Abstracts

Multifrequency formulation for electromagnetic scattering using shifted-frequency internal equivalence

A. Koksal. "Multifrequency formulation for electromagnetic scattering using shifted-frequency internal equivalence." 1999 Transactions on Microwave Theory and Techniques 47.2 (Feb. 1999 [T-MTT]): 150-155.

A new formulation for multifrequency electromagnetic scattering problems involving homogeneous or inhomogeneous bodies is introduced and discussed. The formulation is developed using the shifted-frequency internal equivalence in the construction of the internal equivalence in the scattering problem. With this approach, the equivalent currents for the internally equivalent problem radiate a chosen fixed frequency which is different from the frequency of the incident wave. These equivalent currents are functions of the incident and shifted frequencies, material parameters, and the total field inside the body and on its boundary. A combination of this internally equivalent problem with an externally equivalent one, so as to match the tangential fields at the boundary of the body, results in the new formulation. The formulation and its application to generate multifrequency data using internal data generated at a single frequency in a volume-surface integral-equation approach utilizing the method of moments in the solution are explained and exemplified using a simple inhomogeneous slab problem.

❑ Return to main document.