

ABSTRACT

Raman Optical Amplifier (ROA) is an optical amplifier which is utilizing nonlinearity interaction between signal and laser in optical fiber. This amplifier pumps laser into optical fiber which causes information signal amplify. Fiber optic amplify analysis using one pump ROA have been performed earlier. However, there is a cascade ROA application method which is useful for WDM (Wavelength Division Multiplexing) development. Cascade ROA method is the method which is using the number of ROA in one optical fiber in order to get higher gain and wider bandwidth of the optical signal amplifier.

In this final project, researcher analyze pump scheme of Raman amplifier in various cases, with one pump or with cascade ROA. The purpose is to obtain an optimal result and also to show the effect caused by existing parameters towards Raman gain spectrum changes.

This research showed that given 11 pumps in to the fiber, Raman gain peak is 12.08 dB with ripple 0.56 dB and the total bandwidth is 83 nm. Given 12 pumps in to the fiber, Raman gain peak is 10.94 dB with ripple 0.43 dB and the total bandwidth is 78 nm.

Keywords: Bandwidth, Cascade, Raman optical amplifier, Ripple, WDM