Abstracts

Radiation Fields of Optical Stripline Waveguides

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Dispersion characteristics and radiation fields of an optical stripline waveguide radiating into free space are calculated. The waveguides are fabricated as multiple layers of differing dielectric materials. A top layer is etched to form a "cap" with an effective waveguide in a layer below the cap. Confinement of the fields to the waveguide is obtained in the vertical direction by dielectric discontinuities, while lateral confinement occurs because of spatial interference of a continuum of plane waves. The radiation field of the fundamental mode in a plane perpendicular to the waveguide layers is characterized by the layer widths and index discontinuities. Beamwidths of the fundamental mode in the plane parallel to the dielectric layers are developed in terms of the waveguide parameters. Values of these parameters which yield the best optical confinement under the stripe can be obtained.

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