

ECEn 560
Electromagnetic Wave Theory

Homework #9

Due Feb. 11, 2016 (may be turned in late for half credit)

1. Derive the Dirichlet function form of the array factor for a uniformly excited ULA.
2. (a) Use the visible window method to sketch the array factor for a two element array with one wavelength element spacing. (b) Repeat for a four element array with one half wavelength spacing. (c) What are the array radiation patterns for (a) and (b) if the elements are dipoles oriented vertically with respect to your coordinate system?
3. Compare the beamwidth of a 10 element ULA with half wavelength spacing and uniform amplitude excitations at (a) broadside and (b) endfire.