Abstracts

Analysis and Design of a Millimeter-Wave Bandpass Filter with a Stopband in the Specified Higher Frequencies

K. Yamamoto. "Analysis and Design of a Millimeter-Wave Bandpass Filter with a Stopband in the Specified Higher Frequencies." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 837-842.

The characteristics of a rectangular waveguide bandpass filter (BPF) are not well known in the high-frequency range where higher order modes can propagate. In this paper, the frequency response of a BPF, composed of symmetric inductive windows, is investigated. The range of frequency under investigation covers the region where not only the TE/sub 10/ mode but also higher modes can propagate in the waveguide. A window with incident waves of various modes is first characterized by a scattering matrix. The matrix elements for various modes are obtained in a closed form by means of the variational method. The overall characteristics of the BPF are then obtained by calculating the product of these matrices. A design of a BPF with a stopband in the specified higher frequencies is proposed. Prototype production proved the validity of the theoretical investigation.

❑ Return to main document.