

ABSTRACT

The research are about Arrayed Waveguide Grating multiplexers/de-multiplexers have been reported since mid 1990. They have been experienced a lot of development which still continuing until now. AWG mux it's been used in DWDM technology to converge the different wavelength which came through into a single signal wavelength. As a multiplexer AWG have three parameters which can be considered such as Pr (power receive), Vbw (bandwidth channel), and IL (insertion loss).

In this final task, there were a simulation, characteristic analysis, and nine scenarios that had been done. The original model AWGs are consist of eight wavelengths to transmit, eleven ports, and using Silica on Silicon as a material. All the nine scenarios have variable change at such as: ΔL (length increment at AW), R (focus length/radius of curvature at FPR), α (angular separation between ports), channel spacing which affect to wavelength shifting, number of lambda, number of port (N), using material InP (Indium Phosphide) and SOI (Silicon On Insulator) instead of SiO₂ (Silica On Silicon), and adding perturbation is called birefringence (double diffraction) which is cause wavelength shifting due to decrease channel spacing. All nine scenarios will be analyzed for their power receive (Pr), channel bandwidth 3 dB (Vbw), and insertion loss (IL).

The result of this final task is the highest value at Pr is 0.030976 mW from all scenarios and the lowest value is 0.030828 mW which was gotten from third scenario. The highest value at Vbw is 1298.0198 GHz was gotten from first scenario and second scenario and for the lowest value is 214.7794 GHz which was gotten from first scenario and second scenario too. And for last parameter IL, the highest value is 0.052092 dBm which was gotten from third scenario and the lowest value is 0.031293 dBm which was gotten from all scenarios.

Keywords: AWG, multiplexer, Pr, Vbw, IL