

What if a WiMax gear maker tuned into affordable UHF for you?

Full Spectrum gives utilities tools to tap cheaper bands

Remember fidgeting with the loop antenna on an analog TV trying to tune into snowy, grainy TV channels in the slightly mysterious VHF/UHF range? No? Well, good riddance, and now that spectrum is waiting for meaningful uses such as smart grid networking. So Full Spectrum tweaked its WiMax gear to use frequencies that utilities could get affordable access to. Utilities are driving the firm's technology out of the lab and into the field, CEO Stewart Kantor told us yesterday. Pilots in distribution and substation automation plus mobile data are starting at several IOUs this quarter, using the firm's FullMax radio -- a product utilities told Kantor they needed, he said. The three-year-old, Menlo Park, Calif.-based firm has about 40 employees in the US, India and Israel developing licensed, private WiMax technology for utility base stations, mobile and fixed radios and network management systems. Financing has come from a group of private investors. Full Spectrum modified the mobile WiMax standard (802.16e-2005) to work in non-standard frequencies below 1 ghz and in non-standard channel sizes. Rather than sticking to microwave frequencies, its FullMax mobile broadband wireless data solution supports VHF/UHF frequencies from as low as 40 mhz up to 958 mhz, Kantor reported. Full Spectrum does not broker

spectrum but does get utilities in touch with private licensed frequency holders such as Space Data. Utilities can also buy licensed frequencies from Spectrum Bridge (SGT, [Aug-10](#)). The utilities Kantor is working with are now requesting bids from spectrum holders, which in effect creates a reverse auction, he noted. The "cognitive radio" effort this decade by Shared Spectrum and others to ferret out unused frequencies in TV bands has revealed that frequencies below 1 ghz in the US are "primarily empty," he added. "We applied to the FCC to use some frequencies on an experimental basis" to show how they can be put to use by utilities. "They're wonderful for utilities" for private, mission-critical voice and data systems, said Kantor. "They allow utilities to use existing towers" since signals can reach, say, towers spread 20 miles apart." UTC wants 30 mhz of spectrum at 1.8 ghz dedicated for utility use (SGT, [Aug-17](#)) and the FCC is soliciting opinions about how much and which frequencies should be used for the wide area networks utilities need for the smart grid (SGT, [Sep-08](#)). In systems and frequencies used by public wireless carriers, modems and the towers on which they reside, would need to be much closer together than 20 miles since they are focused on low-power devices that can be put next to the body. That pushes up costs

for new tower infrastructure. It also greatly adds to the time involved in a build-out, due to zoning requirements, for starters, said Kantor. The build-out for Full Spectrum's nascent product is about seven months for a roughly 10,000-square-mile area, he said. Since the data-transport needs of each application are different, utilities using private networks can match the needs of the applications they deploy to the sequence they deploy them in. This go-slow approach -- buying small slivers of spectrum as needed -- helps avoid a stranded-asset situation since costs are kept in line with benefits. Volume production of the FullMax radio is set to start early next year, said Kantor.