Interference Test Plans

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| **Goals** | **Run 1** | **Run 2** | **Run 3** | **Run 4** | **Run 5** | **Did it succeed 3/5 times?** |
| A) Functional communication network is established between all 3 nodes and the base station |  |  |  |  |  |  |
| B) Base station identifies jamming attack and sends an alert when network connectivity changes |  |  |  |  |  |  |
| C) Network transmission frequency is shifted to a designated value outside of the jammer’s range and communicate effectively |  |  |  |  |  |  |
| **Data Collection** |  |  |  |  |  |  |
| Average RSS |  |  |  |  |  | N/A |
| Average PDR |  |  |  |  |  | N/A |
| Attack Detection Speed  (mS) |  |  |  |  |  | Avg: |
| Countermeasure Deployment Speed (mS) |  |  |  |  |  | Avg: |

**Notes for verification and validation:**

1. **Goal A:** Nodes in the system are executed as Pi Boards equipped with Software Defined Radio (SDR) and Tx/Rx capabilities working in conjunction with a personal laptop operating a countermeasure software designated as the Base Station. Network connectivity will be verified by the transfer of Packet Delivery Ratio (PDR) and Received Signal Strength (RSS) between nodes.
2. **Goal B:** The countermeasures software that is executed at the Base Station will run procedural checks using RSS and PDR between nodes. In theory, during a jamming attack significant changes would be made to these values outside of expected changes due to movement or environmental factors. This significant change will be flagged at the base station for review. To emulate a jamming attack (because jamming is deemed illegal by FCC regulation) RFiD bags will be used to prevent a node from further communications.
3. **Measurable Success:** The completion of goals A and B for all intents and purposes will deem this project to be a success. Again, due to FCC regulation, the scope of this project must be limited to detection and localization of the “attack” which will be emulated using RF blocking materials rather than a signal emitting jammer. The outcome of this project, though modified to work without proper research permits, in theory will predict results seen in real-world testing.
4. **Goal C (Optional):** This goal can still be accomplished in a modified sense, however the jammer (RFiD bag) would have to be physically removed from the attacked node to see the network’s ability to reconnect and communicate after the operational change. This goal is strictly here to provide additional insight to the plausibility of this countermeasure system if it were able to operate under FCC research guidelines. The base station will inform all nodes still in contact to operate at a new designated frequency, while the jammed node will change via pseudo-random sample once it realizes that it is no longer connected to the network. Once removing the RFiD bag the network should in theory be able to communicate effectively in the new operational range.