Abstracts

Full-wave analysis of a split-cylinder resonator for nondestructive permittivity measurements

M.D. Janezic and J. Baker-Jarvis. "Full-wave analysis of a split-cylinder resonator for nondestructive permittivity measurements." 1999 Transactions on Microwave Theory and Techniques 47.10 (Oct. 1999 [T-MTT]): 2014-2020.

This paper presents a full-wave analysis of the split-cylinder resonator. We outline a model where the fringing fields are rigorously accounted for and the resonance condition is derived. Using this model, a method for nondestructively measuring the complex permittivity of materials is examined. Measurements of the complex permittivity for low-loss dielectric materials using the split-cylinder resonator agree well with measurements made in a cylindrical cavity. An uncertainty analysis for the complex permittivity is also provided.

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