CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)

Brant W. Sirles

Project Number

J1423

Project Title

What Material Affects a WiFi Signal the Most?

Abstract

Objectives/Goals

The objective of this study was to determine what material attenuates a WiFi signal the most.

Methods/Materials

Connect NETGEAR wireless router, check settings. Connect Android tablet to internet. Download WiFi Analyzer Application. Use tape measure to place tablet 10 feet from router. Path between Android tablet and router is to be clear and void of signal interference. Perform control read using WiFi Analyzer. Place aluminum foil 1/2 inch in front of router, using the tape measure. Take three readings and mathematically average the results, subtract the average result from the controlled average, to obtain the attenuation. Remove material and place next material in front of router. Repeat steps to obtain results for these materials: human body, steel, glass, cardboard, plastic and water. Enter information into data table, graph and logbook.

Results

The material that caused the most attenuation to the WiFi signal strength was the aluminum foil, at the attenuation of 14.7 decibel-milliwatts (dBm).

Conclusions/Discussion

My hypothesis was that a plastic container would affect the strength of the WiFi signal the most. The data results indicate that this hypothesis is considered false. The attenuation of the aluminum foil was the highest decibel-milliwatt interference of the materials tested in this experiment.

Summary Statement

I tested what common household materials affect a WiFi signal the most.

Help Received

I analyzed the strength of the WiFi signal; my grandfather, for assisting me in holding the test materials; my grandmother, for providing materials needed for this experiment; Mrs. Contreras, for checking and correcting my data, and providing encouragment; and www.sciencebuddies.com, for information.