Abstracts

Efficiencies of Microwave 2-Ports from Reflection Coefficient Measurements (Short Papers)

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It is well-known that one can determine the efficiency of a microwave 2-port by measuring the reflection coefficient Gamma/sub 1/ at the input port when the output port is terminated by a sliding short circuit. The locus of Gamma/sub 1/ is a circle whose radius equals the efficiency eta/sub 2m/ for energy entering port 2 when port 1 is terminated in a nonreflecting load. Similarly eta/sub 1m/ is the radius of the circle when port is terminated in a sliding short circuit. This note describes a procedure for obtaining, from the same measured data, new reflection coefficients Gamma/sub 1N/ and Gamma/sub 2N/, whose circular loci have radii R/sub 1N/ and R/sub 2N/ which give the efficiencies of the 2-port when connected to an arbitrary load of reflection coefficient Gamma/sub L/. Thus the Gamma/sub 1/ or Gamma/sub 2/ data may be used to obtain the efficiency of the 2-port when terminated in any arbitrary load. The method is potentially more accurate than the 3-point method since errors can be reduced by drawing a circle through many measured points.

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