Abstracts

Nonreciprocal Two-Ports Represented by Modified Wheeler Networks

H.M. Altschuler and W.K. Kahn. "Nonreciprocal Two-Ports Represented by Modified Wheeler Networks." 1956 Transactions on Microwave Theory and Techniques 4.4 (Oct. 1956 [T-MTT]): 228-233.

The extension of the (reciprocal) modified Wheeler network to include the more general nonreciprocal two-port is given. This representation is derived via a known decomposition of the general nonreciprocal network into two portions, one reciprocal, the other nonreciprocal. The reciprocal portion is then taken as the modified Wheeler network. Recombination of the elements results in the desired representation which is constituted of a minimum number, i.e., of eight, passive elements. Each of these is a natural idealization of a physical microwave component. Since six of the elements belong to the class of "bilaterally matched" networks, some of the properties of this class are discussed. Two of the bilaterally matched elements embody the nonreciprocal properties of the network: a one-way attenuator and a one-way phase-shifter. Many of the characteristics of the (reciprocal) modified Wheeler network carry over directly to this nonreciprocal representation. The microwave measurement of the network parameters is also indicated.

❑ Return to main document.