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Anti Jamming Wireless Node System Scope

Need: The need is to have a have secure low power signal, free from interference or jamming in order to transmit data, tlm, etc.

Goal: We plan to fulfill this need by developing a countermeasure software to successfully trigger and mitigate low power jamming between a system of transmitters.

Objective: The objective is to create a wireless node system that can hop frequencies when being jammed and continue communication while using as little power as possible.

Mission: The mission will have a 3 node system that will communicate between each other and report to a ground station. When a jammer is introduced, the system must detect jamming between the certain nodes and use frequency hopping to raise the frequency to avoid jamming (all must take place in a time restraint). This system of nodes will work on low power and transmit low power signals.

Constraints: The system must be complete by mid April, must be cheap enough to be paid for by students maybe with help from Capitol Technology University, and must work on the bluetooth frequency band (2.4GHz-2.5GHz).

Operational Concepts: The system will have a frequency of 2.4 GHz signals transmitting off a small Raspberry Pi bluetooth emitter. Each node will communicate with the other two. The alert system should send out an alert when a node is being jammed. Localizing that jammer to a certain section. It then will use the alert to raise frequency up 5MHz at least to 2.45GHz. Between the safe nodes. The node jammed should follow suit thus mitigating any low power jammer.

Authority and Responsibility: Capitol Technology University, along with the group members developing the technology will take responsibility and authority over this project.

Assumptions: The jammer only has a range of 5 MHz to jam signal and bluetooth signal has a range of roughly 50m.