Abstracts

Spurious transmission effects due to the excitation of the bound mode and the continuous spectrum on stripline with an air gap

M.J. Friere, F. Mesa, C. Di Nallo, D.R. Jackson and A.A. Oliner. "Spurious transmission effects due to the excitation of the bound mode and the continuous spectrum on stripline with an air gap." 1999 Transactions on Microwave Theory and Techniques 47.12 (Dec. 1999 [T-MTT] (Special Issue on 1999 International Microwave Symposium)): 2493-2502.

The nature of the strip current excited by a practical delta-gap source on a stripline structure with an air gap above the strip conductor is studied. This structure supports the existence of a dominant leaky mode (LM) in addition to a bound mode of propagation. It is shown that the total current on the strip excited by the source can be resolved into the sum of a bound-mode current and a continuous-spectrum current, with the latter current further represented as the sum of all physical LM currents and a "residual-wave" current. The roles of the various current components are investigated numerically as the frequency and air-gap thickness change. The appearance of a spurious sharp dip in the transmission response is demonstrated numerically and explained theoretically, and numerical results are compared with measurements. Since such a transmission dip can always occur for an appropriate set of parameter values, it is important to be able to understand and predict this effect.

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