

ABSTRACT

Communication transmissions system using optical fiber needs to amplify each wavelength of signal. Gain needed as to compensate losses span along fiber. Raman Amplifier strengthened the light signal in fiber optic directly, and no conversion to other kind of energy. Raman Amplifier uses the intrinsic of fiber optic in amplifying process. However; There is no different to another amplifier, Raman amplifier produces noises also. Noises appear for amplifying spontaneous emission with signal. It is called ASE (Amplified Spontaneous Emission) noise.

The power of ASE appearing is summation of all spontaneous emission arise in along fiber optic. ASE traveling in fiber optic will degrade the signal-to-noise ratio. If the power used is small, ASE is not significant, but when the power is bigger, ASE becomes more significant. In this final project, equalization of ASE achieved by integrating of Fiber Bragg-Grating filter.

The optimum equalization of ASE for 1520–1570 nm achieved by using Fiber Bragg-Grating filter. Configurations of Fiber Bragg-Grating found as follows. Index of refractive is 1,472, different of refractive index is 0,05, length of Fiber Bragg-Grating filter is 31,093 μm with 59 grating included. The maximum power refractive achieved is 11,54 dBm on wavelength 1552 nm and wide of equalization area achieved is $35,293 \times 10^{-9} \text{ m}^2$.

Keywords : Raman Amplifier, ASE, Fiber Bragg-Grating