

9.24 A dipole antenna has a radiation impedance

$$Z_{\text{rad}} = R_{\text{rad}} + jX_{\text{rad}}.$$

For a dipole of length $l = \lambda/2$, $R_{\text{rad}} = 73.13 \, \Omega$ and $X_{\text{rad}} = 42.55 \, \Omega$. Use Module 9.3 to modify the value of l slightly so as to reduce X_{rad} to less than $1 \, \Omega$.

(a) What is the value of l ?

(b) What is the corresponding value of R_{rad} ?

Solution: According to Module 9.3, at $l = 0.488315\lambda$,

$$R_{\text{rad}} = 68.258 \, \Omega,$$

$$X_{\text{rad}} = 3.57 \times 10^{-3} \, \Omega.$$

