ABSTRACT

To satisfy the capacity of telecommunications network and bandwidth requirements, one of the supported technology is Wavelenght Division Multiplexing (WDM). WDM technology combined with Optical Add Drop Multiplexer (OADM) enables greater connectivity and flexibility of WDM network. Optical Add Drop Multiplexer (OADM) is a device to add and drop wavelengths in a optical communication link. To add and drop particular wavelength, reflector is needed, namely, Fiber Bragg Grating (FBG).

Optical Add Drop Multiplexer (OADM) using Fiber Bragg Grating (FBG) are simulated in software for mathematical analysis. Coupled mode theory is used to analyze the spectrum of FBG and transfer matrix method is used to obtain characteristics of the FBG spectrum. There are many parameters in designing FBG, such as grating length (l), modulation of the refractive index grating (Δn), amd number of gratings (N). In this research, the dropped and added wavelength are the second and the fourth lambda.

This research uses five wavelengths in the range of C-Band, λ_1 = 1550.92 nm, λ_2 = 1551.72 nm, λ_3 = 1552.52 nm, λ_4 = 1553.33 nm, λ_5 = 1554,13 nm, with 100 GHz or 0.8 nm channel spacing. Of the simulation result, the reflectivity of second lambda (R_2) is 1 and $P_{out\lambda 1}$ = 1 dB, so there is no crosstalk. While at fourth lambda, the reflectivity (R_4) is 1 and $P_{out\lambda 4}$ = 1 dB, so there is no crosstalk.

Keywords : *WDM, OADM, FBG, Crossstalk.*