Thesis Title	Development of a Digital Densitometer for Medical Applications
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Date of Graduation	2 June, B.E. 2538 (1995)

Abstract

The purpose of this thesis is to develop the digital densitometer for medical applications with the useful optical density(OD) range of 0 to 3.00. Its simple operating step, low cost, ease of maintenance and good performance can be acheived mainly by the use of the local available electronic parts and components with the application of a microcontoller to control the system in order to reduce the electronic hardware. The firmware program is designed to facilitate the system operation with dialogue display consists of; system operating program, calculating program for data averaging and fog subtraction.

By using the 20 W halogen lamp in conjunction with the optical lens system and the large area photodiode no. S2386-45k in the developed instrument, the test result shows that the digital densitometer can read the optical density from the standard film in the range of 0 to 3.00 with an error of ± 2.50 % and ± 2.54 % for 1 and 3 mm aperture diameters, respectively. The reproducibility test results for both sizes of aperture are average at ± 0.013 %.