

CIS 6930 - Fall 2018 - Homework 2

Due: Wednesday, September 27th, 2018 — Professor Patrick Traynor

Name: _____

Grade: _____ (15)

Answers can be typed or handwritten, but must be legible. You MUST show all work to receive any credit. The assignment is due at the beginning of class and all pages must be stapled together. Homework is an individual effort - please see the course webpage of check with Dr. Traynor if you have questions about collaboration.

- (7pts)* You are asked by the ACME Marathon race organizers to set up and manage two aid stations along the course. To communicate between your stations, you enlist two amateur radio operators who can communicate on the 1.8 GHz frequency. Each radio unit is connected an antenna by a 7ft long coax cable with a loss of 5 dB. If the radio transmits at 300 mW, the receiving antenna has a gain of 30 dB, the receiver has a sensitivity of -50 dB and the two radios are separated by 1.5 km, can data be exchanged between the two aid stations based on the FSPL model discussed in class?
- (2pts)* Name two characteristics you can change in this system to allow these buildings to communicate.

3. (3pts) Calculate the change in the first of the above system modifications that would allow the buildings to communicate.

4. (3pts) Calculate the change in the second of the above system modifications that would allow the buildings to communicate.