Abstracts

Electromagnetic modeling and experimental verification of a complete waveguide-based aperture coupled patch amplifier array

A.B. Yakovlev, S. Ortiz, M. Ozkar, A. Mortazawi and M.B. Steer. "Electromagnetic modeling and experimental verification of a complete waveguide-based aperture coupled patch amplifier array." 2000 MTT-S International Microwave Symposium Digest 00.2 (2000 Vol. II [MWSYM]): 801-804.

In this paper, electromagnetic modeling and experimental validation of a waveguide-based spatial power combining array are presented. Here, an aperture-coupled patch array power combining system is modeled in its entirety. This includes a Method of Moments (MoM) integral equation formulation of the Generalized Scattering Matrix (GSM) for a N-port patch-slot-waveguide transition and the mode matching analysis of the GSM for the receiving and transmitting rectangular waveguide tapers. An overall response of the system is obtained by cascading GSMs of electromagnetic structures and the S-parameters of amplifier networks. Numerical and experimental results are shown for the single unit cell, 2/spl times/3 and 3/spl times/4 amplifier arrays operating at X-band.

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