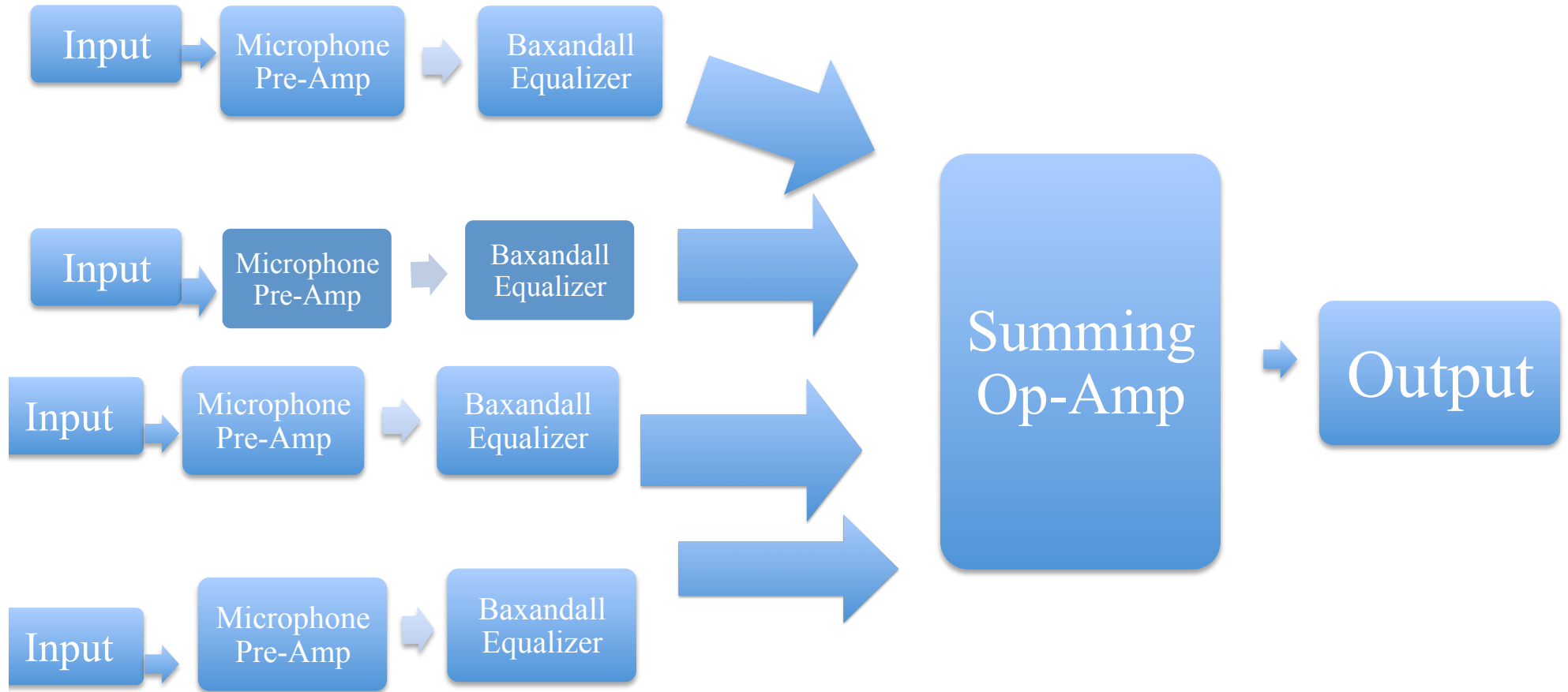
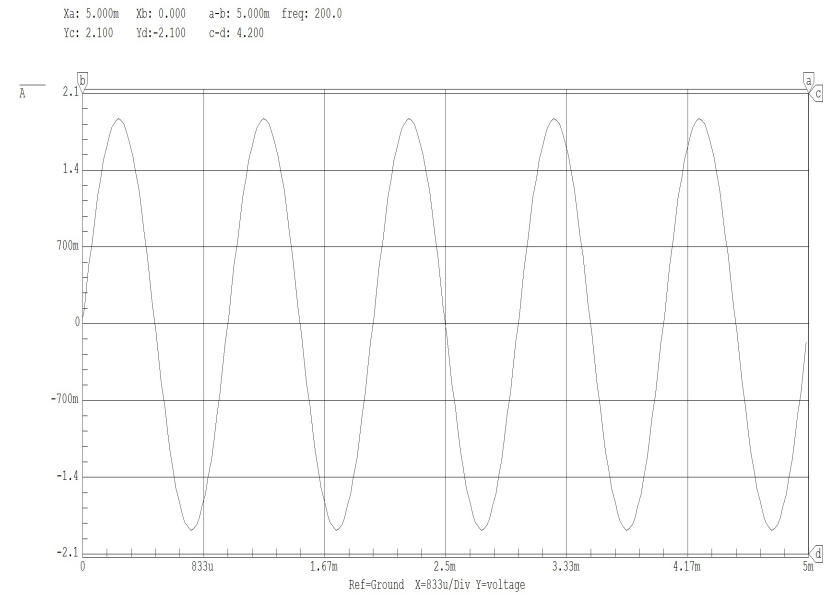
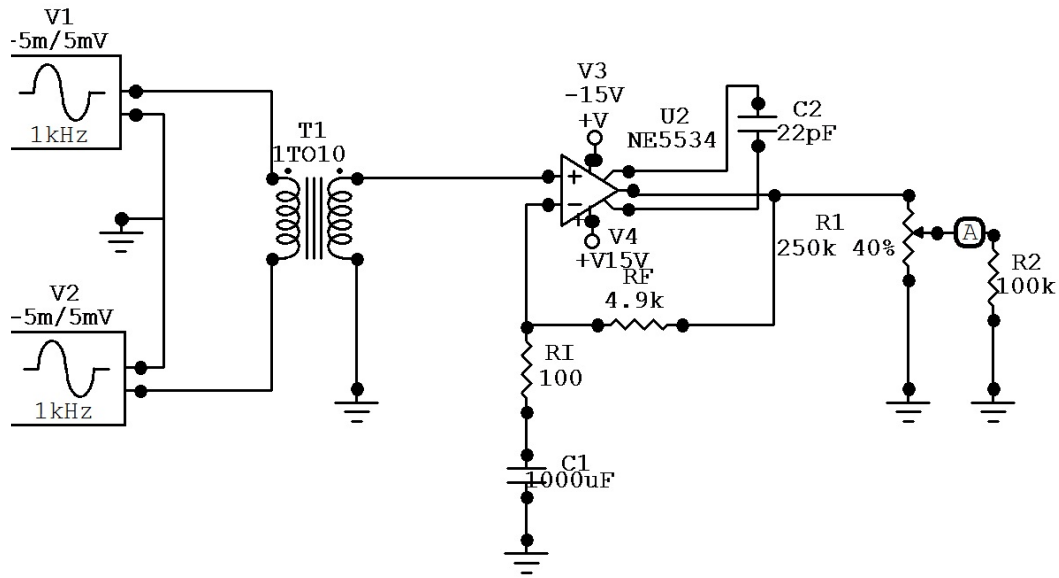


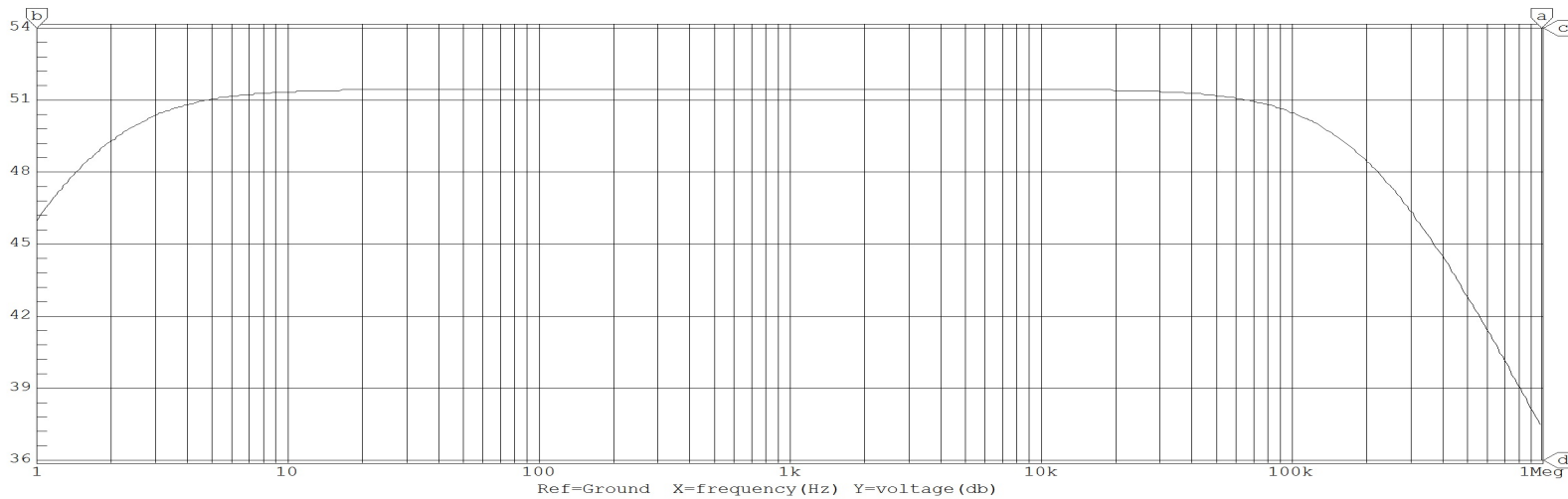
Andrew O'Neil-Smith
MMI 401 Final Project – 4 Channel Mixing Board



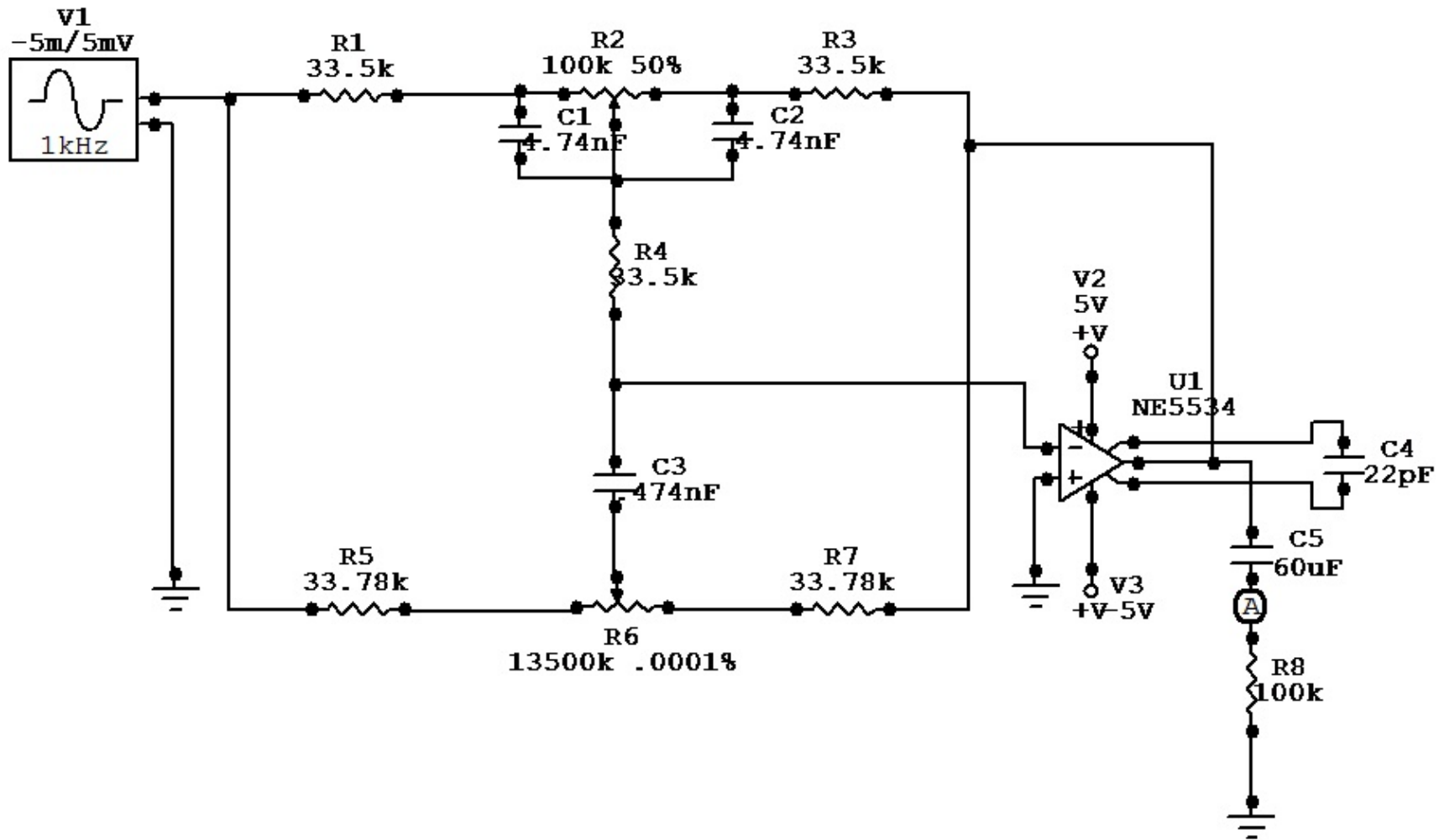
The first part of the mixing board is the microphone pre-amp. The input at V1, V2, and Ground would be the input from an XLR cable. The pre-amp has a flat frequency response between 20Hz and 20kHz and roughly 52dB of gain.



Xa: 983.9k Xb: 1.000 a-b: 983.9k
Yc: 54.00 Yd: 36.00 c-d: 18.00

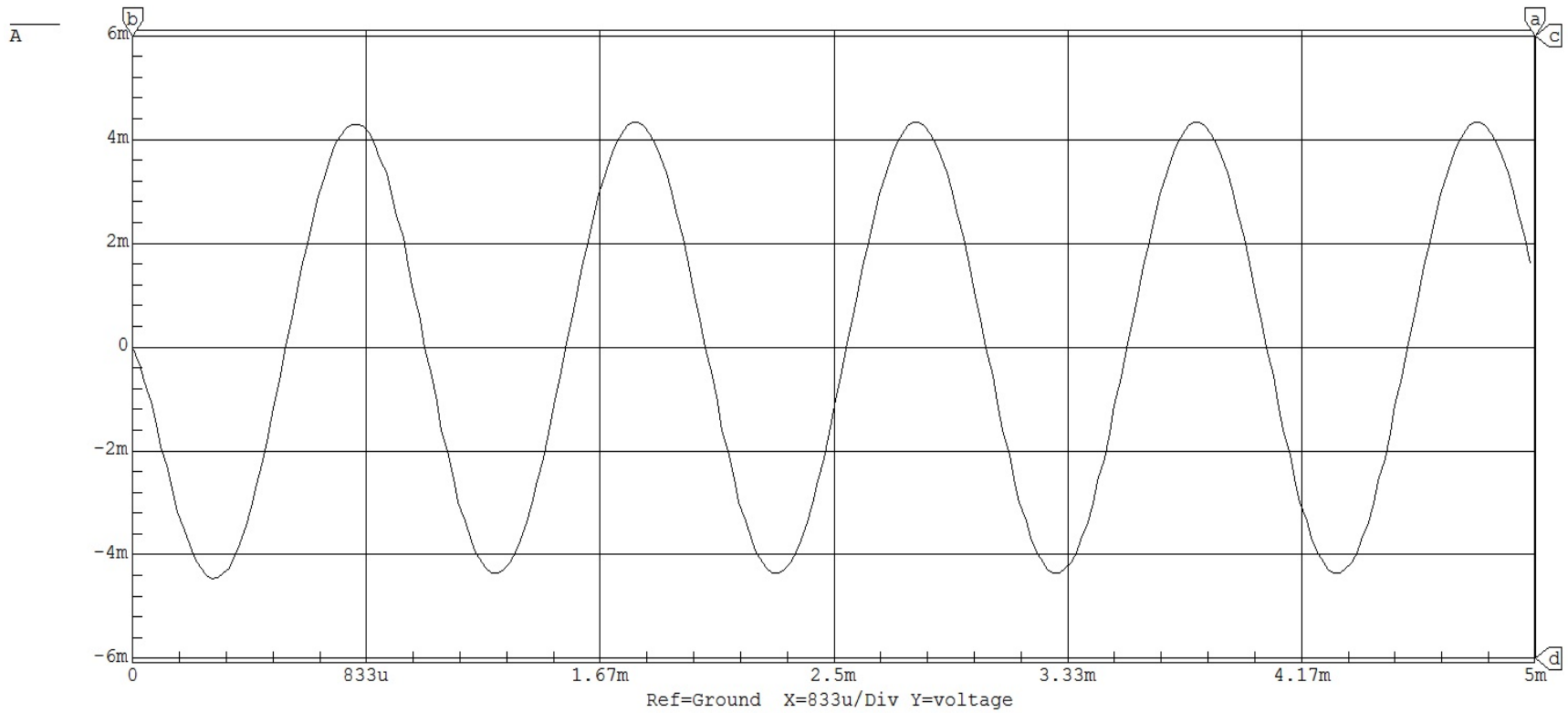


The output from the mic preamp will feed directly into the next part of the mixer – the equalizer. Each of the four channels will have a Baxandall Equalizer circuit. This snapshot is what each one will look like, except the potentiometer values (R2, R6) will change depending on what you want your EQ shape to be. The output will feed one of the the four channels on the summing circuit.



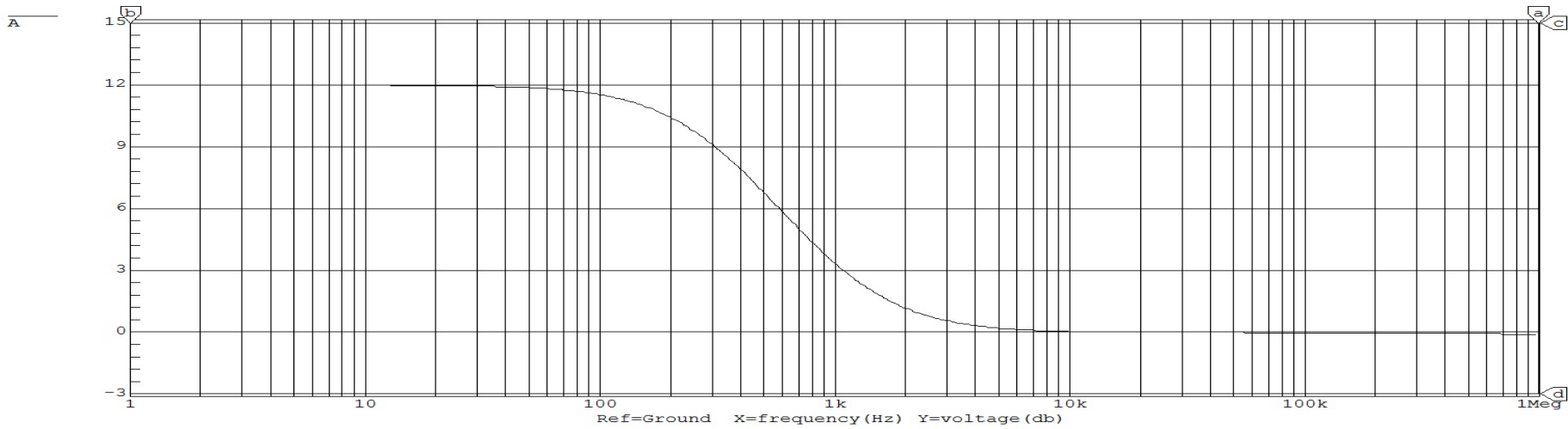
This is the transient analysis for the Baxandall circuit. The 60pF capacitor (C5) centers it around 0V.

Xa: 5.000m Xb: 0.000 a-b: 5.000m freq: 200.0
Yc: 6.000m Yd: -6.000m c-d: 12.00m

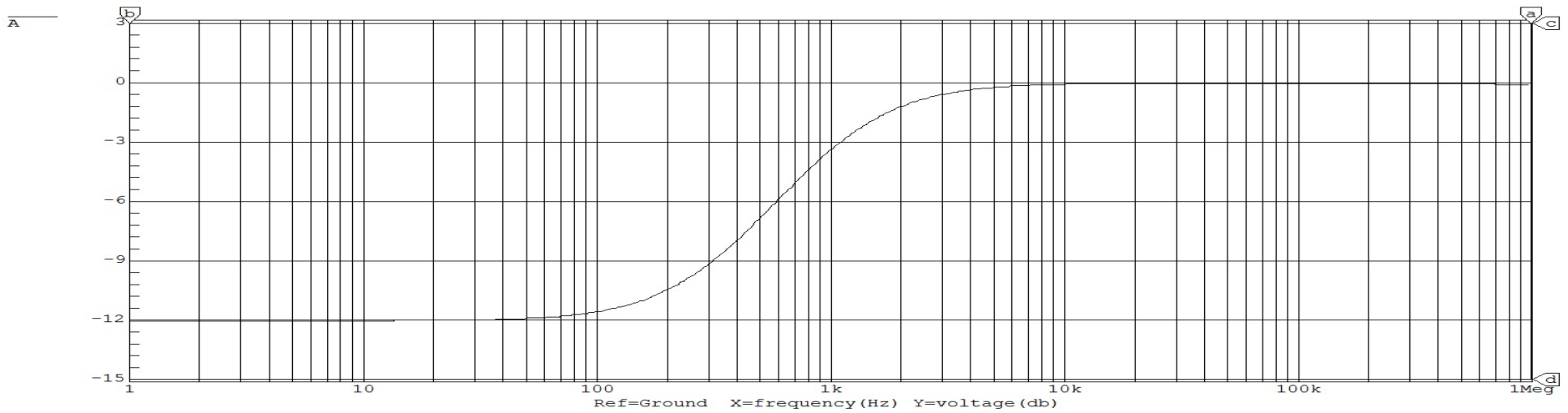


The first two AC analyses are taken when the high frequency potentiometer is at 50% and the low frequency potentiometer is at .0001% and 99.999% respectively.

Xa: 983.8k Xb: 1.000 a-b: 983.8k
Yc: 15.00 Yd: -3.000 c-d: 18.00

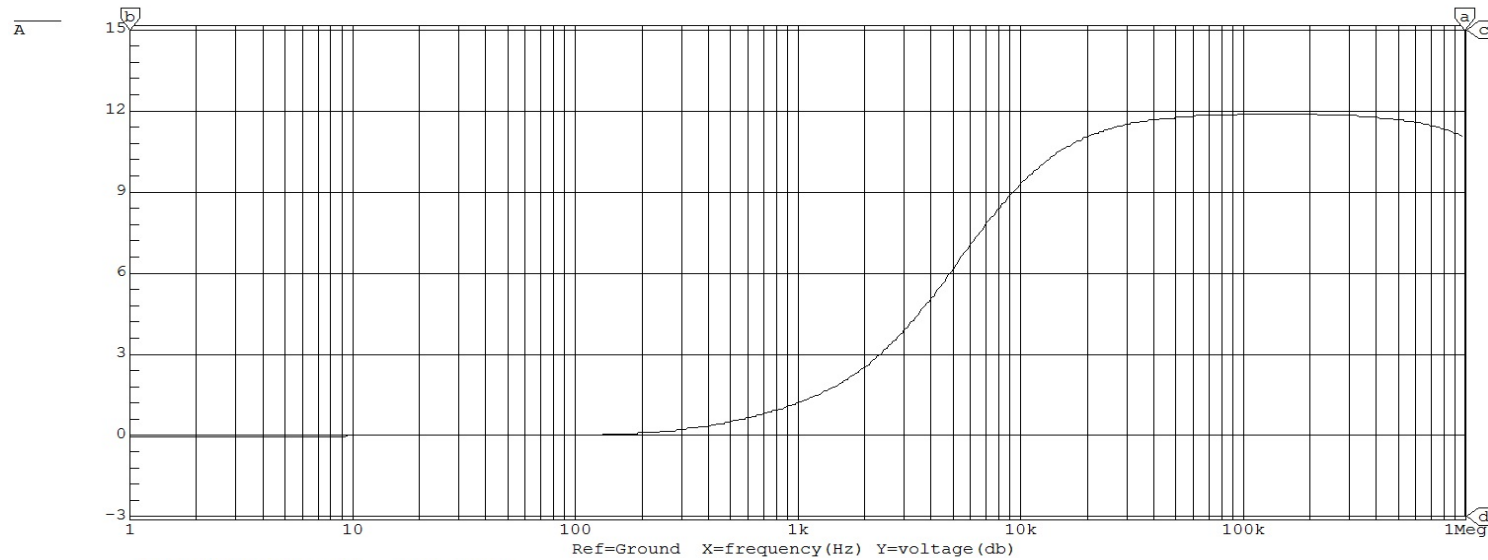


Xa: 983.8k Xb: 1.000 a-b: 983.8k
Yc: 3.000 Yd: -15.00 c-d: 18.00

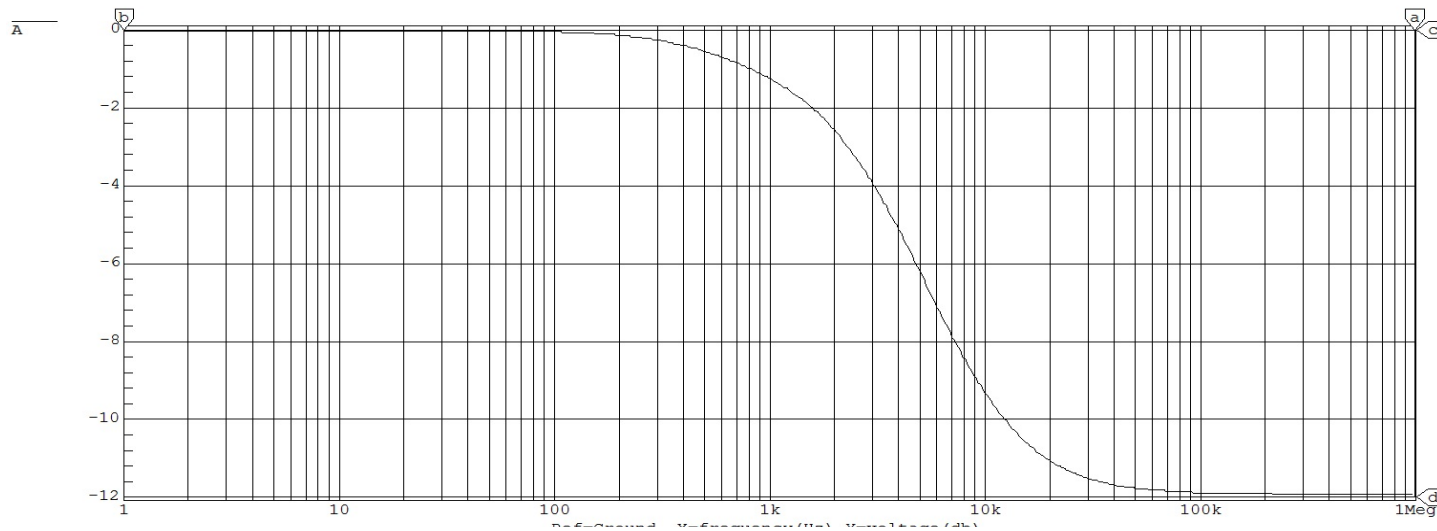


These next two AC analyses are taken when the low frequency potentiometer is at 50% and the high frequency potentiometer is at .0001% and 99.999% respectively. The .0001% graph curves back down around 1Meg, but it will not really matter because our hearing range does not go up that high.

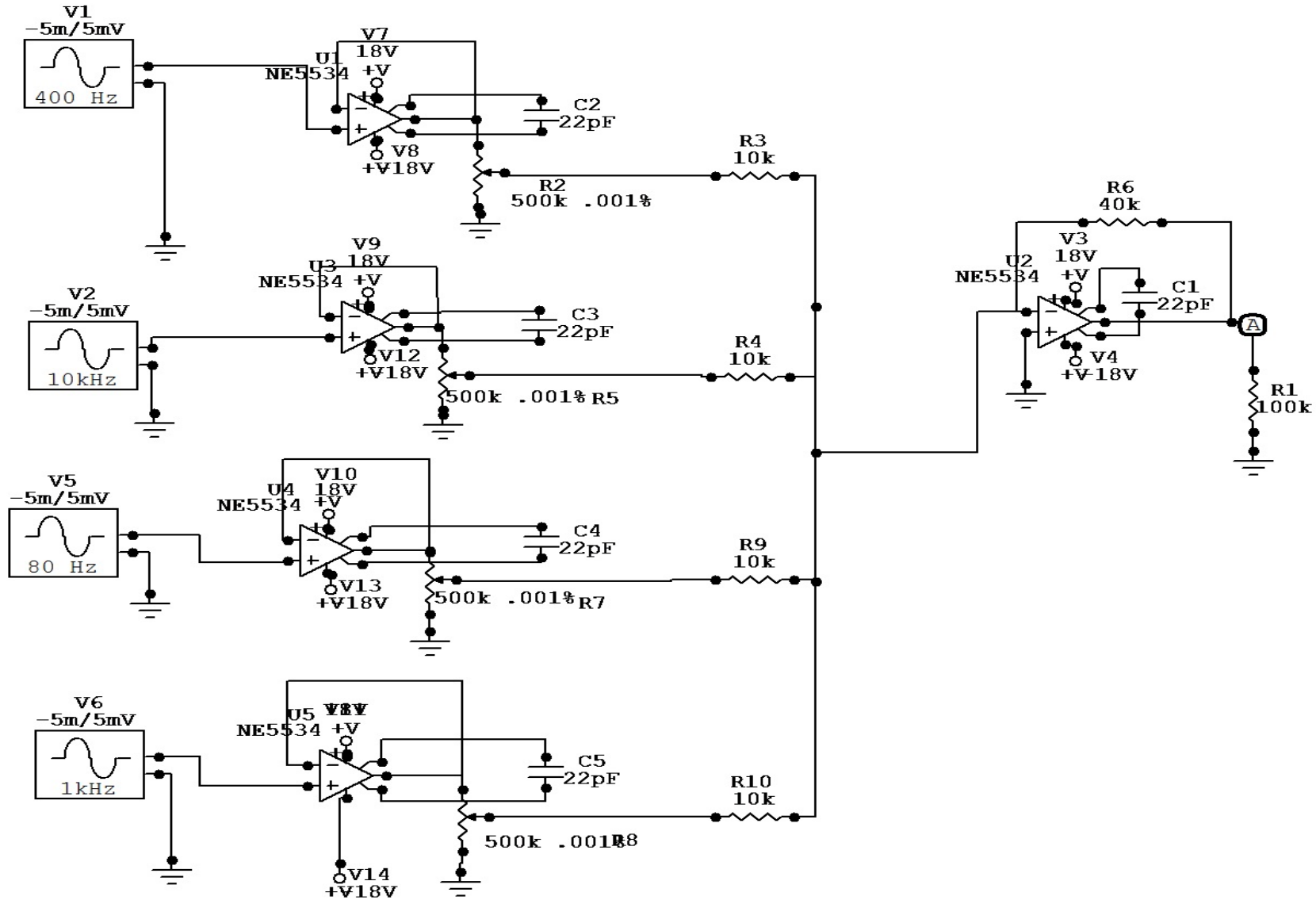
Xa: 983.8k Xb: 1.000 a-b: 983.8k
 Yc: 15.00 Yd: -3.000 c-d: 18.00



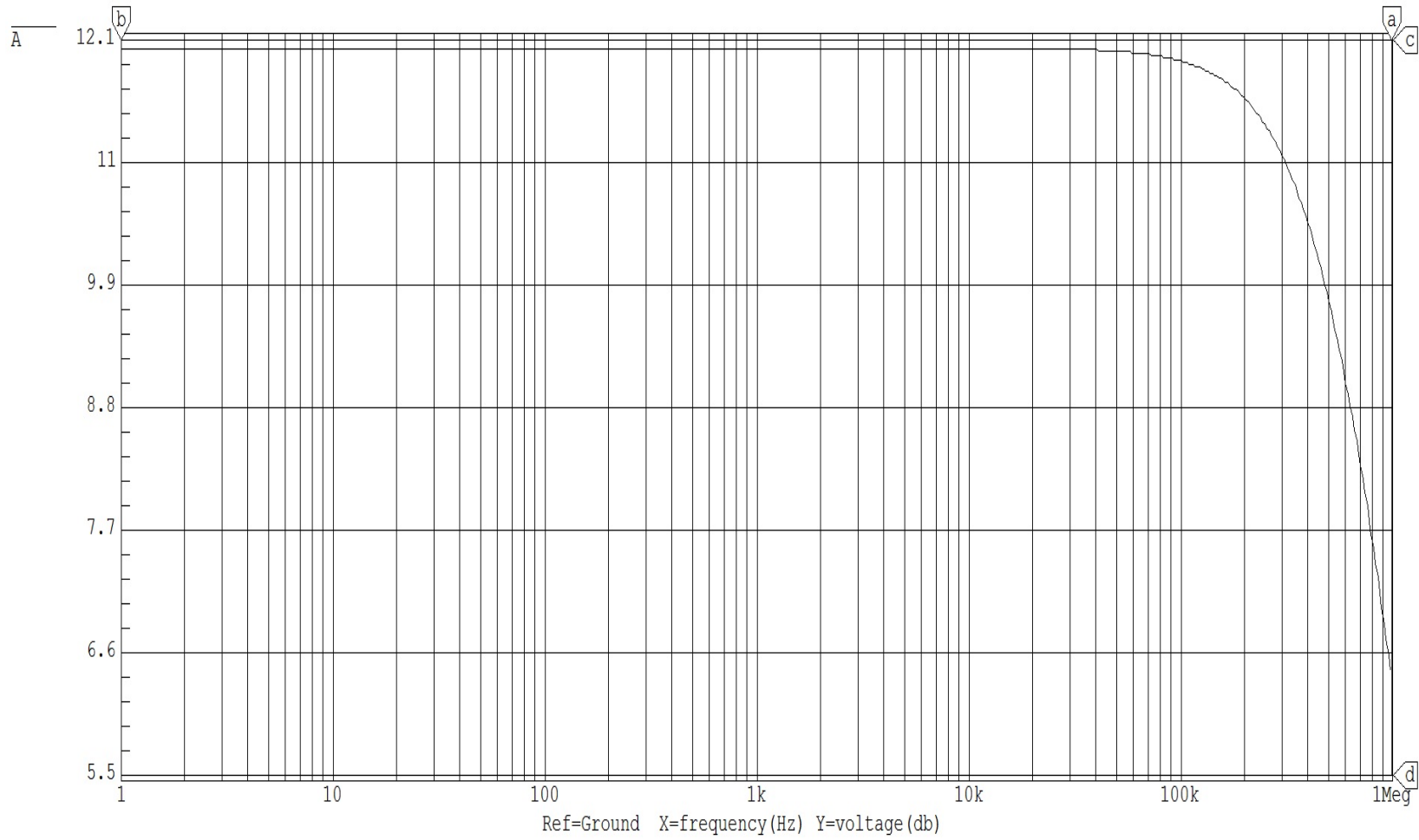
Xa: 983.8k Xb: 1.000 a-b: 983.8k
 Yc: -1.78e-15 Yd: -12.00 c-d: 12.00



The last step is feeding the output of each of the four channels into a 4 input summing op-amp. The AC analysis was taken when the 1k source is all the way on and the others off, showing that each channel has roughly 12dB of gain. The Transient analysis shows what the waveform will look like when all of the sources are mixed together.



Xa: 983.8k Xb: 1.000 a-b: 983.8k
Yc: 12.10 Yd: 5.500 c-d: 6.600



Xa: 5.000m Xb: 0.000 a-b: 5.000m freq: 200.0
Yc: 120.0m Yd: -60.00m c-d: 180.0m

