



**CALIFORNIA STATE SCIENCE FAIR  
2006 PROJECT SUMMARY**

<b>Name(s)</b> <b>Travis Dean Stagnaro</b>	<b>Project Number</b> <b>S0718</b>
<b>Project Title</b> <b>Wireless Signal Interference</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> I chose to do my science fair project on wireless technologies, mainly seeing how different commonly used building materials such as sheetrock, cement, wood, and metal affected wireless speed, signal and quality.</p> <p><b>Methods/Materials</b> Materials: laptops, Wireless router, Wireless card, 1/2in 5ply plywood, 1/2in Sheetrock, Metal (.08in), 1/2in Cement, Fiberglass insulation, Cat-5e Cable. Procedure 1. Construct four boxes out of the following building materials: half inch sheetrock, .08metal, half inch cement, and half inch 5 ply plywood. 2. Construct each box such that the interior dimensions are roughly 25cm x 25cm and 24cm tall. 3. Find open area. 4. Place the wireless G compatible router on the ground, and connect a laptop to the router with cable, and set the computer up with a shared folder. 5. Now take the second laptop and place it three meters away from the router. 6. Connect to the laptop and download a 50 megabyte file and record the average transfer speed. Also record the signal and strength reported by the Linksys wireless card management software. 7. Move the laptop three meters back and repeat step six until there is no signal. 8. Repeat steps five through six three times and average the results. 9. Once results are averaged changes the media through which the wireless signal travels by placing a different box over the router or adding fiberglass insulation to the current box and repeat steps six through eight.</p> <p><b>Results</b> Steel had the greatest interference, only lasting fifteen meters before the signal started cutting out. The cement box caused the wireless signal to only go thirty meters before it became unstable. The wood started having connection issues around thirty nine meters, and was dead by 48 meters, whereas the open signal made it forty five meters before having connection issues. The sheetrock lasted 36 meters, and had connection issues at 39. The fiberglass insulation made no difference.</p> <p><b>Conclusions/Discussion</b> As far as steel goes you defiantly do not want steel products in the same area as your router or the computer receiving the wireless signal. Cement did cause enough interfrnce so it should be avodied, but</p>	
<b>Summary Statement</b> To test how different building materials affected wireless signal, strength, and speed.	
<b>Help Received</b>	