Abstracts

The Synthesis of Quarter-Wave Coupled Circulators with Chebyshev Characteristics (Short Papers)

J. Helszajn. "The Synthesis of Quarter-Wave Coupled Circulators with Chebyshev Characteristics (Short Papers)." 1972 Transactions on Microwave Theory and Techniques 20.11 (Nov. 1972 [T-MTT]): 764-769.

The purpose of this short paper is to give an exact theory of quarter-wave coupled circulators with Chebyshev characteristics. The synthesis starts by replacing the lumped-element equivalent shunt resonator of the circulator by a distributed one that has the same susceptance slope parameter as the original circuit. In this way the overall network involves commensurate transmission lines only. The bandwidth over which the assumed form of the equivalent circuit applies is carefully discussed in terms of the two split frequencies of the magnetized junction. Tables for the required circulator parameters and transformer admittances for one and two transformer sections as a function of VSWR and bandwidth are included. The realizable solution for the latter arrangement is severely restricted by the equivalent circuit of the basic junction. Experimental results on an octave-band stripline circulator, with a two-section transformer, are also included.

❑ Return to main document.