Abstracts

A Fast Algorithm for Computing Field Radiated by an Insulated Dipole Antenna in Dissipative Medium (Short Papers)

L.-K. Wu, D.W.-F. Su and B.-C. Tseng. "A Fast Algorithm for Computing Field Radiated by an Insulated Dipole Antenna in Dissipative Medium (Short Papers)." 1996 Transactions on Microwave Theory and Techniques 44.12 (Dec. 1996, Part I [T-MTT]): 2290-2293.

A fast algorithm for determining the near-field characteristics of an insulated dipole antenna (IDA) embedded in a homogenons dissipative medium is described in this paper. A thin-wire-approximation type of analysis is followed here. In this case, radiation is considered to originate from a filamentary current flowing along the axis of the dipole, which is surronnded immediately hy the ambient dissipative medium. The translational symmetry inherent in the resultant radiation integrals is then exploited to speed up the computation. In one case studied, the basic thin-wire approach that uses no symmetry property is found to yield accurate results in approximately 380 times less CPU time than the traditional King-Casey approach. In another case, use of symmetry property further reduces the CPU time by a factor of 7; additional reduction in CPU time is possible by taking into account the near-field nature of the problem.

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