Abstracts

The Measurement of the Electric Field Inside a Finite Dielectric Cylinder Illuminated by a Plane Wave (Short Papers)

R. Bansal, R.W.P. King and T.T. Wu. "The Measurement of the Electric Field Inside a Finite Dielectric Cylinder Illuminated by a Plane Wave (Short Papers)." 1982 Transactions on Microwave Theory and Techniques 30.8 (Aug. 1982 [T-MTT]): 1282-1286.

An experimental study of the distribution of the electric field induced inside a finite circular cylinder of water illuminated by an approximately plane electromagnetic wave is presented. The incident field was generated by using a monopole above the ground plane with a 90° corner reflector. The cylinder of water included a thin conducting tube at its center to shield the transmission lines leading to the probes. The graphs of selected measured distributions are displayed and interpreted. The measurements were earned out at 100, 300, and 600 MHz. The conductivity of the 50-cm long column of water was varied from approximately zero to 3.5 S/m. Both the amplitude and the phase of the induced electric field were measured in the experiment. Comparisons with a new theoretical solution developed by the authors are also included.

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