Abstracts

The Design of Evanescent Mode Waveguide Bandpass Filters for a Prescribed Insertion Loss Characteristic

G.F. Craven and C.K. Mok. "The Design of Evanescent Mode Waveguide Bandpass Filters for a Prescribed Insertion Loss Characteristic." 1971 Transactions on Microwave Theory and Techniques 19.3 (Mar. 1971 [T-MTT]): 295-308.

A design theory for evanescent dominant mode waveguide filters is presented. The cutoff guide is represented by its equivalent pi-section network, the elements of which closely approximate lumped inductances. Resonators may be formed by introducing appropriate capacitive obstacles at suitable intervals along the guide. The filter that results is a microwave analog of lumped inductance filters with series inductance coupling, the magnitude of the series "inductance" being controlled by the separation between capacitive obstacles. The theory derives the equivalent ladder network from the low-pass prototype and is accurate up to at least 20 percent band-widths. Filters may be designed to couple into other cutoff waveguide components using the same basic principles, a propagating guide, and coaxial terminations. The filters are normally constructed in standard production waveguide and are simple and cheap to manufacture. A considerable size and weight reduction, compared with orthodox waveguide filters, is possible at the cost of a small increase in insertion loss.

❑ Return to main document.