
TITLE: Investigating Optical Properties of Infrared Radiation

AUTHORS: Aaron Rampersad
Rajiv Chadee

SUPERVISORS: Dr. A. Achong
Mr. R. Ramsaroop

The objectives of the assignment are to investigate reflection, scattering and transmission properties of a commercial infrared diode. These investigations are used to examine an observed anomaly associated with some devices using infrared radiation controlled systems. Such devices do not operate properly for direct line of sight positioning of the transmitter with respect to the detector, for low intensity transmission.

In performing the examination it was determined whether the anomaly could be observed under experimental conditions. To do this an appliance was bought similar to the one in which the anomaly was initially observed. Tests were conducted for both line of sight as well as varied angles of the transmitter remote control with respect to the detector, as well as at varied distances away from the detector. However, in practice the anomaly was not observed.

For the second part of this assignment, optical experiments were conducted using infrared radiation with common domestic materials. In order to perform such experiments however, a continuous wave infrared transmitter and detector had to be constructed. Using an oscilloscope connected to the detector, intensity was measured for reflected, transmitted and scattered infrared radiation. Relevant graphs were plotted of Intensity versus Angular Deviation of the transmitter to determine its best position.