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Gigabit Backhaul: The New Battlefield

Clearwire is now using wireless backhaul gear from E-Band Communications for WiMax service in the United States. That's expected to be a boost for the relatively new millimeter band (70-80 GHz), says Light Reading



DragonWave (above) currently supplies most of the 18 GHz and 23GHz backhaul radios to Clearwire. But the 4G operator is expected to cut its capital expenditure spending in the second half of this year and Dragonwave's sales are expected to drop as a result. DragonWave said it expects Clearwire to contribute 25 percent of the total revenue in the second quarter, down from about 77 percent last year.



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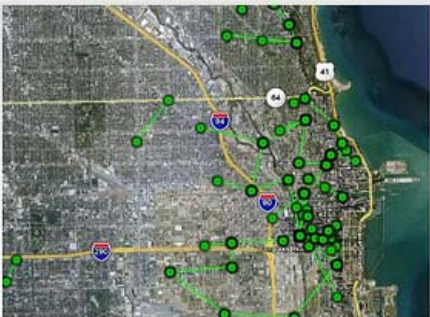
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Carrier Example:
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A leading carrier uses E-Band's backhaul solutions as the foundation for their state of the art 4G network in Chicago.




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E-Band, a millimeter-wave startup, is Clearwire's first major publicly announced supplier for their 60/70/80 GHz backhaul radios. E-Band says Clearwire has initially deployed the E-Band radios in Chicago and Philadelphia. According to LightReading, a company spokesman says that Clearwire has been using E-Band equipment for more than a year.

Gigabit-Ethernet is possible in the millimeter band, due to the increased bandwidth. That enables Clearwire to build wireless backhaul rings and supply the bandwidth necessary for even higher speed 802.16m. The prime disadvante of the 70/80 GHz band is higher cost and reduced range.

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FE80XU	
GE80X	Up to 5 Miles (8 km)
AR80	Up to 5 Miles (8 km)
FE80U	
GE80	Up to 4 Miles (6.5 km)

Bridgewave, market leader in the millimeter band, with more than 60 percent of the market, doesn't appear worried.

I talked with Bridgewave CEO Amir Makleff today about the company and its future. Makleff, broadly hinted that I should look at FCC filings for Clearwire 70-90 GHz licenses and implied that their company has a good relationship with Clearwire. The 71-76, 81-86 and 92-95 GHz bands, unlike 60 GHz, require FCC licenses.



According to EJL Wireless Research's market report, "Global Digital PTP Radio Market Analysis and Forecast", the overall 60-70-80 GHz market increased 46 percent globally from 2008 to 2009 even as the overall point-to-point (PTP) microwave radio market declined almost 11 percent.

What about cellular companies claim to use fiber to the tower?

"We expect about 25% of their cell towers will need microwave," Makleff told me. While both AT&T and Verizon are talking up fiber to the tower, the reality is fiber cannot get everywhere. The 70/80 GHz band enables Gigabit speeds, something hard to attain over lower frequencies with more limited bandwidth.

What about the higher cost of 70 GHz?

Makleff pointed to their new deal with chipset company Provigent. Provigent will collaborate with BridgeWave to develop a chipset that provides increased spectral efficiencies supporting multi-gigabit rates in up to 1 GHz RF channel bandwidth. He also said BridgeWave as OEM deals with companies like Lucent.

"The level of silicon integration offered by Provigent will enable BridgeWave to offer 70/80 GHz solutions at price points similar to lower frequency microwave products, without taking shortcuts that will adversely affect the usefulness of this spectrum in the future," said BridgeWave's CEO.

Bridgewave, Ceragon, E-Band Communications, Gigabeam, Loea, Proxim's GigaLink and Proxim Wireless, Alvarion, and Trango provide a wide range of licensed and unlicensed microwave solutions in a variety of bands for cellular, 4G or industrial backhaul.

The top 3 packet microwave vendors during the fourth quarter of 2009 were Dragonwave (37 percent), Alcatel-Lucent (30 percent), and Bridgewave (9 percent), according to market researcher Dell'Oro Group.

One thing seems clear; more high capacity backhaul will be needed for "4G" networks – and the 60/60/80 GHz millimeter band looks like a prime candidate to deliver it.

Millimeter Band articles on Dailywireless include; 4G Microwave Backhaul, DragonWave: Faster, Cheaper Backhaul, Microwave for Highway Surveillance, Spectrum Bridge: Largest Spectrum Aggregator, Hospital Builds 60 GHz Network, Canon's Optical Link, MIMO 4x4 On a Chip, Exalt: GigE on 5 GHz, SF Bay Unwired with Proxim, Stephouse: Fast, Reliable 5 GHz Long Shots, Proxim Unwires Indiana's Statewide ITS Network, T-Mobile: Now HSPA+ Coverage for 75M, Verizon: Spectrum Scarcity is Good, BridgeWave: 1Gbps Backhaul on 80GHz, 3.65 GHz Gets Real, and

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