



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Christopher R. Kolar	Project Number J0821
Project Title Can You Hear Me? Which Antenna Has the Most Directional Radiation Pattern?	
Abstract Objectives/Goals To determine which amateur radio antenna has the most directional radiation pattern, in terms of field strength. I believe that the yagi antenna will be the most directional. Methods/Materials Materials included a quarter wavelength ground plane antenna, 3-element yagi, a J-pole antenna, field strength meter, and amateur radio transceiver. Built or purchased antennas and meters, Mounted on to level board, rotated to receive field strength to calculate radiation pattern, plotted data on to a radial graph to visually create outline of approximate directionality. Tested three separate antennas at 16 data points for three trials each. Recorded readings from meter in microvolts, industry standard field strength measurement Results Yagi resulted in a massive upswing in readings as it was rotated towards antenna, the quarter wavelength ground plane was at a average constant of 1-2 on the scale, the J-pole was also fairly constant at about 3 on the scale Conclusions/Discussion The hypothesis was proven correct, due to the structure and the placement of the elements, the signal of the yagi antenna was concentrated in one direction, thus having the most directional radiation pattern.	
Summary Statement This project will seek to determine which amateur radio antenna has the most directional radiation pattern.	
Help Received Father helped with experimentation (transmissions only), building test rig, and antenna assembly.	