

Parker Stone & Myer Wickham

*Why No WiFi?*

We wanted to find out why we did not get strong WiFi signals in our basement bedrooms. We thought that materials in walls were blocking the signal. We decided to test six common building materials to see how obstructive each material would be to WiFi signal transmission. The materials tested were wood, metal, drywall, concrete, glass and plastic. Our hypothesis was that wood would be the most obstructive. We constructed boxes to fit over a router made of wood, metal, drywall, concrete, glass and plastic. Using software on a laptop computer located 50 feet away from a router; we recorded measurements of the signal strength with the router in open space. We used this same procedure to measure WiFi signal transmission with the router under each box. Concrete, metal and plastic were the most obstructive materials. Next, we examined the placement of the WiFi router in the home. The router was located behind a large screen TV made of mostly plastic and metal, two of the most obstructive materials we tested. We took WiFi signal strength readings in each room of the house with the router located in front of and behind the TV. Our results showed a better signal with the router in front of the TV. Our hypothesis was incorrect. We found that metal, concrete and plastic were the most obstructive materials to WiFi signal transmissions, not wood. We also found that moving a router to a position in front of a TV improved WiFi reception.