# Abstracts

## A novel broad-band Chebyshev-response rat-race ring coupler

*Chi-Yang Chang and Chu-Chen Yang. "A novel broad-band Chebyshev-response rat-race ring coupler." 1999 Transactions on Microwave Theory and Techniques 47.4 (Apr. 1999 [T-MTT]): 455-462.*

A novel broad-band rat-race ring coupler with a unit element at each port and an ideal phase inverter at one of the ring arms is proposed and analyzed. Design equations based on Chebyshev equiripple functions are derived. The design curves of equal or unequal power division are also presented. Theoretical data show that the bandwidth of unequal power division with a specific return-loss value increases as the power division ratio increases or decreases from unity. For a 180/spl deg/ hybrid with equal power division (3 dB) and 15-dB return loss, the proposed rat-race ring may have a bandwidth of 4:1. Three circuits of this novel rat-race ring are realized using finite-ground-plane coplanar waveguide. The measured results match very well with the theory.

❑ Return to main document.