Abstracts

Resonant Frequencies, Q-Factor, and Susceptance Slope Parameter of Waveguide Circulators Using Weakly Magnetized Open Resonators

J. Helszajn and J. Sharp. "Resonant Frequencies, Q-Factor, and Susceptance Slope Parameter of Waveguide Circulators Using Weakly Magnetized Open Resonators." 1983 Transactions on Microwave Theory and Techniques 31.6 (Jun. 1983 [T-MTT]): 434-441.

A useful quantity in the description of junction circulators is the difference between the split frequencies of the magnetized ferrite resonator. A knowledge of this quantity allows the loaded Q-factor of a junction using a weakly magnetized resonator to be determined. This paper derives an exact description of the former quantity in the case of the open quarter-wave long (partial-height) disk resonator used in the construction of commercial turnstile waveguide circulators. This is done by employing duality between a ferrite-filled circular waveguide having ideal electric wall boundary conditions and one having ideal magnetic wall boundaries. The effect of an image wall on the open flat face of the open resonator is considered separately. The paper includes some remarks about the susceptance slope parameters of disk and triangular open resonators.

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