



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Weston D. Braun	Project Number J0905
Project Title Will Changing the Operating Frequency of a Tesla Coil Change Its Ability to Transmit Power Wirelessly?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My project was to determine how changing the operating frequency of a tesla coil used as a radio transmitter will affect its ability to transmit energy wirelessly to light up a fluorescent bulb.</p> <p>Methods/Materials I made a tesla coil that I used as a simple radio transmitter. I changed the transmitting frequency of the tesla coil by changing the resonate frequency of the primary LC circuit and changing out the secondary coil, which is a quarter length antenna to the transmitting frequency. To test the ability of the tesla coil to transmit energy at different frequencies I used a grounded 12-inch 8 watt florescent bulb. While the transmitter was operating, I touched the non-grounded end of the florescent bulb to the transmitter's top-load. This would cause the gas inside the florescent bulb to ionize, giving a visual indicator. I then pulled the florescent bulb away from the coil until the gas extinguished and measured this distance, which indicated the end of the transmitter's practical range. This test was conducted five times for each of three tested frequencies.</p> <p>Results With the radio transmitter was operating at 300 KHz, it transfered power into the florescent bulb from the farthest distance. When the transmitter was operating at 1 MHz it had the shortest range.</p> <p>Conclusions/Discussion My conclusion is that lower frequencies allow wireless power transfer over a greater range.</p>	
Summary Statement My project is an investigation of the affect of radio transmitter frequencies on wireless power transfer.	
Help Received My father helped me build the protective Plexiglas shielding and helped me wind two of the three secondary coils.	