Abstracts

Fast-wave resonance by space-wave leaky mode carrying dominant-mode-like currents

C.K.C. Tzuang and Ching-Chyuan Lin. "Fast-wave resonance by space-wave leaky mode carrying dominant-mode-like currents." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2444-2449.

By closely examining the resonant phenomena of a suspended, flat wire resonator, this paper speculates on the existence of the fast-wave mode causing the anomalous resonance that cannot possibly be explained by the well-known bound mode. This is followed by proposing a guiding structure model that allows the assessment of the effects of ground plane and sidewalls (external objects) on the guiding properties. The numerical accuracy of the full-wave spectral-domain approach method for the electrically large model is validated by performing the rigorous convergence study. A series of measurements on the resonator are conducted for the same guiding structure of various lengths, confirming that the anomalous resonance is indeed caused by a fast-wave in the form of a space-wave type leaky mode which also exhibits almost identical modal currents to those of the bound mode.

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