



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Vinhcent H. Le	Project Number S0708
Project Title The Effect of Varying Parabolic Reflectors on the Amplification of the Signal to Noise Ratio of 802.11g Devices	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals To determine the effect if any, varying the width of Linear Locus Parabolic Reflectors have on the amplification of the signal to noise ratio of an 802.11 wireless signal.</p> <p>Methods/Materials Materials: Aluminum Sheet Metal, Ruler, Styrofoam, Electrical Tape, Scissors Razorblade, Knife, Wireless Router, Wireless Laptop, Netstumbler Wireless Fidelity Tester, Stopwatch, Parabolic Template</p> <p>Methods: 1.) Using the parabolic template make 3 sizes of reflectors 2.) Using the template cut styrofoam support braces according to template dimensions 3.) Tape the aluminum metal onto sytrofoam support 4.) Attach finished reflectors to a wirelss router 5.) Use netstumbler in order to test signal to noise ratio</p> <p>Results Avg. Group 1 Group 2 Group 3 Group 4 Trial 1 -45.86 -29.71 -29.86 -29.86 Trial 2 -51.71 -30.29 -31.14 -28.43 Trial 3 -50.57 -25.43 -31.43 -35.14 (Units for numbers is db)</p> <p>Conclusions/Discussion Upon the completion of this experiment the hypothesis was proven correct. It could be seen that an 802.11g antenna used in conjunction with a 16.5 cm parabolic reflector would boost the signal to noise ratio of a wireless signal the most. Without the use of the parabolic reflectors the signal to noise ratio of the control group averaged about -49.38 dB. The 12.5 cm parabolic reflector group boosted the signal the least with an average SNR reading of -31.14 dB, in comparison the signal to noise ratio of the 14.5 cm parabolic reflectors had an average signal to noise ratio of about -30.81dB. Group 2 which was the 16.5 cm parabolic reflector group boosted the signal to noise ratio by close to 21 dB and had an average signal to noise ratio of -28.48 dB. So the experiment supports the idea that the greater surface area a parabolic reflector has the better it will perform. Group 2 had the largest surface area and performed the best and the</p>	
Summary Statement Finding effect parabolic reflectors have on wireless internet signal quality.	
Help Received	