Abstracts

A Microwave Ferrite Frequency Separator

H. Rapaport. "A Microwave Ferrite Frequency Separator." 1958 Transactions on Microwave Theory and Techniques 6.1 (Jan. 1958 [T-MTT]): 53-58.

When multiple filter groups are interconnected for operation out of a single source, interaction effects between filters can occur. Frequently, unless special precautions are taken, the filters may interact to such an extent that severe deterioration in performance may result. Introduction of the gyrator by Tellegen and the subsequent microwave realization of the circulator by Hogan, Rowen, and others provide new possibilities for design of channel-branching circuits and frequency-spectrum partition arrays. The nature of the frequency separation problem is reviewed, and the application of the ferrite circulator to effect channel branching is considered in detail. Several specific multichannel systems comprising various circulator filter and one-way line filter arrays are presented and their relative merits examined. A 4-port (3-channel) experimental prototype separator system consisting of a Faraday rotation type of circulator and maximally flat band-pass waveguide filters is described. A quantitative theory of operation of the prototype is developed. Experimental data and performance curves are given. These data show close agreement with results predicted by the theory.

❑ Return to main document.