
ABSTRACT

Optical communication system 40Gbit is a continuation of previous technology i.e. 2Gbit and 10Gbit, but with the increasingly rapid development of technological capabilities required to support the transmission. Creating a system with data rate increases but still maintaining the consistency of the quality we call here BER with sensitivity and SNR who will also be the bigger challenge is the technology that will be faced. That things will affect some of the natural characteristics of the optical system, such as the effect of an system which includes linear dispersion of chromatic (Chromatic Dispersion) and polarization mode dispersion (Dispersion Polarization Mode). Second it is an aspect that must be considered in maintaining the consistency of the quality of the optical communication system. From this arose a few optical modulation formats on a transmitter that can support limitations and improvements in terms of increased bandwidth efficiency, quality of the optical signal and optical network capacity.

Optical modulation formats that supports 40 Gb DWDM own assortment like RZ and NRZ, DPSK using DQPSK, and combination of both the DP-QPSK modulation. The modulation format certainly has characteristic. In this study will use a modulation format that can also works and compatible with 2 G and 10 G DWDM technology, so the network will be able to work according to the needs and capacity of each on the distribution points node.

The output of this research is looking at how a modulation format used the RZ and NRZ-DQPSK affects system performance, affect the quality of the optical signal is composed of several parameters such as sensitivity OSNR (Optical Signal to Noise Ratio), Chromatic Dispersion tolerance of instrinstik systems, polarization mode dispersion tolerance and spectral optical signal that savings can be suppressed so that overall the parameter supports optimal optical transmission system.

Keywords: DWDM, Dispersion-Chromatic, Polarization Mode Dispersion, NRZ-RZ Format, DQPSK