Abstracts

Frequency-Dependent and Frequency-Independent Nonlinear Characteristics of a High-Speed Laser Diode

W.I. Way. "Frequency-Dependent and Frequency-Independent Nonlinear Characteristics of a High-Speed Laser Diode." 1988 MTT-S International Microwave Symposium Digest 88.2 (1988 Vol. II [MWSYM]): 991-993.

This paper experimentally demonstrates if a laser diode can be treated as a memoryless nonlinear device. It was found that for an operating condition with modulation depth below about 60%, the relative time delay (which ranges from zero to several hundred pico-seconds) caused by increased modulation depth has strong effect on the frequency-dependent intermodulation products. In this case, the RF bandwidth over which the laser diode can be considered to be effectively memoryless has to be smaller than the inverse of the measured time delay by two orders of magnitude. Increased optical reflections from fiber connectors were observed to cause significant fluctuations of the measured time delay as a function of frequency, and thus cause more pronounced frequency-dependent nonlinear behavior.

❑ Return to main document.