Abstracts

Active probes for network analysis within 70-230 GHz

O. Wohlgemuth, M.J.W. Rodwell, R. Reuter, J. Braunstein and M. Schlechtweg. "Active probes for network analysis within 70-230 GHz." 1999 Transactions on Microwave Theory and Techniques 47.12 (Dec. 1999 [T-MTT] (Special Issue on 1999 International Microwave Symposium)): 2591-2598.

This paper presents a vector network analyzer system for the 70-230-GHz bandwidth. The instrument employs active probes for millimeter-wave signal generation and detection, and for signal delivery to the device-under-test. Milimeter-wave signals are generated and detected within the active probes using an integrated circuit (IC) based on nonlinear transmission lines. The IC contains all elements of an S-parameter test set: a multiplier to generate the radio-frequency signal, directional couplers to separate the incident and reflected waves, and a pair of high-speed sampling circuits to convert the signals down to lower frequencies. Two-port measurements over the 70-230-GHz bandwidth are demonstrated, including those of directional couplers and millimeter-wave high electron-mobility transistors.

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