Abstracts

A Technique for the Fullwave Automatic Synthesis of Waveguide Components: Application to Fixed Phase Shifters

F. Alessandri, M. Mongiardo and R. Sorrentino. "A Technique for the Fullwave Automatic Synthesis of Waveguide Components: Application to Fixed Phase Shifters." 1992 Transactions on Microwave Theory and Techniques 40.7 (Jul. 1992 [T-MTT] (Special Issue on Process-Oriented Microwave CAD and Modeling)): 1484-1495.

An efficient, computer synthesis technique for waveguide components, based on rigorous field-theoretical models, has been developed. A computer code has been specifically set up for the automatic design of fixed phase shifters in rectangular waveguide technology. Only the electrical specifications are required to generate, normally in 15 to 20 minutes on a 386/16 MHz IBM PC, the geometrical structure of the components. The agreement with the experiments is shown to be so accurate as to avoid any tuning of the circuits realized. The efficiency and accuracy of the code is based on i) a suitable segmentation technique of the microwave structure to obtain a very simple but rigorous network model; ii) the efficient representation of the modal series for the electromagnetic fields; iii) a synthesis procedure based on a simplified model to obtain a good initial guess for the final full-wave optimization routine.

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