



Fiber Bragg Grating Based Dispersion Compensation Module Characteristics and Applications

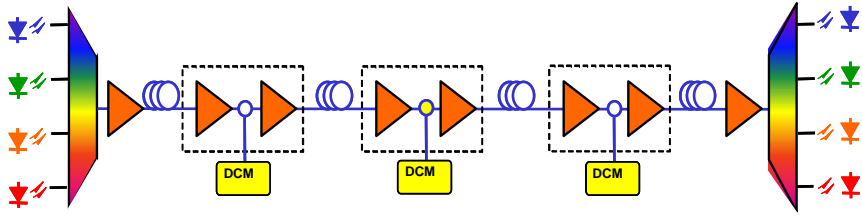
An Wei

Proximion, Stockholm, Sweden
www.proximion.com

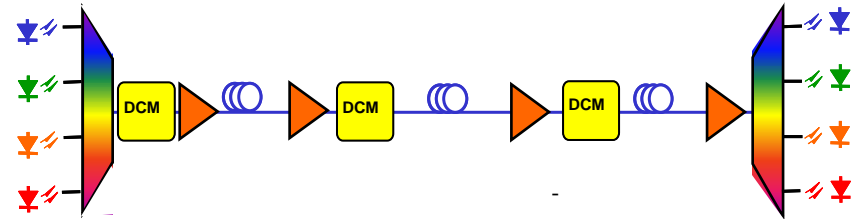


1. FBG-DCM Applications

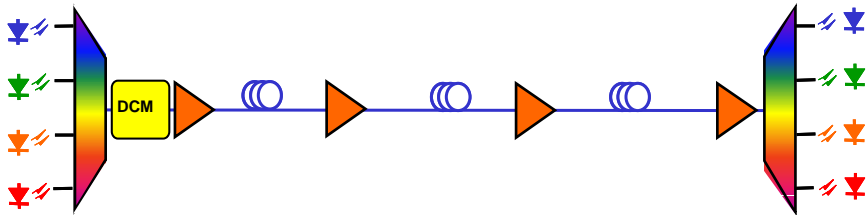
Long Haul Transport



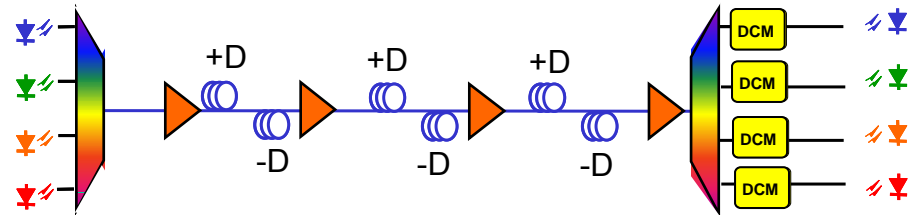
Distributed DC Transport



High Dispersion (pre-booster) Transport



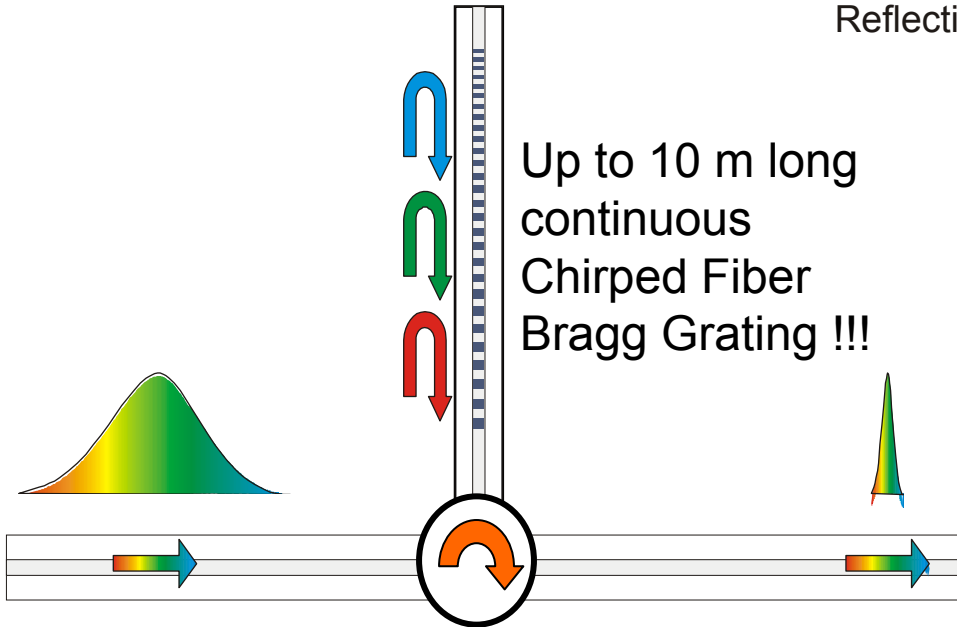
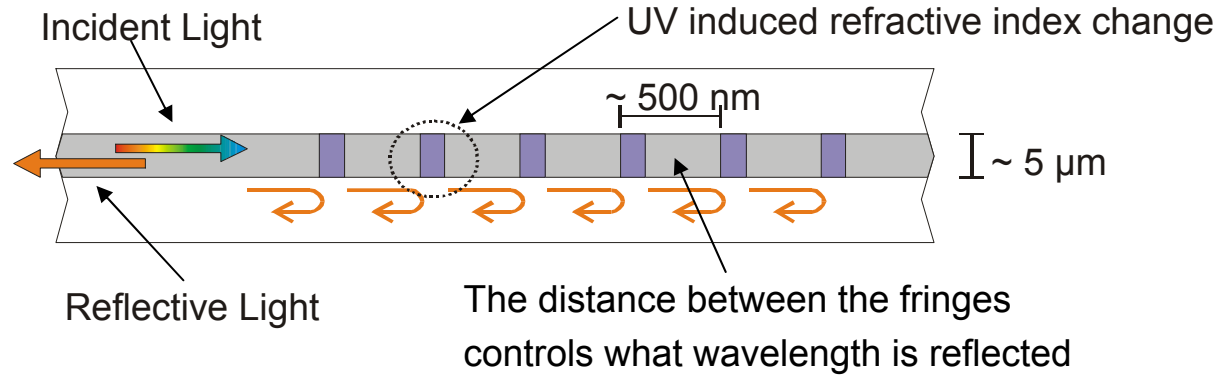
Submarine Transport



Typical Link Topologies



2. FBG-DCM Basic principle



For linear chirped FBG, the group delay difference with bandwidth of $\Delta\lambda$

$$GD = \frac{2n_g \times L}{c}$$

The chromatic dispersion is calculated

$$CD = \frac{GD}{\Delta\lambda} = \frac{2n_g \times L}{c \times \Delta\lambda}$$



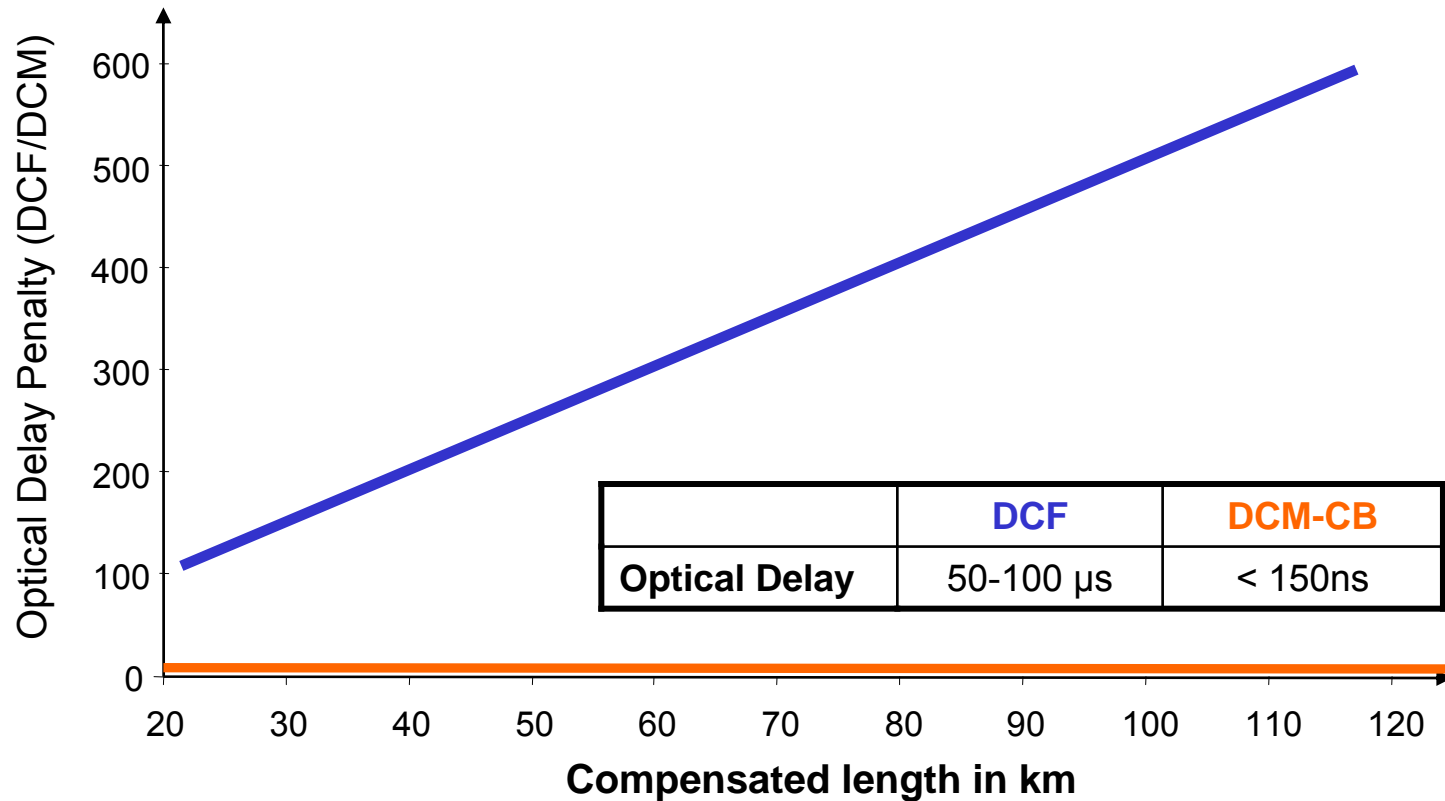
3. FBG-DCM key Characteristics

- Completely passive
- Ultra-low loss
- Small size that enables plug-in board solutions
- No non-linear effects, “No” latency
- Full dispersion slope compensation



Latency DCM-CB vs. DCF

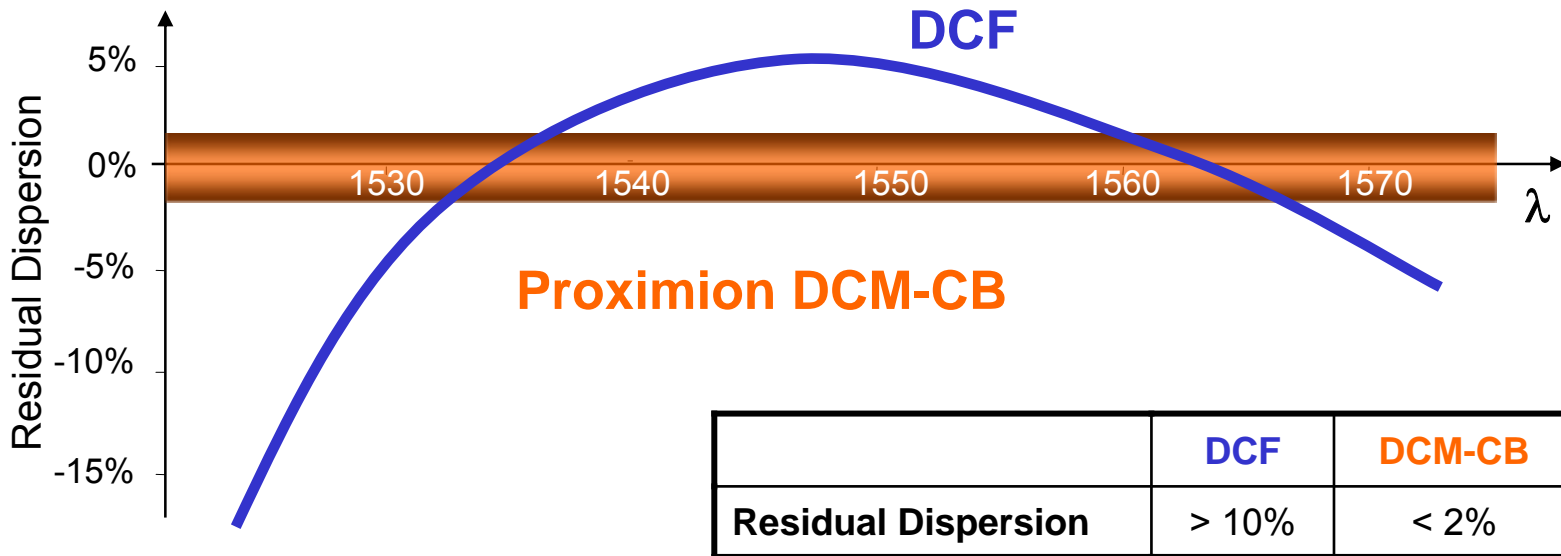
- **Low Latency**
 - DCM-CB technically superior to DCF (100 – 500 times)
 - Affects on effective Bandwidth????





Residual Dispersion DCM-CB vs. DCF

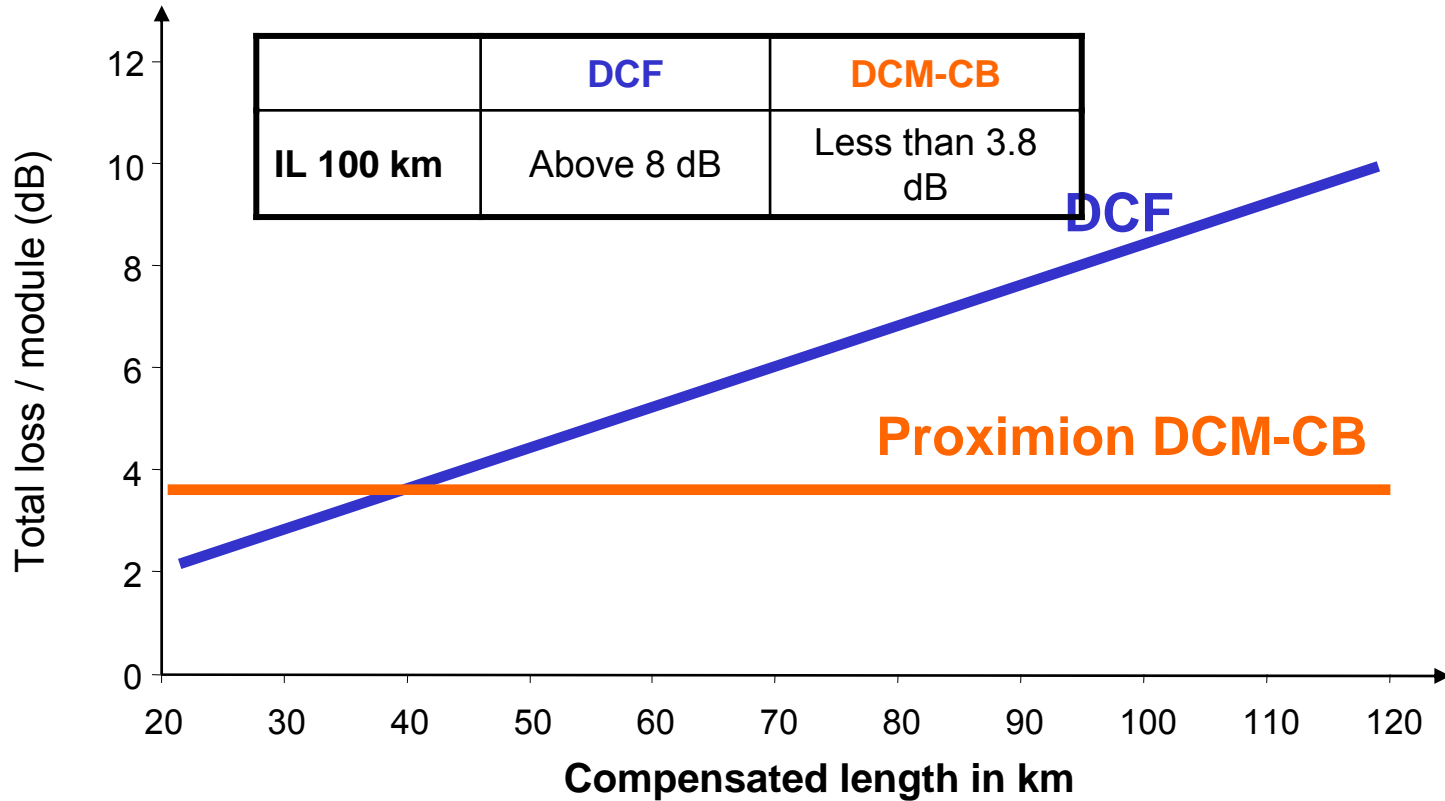
- **Low Residual Dispersion**
 - Tailor-made LEAF® Dispersion Compensation





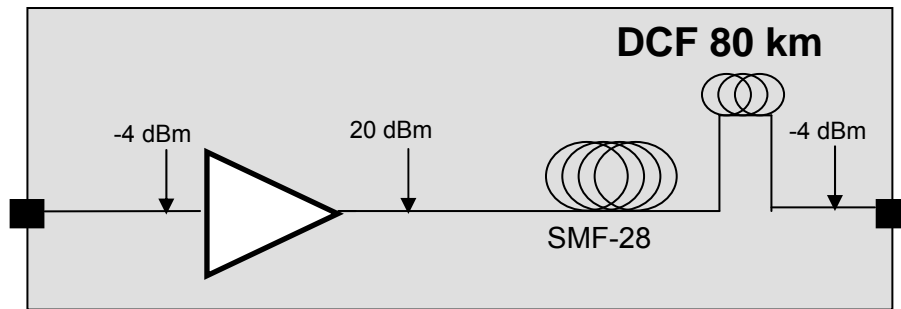
Insertion Loss DCM-CB vs. DCF

- **Low Insertion loss**
 - Span length independent
 - Enables low cost amplification solutions

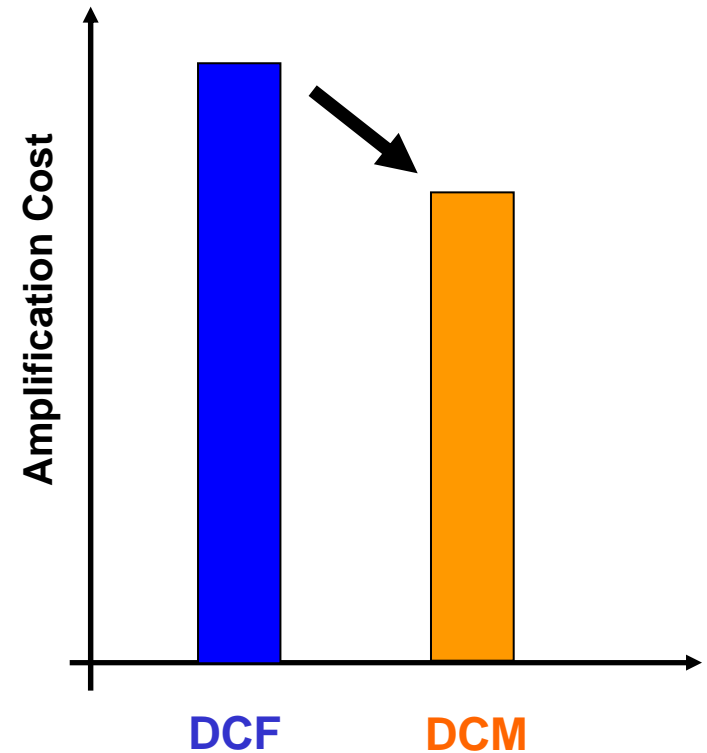
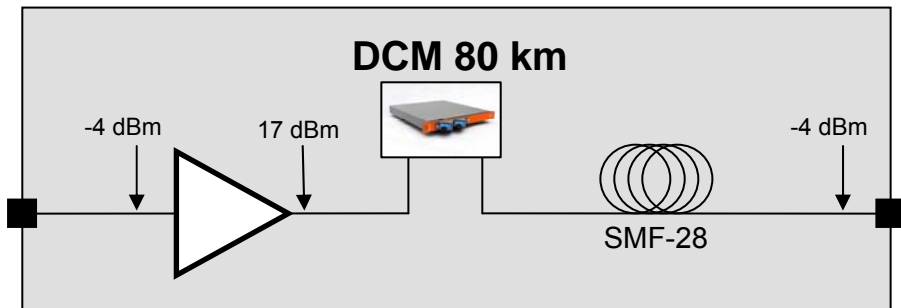


Low Cost Architectural Strategies Utilizing FBG-DCMs

Reduced Insertion loss directly gives cost saving on amplification



VS.



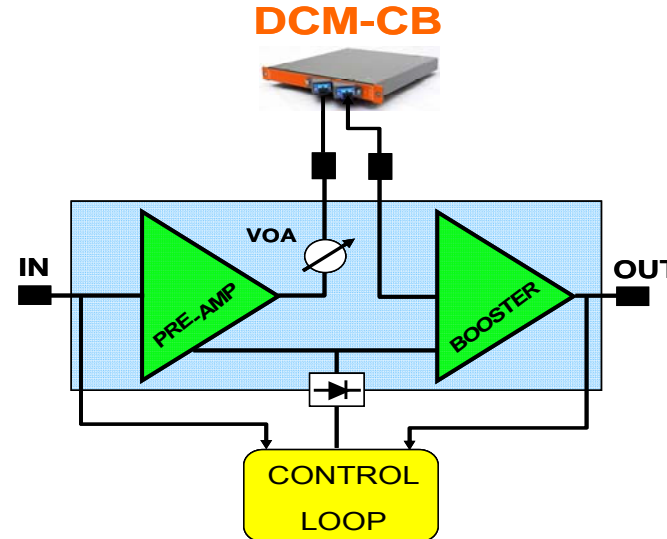
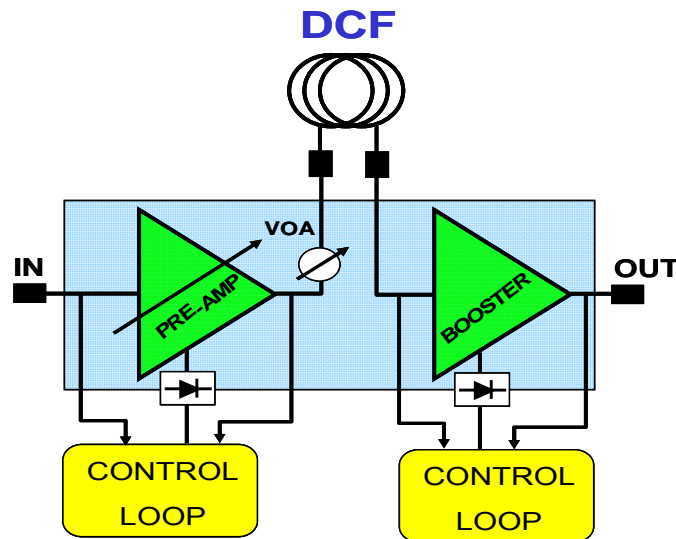


Enables Optimized Amplifier

Dual Stage Single Pump, Single Control Loop Amplifier

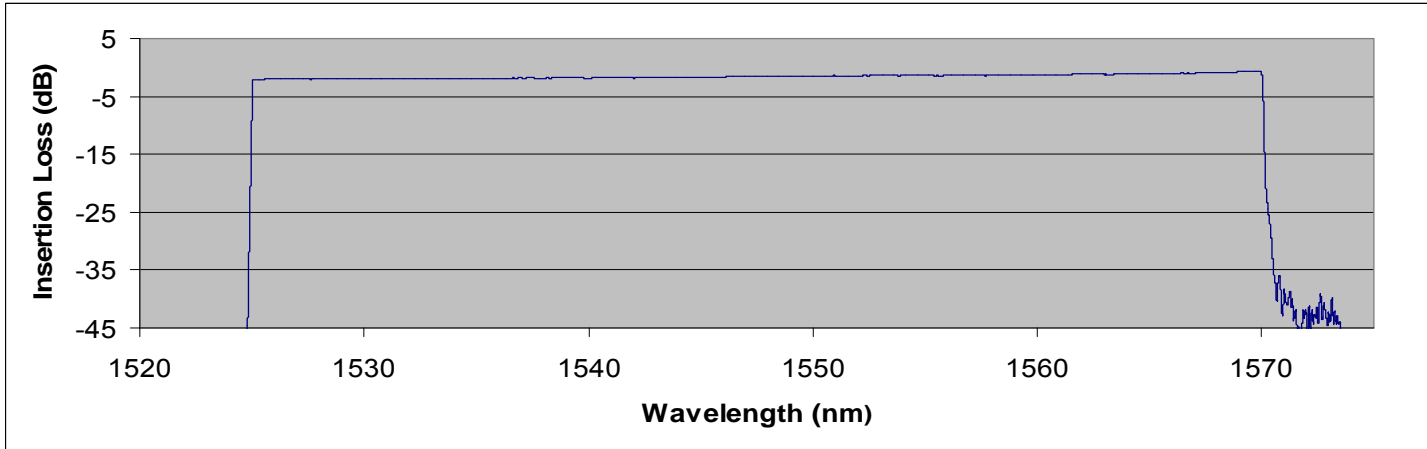
No Latency → Only one loop required for Transient Suppression
One loop enables the use of a Single Optical Pump

Low Loss → Less Pump Power, Low NF
Enables Single Stage pre-Amp



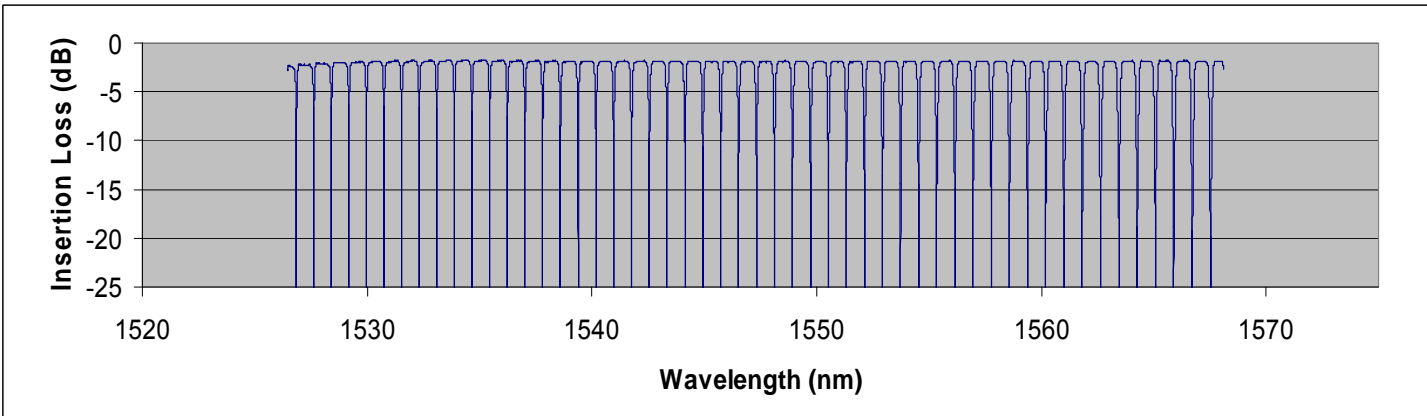


Fixed DCM products



DCM-CB

Continuous band



DCM-ITU

Channelized

与作者联系 (Contact Author)

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