Abstracts

A Circular Cavity Structure for the Efficient CAD of Dual Mode Filters

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A novel type of circular cavity enabling two orthogonally polarised resonances to be coupled and tuned without using screws is presented. In order to achieve an accurate and efficient electromagnetic modeling, the coupling mechanism is realized by inserting in the middle of the circular cavity a short section of rectangular waveguide at an appropriate inclination angle. The proposed cavity allows to realize dual-mode filters entirely by using junctions of waveguides with rectangular and circular cross-sections, thus enabling a very efficient CAD of such filters. Numerical analyses of this structure have been performed showing a noticeable agreement with measured data. It has also been confirmed, both theoretically and experimentally, the ability to achieve close control of resonant frequencies and coupling values without using screws.

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