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Spire Achieves Two-Way Laser Communication Between Satellites in Space

First-ever achievement for Spire enhances data transmission security and efficiency

The Company will launch additional satellites with optical inter-satellite link technology on the Transporter-13 Rideshare Mission

VIENNA, Va.--(BUSINESS WIRE)-- Spire Global, Inc. (NYSE: SPIR) (“Spire” or “the Company”), a global provider of space-based data, analytics and space services, successfully established a two-way optical link between two satellites in orbit. This achievement marks a major step toward enhancing the speed, reliability, and security of data transmissions for future missions.

The satellites, which launched in June 2023, are equipped with optical inter-satellite link (OISL) payloads. The payloads create lasers that send information back and forth between satellites, securely and almost instantaneously, while up to 5,000 kilometers apart. This technology has the ability to enhance applications such as weather forecasting, global communications, and remote sensing for navigation and environmental monitoring by increasing data speeds, enhancing security and reducing data latency.

"Precisely pointing two satellites, across distances equivalent of New York to London, and establishing an inter-satellite optical link is a significant milestone for Spire,” said John E. Ward, Senior Director of Research & Development at Spire. “This achievement places us among a select group of organizations capable of developing and deploying this advanced technology and overcoming the complexities of aligning satellites separated by thousands of kilometers in Low Earth Orbit. Integrating this technology into our future fleet will enhance resilience, improve security, and reduce latency for critical applications.”

“We have shrunk what is typically a large optical system—the size of a microwave—down to the size of a tissue box,” added Thomas Carroll, Applied Optics Team Lead at Spire. “Our OISL payload is the smallest on the market, allowing us to deploy this technology on our small satellites while delivering performance previously achievable only with much larger systems. This breakthrough has the potential to enhance our data and Space Services solutions, especially for applications that require continuous coverage with fast and secure data relay.”

The development of the OISL technology was supported by a European Space Agency (ESA) Advanced Research in Telecommunications Services (ARTES) Pioneer Partnership Project, within ESA’s Connectivity and Secure Communications directorate, with funding from the UK Space Agency (UKSA).

"Through our ARTES Pioneer Partnership Project, we have supported Spire in the development of a new OISL capability for their space data service network," said Clive Edwards, ESA Pioneer Implementation Manager. "This OISL system is set to transform satellite communications, offering enhanced security and efficiency for space-based data transmission."

Following the successful demonstration, Spire will launch three additional LEMUR satellites with OISL technology in 2025, two of which are set to launch via Exolaunch on the Transporter-13 rideshare mission with SpaceX.

During the mission, Spire will also launch four additional LEMUR satellites to replenish its fully deployed constellation and enable missions for its Space Services customers. The launch is scheduled for no earlier than March 2025. For updates on the launch, follow Spire on LinkedIn, X or Bluesky.

About Spire Global, Inc.

Spire (NYSE: SPIR) is a global provider of space-based data, analytics and space services, offering unique datasets and powerful insights about Earth so that organizations can make decisions with confidence in a rapidly changing world. Spire builds, owns, and operates a fully deployed satellite constellation that observes the Earth in real time using radio frequency technology. The data acquired by Spire's satellites provides global weather intelligence, ship and plane movements, and spoofing and jamming detection to better predict how their patterns impact economies, global security, business operations and the environment. Spire also offers Space as a Service solutions that empower customers to leverage its established infrastructure to put their business in space. Spire has nine offices across the U.S., Canada, UK, Luxembourg, Germany and Singapore. To learn more, visit spire.com.

About ESA's ARTES Partnership Projects programme

The European Space Agency (ESA) is Europe's gateway to space, coordinating the financial and intellectual resources of its Member States to conduct space programmes and activities. The Partnership Projects programme line of ESA's Advanced Research in Telecommunications Systems (ARTES) drives innovation by federating ambitious large-scale, long-term collaborations between ESA, private companies, and satellite operators. The programme establishes ESA as a key partner in developing major satellite communication systems, new value-adding solutions and services, and providing in-orbit validation. It focuses on substantial, industry-shaping initiatives that require significant investment spanning over several years.

By closely aligning technological ambition with commercial strategy, ARTES Partnership Projects enable European and Canadian organisations to push the boundaries of satellite communications and strengthen their competitiveness on the global market.

Learn more at connectivity.esa.int/partnership-projects

Forward-Looking Statements

This press release contains forward-looking statements, including information regarding our

plan to launch additional satellites, management's view of Spire's future expectations, plans and prospects, including our views regarding future execution within our business, and the opportunity we see in our industry, within the safe harbor provisions under The Private Securities Litigation Reform Act of 1995. These statements involve known and unknown risks, uncertainties and other factors which may cause the results of Spire to be materially different than those expressed or implied in such statements. Certain of these risk factors and others are included in documents Spire files with the Securities and Exchange Commission, including but not limited to, Spire's Annual Report on Form 10-K for the year ended December 31, 2023, as well as subsequent reports filed with the Securities and Exchange Commission. Other unknown or unpredictable factors also could have material adverse effects on Spire's future results. The forward-looking statements included in this press release are made only as of the date hereof. Spire cannot guarantee future results, levels of activity, performance or achievements. Accordingly, you should not place undue reliance on these forward-looking statements. Finally, Spire expressly disclaims any intent or obligation to update or revise any forward-looking statements, whether as a result of new information, future events, or otherwise.

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