

Low loss 1x2 optical coupler based on cosine s-bend with segmented waveguides

Abstract:

This paper presents an optimization of 1x2 polymer Y-junction optical coupler. The optimized optical coupler comprises straight polymer waveguide as the input waveguide, tapered waveguide, modified cosine S-bend and linear waveguide. At the branching point, N short waveguides with small width are introduced to reduce evanescent field. At operating wavelength of 1550 nm the excess loss of the coupler is ~0.18 dB. In term of polarization dependence loss (PDL), the proposed coupler also shows a good performance with PDL value of less than 0.015 dB for wavelength range of 1470 nm-1550 nm. The proposed coupler could reduce excess loss more than 25% compared to conventional Y junction optical coupler.