Abstracts

S/N and Error Rate Performance in AlGaAs Semiconductor Laser Preamplifier and Linear Repeater Systems

T. Mukai, Y. Yamamoto and T. Kimura. "S/N and Error Rate Performance in AlGaAs Semiconductor Laser Preamplifier and Linear Repeater Systems." 1982 Transactions on Microwave Theory and Techniques 30.10 (Oct. 1982 [T-MTT] (Special Issue on Optical Guided Wave Technology)): 1548-1556.

The applications of AlGaAs semiconductor laser preamplifier and linear repeaters in single mode optical fiber transmission systems were studied through the baseband signal-to-noise ratio and bit error rate performance measurement. Experiments were carried out with the Fabry-Perot cavity laser amplifiers whose characteristics are improved by reducing the input mirror reflectivity to 6 percent. The use of a preamplifier improves the minimum detectable power by 7.4 dB over the Si-APD direct detection level when the received signal is amplified by 30 dB before photodetection. The use of two linear repeaters increases the regenerative repeater gain by 37 dB. These experimental results are in good agreement with theoretical predictions based on the photon statistic master equation analysis.

❑ Return to main document.