Abstracts

Design of waveguide finline arrays for spatial power combining

Pengcheng Jia, Lee-Yin Chen, Nai-Shuo Cheng and R.A. York. "Design of waveguide finline arrays for spatial power combining." 2001 Transactions on Microwave Theory and Techniques 49.4 (Apr. 2001, Part I [T-MTT]): 609-614.

Dense arrays of tapered-slot or finline transitions have proven useful in the design of compact spatial power combiners. In this paper, a design procedure is established for tapered finline arrays, providing a broad-band impedance match to a target load over the waveguide band. The procedure is based on an extension of the Klopfenstein optimal taper design to non-TEM waveguiding structures, and employs the spectral-domain method for the computation of propagation constants in the array structure. The method has been experimentally verified for a small X-band array. Data are also presented, which show that insertion loss in the finline arrays is independent of the number of array elements, assuming the designs are optimized for the desired return-loss characteristics in each case.

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