

ABSTRACT

EEG (electroencephalogram) is a physiologic signal produced by electric activity of brain's muscles in the head skin. The ECG signal, clustered into four categories kind based on its frequency range (alpha, beta, delta and theta), is generated because of human's brain activities. By processing the ECG signal, a medical doctor can perform an analysis towards patients' activity condition.

Conventionally, the EEG signal supports acquisition and recording (printing) on electroencephalography-specified paper. Later on, the value of frequency is measured automatically and manually by calculating the peak-to-peak amplitude of the signal by the means of software as well as the paper printout of the signal.

This final assignment has successfully realized EEG signal acquisition tool using biopotential amplifier with total amplification of 17.286,9 times and filtering at the frequency from 0,5 to 30 Hz. The signal is sent to PC using serial port (COM). To separate EEG signal becomes alpha, beta, delta, theta signals and also automatic frequency measurement. Programming algorithm is used with Borland Delphi 7.0 so that each signal can be monitored in real time at every moment to find out the condition and activity of a patient based on the change of its signal frequency.

Key words : EEG, Brain Waves, Filter, FFT, Op-amp.