

Waveguide Filter Modeling and Simulation using Mode-matching, FullwaveNetwork Analysis and Swarm Optimization

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Abstract: This paper presents the modeling of waveguide bandpass filter synthesis. It consists of a combination of the most appropriate and reliable methods and techniques of analysis, simulation and optimization used in determined order and leading to a fast and accurate method of filter synthesis. An example of a fourth-order filter synthesis is given, employing asymmetric configuration and symmetric response. The obtained results, reference measurement and commercial software simulator results are compared for validation.

Keywords : filter, waveguide, Coupling matrix, Mode-matching, Segmentation method, Optimization techniques.