Abstracts

A Monolithic Diode Array Millimeter-Wave Beam Transmittance Controller

L.B. Sjogren, H.-X.L. Liu, F. Wang, T. Liu, X.-H. Qin, W. Wu, E. Chung, C.W. Domier and N.C. Luhmann, Jr.. "A Monolithic Diode Array Millimeter-Wave Beam Transmittance Controller." 1993 Transactions on Microwave Theory and Techniques 41.9 (Oct. 1993 [T-MTT] (Special Issue on Quasi-Optical Techniques)): 1782-1790.

Amplitude control of transmitted millimeter-wave beams by monolithic Schottky diode arrays is demonstrated. An array containing 4800 diodes has demonstrated control over the range 20-50% beam transmittance at 99 GHz and 20-70% beam transmittance at 165 GHz. Modulation testing on a second array (8640 diodes) with similar transmission characteristics has shown array control to 50 MHz with negligible loss of output response. An extensive evaluation performed for the 8640 diode array shows good agreement between array impedance parameters determined from quasi-optical measurements, theoretical calculations, and low frequency C-V measurements. The results have extended the range of quasi-optical functions demonstrated by solid-state power-combining arrays for application to millimeter-wave systems.

❑ Return to main document.