

1) A dipole antenna is designed for a signal with the wavelength of 3m. Calculate the length of the dipole.

Soln.

$$\lambda = 3\text{m}$$

$$L = \frac{\lambda}{2} = \frac{3}{2} = 1.5\text{m}.$$

2) A dipole antenna operates at a frequency of 2GHz. Calculate the length of the antenna.

Soln.

$$f = 2 \times 10^9$$

$$f = \frac{c}{\lambda}$$

$$L = \frac{\lambda}{2} \quad \lambda = 2L$$

$$f = \frac{c}{2L}$$

$$L = \frac{c}{2f}$$

$$L = \frac{3 \times 10^8}{2 \times 2 \times 10^9}$$

$$L = 0.075 \text{ m}$$