



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2019 PROJECT SUMMARY**

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Project Title The Dangers of Technology: How Much Radiation Do Household Devices Emit?	
<p style="text-align: center;">Abstract</p> <p>Objectives The purpose of this science fair project is to determine the amount of radiation that different types of household devices emit.</p> <p>Methods This project tested ten devices (such as a microwave, cell phone, smart speaker, wireless router, etc.) in thirteen different scenarios (like active/idle states, a cell phone on call, etc.). The radiation readings were taken by a device called a RF Meter (Acoustimeter AM-10) at various distances. Base readings were taken before turning the devices on and subtracted later from final readings.</p> <p>Results During this experiment, it was discovered that the wireless router emitted the most radiation while the Amazon Firestick (a streaming device) emitted the least amount of radiation. A common theme found was that the farther away the device was, the less amount of radiation was detected. The devices that are the most commonly used such as the cell phones and laptops emit some radiation, but not considered a lot when compared to a wireless router or microwave. The devices that were idle such as the idle smart speaker and idle cell phone with no Wi-Fi and Bluetooth emitted the least amount of radiation compared to their active forms.</p> <p>Conclusions It was determined that the results followed the inverse square law, which states that the amount of radiation is inversely proportionate to the square of the distance from the device. The experiment proved that the wireless router emitted the most harmful levels of radiation compared to the other devices at all of the distances.</p>	
Summary Statement When measuring the radiation of household devices at certain distances, it was proven that the further away the devices were, the less amount of radiation was detected.	
Help Received Our professional contact, Ms. Liz Menkes, an E.M.R. specialist, helped us by answering our interview questions and reviewed our procedure and results.	