





News Release

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Verizon, Qualcomm and Ericsson demonstrate Dynamic Spectrum Sharing

Technology will allow Verizon to allocate spectrum in real time to meet the simultaneous needs of 4G and 5G customers

RICHARDSON, TX - In a proof-of-concept demonstration in the US, Verizon, Ericsson, and Qualcomm Technologies, Inc., a subsidiary of Qualcomm Incorporated, successfully trialed Dynamic Spectrum Sharing, a technology that allows 5G service to run on multiple spectrum bands (the invisible radio frequencies that wireless signals travel over), including those historically reserved for 4G LTE services. When commercially deployed in the near future, this new technology will allow Verizon to use its full portfolio of current spectrum resources to serve both 4G and 5G customers, maximizing their experience on the Verizon network.

"As market demands for our services shift between 4G and 5G, we need to be able to shift our resources to efficiently meet those demands," said Adam Koeppe, Senior Vice President of Network Planning for Verizon. "Dynamic Spectrum Sharing will allow us to allocate those resources in real time so we use our current spectrum effectively while also providing our customers the precise experience they need."

Running 5G technology on low or mid-band spectrum historically reserved for 4G will complement Verizon's primary strategy of offering a keenly differentiated 5G Ultra Wideband service on mmWave spectrum. With Verizon's 5G Ultra Wideband network, customers can enjoy near real-time experiences with high throughput, ultra-low latency and massive capacity. That means things like streaming 4K movies with virtually no buffering, video chatting with near zero lag and augmented reality that responds in near real-time.

With Dynamic Spectrum Sharing, when customers move outside Verizon's 5G Ultra Wideband coverage area, their 5G-enabled devices will remain on 5G technology using lower bands of spectrum.

"We will continue to focus on providing 5G over millimeter wave – especially in high density areas like airports, stadiums and urban areas – in order to continue to deliver the unique experience customers associate with 5G and that are only possible on mmWave technology," said Koeppe. "However, with Dynamic Spectrum Sharing we will be able to supplement mmWave deployments and accelerate the

deployment of 5G in low and mid band spectrum for customers as we continue to build out our Ultra Wideband network."

"Dynamic Spectrum Sharing is essential for broad 5G coverage and we're excited to collaborate with Verizon and Ericsson on this significant milestone for the U.S.," said Joe Glynn, vice president, business development, Qualcomm Technologies, Inc. "DSS is a game changing technology that is imperative to drive a faster transition to commercial 5G global rollout. The Qualcomm® Snapdragon™ 5G Modem-RF System is at the center of virtually all 5G-enabled commercial mobile devices and is instrumental in enabling the ecosystem and bringing new experiences to consumers today."

About the trial

This latest 5G milestone in the US is an over-the-air, Dynamic Spectrum Sharing (DSS) 5G data call that was successfully carried out in Ericsson's lab in Richardson, Texas, by Verizon, Ericsson, and Qualcomm Technologies. Ericsson Spectrum Sharing, part of Ericsson Radio System, enables a quick, flexible, and cost-effective upgrade to 5G within existing 4G carriers. The solution will dynamically share spectrum between 4G and 5G carriers based on traffic demand. The switch between carriers happens within milliseconds, which minimizes spectrum waste and allows for best end-user performance. It is compatible with all 5G FDD capable smartphones and other devices based on the Snapdragon 5G Mobile Platform with the Snapdragon X55 5G Modem-RF System, supporting the standardized spectrum sharing functionality.

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About Verizon

Verizon Communications Inc. (NYSE, Nasdaq: VZ), headquartered in New York City, generated revenues of \$130.9 billion in 2018. The company operates the network more people rely on and the nation's premier all-fiber network, and delivers integrated solutions to businesses worldwide. With brands like Yahoo, TechCrunch and HuffPost, the company's media group helps consumers stay informed and entertained, communicate and transact, while creating new ways for advertisers and partners to connect. Verizon's corporate responsibility prioritizes the environmental, social and governance issues most relevant to its business and impact to society.

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About Ericsson

Ericsson enables communications service providers to capture the full value of connectivity. The company's portfolio spans Networks, Digital Services, Managed Services, and Emerging Business and is designed to help our customers go digital, increase efficiency and find new revenue streams. Ericsson's investments in innovation have delivered the benefits of telephony and mobile broadband to billions of people around the world. The Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York. www.ericsson.com

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