Abstracts

A simple method for accurate loss tangent measurement of dielectrics using a microwave resonant cavity

Daiqing Li, C.E. Free, K.E.G. Pitt and P.G. Barnwell. "A simple method for accurate loss tangent measurement of dielectrics using a microwave resonant cavity." 2001 Microwave and Wireless Components Letters 11.3 (Mar. 2001 [MWCL]): 118-120.

A simple yet rigorous method has been developed to enable the loss tangent of dielectrics, having a known relative permittivity, to be accurately measured using a waveguide resonant cavity. The novel method eliminates the need for any physical measurement, either on the cavity or dielectric sample under test. The only electrical parameters that need to be measured are resonant frequencies and Q-factors of a reference cavity and those of the same cavity loaded with the dielectric sample. One of the advantages of the new technique is that dielectrics, of arbitrary shape, can be characterized at very high microwave frequencies. The new method has been verified through measurement over X-band.

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