Silicon waveguide based TE mode converter

From Paper: “A silicon waveguide based TE mode converter was designed for the mode conversion between a horizontal waveguide and vertical waveguide in the two-layer structure waveguide based polarization diversity circuit. […]”

Since dielectric fiber devices are usually electrical large, the Time Domain solver will be used.
Define new materials Si and SiO\(_2\) with an Epsilon of 3.5\(^2\) and 1.45\(^2\) respectively.

Define Background Material (cladding) and assign SiO\(_2\) properties to it over 500nm distance.

Use the „Generalized Port Mode Solver” with “Broadband for inhomogeneous ports” and run full simulation in the TD Solver.
Simulation

In the first part you have to simulate with CST Microwave Studio the e-field of the waveguide, the wavelength dependence, energy losses…

In the second part of your work you have to study the behavior of the variations:

• length of the converter (middle part) in this respect for the best conversation rate

• length of the converter (middle part) in this respect for the selected wavelength of 650nm, 850nm and 1440nm

• to take an convergence investigation of the grid
Results

At the end of your project you have to present your results in one talk in our group and submit an elaboration/documentation of your work.

You can explain why the “Generalized Port Mode Solver” is the preferred excitation for dispersive waveguide ports.