Abstracts

Proper definition of voltage for a leaky two-layer stripline consistent with its characteristic impedance

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Under suitable conditions, a non-uniform stripline having two different dielectric substrates on the two sides of its center conductor (referred to as a two-layer stripline), leaks power to its surrounding parallel-plate medium. The transverse fields of such a leaky line becomes strongly non-TEM in nature, with a non-conventional field behavior. This situation makes it impossible or ambiguous to define some of the basic, useful transmission-line parameters, such as voltage, transverse propagation power or a characteristic impedance. In this paper we investigate a suitable definition of the voltage of a two-layer leaky line, using which the characteristic impedance can be correctly computed. The practical validity of the definition, and its basic consistency with independent results are evaluated.

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