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DCF Method for Dispersion Compensation in Optical Fiber Link for LongHaul Communication

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ABSTRACT

To improve the overall performance of the high speed transmission system, and reduce losses as much as possible, several dispersion compensation techniques are used. In this article, we proposed a model of the compensation schemes which performed according to the position of the DCF. In precompensation, the DCF is placed before the SMF. In post-compensation, the DCF is placed after the SMF. In symmetrical (pre-post), that is to say that the DCF is placed before and after SMF, with bit rates 10 Gbit /s having SMF of length 100km and DCF of length 21.25 km. The performances have been compared on the basis of parameters such as Q factor and bit error rate (BER). All the simulation work is done with the help of Optisystem Software version 7.0. It is concluded from the results that the symmetrical compensation technique shows performs better than pre and post compensation technique in the system for long haul.

f= 193,1THz			
	Pré	Post	Symmetrical
Q-Factor	16.7698	25.729	53.7365
BER	1.2365e ⁻¹¹⁴	2.916675e ⁻¹¹	⁹ 3.2569e ²¹¹
f= 193,3 THz			
	Pré	Post	Symmetrical
Q-Factor	14.2010	23.4222	48.6325
BER	1.2365e-90	8.3886 ^{e-111}	2.2362 e ⁻¹²⁵
f= 193,5 THz			
	Pré	Post	Symmetrical
Q-Factor	13.9568	22.3698	45.7218
BER	6.227 e-70	1.97269 e ⁻⁸⁹	1.6034e ⁻¹¹³

Table.1. Comparison of three different techniques at different frequency at 193.1 THz, 193.3THz and 193.5 THz

Keywords: Dispersion Compensation DCF, BER, Q factor, Pre, Post, and Symétrique Compensation..

