Abstracts

Permittivity determination using amplitudes of transmission and reflection coefficients at microwave frequency

Zhihong Ma and S. Okamura. "Permittivity determination using amplitudes of transmission and reflection coefficients at microwave frequency." 1999 Transactions on Microwave Theory and Techniques 47.5 (May 1999 [T-MTT]): 546-550.

A new method is proposed in this paper to determine the permittivity of materials. The general consideration is to use only the amplitudes of the transmission and reflection coefficients to do the permittivity determination. According to the analysis, the permittivity can be uniquely determined by measuring these two amplitudes when a sample is prepared with large enough attenuation that the multiple reflections between the two surfaces of the sample can be neglected. The validity of the method was proven by experiments. Using the method, the instantaneous and noncontacting measurements of the amplitudes can be realized. Thus, the dynamic measurement of the permittivity becomes possible.

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