Abstracts

New Results in Dielectric-Loaded Resonators

K.A. Zaki and C. Chen. "New Results in Dielectric-Loaded Resonators." 1986 Transactions on Microwave Theory and Techniques 34.7 (Jul. 1986 [T-MTT]): 815-824.

Analysis of cylindrical dielectric-loaded resonators is reviewed. The fields within the dielectric-loaded region are postulated as the superposition of hybrid, TE, or TM modes of the infinite dielectric-loaded waveguide, while the fields in the end regions of the resonators are described by the superposition of the normal modes of a homogeneously filled waveguide. Numerical results are presented which reveal that accurate representation of the fields in the resonant structure generally require several modes. Hence, the resonant modes cannot be correlated directly with single waveguide modes. A new method for mode identification is proposed. For a wide range of parameters, the resonant frequencies, mode charts, field expansion coefficients, field intensity, and distributions are presented. Excellent agreement of the mode charts with resonant frequency measurement results are obtained.

❑ Return to main document.