Abstracts

Modeling and Measurement of Microstrip Transmission-Line Structures

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New techniques have been employed in both the modeling and measurement of microstrip transmission-line structures. The modeling employs a dual potential approach using finite-element analysis to derive exact bounds to the microstrip characteristics. From these, error limits to the theoretical S-parameters of step-impedance-line structures have been derived. The measurement of the S-parameters were performed on an automatic vector network analyzer using an "on-chip" calibration method with micro-strip calibration pieces. Theoretical results are presented for the test structures on both alumina and gallium arsenide, and measured results are presented for the alumina structure. Error bounds for the measured results have been derived from repeatability, and agreement between theoretical and measured results is reasonably good.

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