Abstracts

A Rigorous Solution for Dispersive Microstrip

M. Hashimoto. "A Rigorous Solution for Dispersive Microstrip." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1131-1137.

Closed-form solutions are presented for the frequency-dependent characteristic impedance of microstrip as defined by the ratio of the electromagnetic power to the square of the electric current. The analysis uses the rigorous spectral-domain approach based on the charge-current formulation. Analytical expressions for the impedance solutions show that the frequency dispersion occurring in microstrip is characterized in terms of three different impedances. The characteristic impedance of a TEM line given in the limit as the frequency decreases is derived from one of these impedances, and the other two are involved in expressing the nature of dispersion to vanish in the limit. Conversely, as the frequency increases, these dispersive parts grow rapidly. Some comments are given in conjunction with previous works.

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