

Laboratory Assignment: Basic 10 GHz Antennas



Names: _____

Objective

This laboratory assignment introduces the students to basic antenna measurement practices and terminologies, while exploring the radiation characteristics of common microwave-frequency antennas (the open waveguide and the rectangular patch antenna).

Preparation

Before coming to the laboratory to perform this assignment, the students should prepare the following:

- Complete the laboratory assignments for using the spectrum and network analyzers.
- Bring a USB thumb drive to the laboratory for capturing network analyzer output.

Write-Up

The students performing this laboratory may prepare an informal laboratory report for this assignment. This work may be submitted on copies of the lab manual pages and attached supplements.

Equipment Guide



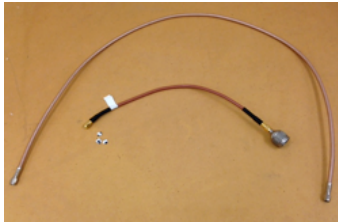
network analyzer



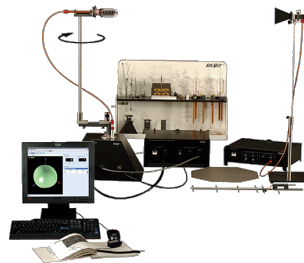
connectors/adapters



calibration kit



assorted coaxial cables



tabletop antenna range

Procedure

Part I: 10 GHz Open Waveguide Antenna

1. Perform “Exercise 1-2: Radiation Pattern of an Open Waveguide at 10 GHz” in your *Antenna Fundamentals* lab book (p 1-21 to 1-36). Complete all of the exercises as you go.

Part II: 10 GHz Patch Antenna

1. Perform “Exercise 3-2: Microstrip Technology: The Rectangular Patch Antenna” in your *Antenna Fundamentals* lab book (p 3-17 to 3-34). Complete all of the exercises as you go.