TITLE: Transceiver Design

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Photoplethysmography is a non-invasive method of observing blood volume changes; within an organ or across limbs. In a small area such as the fingertip or earlobe blood volumes change are relatively large during the systole and diastole cycles of the heart. This is due to the large proportion of capillaries; this enables an accurate representation of the blood transmission per cycle of the heart at the point of measurement. Photoplethsymography is able to achieve this by illuminating the tissue and observing the pulsations using light detectors in a reflected mode. The purpose of this investigation was to observe these waveforms from a normal patient and compare the signals obtained with the patient at rest and those after the patient has exercised in an effort to raise their heart rate. As expected, a signal in the form of pulses is obtained, with the frequency of pulses coinciding with the patient's actual measured heart rate. An increased frequency of pulses compared at rest was observed with the patient having an increased heart rate; from this we can conclude that the device successfully represents the heart rate of the patient.