



Blue Danube Systems Announces Industry's First FDD LTE Massive MIMO Commercial Trials with Shentel and AT&T

Demonstrates 20X increase in dynamic throughput for enhanced video user experience

Santa Clara, Calif. – February 16, 2017 – [Blue Danube Systems](#), a provider of mobile wireless access solutions that significantly and cost-effectively increase network capacity, today announced that it has completed first commercial trials of its Massive multiple-input multiple-output (MIMO) system in licensed FDD (Frequency Division Duplex) LTE spectrum. These trials were conducted using Blue Danube's BeamCraft™ 500 active antenna product for advanced 3D beamforming, which is capable of delivering a record 160W of transmit power for a Massive MIMO system. Based on its underlying High Definition Active Antenna System (HDAAS™) technology, the 96 element BeamCraft 500 can intelligently and seamlessly focus signal energy where it is needed, allowing wireless carriers to better serve high demand areas and minimize interference zones.

These industry-first trials were conducted with Shenandoah Telecommunications Company (Shentel) and AT&T, an investor in Blue Danube Systems, and supported over 10TB of data during a three-month period. Through a simple retrofit of the existing antenna with a BeamCraft 500 unit at the trial sites, an improvement of 2X to 5X in throughput was demonstrated for users in high traffic demand areas for the same transmit power as the legacy installation. Additionally, users received up to 20X improvement in instantaneous video throughput and experienced smooth 1080p HD videos in locations where existing systems were stalling and previously only capable of 144p. A second phase of trials is now ongoing to test additional operational modes and traffic scenarios.

This is the first commercial test of an FDD Massive MIMO system for deployment in current LTE networks. So far, over 85% of the commercial LTE networks have adopted the FDD air interface* and these first HDAAS™ trials have demonstrated an effective capacity solution for these markets. Blue Danube is also developing additional HDAAS™ products for additional spectrum bands and TDD (Time Division Duplex) LTE operation to support several trials in Europe, Australia and North America in the first half of 2017.

"Working together with AT&T and Shentel has allowed us to validate our HDAAS technology in live commercial network conditions," said Mark Pinto, CEO of Blue Danube. "The results were consistent with our system performance simulations and the first FDD R&D trials we performed in 2Q'16, demonstrating that our product can be used as a low friction upgrade to existing LTE networks to improve capacity."

"AT&T is committed to enabling next-generation mobile experiences by exploring leading-edge capabilities," said Tom Keathley, Senior Vice President, Wireless Network Architecture & Design, AT&T. "The work we have done with Blue Danube to evaluate their beamforming technology in our live network supports this objective."



“The versatility of this advanced antenna system has provided a dramatic performance improvement in our commercial network by dynamically increasing RF energy in problem areas without impacting neighboring sites,” said Willy Pirtle, Senior Vice President of Wireless for Shentel.

Mobile data traffic continues to grow at a significant rate driven primarily by the increase in video content. By 2022, video content is expected to account for 75% of the mobile data traffic*. The current, as well as the next generation of wireless data networks, must address not only future capacity constraints but also existing challenges of delivering reliable quality of service to users. Massive MIMO offers significant gains in wireless data rates and link reliability, allowing for data consumption from more users in a dense area without consuming any more radio spectrum or causing interference. This results, in fewer dropped calls, a significant decrease in dead zones, and better quality data transmission. With these results from the industry’s first FDD Massive MIMO trials in a live commercial network, Blue Danube’s BeamCraft 500 active antenna product has demonstrated a commercially viable Massive MIMO product that will improve spectrum efficiency for the 4G evolution as well as 5G.

Analyst Quotes

“The demand for Massive MIMO solutions continues to increase as industry gears towards delivering 4G advancements and 5G. Mobile carriers are looking for innovative and cost-effective ways to improve network capacity and Blue Danube’s BeamCraft™ 500 is the first product designed to provide operators a low friction upgrade at existing sites targeting lowest total cost of ownership (TCO) for high-capacity,” said Earl Lum, President at EJM Wireless Research. “The compact form factor for a 160W system with no fans and use of existing Common Public Radio Interface (CPRI) to the Base Station/eNodeB makes the solution very attractive. Results from first commercial trials are very promising and validate efficiency and simplicity of the system”.

“Massive MIMO opens up a new way to boost capacity in mobile telecom, by using the spatial dimension and multiple antennas to create multiple paths that re-use spectrum more effectively. Instead of waiting for 5G, mobile operators are upgrading thousands of TD-LTE base stations with Massive MIMO this year,” said Joe Madden, founder and Principal Analyst at Mobile Experts. “It’s an exciting development which, as it gains momentum, may be able to leap into the FDD market as well. Blue Danube’s recent FDD field trial results using simple modules are very promising, and represent a big step toward cost-effective FDD and 5G solutions.”

Blue Danube Participation at Mobile World Congress 2017

Blue Danube will have representatives at Mobile World Congress from February 27 through March 2 in Barcelona. Blue Danube can be found in Hall 2, hospitality stand 2L1.



About Blue Danube Systems

Blue Danube Systems provides mobile wireless communications solutions that significantly and cost-effectively expand network capacity to enhance quality of service. The company's proprietary approach combines reliable hardware and intelligent software to enable a significant increase in capacity, utilizing existing infrastructure and today's mobile devices. Blue Danube Systems is backed by investors including Sequoia Capital, Northgate and AT&T and has locations in Warren, NJ and Santa Clara, CA. Blue Danube Systems is listed among *EE Times* Silicon 60 and is a winner of *FierceWireless* Fierce 15 for 2016. For more information, please visit www.bluedanube.com.

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*Ericsson Mobility Report 2016