Abstracts

The Generalized Direct-Coupled Cavity Linear Phase Filter

J.D. Rhodes. "The Generalized Direct-Coupled Cavity Linear Phase Filter." 1970 Transactions on Microwave Theory and Techniques 18.6 (Jun. 1970 [T-MTT]): 308-313.

A procedure is described whereby narrow-band waveguide generalized direct-coupled cavity linear phase filters may be designed from a low-pass prototype linear phase network. The structure is comprised of two identical conventional half-wave direct-coupled cavity filters with shunt inductive irises, cross coupled by small apertures in the narrow wall between adjacent cavities. Explicit formulas for the susceptances of the irises, the cross coupling apertures, and the electrical lengths of the cavities are given in terms of the element values of the low-pass prototype. Measured results on two X-band filters are given with fractional bandwidths of 0.15 percent and 0.85 percent. Both were designed upon the maximally flat prototype, the former being an 8-cavity filter while the latter is a 14-cavity version and illustrates the dispersion effect due to the frequency-dependence of the inductive irises.

❑ Return to main document.