

# Analysis of TM-Pass Reflection Mode Optical Polarizer using Method of Lines

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**Abstract:** A TM-pass polarizer is proposed and analyzed. This polarizer reflects TM polarized waves with low-loss, while the reflected TE polarized waves are highly attenuated. Thus, it is called a reflection mode TM-pass polarizer. The proposed polarizer is realized by adding corrugations in cascade with a four layer high-index metal-clad waveguide. The reflection spectra of device are calculated in order to study the effect of the various parameters of the device. This includes variation of the length of the metal-clad section, the thickness of the high index buffer layer, the grating groove depth and the total number of grooves in the corrugated section of the device. The corrugated section of the polarizer causes it to act as a wavelength filter. The device is analyzed numerically using the Method of Lines.