

Study Material

Text Book

Elements of Electromagnetics, 6th Ed.
Matthew N. O. Sadiku
Oxford University Press

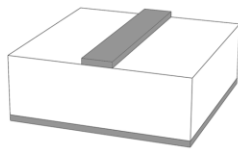
Study Transmission Lines

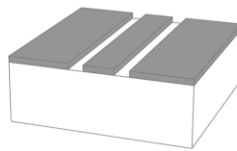
Read Chapter 11, pp. 534–554.

Work Problems

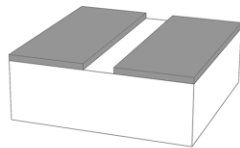
Problem #1

Write the names of each of the following transmission lines.

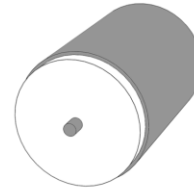












Problem #2

A 75Ω transmission line is connected to an antenna. The reflection coefficient at the antenna is 0.33.

- What is the impedance of the antenna?
- What fraction of power is fed into the antenna?
- What is the standing wave ratio (SWR) in the transmission line feeding the antenna?
- What must be done to make this configuration more efficient?

Problem #3

A transmission line with $C = 16 \text{ pF/m}$ and $L = 90 \text{ nH/m}$ operates at 5.6 GHz and is connected to a 50 nF capacitor as the load.

- What is the input impedance to the transmission line if the length of the line is 6.0 cm?
- Is the input impedance inductive, capacitive, or resistive?
- What value inductor, capacitor, or resistor does the input impedance act like?