

ECE 124d

Homework 1

Due: Wed Jan. 17, 2007

Reading: Digital Systems Engineering (DSE) chap 1, chap 3 through 3.3

Problems:

Sec. 1.6: 1-1, 1-2, 1-5, 1-6, 1-7

Sec. 3.9: 3-1, 3-2, 3-6

8. An Aluminum wire 110nm wide, 200nm tall and 1cm long lies 1 μ m above a (lossless) ground plane and floats in a sea of silicon dioxide. Neglect the surface interface with air. What is the wire's impedance, and what is the attenuation per mm? How about a copper wire 75nm wide, 200nm tall, 1 cm long and 1 μ m above a similar ground plane in a low-k dielectric of $2.5\epsilon_0$?