

Abstracts

The Interchange of Source and Detector in Low-Power Microwave Network Measurements

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The technique for interchanging generator and detector in the impedance measurement of microwave one-ports is a useful, known procedure often applied when low powers are indicated. The necessary and sufficient conditions for the validity of such measurements are examined critically and direct extensions of this technique to measurements of reciprocal two-ports are given. A completely separate analysis is necessary when such an interchange is made in the case of an interference bridge which is to be used for the determination of the scattering parameters of arbitrary (active or passive, and reciprocal or nonreciprocal) two-ports. This analysis, presented in detail, results in a new low-power-level version of a method of measuring arbitrary two-ports as outlined in an earlier paper. The measurement technique and the subsequent data analysis of the two versions are found to be identical, except that the two scattering parameters S_{12} and S_{21} appear in interchanged positions.

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