

## Electromagnetic Field Analysis and Calculation of the Resonance Characteristics of the Loop-Gap Resonator

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The electromagnetic field configuration of the loop-gap resonator is analyzed and expressions for field distributions are derived. The method involves solving Maxwell's equations for the boundary conditions and matching the internal magnetic fields of the resonator to the evanescent fringing fields by a numerical fitting method. The expressions derived from this analysis are used in the derivation of equations for the resonant frequency and the quality factor of the resonator. The computed results are in good agreement with the measured values for resonant frequency and quality factors.

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