



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Zachary S. Seaton	Project Number J0732
Project Title Changing Antennas for Strength	
Objectives/Goals The purpose of this experiment was to find out how different antennas varying in type, height, and location, can change the strength of the FM signals received by an FM stereo.	
Abstract Methods/Materials Three different antennas were installed onto the stereo and put at three different heights (.30, 1.37, and 2.43) one at a time both inside and outside of a house. The resulted signal strength was then recorded. This was done three times for each different antenna. The materials used in this experiment are 1 Sony FM/AM stereo, 2 Klipsh speakers, 2 KLH speakers, 1 115v electrical outlet, 1 roll of measuring tape, 1 screw driver, 1 roll of duct tape, 1 ladder, 1 Radio Shack Rabbit Ears antenna, 1 Radio Shack Rabbit Ears antenna converted to a Whip antenna, 1 Radio Shack Di-Pole antenna, 1 Radio Shack 25 foot 75-Ohm to 300-Ohm singal transformer, and 1 Radio Shack coaxial cable coupling.	
Results The reception of the Single Whip antenna at all heights was better inside than outside, the reception of the Rabbit Ear antenna at all heights was better outside than inside, and the reception of the Di-Pole at all heights was better outside than inside. The data also showed that the Whip antenna was the best antenna inside and was the second best antenna outside. That the Rabbit Ear antenna was the best antenna outside and was the second best antenna inside. Lastly, that the Di-Pole antenna was the weakest antenna inside and was the weakest antenna outside.	
Conclusions/Discussion In conclusion, the data shows that with all antennas placed in a horizontal position that the Single Whip antenna was the best antenna to use inside a house at all the tested heights where there are some electrical wiring within the walls and ceiling. Also that the Rabbit Ear antenna was the best antenna to use outside a house were there may be some electrical wires and bushes that can obstruct or interfere with the signal. If the antennas used were placed in different positions/angles the overall results could be different. In this situation the Di-Pole could pull in a stronger signal.	
Summary Statement This experiment is about testing three different antennas varying in type, height, and location to determine how much they will affect the overall signal strength of a FM stereo.	
Help Received My dad helped me to set up the antennas at the three different heights both inside and outside the house.	