ELEC 240
Lab 2 - Signal Sources and Sinks

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1 Objective

In this lab, we explored how to detect and change signals through the use of electroacoustic transducers. In the first section, we observed the various properties of a signal such as its frequency and amplitude through a speaker and calculated how measuring this signal with the speaker affects the circuit. In the second section, we now produced signals through various methods like our vocal cords and the lab PC and viewed these signal properties on the oscilloscope. Finally, in section three, we independently viewed the signal properties of a photodiode and a light-emitting diode, then combined the two to view how a light-emitting diode can send signals to a photoresistor to achieve optoelectronic communication.

2 Materials

- Virtual Bench (Software, Oscilloscope, Function Generator, DC Power Supply)
- BNC Male to Clips cord
- Oscilloscope Probe
- Speaker
- Breadboard
- Microphone
- 2 10 cm length wires (with 6 mm stripped on each end)
- Lab PC with associated sound files and sound card cable
- Photodiode
- Red LED
- BNC Banana Adapter
- Digital Multimeter
- 220 Ohm Resistor

3 Test Description

3.1 Electroacoustic Transducers I

We began by creating a 1kHz sine wave, connecting this signal to a speaker, and listening to the signal in audio form. We then varied the parameters of the input signal to listen to the effects on the output signal.

3.2 Pre-Lab Calculations and Schematics

Your text here

Note (To be deleted): Include the homework pre-calculations and schematics that serve as the initial setup for the test. Briefly explain the importance of each item you include. You may want to number your equations/figures so you can refer to them in later sections. Including photos of handwritten work is okay.

4 Results and Discussion

Your text here

Note (To be deleted): The heart of your report is the presentation of your results and a discussion of those results. In your discussion, you should not only analyze your results, but also discuss the implications of those results.

5 References

Your text here

Note (To be deleted): List any datasheets, websites, lab procedure, etc. used during the lab.

6 Conclusion

Your text here

Note (To be deleted): While the "Results and Discussion" section focused on the test results individually, the "Conclusion" discusses the results in the context of the entire experiment. Usually, the objectives given in the "Introduction" are reviewed to determine whether the experiment succeeded. If the objectives were not met, you should analyze why the results were not as predicted.

7 Errors

Your text here

Note (To be deleted): Briefly list sources of error and discuss how to eliminate or deal with them