Abstracts

Microwave Noncontact Examination of Disbond and Thickness Variation in Stratified Composite Media

S. Bakhtiari, N. Qaddoumi, S.I. Ganchev and R. Zoughi. "Microwave Noncontact Examination of Disbond and Thickness Variation in Stratified Composite Media." 1994 Transactions on Microwave Theory and Techniques 42.3 (Mar. 1994 [T-MTT]): 389-395.

Numerical and experimental results of a microwave noncontact, nondestructive detection and evaluation of disbonds and thickness variations in stratified composite media are presented. The aperture admittance characteristics of a flange mounted rectangular waveguide radiating into a layered, generally lossy dielectric media backed or unbacked by a conducting sheet is modeled. The theoretical implementation is based on a Fourier transform boundary matching technique to construct the field components in each medium, coupled with a stationary form of the terminating aperture admittance of the waveguide. The model can serve as a reliable test bed for real-time examination of layered composite media. Experimental results for several cases are presented which show good agreement with the theoretical findings. This is a versatile technique for near-field in situ interrogation of stratified composite media which provides for high resolution measurements.

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