Abstracts

Design and implementation of filters using transfer functions in the Z domain

Da-Chiang Chang and Ching-Wen Hsue. "Design and implementation of filters using transfer functions in the Z domain." 2001 Transactions on Microwave Theory and Techniques 49.5 (May 2001 [T-MTT]): 979-985.

In this paper, a novel approach composed of digital signal-processing techniques and optimization algorithms is developed to design and implement filters at microwave frequencies. The design phase begins with the adoption of digital filter prototypes and the implementation phase is facilitated by using both parametric modeling techniques and optimization algorithms. All the zeros of digital filter prototypes are removed first; the remaining part of the prototypes is then transformed to an autoregressive (AR) process by parametric modeling techniques. The values of characteristic impedances of transmission lines synthesizing the filters are adjusted according to the AR process by optimization algorithms. Both low-pass and bandpass filters are designed and then implemented in the form of a microstrip line, and their frequency responses are measured to validate the novel approach.

❑ Return to main document.