Abstracts

Tables for Nonminimum-Phase Even-Degree Low-Pass Prototype Networks for the Design of Microwave Linear-Phase Filters

J.H. Cloete. "Tables for Nonminimum-Phase Even-Degree Low-Pass Prototype Networks for the Design of Microwave Linear-Phase Filters." 1979 Transactions on Microwave Theory and Techniques 27.2 (Feb. 1979 [T-MTT]): 123-128.

The element values of a selection of even-degree nonminimum phase low-pass prototype networks with equiripple passband amplitude and constant group delay in the least squares sense over a large percentage of the passband are tabulated. All the prototypes have passband insertion loss ripple R=0.01 dB and cutoff frequency omega/sub c/ = 1.0 rad/s at the 0.01-dB point. Five tables contain the element values of networks up to degree N=20. The tables are classified according to the number of transmission zeros at infinite frequency NZ/sub infin/ and the passband frequency to which the group delay is constant in ttse least squares sense omega/sub d/. The following combinations of NZ/sub infin/ and omega/sub d/ are tabulated: NZ/sub infin/ = 2 and omega/sub d/=0.9; NZ/sub infin/ =4 and omega/sub d/ =0.8; NZ/sub infin/ = 6 and omega/sub d/=0.7; NZ/sub infin/ =8 and omega/sub d/ = 0.6; and NZ/sub infin/ =10 and omega/sub d/= 0.5. The maximum phase and delay errors for each network are tabulated. Plots of the passband group delay and stopband insertion loss versus frequency, for each network, accompany the tables to facilitate selection of a prototype. The prototypes are suitable for the design of narrow-band generalized interdigital, generalized direct-coupled cavity waveguide, and generalized combline linear-phase filters A simple algorithm for the analysis of the prototypes is given.

❑ Return to main document.