

Abstract

Heartbeat and respiratory rate are important indicators in medical test. The current method mainly adopts contact detection technology. However, in the process of testing the human body, it has certain constraints. In this project, we'd like to create a system based on the metamaterial leaky-wave antennas which is non-contact. Compared with the conventional non-contact systems, it is more efficient and convenient. The complexity will be reduced dramatically, and the issue of latency performance will be solved in our study. Our system is able to achieve real time location detection. Moreover, the range of direction angle is expanded. As a result, we can detect more than one object simultaneously. This detector utilizes Doppler Effect to measure the heartbeat and respiratory rate. To make the data we captured as precise as possible, the main problem we need to solve is to reduce the impact of noise. We can apply this technology on natural disaster relief and public health care, etc.