

ABSTRACT

Monitoring of heart signals is very important for patients with heart disease. EKG signal detection that is done to help doctors diagnose heart disease. The purpose of this research is to develop a portable ECG monitoring system and easy to operate with remote monitoring, therefore the ECG 6 Lead Design with wireless Lora was created. The main contribution of this proposed method is the low cost, use of a digital filter to remove noise in the ECG signal and display it on long distance transmission. This can be achieved by evaluating the use of a filter on the ECG signal. The main design consists of a buffer, multiplexer, pre-amplifier, band pass filter, filter notch, amplifier sum, Arduino microcontroller, TFT LCD, and LORA transmitter. ECG signals are collected from the body based on standard LEAD I, LEAD II, and LEAD III measurements. The ECG signal is sampled with a sampling frequency of 250 Hz. To record raw data from the ECG signal, then apply a Butterworth digital filter order 6 with f_c 0.5 - 40 and send it to the PC using LORA wireless. The delivery test results obtained the furthest delivery distance at 44 meters without barrier and 20 meters with barrier. The maximum baudrate that can transmit a signal is 9600 with an air data rate of 250 kbps. This study shows that the 6th order Butterworth filter and delivery using LORA wireless can be used.

Keywords — ECG 6 LEAD; Heart Monitoring; Arduino Microcontroller; LORA wireless