

UNIVERSITY OF VICTORIA

ELEC 340

APPLIED ELECTROMAGNETICS AND PHOTONICS

Lab 4 - Oblique Incidence and Waveguides

Instructor:

Dr. Poman So

Teaching Assistant:

Farzeen IQBAL

A.K. BLANKEN V00809798

T. STEPHEN V00812021

A01 - B03

March 23, 2016



University
of Victoria

1 Objective

Purpose of the lab.

2 Introduction

Short section on the background and motivation i.e. what the experiment is about and what is being measured [1].

3 Procedure

Overview of lab sequence.

4 Discussion

4.1 Snell's Law

Task 4 *Compare the angles of incidence, reflection and transmission in an air-to- $\epsilon_r = 2$ and $\epsilon_r = 2$ -to-air interface.*

Task 6 *Compare the images for $\epsilon_r = 2.0, 2.5, 3.0$ in the ABC-bounded region.*

Task 8 *Capture an animation of \mathbf{H} with pointer mode and comment on it.*

4.2 Brewster angle

Task 9 *Design a Brewster angle interface for zero reflection transmission of a plane wave from air to a dielectric with $\epsilon_r = 4$.*

4.3 Rectangular waveguides and cavities

Task 16 *Obtain the resonant frequencies of the constructed waveguide and compare it to the calculated values.*

4.4 Rectangular waveguide modes

Task 20 *Compare the propagation in a waveguide with TE_{10} and TE_{30} .*

5 Conclusion

Summarize the entire report and note any unresolved issues. This section will usually repeat the abstract.

References

- [1] P. P. M. So, *Laboratory Manual for ELEC340 - Applied Electromagnetics and Photonics*, University of Victoria, 2016.