

Abstracts

A New Four-Port Automatic Network Analyzer: Part II--Theory

K. Brantervik. "A New Four-Port Automatic Network Analyzer: Part II--Theory." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 569-575.

This paper presents a comprehensive theory of the new four-port network analyzer using only one power detector and one electronically adjustable reference load, (e.g., an adjustable short circuit or a varactor diode) described in a companion paper. A method based on annihilation operators for describing an n-port is introduced. This method is found convenient for analyzing different measurement situations. Hence, schemes for reflection measurements and transmission measurements are analyzed in detail. For evaluation of the reflection (or transmission) coefficient, it is shown that seven (or five) parameters defining the system have to be determined. Calibration schemes for precision reflection and transmission measurements are described.

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