

HOME / SCIENCE

Wireless Data Successfully Transmitted Over Active TV Channels

15 July 2015, 8:04 pm EDT By **Jim Algar** Tech Times

Engineers at Rice University say they've successfully transmitted wireless data over active UHF channels without interfering with TV broadcasts.

If included in next-generation televisions or smart TV remotes, the technology could significantly increase the reach in urban areas of so-called "super Wi-Fi" networks, they say.

The technology could breathe new life into "dying" UHF channels, now mostly used for legacy TV broadcasts, they explain.

"Due to the popularity of cable, satellite and Internet TV, the UHF spectrum is one of the most underutilized portions of the wireless spectrum in the United States," says research leader Edward Knightly. "That's a bitter irony because the demand for mobile data services is expected to grow tenfold in the next five years, and the UHF band is perfectly suited for wireless data."

Signals in UHF - between 400 and 700 megahertz on the wireless band - can carry for many miles and are better at penetrating walls than the higher frequencies most wireless routers utilize.

However, access to UHF frequencies is still dominated by television broadcasters even though fewer and fewer Americans rely on over-the-air TV programming.

While the Federal Communications Commission has said data can be transmitted over UHF frequencies not claimed by a TV broadcaster - sometimes known as "TV white space," the broadcast industry term for unused or blank portions within the TV spectrum - unclaimed UHF channels are hardest to find in the urban areas most clamoring for additional Wi-Fi options.

"Unfortunately, in the most densely populated areas of the country, where the need for additional wireless data services is the greatest, the amount of available white space is extremely limited," Knightly said.

Citing Houston as an example, he said only one UHF channel was open in some areas of the city and none in others, a situation typical of most large U.S. urban locations.

Knightly and graduate student Xu Zhang designed a system using advanced signal-canceling technology to send wireless data over a channel with an active TV transmission without interference between the two transmissions.

They've dubbed the technology "Wi-Fi in Active TV Channels," or WATCH.

"Our tests showed that WATCH could provide at least six times more wireless data compared with situations where we were limited only to the traditionally available white-space spectrum," Knightly said.

"Allowing the UHF spectrum to be inefficiently used makes little sense today and will make even less sense in the future," Knightly said, noting that more people in the U.S. require mobile data than are watching broadcast-only television.

TAG Television , wireless spectrum , UHF TV Channels , Wi-Fi , White-Space Spectrum

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