Project 2:
5.8 GHz Directional PCB Antenna

ECE 4370: Antenna Engineering

Objective

The student team will design and produce a directional antenna on a printed circuit board (PCB) with 50-Ω SMA connectorization.

Design Specifications

Each student team is expected to design and build a directional PCB antenna in the 5.725-5.850 GHz ISM band. The device must be fabricated entirely from circuit traces on a PCB. The key design targets for the device are

- Interfaces with a 50Ω SMA line input
- No discrete electrical components on the PCB; only traces, metal components, and solder allowed
- Total size of the PCB must fit within a 10 cm x 10 cm x 1 cm rectangular prism
- Design for linear polarization

This antenna may use *any* topology, whether it is a type we discussed in class (dipole, yagi, patch array, etc.) or a type described in a reference (source must be cited in your paper). Be sure to measure impedance and bandwidth on the network analyzer as well as include design calculations and/or simulations.

Grading

Grading for the student teams is based primarily on a written report. The base score of this project will depend on the written documentation of the group's project design and implementation. Key grading points for good design documentation:

a. Technical Correctness
b. Thorough Design Methodology
c. Clear, *Concise* Writing
d. Professional Content
e. References

Design documentation should strive for succinct repeatability.