CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
S0717

Project Title
How Antenna Design Affects Signal Strength

Abstract

Objectives/Goals
I hope to find a better antenna design. that will improve my access points range in one direction.

Methods/Materials
I will be testing five different antenna designs made out of copper and fiberglass. I will be testing them at one fixed location for both end points and at a set distance away from the access point. I will be using a control antenna as a baseline to help determine the best design. For measuring the test I will be using WildPackets Airopeek and Cisco Link status. I will hook all of the antennas up individually to the access point to see if the signal strength has changed and I will be in a fixed position away from the access point.

Results
I found on my experiment that all of my designs preformed differently than I thought they would. The design that I was favoring to do the best did perform the best. But I found some problems in the dipole design so I fixed them and now the antenna has optimum performance. It also improved since the first time I used it and now that I fixed the problems in the antenna if has a greater gain than before.
Now for the other antenna designs, they were good but not as good as the dipole design. I found with the other antenna designs I developed better ways of building them now after my experiments are complete. The antenna designs I thought would do better didn#t do as good as the ones I thought that would not do as good. I found some new ways to make antennas and how to position them. I feel with a better antenna design it will further the distance you can expect to be away from the access point. With this knowledge I can think outside the box and develop antenna designs that allow you to go further that just the 150 feet these radios are capable.

Conclusions/Discussion
Now for the other antenna designs, they were good but not as good as the dipole design. I found with the other antenna designs I developed better ways of building them now after my experiments are complete. The antenna designs I thought would do better didn#t do as good as the ones I thought that would not do as good. I found some new ways to make antennas and how to position them. I feel with a better antenna design it will further the distance you can expect to be away from the access point. With this knowledge I can think outside the box and develop antenna designs that allow you to go further that just the 150 feet these radios are capable.

Summary Statement
I plan on finding a better antenna design.

Help Received
Mother and Father for materials