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Computer Engineering Lab III (CPE-427-01)

Tech Memo Lab 3

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The goal of Lab 3 was to use the Analog to Digital Conversion (ADC) with the EEPROM. 512 bytes were stored in the on-board EEPROM and then converted and displayed on PuTTY.

The bytes were converted successfully sent serially via PuTTY. The session log of this from PuTTY was then plotted in EXCEL. The output was expected to be 0x19 and values we were getting 16, 17, and 18. Several factors could cause this, including differences in resistance of the board or component tolerances.

Throughout the course of the lab, some small issues presented themselves. The conversion of the 0.5V needed to be divided by 5 and that was missing from the code at first. We also had not soldered on two diodes required to create a connection between the R54 and the ADC0 pin of the ATMEGA 8. Our board was not perfect to begin with but after initial measurements, a connection between the input diode and the 5V pin of the microprocessor was broken. This was most likely caused by a lack of good solder-pads on our board due to previous re-soldering. A new board was acquired, and new measurements were taken.

To summarize, despite some software and hardware issues, the ADC was able to successfully convert data from the EEPROM and output to PuTTY.

Appendix

Figure

A white sheet with numbers

Description automatically generated

Figure : PuTTY log sample during 5V sin wave stimulus