

Gilat Blog

Advancing In-Flight Connectivity: The Impact of Innovative ESA Technologies

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I'm thrilled to share exciting news that marks a new chapter for Stellar Blu Solutions (SBS) and the future of in-flight connectivity (IFC). As the CEO of Stellar Blu Solutions, I couldn't be prouder to announce that we are now part of the Gilat Satellite Networks family. This acquisition not only strengthens our collective capabilities but solidifies our position as the leading force in IFC terminal solutions.



Gilat has been a global leader in satellite-based broadband communications for over 35 years, and by combining their cutting-edge satellite technology with our next-generation avionics, we're set to redefine in-flight connectivity—delivering unmatched performance and reliability for airlines and service providers worldwide. Beyond our industry-leading ESA technology, Gilat offers a comprehensive range of advanced IFC products, including modems, baseband equipment, and transceivers that support both Ku and Ka bands. This transformative combination positions us to drive the future of aviation connectivity.

In-flight connectivity (IFC) has quickly evolved from a luxury to an expectation. Leading airlines now offer free Wi-Fi as a standard feature, driven by the growing demand for a seamless, "at-home" experiences at 30,000 feet. Passengers no longer view connectivity as a perk—it's essential to their journey.

With this rising demand, IFC providers are rethinking their strategies, investing in new technologies to ensure reliable, high-speed service across entire fleets. Keeping passengers connected isn't just about convenience—it's about delivering consistent performance while managing costs.

As data-heavy activities like streaming, gaming, and video conferencing become the norm, the pressure is on. Airlines need to provide robust, uninterrupted connectivity that meets modern expectations—ensuring every passenger can stay online from gate to gate.

The market shift towards connectivity leveraging LEO-based satellite constellations requires a parallel shift in the IFC equipment installed on the aircraft. LEO-based networks provide ubiquitous, high-performance service but impose demanding requirements on IFC terminals to maintain uninterrupted, high-quality service throughout the flight.

The Emergence of ESA Technology

Traditional mechanically steered antennas have served well, but they're starting to show their limits—especially when it comes to supporting next-generation non-geostationary orbit (NGSO) services. The challenge lies in their slower satellite tracking and handover speeds. NGSO constellations require antennas to continuously switch beams and satellites while handing over signals instantaneously, in less than a thousandth of a second. Mechanical antennas simply can't keep up, leading to service interruptions that fall short of passenger expectations. On top of that, their moving parts—like motors—introduce reliability issues, increasing downtime, maintenance needs, and operational headaches for airlines.

Enter LEO satellites—the game-changers of global connectivity. By delivering low-latency, high-speed internet to even the most remote areas, LEO constellations are reshaping communication networks. But this leap forward comes with a catch: LEO satellites move fast, constantly crossing the sky. Conventional antennas struggle to keep pace, leaving gaps in connectivity.

For in-flight connectivity, ESAs are not just an upgrade—they're essential for delivering the seamless, always-on experience that today's passengers expect.

Gilat's Innovative IFC Technology Combined with Stellar Blu Delivers the Ultimate Global Flying Experience

For over 15 years, Gilat has been investing in IFC technology to serve commercial, business, government, and defense aviation markets. Gilat technology has been proven, including in multi-orbit operations supporting satellites in GEO, MEO and LEO orbits.

Gilat was selected by Satcom Direct as the driving force behind the technology that will deliver the highest possible bandwidth to business aviation customers utilizing OneWeb's Low Earth Orbit (LEO) constellation.

Introducing Sidewinder, a full ESA for Multi-Orbit and LEO Only Solutions

As the first to bring multi-orbit ESA technology to commercial and business aviation, we've built a one-stop shop for inflight connectivity—covering everything from development and certification to integration and installation. Our focus has always been on next-gen avionics and satellite solutions that ensure global coverage, even in high-traffic regions or areas with LEO regulatory restrictions.

It's very exciting that SBS has officially joined the Gilat family! By joining forces, we're creating a powerhouse of innovation that will drive faster, more reliable IFC solutions to the market. With this partnership, airlines and operators can expect even greater performance, expanded capabilities, and seamless connectivity—helping shape the future of inflight connectivity like never before.

The Stellar Blu "Sidewinder" ESA solution is breaking new ground with its open, modular architecture—designed to unlock the performance and cost benefits of multi-orbit connectivity. Its adaptable design isn't just for commercial aviation; it can easily scale to meet the needs of other aerospace applications.

Sidewinder's open architecture allows seamless integration with any service provider, giving airlines unmatched flexibility. Its sleek, radome-free design not only boosts performance but also streamlines installation and maintenance—driving down total cost of ownership. With best-in-class performance and adaptability, Sidewinder is setting the standard for the future of inflight connectivity.

Industry leaders like Intelsat, Panasonic, Boeing, OneWeb, and more have chosen the Sidewinder platform to power their next-gen satcom solutions. With over 1,000 installations planned in the next 18 months, some of the world's largest airlines are already on board. And Gilat's solutions are widely deployed in over 30 airlines around the world.

Conclusion

LEO satellite systems are ushering in a new era of in-flight connectivity, meeting the growing demands of passengers and the aviation industry alike. Electronically Steered Antennas (ESAs) are essential to enabling LEO-based services, allowing airlines to provide seamless connectivity for travelers.

Gilat is at the forefront of this transformation, leading the market with ESA solutions that combine performance, flexibility, and reliability. As ESA technology continues to evolve, the sky is no longer a barrier to communication or productivity—it's an expansive space where passengers can stay connected, and airlines can exceed the expectations of the digital age.

The combination of Gilat and Stellar Blu Solutions brings even more exciting potential to the future of aviation connectivity. Together, we're combining innovation and expertise to revolutionize the passenger experience. With a full lineup of industry leading solutions, airlines and service providers can count on Gilat, with Stellar Blu now on board to deliver reliable, high-performance connectivity for passengers around the world, shaping the future of air travel and connectivity.

For more information about Gilat and its IFC and ESA offerings read [here](#) or contact us at: info@gilat.com