Multi-Access Data Network

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Project Description

- Multiple-Access Data Networks allow more than one device to transmit data over one channel
- The goal of this project was to send two streams of data to a single receiver node
- The group fabricated three modems from scratch and designed their own multiplexing scheme to accomplish this task
- Future work would include implementing this system over a power line network and sending useful data.

Modem

- Level shifting device implemented to convert between TTL and RS232 voltage levels
- On-Off Keying modulation scheme with 400 kHz carrier used to transmit serial data over the network
- Energy Detection used for demodulation of OOK signal
- Envelope sent through a schmitt trigger for a clean output

Multiplexing

- Each transmitter waits for a timing signal from the receiver
- Once the timing signal is received, transmitters send data during their time slots for a specified number of rounds.
- Once all rounds have passed, the two transmitters wait for the timing signal, starting the process over.