



PAUL WHYTOCK

Collaboration To Develop Low-Power IP For WiGig And 4G Backhaul Apps

A NEW PARTNERSHIP agreement between UK-based Blu Wireless Technology and Cadence Design Systems, San Jose, Calif., aims to advance and promote a set of design IP software for designers to develop low-power solutions for emerging 60-GHz WiGig and Fourth-Generation (4G) cellular backhaul market sectors.

Blu Wireless maintains that the 60-GHz market is being driven by consumer demand for high-definition video via smartphones, laptops, and tablets. The IEEE 802.11ad Wi-Fi standard, which uses the 60-GHz band for backhaul links, is capable of delivering more than 20 times the speed of existing WiFi services. This enables almost instantaneous sharing of large HD video files and also supports low-latency wireless streaming of video and gaming content to large high-definition televisions.

Analysts think that globally this market could have an annual value of \$5 billion (USD) by 2018. In addition to this application, 4G base station operators are also using the 60-GHz band for high-speed unlicensed wireless links between small cells that can be mounted on street furniture. The demand for these small cells is also being driven by the fast download requirements of mobile video and is forecast to be worth over \$3 billion (USD) annually by 2018.

As part of the working agreement between the two companies, CDNS will

contribute its analog/mixed-signal IP expertise while Blu Wireless will share its experience with 60-GHz band design.

“As our customers turn to 28 nm and beyond for designs for the 60-GHz communications market, it is important for them to be confident that they can rely on robust mixed-signal and interface IP from Cadence that has been matched to our HYDRA baseband architecture (see “Behind Hydra Technology”). By working with Cadence, we will be able to provide a complete system IP solution addressing our customers’ time-to-market, cost, and power demands,” explains Henry Nurser, CEO of Blu Wireless.



HENRY NURSER, CEO OF BLU WIRELESS

MILLIMETER-WAVE SOLUTIONS

Blu Wireless also has a collaboration agreement with wireless research company InterDigitalTechnology. It has successfully concluded the first phase of its work, which involved the investigation of millimeter-wave solutions for small-cell base stations and access points. A demonstration platform resulting from this work is expected to enable operators to evaluate this technology in order to cost-effectively increase 4G and Fifth-Generation (5G) cellular backhaul. The platform will also be suited to research and development exploration for 5G millimeter-wave mobile-access services. It will combine InterDigital’s multi-hop backhaul technology with Blu Wireless’s HYDRA baseband evaluation platform, which was developed for IEEE 802.11ad WiFi systems and has been further optimized to speed throughput in backhaul applications. [ITW](#)

BEHIND HYDRA TECHNOLOGY

HYDRA BASEBAND TECHNOLOGY uses a heterogeneous multiprocessing architecture, mixing fixed-function digital-signal-processing (DSP) blocks with highly optimized parallel vector DSPs. This mixture provides a pool of DSP processors and fixed-function blocks that are arranged in clusters that optimize data flow. Each cluster has a heterogeneous controller that automatically and optimally utilizes these units, switching units off between executing tasks to preserve power.

The high-level software that maps onto the heterogeneous controller uses a threaded data-flow model. Software threads that define the wireless DSP pipeline are dispatched in order as a “virtual pipeline” in a series of interlocking threaded sub-tasks. The controller automates the threaded data flow through the heterogeneous DSP resources. These subtasks are executed on each DSP unit driven by data-flow completions that move data concurrently between them. Any arbitrary combination of dispatched virtual pipelines can be dispatched, and the real-time data flow defines the execution, timing, and order.