Abstracts

Optical Measurements of Microwave Grid Oscillator Power Combiners

K.Y. Chen, P. Biernacki, A.R. Mickelson and Z.B. Popovic. "Optical Measurements of Microwave Grid Oscillator Power Combiners." 1993 MTT-S International Microwave Symposium Digest 93.1 (1993 Vol. I [MWSYM]): 313-316.

A unique electrooptic sampling technique is used to measure the potential distribution on a 5.8 GHz 25-HEMT grid oscillator power combiner built on a GaAs electrooptic substrate. The grid oscillator is a two-dimensional planar array of HEMT oscillators, backed by a metal mirror that provides feedback and unidirectional radiation. From the measured potential distribution, the current distribution along the radiating leads and bias lines is found. No edge effects were observed on a square grid that is smaller than a free-space wavelength on the side. It was found that each unit cell in the grid can operate independent y and that the bias lines provide the boundary conditions necessary for oscillation. Knowing the exact current distribution is important for designing the output power of such quasi-optical combiners.

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