Abstracts

On RF material characterization in the stripline cavity

C.M. Weil, C.A. Jones, Y. Kantur and J.H. Grosvenor, Jr.. "On RF material characterization in the stripline cavity." 2000 Transactions on Microwave Theory and Techniques 48.2 (Feb. 2000 [T-MTT] (Mini-Special Issue on Research Reported at the 1999 Radio Frequency Integrated Circuits (RFIC) Symposium)): 266-275.

We examine the accuracy of the air-filled stripline cavity in measuring the dielectric and magnetic properties of bulk materials in the frequency range of 150-2000 MHz. Measured data on complex permittivity and permeability for several different-sized specimens of dielectric and magnetic materials were compared with reference values obtained using other techniques of known uncertainties. Major differences were noted for both complex permittivity and permeability data, and we largely attribute these to less-than-optimal perturbation of the internal cavity fields by the material specimens under test. The technique is particularly unsuited to measuring the dielectric loss of the higher-permittivity low-loss materials due to energy scatter by the specimen under test. In order to improve measurement accuracy, we suggest guidelines on the range of specimen electric and magnetic volume needed for optimal cavity perturbation.

❑ Return to main document.