Abstracts

Suppression of Leakage on Stripline and Microstrip Structures

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Recent investigations have shown that leaky dominant modes exist on various planar transmission lines. Two specific structures that support leaky modes are a conventional stripline with a small air gap above the conducting strip, and a conventional microstrip. The leaky dominant mode leaks into only the fundamental guided-wave mode of the background structure in each case. For stripline, the leakage occurs over a wide frequency range, down to zero frequency. For microstrip, the leakage occurs only at high frequencies. For both structures, the leakage results in spurious performance and crosstalk, and thus it is important to investigate methods for suppressing the leaky modes. It is demonstrated here that the leakage can be eliminated by the use of suitable bonding films or superstrate layers. Anisotropic as well as isotropic substrates are treated, and interesting differences are found. Furthermore, it is shown that certain structures, such as suspended stripline and inverted microstrip, do not support leaky modes for most practical ranges of parameters.

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