Abstracts

Electrooptic mapping and finite-element modeling of the near-field pattern of a microstrip patch antenna

Kyoung Yang, G. David, Jong-Gwan Yook, I. Papapolymerou, L.P.B. Katehi and J.F. Whitaker. "Electrooptic mapping and finite-element modeling of the near-field pattern of a microstrip patch antenna." 2000 Transactions on Microwave Theory and Techniques 48.2 (Feb. 2000 [T-MTT] (Mini-Special Issue on Research Reported at the 1999 Radio Frequency Integrated Circuits (RFIC) Symposium)): 288-294.

A comprehensive electrooptic field-mapping technique is applied to the characterization of near-field radiation patterns above a microstrip patch antenna. The amplitude and phase maps of three orthogonal electric-field components, measured using electrooptic crystals above the patch, also have revealed the transition from the near field to the far field of the radiation pattern. In addition, experimental results have been compared with a finite-element method (FEM) simulation. The measurememts show superior results to the FEM simulation, especially in terms of spatial resolution and data acquisition times. Furthermore, the scattering parameter S/sub 11/ for the patch antenna has been calculated from the electrooptic measurement results of standing waves on the feeding line and compared with results from a conventional network analyzer.

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