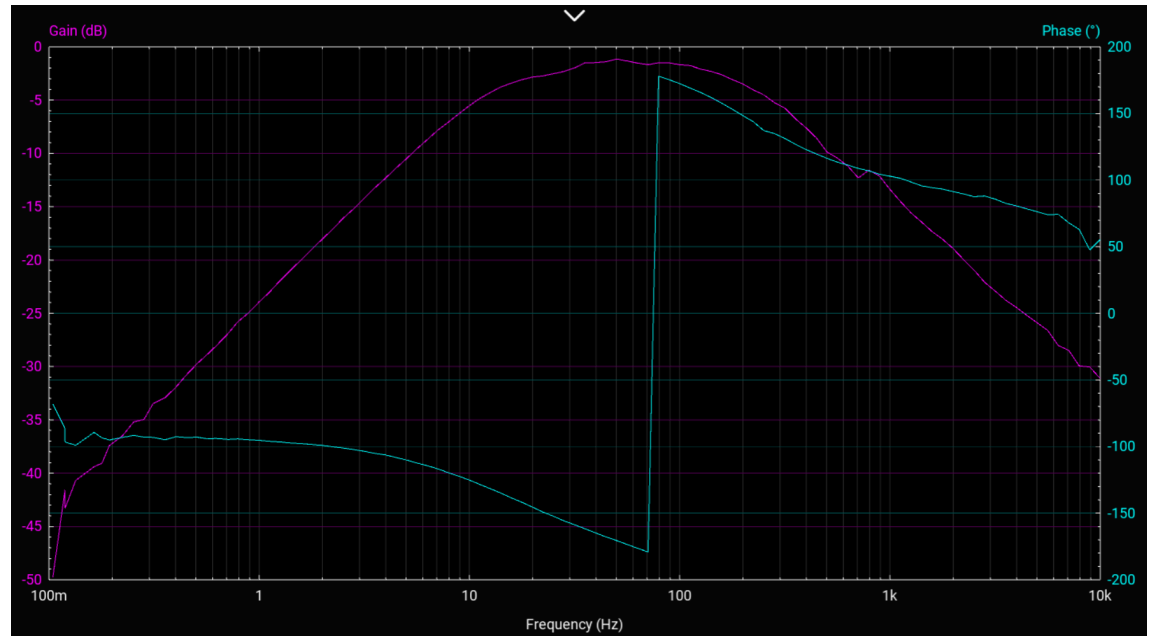


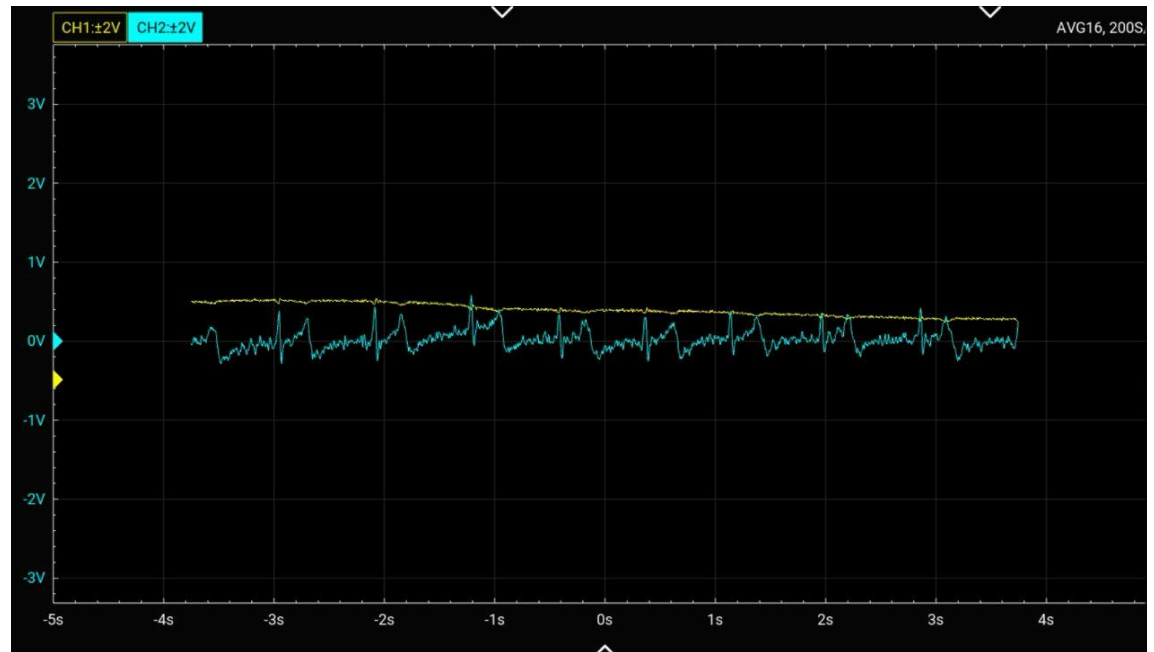
ISIM Lab 5- EKG  
Kuhu Jayaswal  
3/10/25

### Bode Plot:



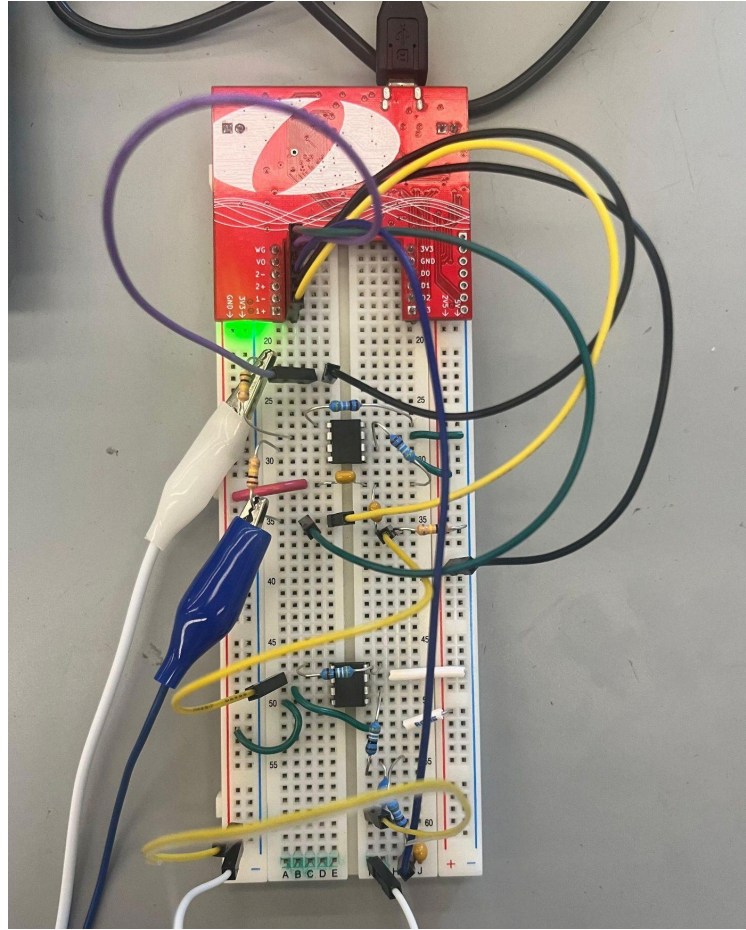
Caption: Frequency response of the EKG circuit showing bandpass filter behavior.

### EKG Trace:



Caption: Filtered and amplified EKG signal displaying clear heartbeats.

### Built Circuit:



### Description of Circuit Functioning:

The EKG circuit uses two stages of amplification and filtering to isolate the heart's electrical signal.

- Stage 1 includes an instrumentation amplifier with a high-pass and low-pass filter to remove baseline drift and high-frequency noise.
- Stage 2 adds low-pass filtering and refines it with two RC low-pass filters, helping suppress high-frequency noise and improving signal clarity.
- In total, the circuit uses one high-pass and three low-pass filters, forming a bandpass filter centered around typical heartbeat frequencies (upto 40 Hz).
- The overall gain is set by resistors on the AD623 amplifiers, typically achieving upto 1000 times the amplification to make microvolt signals visible on the O-Scope.