Abstracts

45-GHz MMIC power combining using a circuit-fed, spatially combined array

J.T. Delisle, M.A. Gouker and S.M. Duffy. "45-GHz MMIC power combining using a circuit-fed, spatially combined array." 1997 Microwave and Guided Wave Letters 7.1 (Jan. 1997 [MGWL]): 15-17.

We describe the design and measurement of a hybrid-circuit, tile-approach subarray for use in spatial power-combined transmitters. The subarray consists of 16 monolithic millimeter-wave integrated circuit (MMIC) amplifiers, each feeding a circularly polarized cavity-backed microstrip antenna. The average performance across the 43.5-45.5 GHz band is as follows: EIRP 18.3 dBW, DC-RF efficiency 10.3%, effective transmitter power 530 mW, system gain 13.2 dB, and combining efficiency of 46.2%. The minimum axial ratio is 1.2 dB at 43.9 GHz, and the array has a 3% 3-dB axial ratio bandwidth.

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