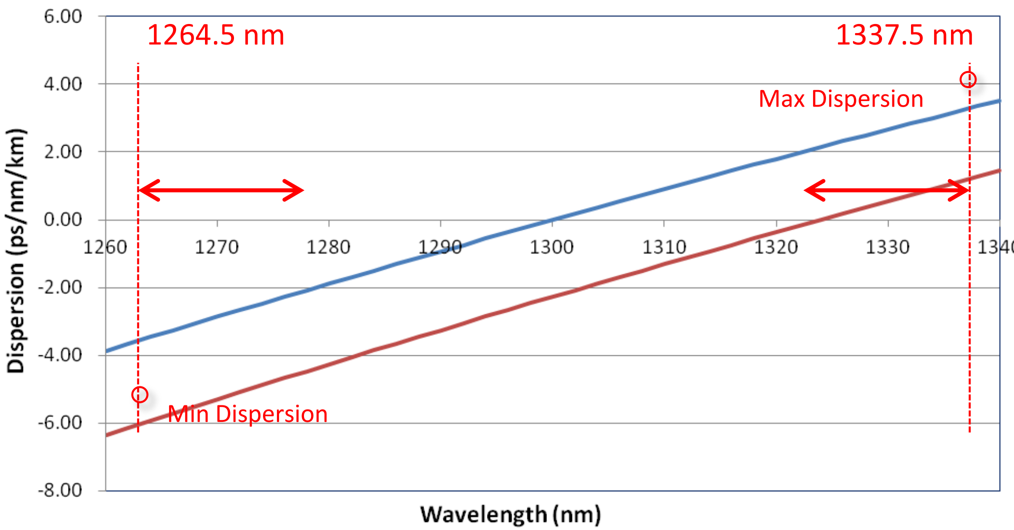
$$L \propto \frac{1}{B^2} \quad \text{where L : Transmission distance, B : Bit rate}$$

	Dispersion	500m
1264.5 nm	-5.87 ps/nm/km	-2.94 ps/nm
1337.5 nm	3.31 ps/nm/km	1.65 ps/nm

ITU-T G.652

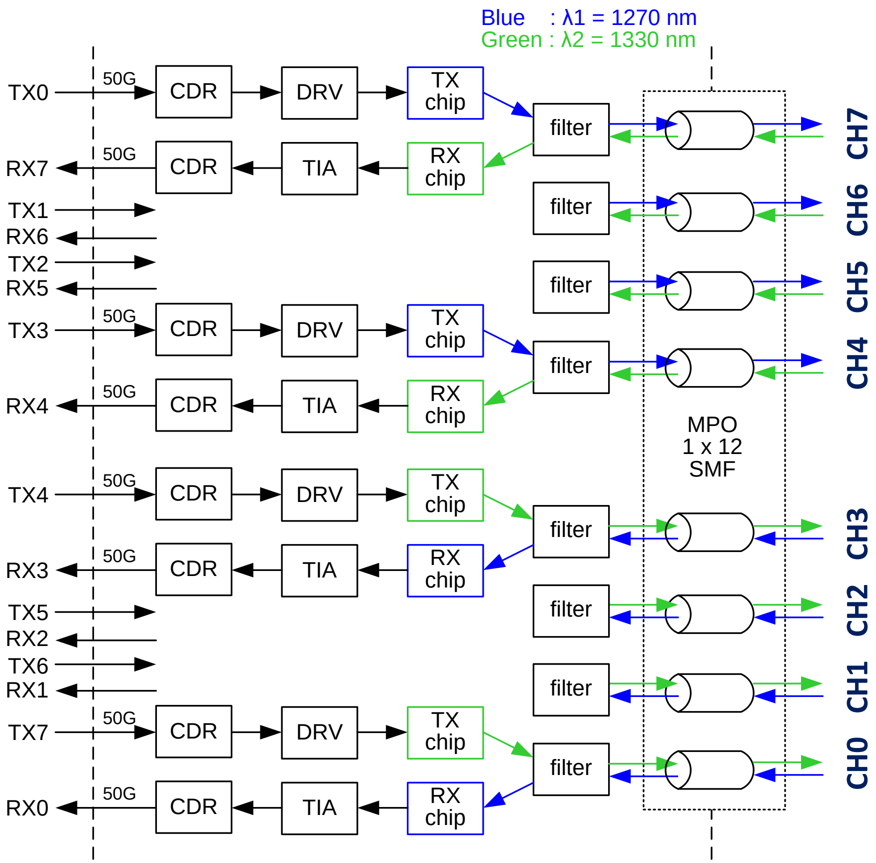
$$\frac{\lambda S_{0\max}}{4}\left[1-\left(\frac{\lambda_{0\max}}{\lambda}\right)^4\right] \le D(\lambda) \le \frac{\lambda S_{0\max}}{4}\left[1-\left(\frac{\lambda_{0\min}}{\lambda}\right)^4\right]$$

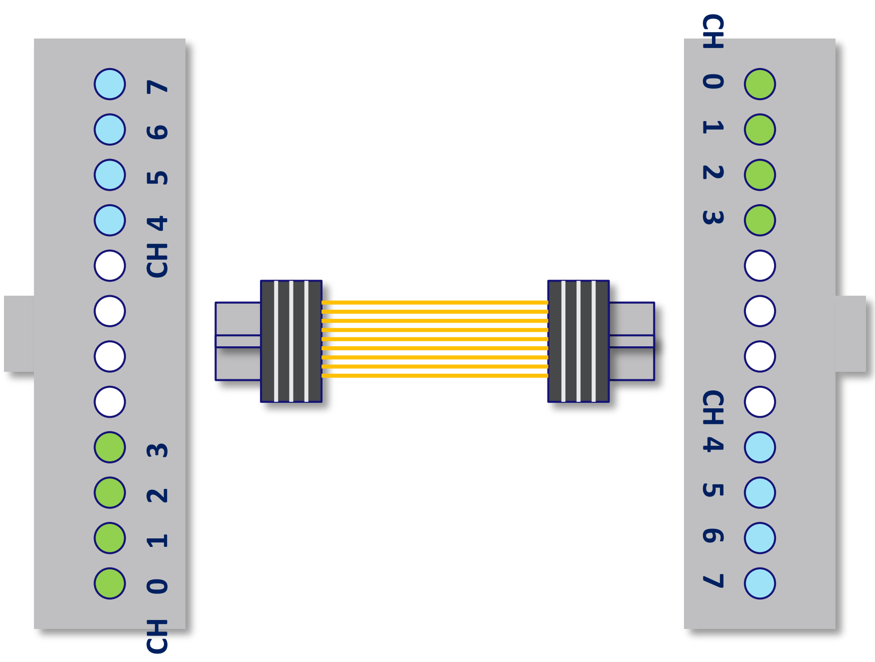
Chromatic dispersion coefficient	$\lambda_{0\min}$	1300 nm
	$\lambda_{0\max}$	1324 nm
	$S_{0\max}$	0.092 ps/nm^2 × km



Formation Proposal

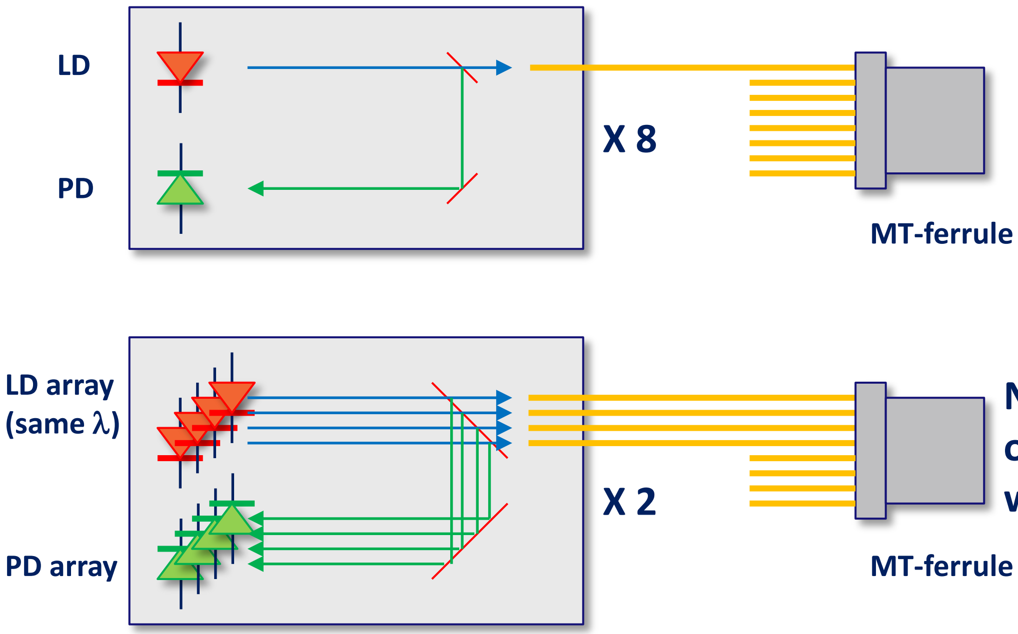
- BiDi





Examples of BOSA

- Lower cost optical coupling: Easier to align one LD or LD array to an SMF or SMF array then PD or PD array, respectively, than two LD’s or LD arrays to an SMF or SMF array



Number of each parts and optical couplings for LD and PD to SMF array will be reduced to two

Thank you