

## ***ABSTRACT***

Optical fiber can transmit information at high speed over long distances, a small noise, and wide bandwidth. However, the level of information that is sent through an optical fiber is always decreasing, the cause is the presence of noise. One effort to decrease the level prevents the power delivered is by installing an optical amplifier.

EDFA (Erbium Doped Fiber Amplifier) is one of the optical amplifier that can provide reinforcement directly on the optical signal, but with the added noise ASE (Amplified Spontaneous Emission). Noise ASE which is the main source of noise in EDFA. The purpose of making this final project is to suppress the noise ASE generated by EDFA is not flat at a 1531 nm. The flat noise ASE spectrum can improve the transmission distance and increase the number of transmission channels which is very useful in DWDM system.

The amount of noise ASE generated by EDFA can be suppressed using Fiber Bragg Grating filters. In this final project simulation, FBG can minimize noise ASE by -2.5655 dB with FWHM 10.5380 nm, bragg period 524.3151nm, and length of bragg 78.6473  $\mu\text{m}$ , the result of a combination of  $\Delta n = 0005$  and  $N = 150$ .

**Key words:** Optical fiber, Noise ASE, EDFA, Fiber Bragg Grating