Abstracts

One-port time-domain measurement of the approximate permittivity and permeability of materials

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Single-port frequency-domain measurements to determine the electrical characteristics of a material are often made for liquids or amorphous solids (water, dirt, biological material, etc.). Before yielding the desired property, the corresponding data-reduction procedure requires an assumption of the value of either the permittivity of permeability (often one chooses /spl mu//sub r/=1). This paper describes a one-port time-domain measurement technique that can yield the approximate broad-band frequency-dependent complex values of permittivity and permeability for a sample material. A description of the procedure is given, the governing equations are derived, and two examples (one with simulated data and the other with measured data) with representative waveforms and results are presented.

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