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2012 USU Student Showcase

The Effect of Space Environment on Wireless Communication Devices' Performance

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Abstract

This project evaluates the effects of the space environment on small radio hardware devices called Bluetooth (a proprietary open wireless technology standard for exchanging data over short distances) chips (hoovers). When electronics are exposed to the harsh environment outside the Earth's atmosphere, they sometimes do not perform as expected. The USU Getaway Away Special (GAS) team is now in the design stages of launching a CubeSat (a 10 cm cubed autonomous satellite to fly in Low Earth Orbit). In order to conduct experiments proposed for the USU GAS Cubesat, Bluetooth wireless communication will be used. By testing commercially available hardware in appropriate custom configurations, the reliability and quality of the CubeSat experiments will be greatly improved. The project funding will purchase enough Bluetooth hardware chips to test survivability when exposed to 100-1000 rads, a temperature range from -20°C to 100°C, and a pressure of 10^{-5} Torr to 10^3 Torr.