Abstracts

A new coupling structure for dual mode dielectric resonators

G. Macchiarella, M. Fumagalli and S.C. D'Oro. "A new coupling structure for dual mode dielectric resonators." 2000 Microwave and Guided Wave Letters 10.12 (Dec. 2000 [MGWL]): 523-525.

A novel method for realizing coupling between two orthogonal HEM/sub 11/ resonant modes in dielectric ring resonators is described. The coupling is obtained by means of a metallic strip located on the inner or on the outer boundary of the dielectric ring; a strong coupling is obtained, even with a small width of the strip, in particular when the strip is on the inner boundary. The dual-mode resonator is then suitable for filtering applications, with normalized bandwidth requirements exceeding 1% (as in base station units for mobile communications), allowing a relevant reduction of the overall volume, at the expense of a small reduction of the unloaded Q. The novel coupling mechanism and the Q degradation produced have been studied both numerically (by using finite elements simulations) and experimentally (measurements from a prototype two-resonators filter are reported).

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