Abstracts

A C-Band Beam-Forming Matrix for Phased-Array Antenna Applications

G. Estep, R. Gupta, T. Hampsch, M. Zaharovits, L. Pryor, C. Chen, A. Zaghloul and F. Assal. "A C-Band Beam-Forming Matrix for Phased-Array Antenna Applications." 1995 MTT-S International Microwave Symposium Digest 95.3 (1995 Vol. III [MWSYM]): 1225-1228.

A design description and measured performance of a modular beam-forming matrix (BFM) are presented. Advanced GaAs monolithic microwave integrated circuit (MMIC) phase shifter and attenuator designs ensure repeatable performance and small size. A novel BFM integration approach is used which ensures state-of-the-art performance, low mass, and high reliability, as well as low-risk/low-cost assembly. The 8 X 8 BFM shelf includes 192 GaAs MMICS, 200 silicon ICS, and 16 eight-way power dividers/combiners in an assembly measuring only 21 X 16 X 1.5 cm. While the design presented is for an eight-beam C-band phased array, the modular architecture easily accommodates other array configurations at different frequency bands with different numbers of beams and elements.

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