



First White Spaces access point gives grandma the Internet



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A Houston restaurant worker is the first user of a prototype wireless access point using low frequency signals in the so-called White Spaces between unused UHF digital TV signals.

The access point was set up in the home of 48-year-old Leticia Aguirre, described as a working grandmother and homeowner, who had never had a reliable Internet connection before the White Spaces spectrum created one.

Widely but wrongly dubbed "Super Wi-Fi," these lower frequencies can reach further and penetrate buildings more easily than standard Wi-Fi radios, which implement the IEEE 802.11 specification. Wi-Fi runs in the unlicensed 2.4 and 5 GHz bands.

OPINION: [What the Heck is "Super Wi-Fi"?](#)

The prototype access point was developed by Rice University researchers with a grant from the National Science Foundation, in conjunction with a Houston non-profit group, Technology For All (TFA). The NSF wants to develop White Spaces radio capability as part of an [open source](#) project to bring wireless broadband affordably to under-served areas, according to Rice's Edward Knightly, a professor in electrical and computer engineering.

His research group worked with TFA in 2004 to launch a conventional Wi-Fi mesh network in Aguirre's East Houston neighborhood of Pecan Park. Aguirre was one of the first residents to agree to host an access point then, but living on the edge of the network, had never been able to get a good, reliable Wi-Fi signal.

Rice graduate student Ryan Guerra developed the prototype access point. According to a Rice press release, any Wi-Fi client can connect to it. The access point can automatically shift between conventional Wi-Fi and the White Spaces in unused UHF digital TV signals to create the optimal connection.

The White Spaces access point created the reliable connection that Aguirre's household had been missing. According to a [Houston Chronicle story](#), she now uses the Internet to "view her paychecks, conduct online banking and watch movies. Her 5-year-old grandson likes to play games."

The [FCC voted in September 2010 to revise regulations for the White Spaces spectrum](#), making them more attractive and easier to use for unlicensed radios. But as [Network World blogger Craig Mathias noted](#) at the time, the term "Super Wi-Fi" is both silly and misleading. Besides using a different frequency, White Spaces channels are 6 MHz wide, compared to 20 or 40 MHz for Wi-Fi. He also points out the physics of terrestrial radio mean that as lower frequency signals extend further, throughput drops.

There is a so-called "White Fi" project in IEEE, specifically, the [PP802.11 Task Group AF](#), with the just-begun task of defining modifications to the 802.11 physical layers and media access control layers to meet the legal requirements for operating in the White Spaces spectrum.

"I don't think an 802.11 standard or Wi-Fi spec is required to make the White Spaces fly," Mathias wrote. "There are lots of possibilities for those dipping into the cognitive radio waters, and, while rural consumer broadband is an enticing possibility, there are many others: municipal and public-utility services, security (as in alarm services, etc.), surveillance (including video), smart grid, telephony, messaging, machine-to-machine, and many, many more."

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