ABSTRACT

NG-PON2 was first introduced by ITU-T in 2013 for the G.989.1 standard and continued G.989.2. NG-PON2 has a 40 Gbit / s of bitrate and becomes a system that implements TWDM (Time and Wavelength Division Multiplexing) technology. But from many advantages of NG-PON2 it still has losses that the influence of network performance is said to be good. One of the NG-PON2 losses is optical non-linear effect (Kerr Effect).

More deeply observed Kerr Effect can cause some effects such as, Self Phase Modulation (SPM), Cross Phase Modulation (XPM), and Four Wave Mixing (FWM). This research has two scenarios to prove the effect of non-linear on NG-PON2 performance. In the first scenario determine the NG-PON2 system to be tested for its performance against non-linear effects. The second scenario performs SPM and XPM simulations on bidirectional optical fiber parameters and simulation n_2 (non-linear refractive index) by changing the value of its order based on the refractive index refractive index.

This research resulted the parameters of XPM and SPM did not significantly affect the performance of NG-PON2. This study also found that NG-PON2 performance decrease significantly occurred in non-linear refractive index values of 10^{-18} by order, so with a large order values can cause damage to each channels. In addition, NG-PON2 has the best performance on 100 GHz channel spacing with 4 and 8 lambda channel numbers that have been affected by non-linear effects.

Kata kunci : NG-PON *stage 2, fiber optic, Passive Optical Network*.