On Maximum Absorption by Lossy Finite-Length Dipole Antennas

Ofer Markish and Yehuda Leviatan, *Life Fellow, IEEE*

Abstract—Approximate analytical expression is presented for calculating the current flowing along a lossy finite-length dipole antenna illuminated by an obliquely incident plane wave. This current is used to evaluate the total power absorbed, both by the lumped load connected across the antenna terminals and by the lossy material of which the antenna structure is made. An approximate value of the load impedance that maximizes the total absorbed power is then derived. The results are compared against results obtained using a method of moments solution and good agreement is found.

Index Terms—Dipole antenna, electromagnetic wave absorption, lossy antenna.