



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Christopher R. Wilson	Project Number J0737
Project Title What Blocks My Signal?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of my experiment was to determine what household materials cause the most interference for wireless networking signals.</p> <p>Methods/Materials I started with a wireless network consisting of a base computer, a router, and a laptop. I built five-sided boxes out of different materials (metal, wood, glass, plastic, drywall, foam core, and cardboard) to place over the router to potentially interfere with the wireless signal. I also filled a glass container with water to place between the router and the laptop. I placed the laptop 23 feet from the base computer and router, with nothing in between, sent 25 packets of data from the laptop through the router to the base computer and back to the laptop, and recorded how long it took each packet to return to the laptop. I repeated this test for each source of interference by putting the box over the router, or by putting the glass container between the laptop and the router. These tests were repeated at different dates and times, and the results were recorded and summarized.</p> <p>Results Without any external source of interference, 69% of the packets were returned within 2 milliseconds, and none were lost. When using water as the source of interference, about 30% of the packets were returned within 2 milliseconds, but about 40% of the packets were not returned at all. When using metal as the source of interference, just 2% of packets were returned within 2 milliseconds, and 14% of the packets were not returned. For all other materials, more than 50% of the packets were returned within 2 milliseconds, and none were lost.</p> <p>Conclusions/Discussion Of the materials tested, water creates the most interference with wireless networking signals, and metal creates the next most interference. No other material created any noticeable interference with the signal.</p>	
Summary Statement My project determines what household materials cause the most interference for wireless networking signals.	
Help Received My Mom helped me to design and build boxes out of various materials to create the needed interference. My Dad gave me research suggestions, and once I found a possible test method on the Internet, he helped me adapt that test for use in my project.	