

Analysis for Electromagnetic Property of Microwave Shielding and Absorbing Materials

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ABSTRACT

In this thesis, Electromagnetic shielding and absorbing properties of flat materials will be discussed. Two models will be used in this research. One is the scattering model, and the other is the inverse scattering model. In the scattering model, the shielding and absorbing properties of multilayered media are analyzed using the transmission-line theory. In the inverse scattering model of single-layer slab materials relative permittivity and permeability are calculated using the measured scaling parameters. This task is performed by implementing two difference algorithms, which are verified numerically for three different slab materials. If the scattering parameters are exact, the calculated constitutive parameters of the slab materials are identical to thesis pre-assumed values. Errors of the calculated parameters may become unacceptable if the scattering parameters are contaminated by noise with are NSR level equal or greater than say 40 dB.

Keywords : Electromagnetic shielding ; Shields ; RF absorber ; Scattering model ; Inverse Scattering model

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