

World's first WiGig-based millimeter wave mesh backhaul system

March 2 2015, by Hanne Degans

InterDigital, Inc., a mobile technology research and development company, nanoelectronics research center imec, and WiGig chip developer Peraso Technologies Inc. today announced the integration of their respective technologies into the world's first WiGig-based Millimeter Wave Mesh Backhaul system. The technology will enable easier deployments for small cell mobile backhaul resulting in lower cost solutions for high-speed data delivery in 4G and 5G networks.

The system developed by the InterDigital Labs team includes imec's 60 GHz PHARA4 radio and phased array antenna with fast electrical beam steering in azimuth and elevation, and Peraso's highly integrated PRS4000 WiGig baseband chip, operating at multi-Gbps data rates. InterDigital's software provides self-configuration and data routing for the multi-hop mesh backhaul. The cost-effective architecture uses radio and baseband components targeted for high volume consumer electronics rather than proprietary architectures found in existing millimeter backhaul solutions. Multi-sector rapid beam steering enables many links to be supported with the same equipment for added cost-reduction, reliability, and simple network scaling with additional nodes. InterDigital calls the solution EdgeHaul, and aims to bring it to industry field trials in the second half of 2015.

"Millimeter wave is the only spectrum with enough available bandwidth to provide fiber-like data rates," said Doug Castor, Principal Engineer, InterDigital Labs group. "Cost-effective backhaul is a huge challenge for small cell deployments and our approach will enable network operators

to rapidly deploy denser networks to meet growing capacity demands. We're also excited about the opportunities to bring this platform to other markets such as residential broadband and 5G mmW access."

"Our phased-array radio module is the result of more than 10 years of 60 GHz R&D at imec. Initially developed for consumer-oriented WiGig markets, the technology is inherently cost-effective and scalable. Moreover, it features fully-integrated fast electronic beam-steering for easy installation, adjustment without human intervention, and reconfigurable mesh networking. The record energy efficiency of over 65% (16 antenna) finally means a lower number of antenna needed and a small, low-cost form factor," said Charlotte Soens, program manager [millimeter wave](#) technologies at imec.

"Peraso has been a significant contributor in the standardization of 60 GHz technology for many years. Our solutions are designed with a low-power and modular software MAC that enable customer value-add features and differentiation across a wide-variety of WiGig applications," said Ron Glibbery, CEO of Peraso. "We are extremely pleased with the continuing emergence of WiGig eco-system products and solutions utilizing our chips as critical components."

Provided by IMEC

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