

Abstract

In this work a laser diode had be operated with different frequencies (50 kHz –2 MHz), different laser diode with (635nm, 776nm, 811 nm) and Light emittingdiode LED with 650 nm wavelength had be used, optical spectrum analyzer with spectrum range (200 – 1050 nm) we had used to test the output spectrum, digital thermometer to measure the temperature and Thermo Electric Cooler (TEC) to control the device temperature (20 – 50 C_o) also employed in the experience.

With temperature increases the output spectra showed Red-shift and expansion in spectrum width, via temperature controller with TEC and metallic heat sink we can control the instability in output spectrum, for laser diode (635 nm) the spectrum shift was (3.21 nm to 4.9 nm), for laser diode (776 nm) the spectrum shift was (1.18 nm to 2.94 nm), for laser diode (811 nm) the spectrum shift was (6.12 nm to 9.19 nm).

The Light emitting diode (LED) was very stable during the different operating conditions and the change in temperature and operating frequency the spectrum shift was (0) and no change in temperature.