Abstracts

Dielectric Measurements Using a Rational Function Model

J.M. Anderson, C.L. Sibbald and S.S. Stuchly. "Dielectric Measurements Using a Rational Function Model." 1994 Transactions on Microwave Theory and Techniques 42.2 (Feb. 1994 [T-MTT]): 199-204.

A recently proposed rational function model for the aperture admittance of 50 ohm teflon filled coaxial lines in contact with a homogeneous dielectric is experimentally validated. A calibration technique of the automatic network analyzer utilizing standard terminations and time domain gating is used. Uncertainties in the dielectric properties of reference liquids do not enter the calibration procedure. Experimental results for water and methanol are compared with estimated values. A model expression for the sensitivity of the probe is validated. The sensitivities of two coaxial line probes for the measurements made are determined. Results obtained using the new model are compared with those of other workers.

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