

## ConnectGRADD Adding Cutting-Edge "TV White Space" Technology

As demand for more Internet speed and bandwidth increases, ConnectGRADD rural Internet service continues working to explore ways to improve speeds and coverage across the area, particularly in parts of the region with challenging terrain, where non-line-of-sight (to the tower) equipment is required.

"Probably the biggest challenge we've faced with ConnectGRADD is finding ways to offer faster speeds in areas with hills and tree cover that obscures our towers from customers' homes," says Phil Lambert, General Manager of Q-Wireless, the company providing ConnectGRADD service. "It's always been a trade-off. To get signals through tough terrain, you sacrifice speed."

New technology may now be helping to change that. In 2014, Q-Wireless signed an agreement with Israeli equipment manufacturer Runcom to develop technology that would use the "TV White Space" spectrum — frequencies cleared in the transition of television signals from analog to digital — that is beginning to bear fruit in 2017. Because the TV White Space band can penetrate hills and trees, many homes can get video-capable speeds even without line-of-sight connectivity to towers.

"This is the first real leap in the equipment and technologies available to us since the ConnectGRADD project began in 2007, and Q-Wireless's addition of TV White Space to this network is the first of its kind in the United States," Lambert notes. "We've been testing three sites for several months now and we believe we have most of the kinks worked out, so we'll be adding this equipment to several more sites before the end of the year."

There are limitations on where and how TV White Space can be used, however. FCC regulations restrict its power levels compared to other types of equipment, and radios can only be installed at relatively low heights, meaning some ConnectGRADD towers are not candidates for the new equipment.

"Because regulations restrict this equipment more than other radios we use, we have to be selective about where it's added," says Lambert. "On our network, that means water tanks instead of towers, because of their lower height. For bigger towers, we're adding more traditional equipment, but that often requires line-of-sight for full-speed connections."

With that, Q-Wireless is in the process of adding TV White Space on several water tank sites this fall. Already, the equipment is in use on three sites in Ohio County. As July closes, three more sites — one each in Daviess, Henderson and Hancock counties — are being released, and by autumn, a second site in Hancock County is planned, plus one in Union County.

"We're very excited to be adding this new equipment," Lambert concluded. "We expect this to become a significant part of our network as we continue to work to improve speeds across the area."

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