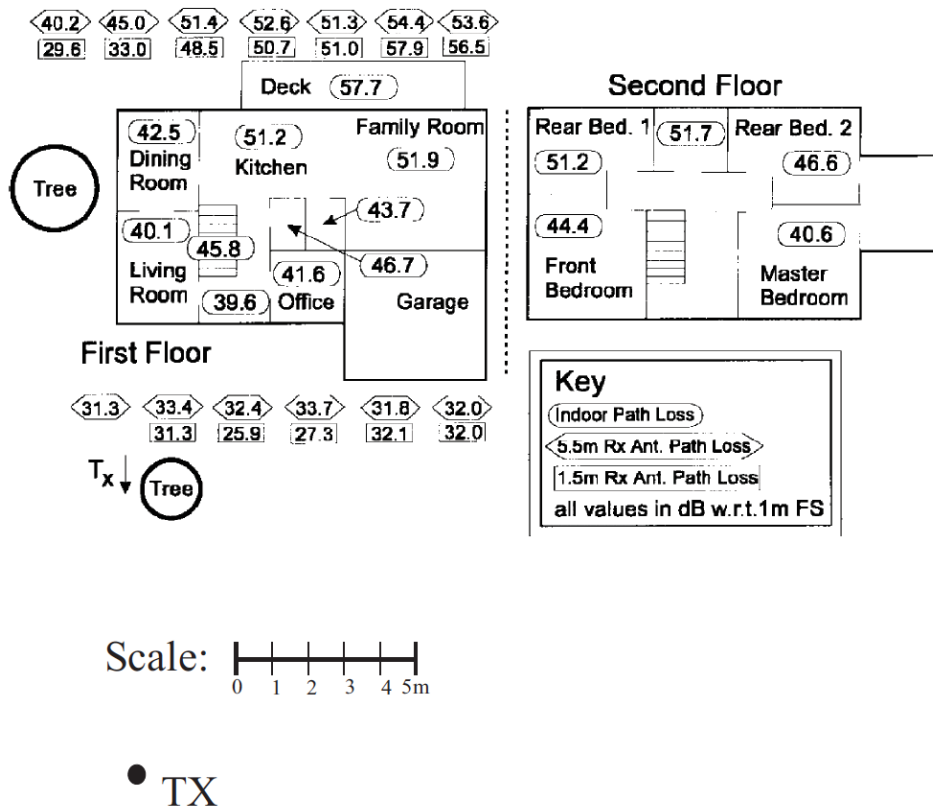


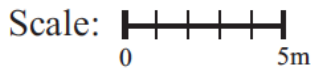
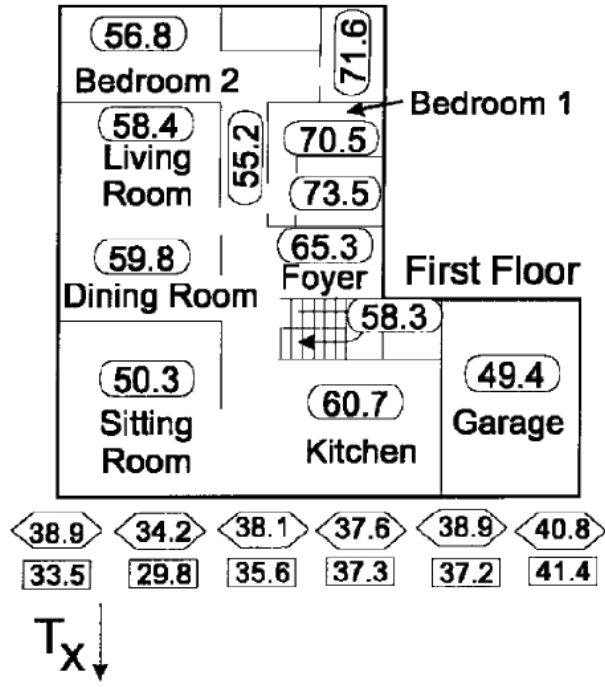
ECE 4370: Antenna Engineering  
Homework 4

1. **Path Loss Exponent:** You are hired as a consultant to study signal propagation in and around homes and trees at 5.85 GHz, which is the unlicensed radio band for IEEE 802.11n networks. Your client is interested in delivering wireless internet into homes from 5m-high utility top poles. You collect a great deal of data in and around a sample home, which has been recorded to scale on the last sheet of this homework assignment. Using a ruler to calculate distances, estimate a path loss exponent for this indoor/outdoor data that helps network planners model coverage. Report the standard deviation of your model. (10 points)

Diagram for Problem 1:



2. **Partition Model:** You are given a second set of path loss data that must be analyzed with a more sophisticated partition-based model (see below). Find typical loss values for exterior walls and interior walls. Report the standard deviation of your model. (10 points)



**Key**

- Indoor Path Loss
- 5.5m Rx Ant. Path Loss
- 1.5m Rx Ant. Path Loss

all values in dB w.r.t.1m FS

• TX