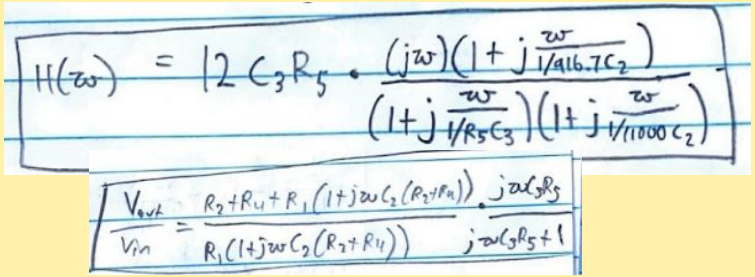
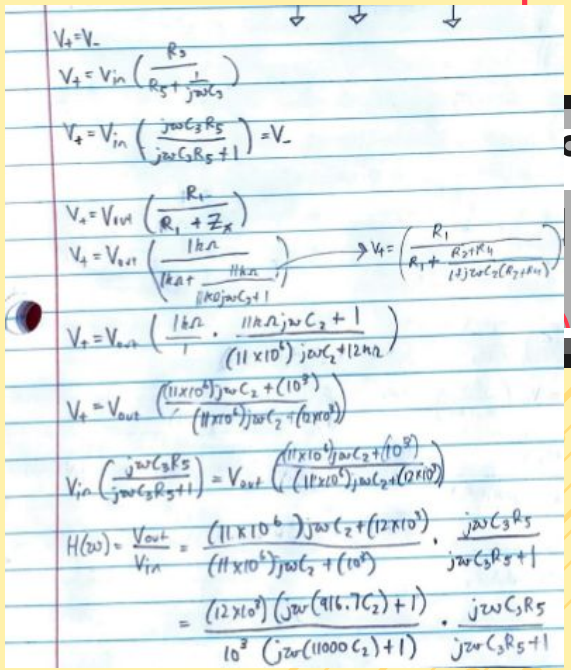
Laboratory 5: Treble Boost Effects Box

By: Nil Patel & Phillip Wang

Transfer Function & Component Values

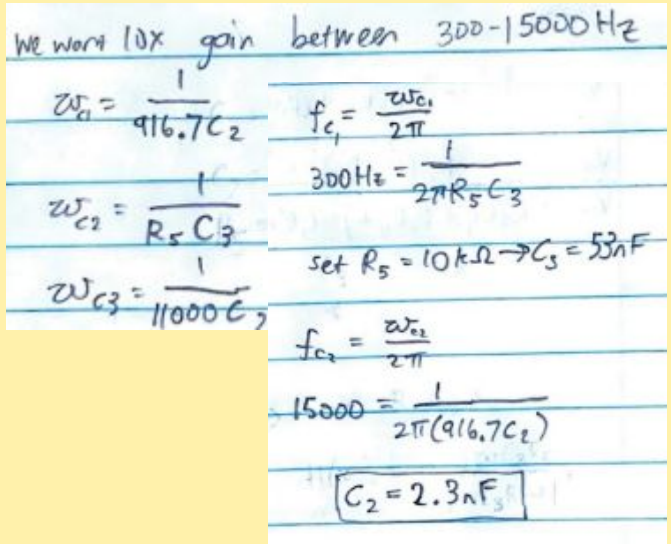
Transfer Function:





Component Values:

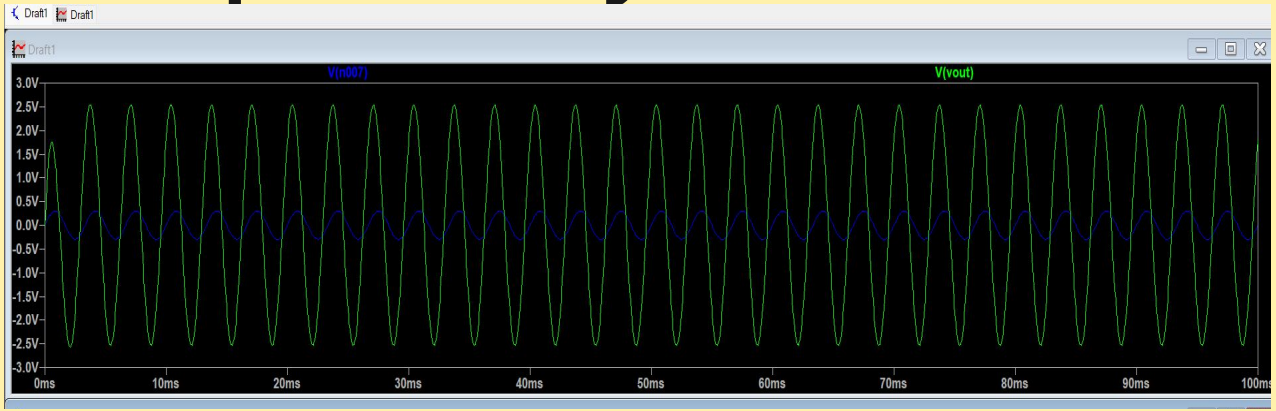
- C2 = 2.3nF
- R3 = 10k ohms
- C3 = 53nF

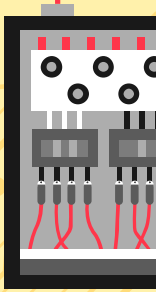


Design Choice (didn't have exact capacitance values):

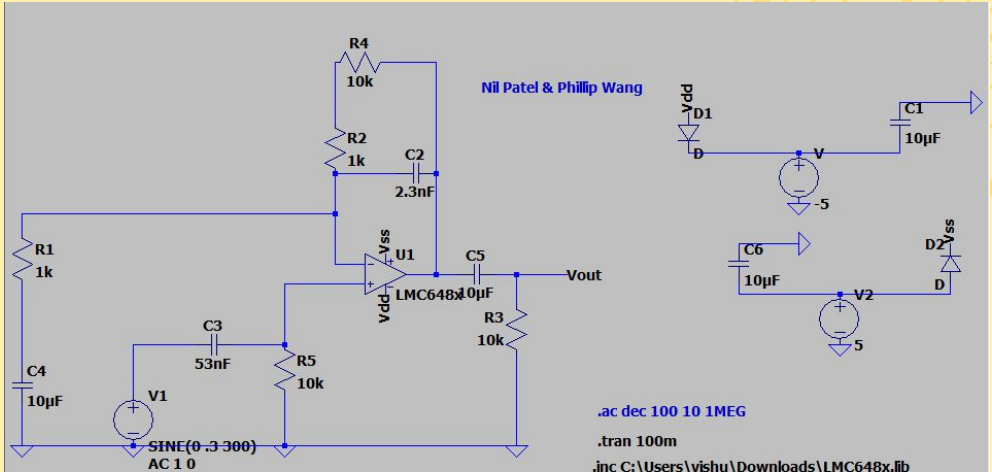
- Used 2nF instead
- Used 47nFinstead

LTSpice Analysis - Transient Response





Vin = Blue
V(out) = Green
Frequency = 300 Hz



LTSpice Analysis - Frequency Response

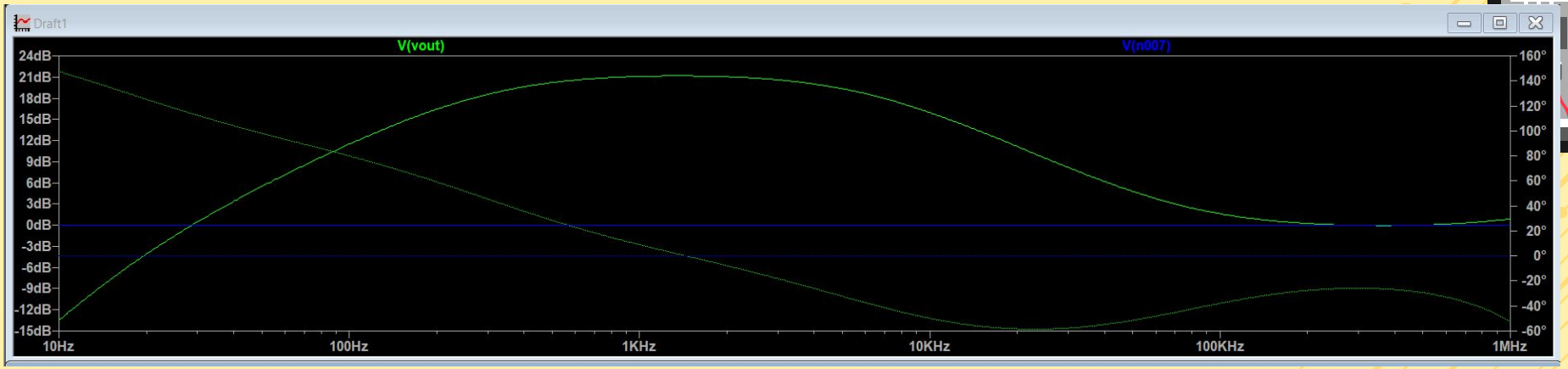
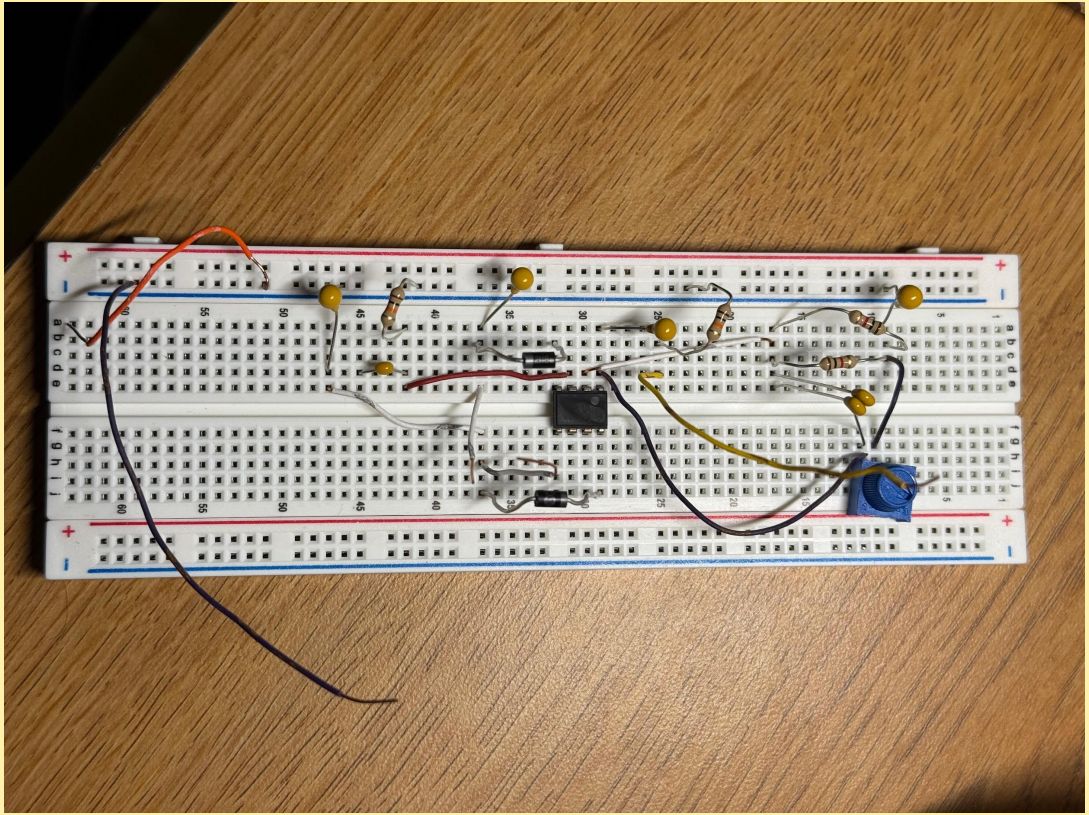
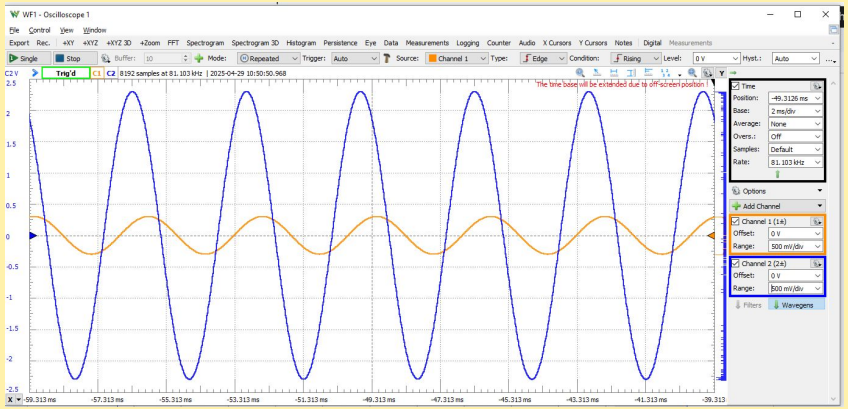


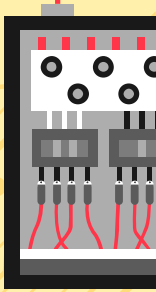
Photo of Breadboard



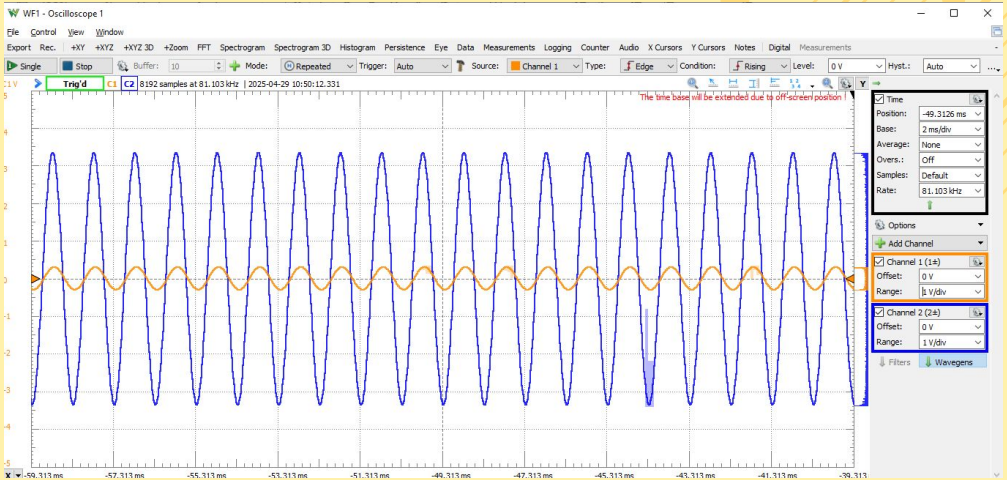
Measured time domain plots - Oscilloscope



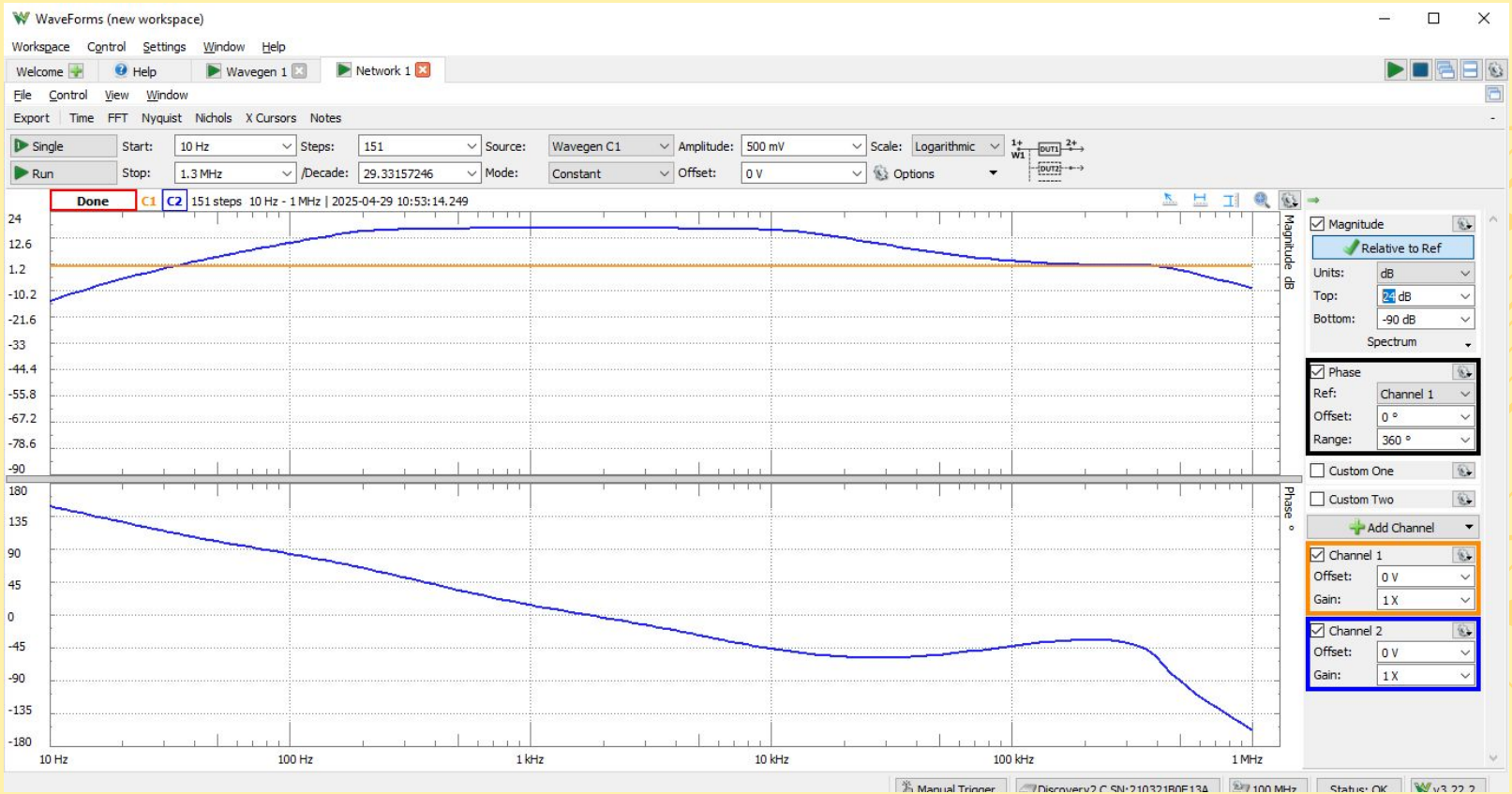
299 Hz

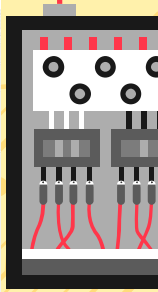


1khz

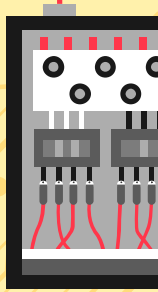


Measured Frequency Domain Plots





Designed VS. Achieved



Component Selection:

- Used 2nF instead of 2.3nF
- Used 47nF instead of 53nF
- (Didn't have exact values that we needed)

	Symbolic Expression	Simulation *(low, high)*	Measurement
Cutoff Frequencies	$(1 / 2\pi * R_5 * C_3) = 300$ Hz $(1 / 2\pi * 916.7 C_2) = 15.1$ kHz	300 Hz, 15 kHz	200 Hz, 13 KHz
Gain *(inside boosted range)*	21.5dB	21dB	18.5dB