Abstracts

A Broadband Free-Space Millimeter-Wave Vector Transmission Measurement System

Y. Konishi, M. Kamegawa, M. Case, R. Yu, S.T. Allen and M.J.W. Rodwell. "A Broadband Free-Space Millimeter-Wave Vector Transmission Measurement System." 1994 Transactions on Microwave Theory and Techniques 42.7 (Jul. 1994, Part I [T-MTT]): 1131-1139.

We report both broadband monolithic transmitter and receiver IC's for mm-wave electromagnetic measurements. The IC's use a nonlinear transmission line (NLTL) and a sampling circuit as a picosecond pulse generator and detector, The pulses are radiated and received by planar monolithic bow-tie antennas, collimated with silicon substrate lenses and off-axis parabolic reflectors. Through Fourier transformation of the received pulse, accurate 30-250 GHz free space gain-frequency and phase-frequency measurements are demonstrated. Systems design considerations are discussed, and a variety of mm-wave broadband transmission measurements are demonstrated.

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