

Measurement of transmission parameters of analog optical fiber communication system

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Abstrak

Development of optical fiber communication system is mainly due to the progressive influence of optical source. Laser diode as optical source in optical transmission system is of great attention because laser diode produces coherent monochromatic-light. Furthermore, laser diode has a high quantum efficiency, can be modulated at a very high speed, has small size and compact. The application of such optical source is also wide, ranging from optical signal communication to radar optics.

Therefore, laser diode is considered to be a key component in optoelectronic system.

In this study, an experimental model of analog optical transmission system with laser diode as optical source at wavelength of 0.79 μm has been designed and constructed. The design and construction include optical and electronic circuits. Design description at the wavelength used in this study is briefly described.

The characteristics of the system was evaluated by measuring the frequency responds of photo detector, the transmission bandwidth and the loss of the system. The result shows that the frequency responds of the photo detector limits the transmission bandwidth of the whole system. On the other hand, by the use of the selfoc lens for coupling laser diode to fiber line, a coupling efficiency as high as 55 % has been achieved. Based on the evaluation on the result obtained for the experimental model the practical applicability of the system is pointed out.