Abstracts

Effects of Waveguide Wall Grooves Used to Hold Samples for Measurement of Permittivity and Permeability

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The complex permittivity and permeability of a material may be measured at microwave frequencies by placing a sample of the material in a waveguide and measuring the complex reflection and transmission coefficients. Whereas there are various approaches to holding the sample in place, for a thin rigid sample in place, for a thin rigid sample shallow grooves may be cut in the waveguide walls for this purpose. However, such grooves will be a source of error since higher order modes can be excited. In this paper the modal analysis method is used to illustrate the potential for error in measuring constitutive parameters of the sample introduced by the grooves.

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