

EEC133 Pre-Lab 2: Loop Antennas

Tao Wang

November 3, 2024

Contents

Loop Antenna Design

1

Part 1: Loop Antenna Design

Questions:

1. $r = 0.0064\text{m}$. $\lambda = \frac{c}{f} = 0.12\text{m}$. $r \leq \frac{\lambda}{6\pi} \approx 0.00637\text{m}$.

2.

$$\text{Radiation Resistance: } 320\pi^6 \left(\frac{0.00637}{0.12} \right)^4 = 2.44\Omega$$

$$\text{Directivity: } 1.5$$

$$\text{Half-power beamwidth: } \frac{\pi}{2}$$

$$\text{Far Field Requirement: } r \gg \frac{0.12}{2\pi} = 0.019\text{m}$$