Abstracts

Equivalent Circuit Parameters of an Aperture Coupled Open Resonator Cavity

R.K. Mongia and R.K. Arora. "Equivalent Circuit Parameters of an Aperture Coupled Open Resonator Cavity." 1993 Transactions on Microwave Theory and Techniques 41.7 (Aug. 1993 [T-MTT]): 1245-1250.

In this paper, we use modified form of Bethe's small hole coupling theory to compute equivalent circuit parameters of an aperture coupled open resonator cavity. The open resonator cavity is composed of spherical mirrors of circular cross section. The cavity is coupled to a rectangular waveguide by means of a common hole in the mirror and the shorted end wall of the rectangular waveguide. Closed form expressions have been obtained for the equivalent circuit parameters. Experiments conducted in the W-band frequency range show good agreement with theory when an experimentally estimated correction to the transmission coefficient is applied for the thickness of the coupling holes.

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