Abstracts

Multimode Synthesis Procedure for Microwave Filters Based on Thick Inductive Windows

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For several types of microwave filters for space application it is important to manufacture hardware without tuning elements. For this to be possible, one needs a systematic procedure to convert ideal elements, such as resonators and impedance inverters, into actual waveguide lengths and discontinuities. The situation is further complicated by the fact that waveguide discontinuities excite higher order modes that interacting with each other can have very strong effects. In this paper we first outline the theory behind a very efficient computer code for the simulation of microwave filters based on thick inductive windows. Then we describe in detail a step-by-step procedure that, based on the code developed, allows for the rapid design of this class of microwave filters without any tuning elements. Two actual examples of design are also discussed and comparisons presented between measurements and simulations.

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