Abstracts

Synthesis of coupled-resonators group-delay equalizers

Heng-Tung Hsu, Hui-Wen Yao, K.A. Zaki and A.E. Atia. "Synthesis of coupled-resonators group-delay equalizers." 2002 Transactions on Microwave Theory and Techniques 50.8 (Aug. 2002 [T-MTT]): 1960-1968.

A systematic synthesis and design procedure for coupled-resonators cavity group-delay equalizers is presented. The procedure consists of solving the approximation problem by optimization and performing cascade synthesis. The error function for the optimization is computed from the given filter's group delay and the zeros and poles of the input impedance of the equalizer. Convergence of the optimization is fast and insensitive to the initial guess even when the number of resonators is large. Two examples, together with experimental results, are presented; comparisons between the externally equalized and self-equalized filters are made. The effect of the isolation of the cascading devices (circulator or 3-dB hybrid) on the ripple of the final group-delay response is also extensively investigated. The good agreement between the theoretical simulation and the experimental results demonstrates the powerful nature and effectiveness of the proposed design procedure.

❑ Return to main document.