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Spire Global Demonstrates Single-Satellite RF Geolocation Capability

On-orbit demonstration successfully identifies and geolocates S- and X-band radio frequency signal sources

VIENNA, Va.--(BUSINESS WIRE)-- [Spire Global, Inc.](#) (NYSE: SPIR) (“Spire” or “the Company”), a global provider of space-based data, analytics and intelligence, has successfully demonstrated single-satellite radio frequency (RF) geolocation techniques on orbit, including the detection and geolocation of S-band and X-band radio frequency signals.

Traditionally, RF geolocation relies on multiple satellites operating together to determine the origin of a signal. Spire’s single-satellite RF geolocation capability expands the company’s RF sensing capabilities by enabling the identification and geolocation of higher-frequency emitters, including S- and X-band signals, using sensors onboard a single satellite.

The satellite launched in late 2025 aboard SpaceX’s Bandwagon-4 mission and was co-funded by the Government of Luxembourg through an ESA Contract in the Luxembourg National Space Programme, LuxIMPULSE, managed by the Luxembourg Space Agency.

“Understanding activity across the radio frequency spectrum is increasingly critical for modern defense and security operations,” said Theresa Condor, Chief Executive Officer of Spire Global. “By successfully detecting and geolocating higher-frequency emitters such as S- and X-band signals — commonly used by radar and sensing systems critical to defense and national security missions — and demonstrating single-satellite RF geolocation, we are strengthening Spire’s ability to deliver RF intelligence supporting defense and national security missions worldwide.”

“Single-satellite RF geolocation allows us to expand the range of signals we can detect from space while improving the efficiency of how those capabilities are deployed,” said Gabriel Oehme, Chief Technology Officer at Spire Global. “By leveraging Spire’s vertically integrated satellite platform, we can rapidly test, deploy, and scale new sensing technologies across our constellation. Demonstrating this capability for higher-frequency emitters such as S- and X-band signals represents an important step in expanding Spire’s RF intelligence capabilities.”

Through its defense-grade, space-based RF intelligence platform, Spire enables customers to detect and act on critical signal activity anywhere on Earth. Spire’s RF geolocation capabilities now span multiple bands across the RF spectrum, including VHF, UHF, GNSS L-band, S-band, and X-band, providing precise emitter latitude and longitude locations along with associated signal characteristics. These data products are designed to integrate seamlessly into existing geospatial intelligence (GEOINT) workflows, enabling enhanced monitoring, analysis, and decision-making.

Learn more about [Spire's RF detection and geolocation](#).

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 offices across the U.S., Canada, UK, Luxembourg and Germany. To learn more, visit spire.com.

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