Abstracts

Novel beam-control techniques using dielectric-image-line-fed microstrip patch-antenna arrays for millimeter-wave applications

Ming-Yi Li and Kai Chang. "Novel beam-control techniques using dielectric-image-line-fed microstrip patch-antenna arrays for millimeter-wave applications." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1930-1935.

This paper reports novel beam-control methods which have the potential of low cost and simplicity. The beam direction of the antenna array is controlled by changing the distance between the perturbed dielectric image line (DIL) and a movable reflector plate. A rigorous hybrid-mode theoretical analysis is developed for calculating the dispersion of propagation constants in DILs without or with the movable reflector plate and, then, for designing beam-control patch-antenna arrays. Experimental results of scanning angles agree well with theoretical predictions at Ka-band frequencies.

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