Abstracts

Attenuation characteristics in confocal annular elliptic waveguides and resonators

J.C. Gutierrez-Vega, R.M. Rodriguez-Dagnino and S. Chavez-Cerda. "Attenuation characteristics in confocal annular elliptic waveguides and resonators." 2002 Transactions on Microwave Theory and Techniques 50.4 (Apr. 2002 [T-MTT]): 1095-1100.

The perturbation method is used to obtain the attenuation constant and Q-factor of several TEM, TE, and TM modes in confocal annular elliptic waveguides (CAE-Ws) and confocal annular elliptic resonators (CAE-Rs). Normalized attenuation and Q-factor charts are given for a variety of possible combinations of the focal distance and the eccentricities. Comparisons between the first higher mode in a CAE-W and a coaxial waveguide with the same cutoff frequency and cross-sectional propagating area reveals a lower attenuation in elliptic geometry. Consequently, the Q-factor in a CAE-R is 20%-40% greater than a Q factor for a coaxial resonator with the same volume and resonant frequency.

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