

EE/Ae 157b
Homework #1
Due Date: January 22, 2020

Problem 1. (10 points)

An orbiting SAR has the following characteristics:

- frequency of 1.25 GHz
- look angle is 45 degrees
- swath width is 50 km
- bandwidth is 40 MHz
- receiver noise temperature is 500 K
- orbit altitude is 200 km
- peak power is 1 kW
- pulse length is 30 microseconds

Calculate the other key characteristics required to define the sensor:

- antenna width
- maximum PRF
- minimum antenna length, minimum PRF, and best along-track resolution
- noise equivalent backscatter cross section
- Data rate assuming dual polarization (two channels) operation