Abstracts

A PHEMT Based Monolithic Plane Wave Amplifier for 42 GHz

E.A. Sovero, Y. Kwon, D.S. Deakin, A.L. Sailer and J.A. Higgins. "A PHEMT Based Monolithic Plane Wave Amplifier for 42 GHz." 1996 MTT-S International Microwave Symposium Digest 96.2 (1996 Vol. II [MWSYM]): 1111-1114.

We report the design and operation of a monolithic Plane Wave PHEMT amplifier operating at millimeter wave frequencies. The array is made up of input slot antennas (5 x 7 array) and output patch antennas (4 x 8 array) polarized in orthogonal directions. An array of PHEMT amplifiers (7 x 8) placed between the two antennas amplifies and reradiates the input signal. The amplifier was placed in an oversized waveguide in order to avoid diffraction losses of a free space system. Gain of the amplifier was 3 dB at 42 GHz without any corrections for internal fixture losses. The amplifier results correlate well with computer model predictions of the antenna structures. These results prove the feasibility as well as the manufacturability of this approach.

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