Abstracts

A New Method for Measuring Dielectric Constant Using the Resonant Frequency of a Patch Antenna

D. Shimin. "A New Method for Measuring Dielectric Constant Using the Resonant Frequency of a Patch Antenna." 1986 Transactions on Microwave Theory and Techniques 34.9 (Sep. 1986 [T-MTT]): 923-931.

An analytical expression is given for the resonant frequency of a rectangular patch antenna. It shows explicitly the dependence of the resonant frequency on the characteristic parameters of a patch antenna. Based on this result, a new method is developed for the measurement of the dielectric constant of a thin slab substrate. Basically, the test equipment consists of a rectangular microstrip antenna the patch of which is fed either by a microstrip line or coaxial line. From the measured resonance parameters of the rectangular patch antenna, the dielectric constant can be easily obtained. The measured values of the present method are in agreement with the precision standard cavity resonator method. Accuracy of the dielectric constant so obtained is satisfactory.

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