Abstracts

The danger of high-frequency spurious effects on wide microstrip line (Dec. 2002 [T-MTT])

F. Mesa and D.R. Jackson. "The danger of high-frequency spurious effects on wide microstrip line (Dec. 2002 [T-MTT])." 2002 Transactions on Microwave Theory and Techniques 50.12 (Dec. 2002 [T-MTT] (Special Issue on 2002 International Microwave Symposium)): 2679-2689.

It has been found that remarkably severe spurious effects can occur in the current excited on microstrip line at moderate to high frequency, when the strip is wide (approximately w/h > 3). This newly observed effect occurs because one or more leaky modes (LMs) approaches the branch point at k/sub 0/ in the complex longitudinal wavenumber plane. When this happens, the attenuation (leakage) constant of these LMs becomes very small. Hence, the LMs can propagate to very large distances along the line with only minimal attenuation. This effect only occurs when the strip is fairly wide, and at certain frequencies. When it occurs, the effect can be disastrous since the continuous-spectrum (radiation) part of the current on the strip then decays very slowly with distance from the source so that the total strip current excited by the source exhibits spurious oscillations out to very large distances from the source. An approximate design rule for predicting this effect is given, which is accurate for wide strips (approximately w/h > 6). The LMs that are responsible for this effect are identified, and the behavior of these modes are studied for different strip widths.

❑ Return to main document.