



## Lab 2: Indoor Propagation at 915 MHz

### EE432: RF Engineering for Telecommunications

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#### Objectives

- Gain experience making field strength measurements.
- Produce an indoor coverage map.
- Use simple models to analyze indoor propagation.

#### Equipment and materials needed

- Champ Ultralite ISM field strength meter.
- Spyder ISM transmitter.
- Floorplan of EME building.

#### Procedure

1. Set the transmitter to CW transmission at 915 MHz. Place it in EME230.
2. Carry the field strength meter through the halls of the EME building. At selected points (you selected the points) stand still and measure the maximum RSSI value within an arms distance. Record the RSSI value and location. (*Note: since there is an implicit minus sign associated with the dBm readings, RSSI is largest when the numerical value is smallest. The best way to find the maximum RSSI reading is to watch the bar graph. Higher power readings are farther to the right.*)

#### Analysis

1. Generate a color-coded map of the EME building that shows received power vs. location in 10dB increments.
2. On a single graph make four plots of RSSI (in dBm) vs. log of the distance between the receiver and the *projected location* of the transmitter (that is, don't include the distance between floors), one for each of the four main floors.
3. Fit straight lines to each of these four plots. Determine the slope (dB per decade) and standard deviation of the fit in each case.
4. If your data is consistent with the floor attenuation factor (FAF) model, estimate the FAF for the EME building.