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| **Title:** | Effects of Variation of Injection Current, Differential Gain and Injection Current Efficiency on the Modulation Performance | | |
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| **Published Journal Name:** | International Journal of Multidisciplinary Sciences and Engineering (IJMSE) | | |
| **Type of Publication:** | Journal | | |
| **Volume:** | 5 | Issue |  |
| **Publisher:** |  | | |
| **Publication Date:** | November 2014 | | |
| **ISSN:** | 2045-7057 | | |
| **DOI:** |  | | |
| **URL:** | <http://www.ijmse.org/Volume5/Issue11.html> | | |
| **Other Related Info.:** | pp- 1-7 | | |
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| **Abstract:** |  |
| In this work, the effects of variation of Injection Current, Differential Gain and Current Injection Efficiency on the Modulation performance characteristics of a GaInP based 635nm Red laser have been obtained through proper simulation  and computations. Here the analyzed red laser consists of 3 multiple quantum well (MQW) and separate confinement heterostructure (SCH). The total simulation process of the designed Ga0.5In0.5P/(Al0.5Ga0.5)0.5In0.5P is completed by using MATLAB software. The injection current is proposed 90mA  where the threshold current is maintained 6.7mA at the temperature of 300K. By sustaining the proposed injection current the peak intensity is found at exactly 635nm wavelength with the power of 105mW. A maximum resonance frequency is obtained 10 GHz with the modulation bandwidth of 16.25 GHz. By varying the value of different parameters the total analyses and the performance of the laser has been optimized. | |