



**CALIFORNIA STATE SCIENCE FAIR  
2005 PROJECT SUMMARY**

<b>Name(s)</b> <b>Lauren M. Turner</b>	<b>Project Number</b> <b>J0734</b>
<b>Project Title</b> <b>More Power to You: Increasing Wireless Signal Reception</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective is to determine if a homemade wire mesh parabolic reflector will improve the signal strength from my downstairs wireless router to my laptop computer in my upstairs room. <b>Methods/Materials</b> I constructed the reflector from 1/4-inch iron wire mesh cloth and attached it to a plastic cutting board in the shape of a parabola. A large hole was drilled through the plastic board at the focus of the parabola to place over the antenna of the wireless router. I tested and recorded the reception measured in dBm in several locations in my house, both with and without the reflector attached to the router. Materials used were: galvanized iron wire mesh cloth (1/4 in grid), one plastic cutting board, duct tape, picture hanging wire (19 gauge), electric drill, assorted drill bits (1/16 in. up to 5/8 in.), wire cutters, tin snips, Linksys wireless router, laptop with Linksys wireless adaptor and software, and tape measure. <b>Results</b> In general the signal strength of wireless router was increased in the direction that the reflector was focused or pointed and decreased the signal strength in other areas. Specifically the signal strength in my room was increased by 7 dBm, which is greater than a four times improvement compared to the original signal strength. <b>Conclusions/Discussion</b> I concluded that putting a wire mesh parabolic reflector on the transmit antenna of a Linksys wireless router was very successful in increasing the signal strength received by my laptop computer in my bedroom. It increased the measured signal strength by 7 dBm in my bedroom, which is an increase of greater than four times the original signal strength received. All of the measured signals strengths increased in all of the locations that were positioned in the areas that the reflector was focused.	
<b>Summary Statement</b> I built a wire mesh parabolic reflector and tested to see if it improved the wireless signal strength reception on my laptop computer located in my upstairs room from a wireless router located downstairs.	
<b>Help Received</b> My dad helped me understand the subject matter and answered my questions. He also operated the drill. My mother bought books and materials.	