

Abstracts

Coupling of Degenerate Modes on Curved Dielectric Slab Sections and Application to Directional Couplers

M.D. Abouzahra and L. Lewin. "Coupling of Degenerate Modes on Curved Dielectric Slab Sections and Application to Directional Couplers." 1980 Transactions on Microwave Theory and Techniques 28.10 (Oct. 1980 [T-MTT]): 1096-1101.

Approximate expressions are derived for the coupling of degenerate modes on two curved dielectric slab sections. From this analysis a directional coupler is designed in which a finite length coupler is joined to terminal lengths via curved structure sections. The reverse coupling (directivity) and reflection, as well as corrections to the coupling length, are studied. The propagation characteristics and the reflection coefficient due to coupling, as well as the correct 3-dB coupling length are calculated, numerically. Second order effects, that determine the bandwidth as well as the coupling, have been considered and found to be very substantial. In the examples considered the reflection and directivity due to the coupling process were both more than 35 dB down, and the 3-dB outputs were exactly in quadrature, correct to the first order of approximation.

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