Abstracts

A Free Space Technique for Measuring the Complex Permittivity and Permeability in the Millimeter Wave Range

R.G. Nitsche, J. Preissner and E.M. Biebl. "A Free Space Technique for Measuring the Complex Permittivity and Permeability in the Millimeter Wave Range." 1994 MTT-S International Microwave Symposium Digest 94.3 (1994 Vol. III [MWSYM]): 1465-1468.

A new techniques presented for measuring the complex permittivity epsilon = epsilon'-j epsilon" and permeability μ = μ'-jμ" of matter at millimeter wavelengths. A direct transmission path is established between two horn antennas. A planar material sample is inserted into the path between the antennas and the transmission coefficient is measured. Subsequently, the sample is used as a reflector between the transmitting and receiving antennas. The angle of incidence is varied and both the horizontal and the vertical polarization are measured. With glass samples the accuracy of better than 0.04 % and 0.5% for epsilon' and epsilon", respectively, has been achieved at 94 GHz. The sample preparation is very easy and nondestructive.

❑ Return to main document.