

University of Portland School of Engineering

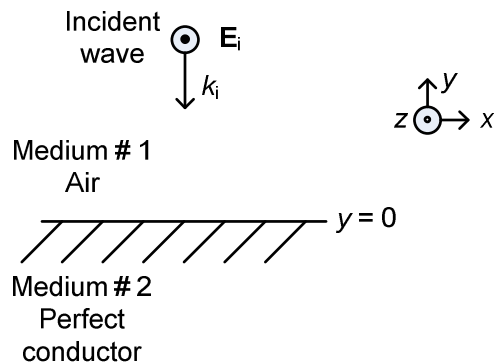
EE 402/EE 502
Spring 2014
A. Inan

Homework # 3

(Assigned: Thursday, February 13, 2014)
(Due: Tuesday, February 25, 2014, 9:15a.m.)

Classroom Problem:

A 1 GHz uniform plane wave of time-average power density $10 \text{ mW}\cdot\text{m}^{-2}$ propagating in air is normally incident on the surface of a perfect conductor located at $y = 0$, as shown. Find (a) the complete phasor-domain expressions for the incident and reflected fields \mathbf{E}_i , \mathbf{H}_i , \mathbf{E}_r , and \mathbf{H}_r ; (b) their time-domain expressions.



These problems are assigned from Electromagnetic Waves by Inan/Inan (2000) (pages 232-248):

- 3-3. Air-perfect conductor interface.**
- 3-7. Air-GaAs interface.**
- 3-9. Aircraft-submarine communication.**
- 3-20. Antireflection (AR) coating on a glass slab.**

Please use the following guidelines for your homework solutions:

- 1) On the first sheet, at the top center, write: Homework #3-Solutions.
- 2) Provide your full name on the upper right corner of the first sheet.
- 3) Also write: EE 402/EE 502-Spring 2014 on the upper left corner of the first sheet.
- 4) Solve each problem on a separate sheet unless your solution is very short.
- 5) Box all of your answers.
- 6) Staple your solutions in the above order before you turn them in.

Please turn in your homework on time.