Abstracts

Radiation From Planar Resonators

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Radiation from planar resonators is troublesome because it tends to inject spurious signals into neighboring circuits. Power radiated from microstrip-based resonators is calculated by integration of a Green's function with assumed currents, a method that is convenient and is thought to be more accurate than methods used in earlier calculations of radiation Q. Resonators consisting of two coupled microstrips excited in the odd mode are found to radiate very much less than conventional single microstrip resonators or U-shaped "hairpin" resonators suggested earlier. However, when the resonator is loaded by a semiconductor device, as in an oscillator, radiation is increased. Asymmetries in these resonators, arising from output coupling or fabrication errors, introduce even-symmetric currents which radiate much more strongly than odd-mode currents; the effects of such asymmetries on radiated power are estimated. On the basis of these findings a convenient geometry for high-power planar oscillators with low radiation is proposed.

❑ Return to main document.