



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> <b>Bryn E. Cloud</b>	<b>Project Number</b>  29150
<b>Project Title</b> <b>Keep Your Distance! The Effect of Different Computer Keyboard Locations on Electromagnetic Field Levels</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective is to compare electromagnetic field levels from different laptop keyboard locations. I believed that the electromagnetic field readings would be greater when the laptop is on your lap than other keyboard locations, and the readings from the lap position would average at least .5 mG. units greater than the other keyboard positions.</p> <p><b>Methods/Materials</b> A Mac Book Pro laptop, 4100 Series ELF Gauss/Tesla Meter, measuring tape, plug-in keyboard, and recording sheets were the materials used for my project. The laptop keyboard locations that were the test variables were: laptop on lap (finger and lap exposure), laptop with plug-in keyboard (six inches away from laptop, laptop on table, and a control (laptop in "off" position). The laptop was placed in test variable position. An electromagnetic field reading (EMF) was take in the "off" mode first. The laptop was then turned on for 5 minutes, and the Microsoft Word Program was opened. EMF readings were taken for each test variable thirty times while simultaneously pressing the "g" key on the keyboard.</p> <p><b>Results</b> The laptop on lap keyboard position had the highest average exposure measuring 2.42mG. The laptop with plug-in keyboard position had the lowest average exposure of .24mG. All of the electromagnetic field readings taken for the laptop on table and the laptop on lap positions exceeded the Swedish safety standard (1mG). None of the electromagnetic field readings exceeded this standard when testing the plug-in keyboard.</p> <p><b>Conclusions/Discussion</b> Overall I learned that the laptop on lap as well as the laptop on table positions had the greatest electromagnetic field readings. These positions are potentially more hazardous to your health than using a plug-in keyboard.</p>	
<b>Summary Statement</b> The purpose of my science project is to compare the electromagnetic field levels from different laptop keyboard locations.	
<b>Help Received</b> mother helped supervise experiment; teacher assisted in proofreading report	