Abstracts

Spurious radiation from a practical source on a covered microstrip line

W.L. Langston, J.T. Williams, D.R. Jackson and F. Mesa. "Spurious radiation from a practical source on a covered microstrip line." 2001 Transactions on Microwave Theory and Techniques 49.12 (Dec. 2001 [T-MTT] (Special Issue on 2001 International Microwave Symposium)): 2216-2226.

The TM/sub 0/ parallel-plate mode field that is radiated from the currents induced on a covered microstrip transmission line by a finite-gap voltage source is studied. The behavior of the total radiation field (the field radiated by the total strip current) is investigated, along with the field radiated by the constituent current components that make up the total current, namely the bound-mode (BM) and continuous-spectrum currents. The continuous-spectrum current is further resolved into the sum of a physical leaky-mode current and a residual-wave current, and the fields radiated by each of these separate components are examined. It is determined that leaky-mode fields can contribute to crosstalk and other interference effects near the source and within an angular leakage region, while the radiation field from the BM current is the predominant mechanism for these effects further away from the gap source, outside the leakage region. The field radiated from the residual-wave current can be quite strong in the "spectral-gap region," which is the frequency region where the leaky mode is nonphysical, and therefore the leaky mode does not contribute directly to the spectrum of current on the strip in the decomposition used here.

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