

Gilat Satellite Networks

A Remarkable 2017

By Doreet Oren, Director of Product Marketing and Corporate Communications, Gilat Satellite Networks

For Gilat Satellite Networks, 2017 has been a most remarkable year, as the company brought to market innovative solutions that addressed the hottest market trends — two such notable trends are: In-Flight Connectivity (IFC) and Cellular Backhauling (CBH) over satellite.

Connectivity Cravings in the Air

The promise of In-flight Connectivity (IFC) is here as a growing number of commercial airlines offer broadband to their passengers. In a recently published research report, Euroconsult estimated that nearly 50 percent of commercial aircraft will be connected by 2021.

The increasing number of airplanes with internet connectivity is not surprising, given the user demand and recent technological advancements. For those who are used to being connected round the clock, having internet access between take-off and landing is more important than being served an in-flight meal. Research shows that connectivity is preferred over food and often a passenger's selection of an airline is affected by whether or not Wi-Fi is available during flight.

Gogo 2Ku Service Empowered by Gilat's Aero Modem

During 2017, Gilat has significantly contributed to the IFC market with a broad portfolio of solutions. Gogo has upgraded their IFC service with Gilat's next-generation aero modem. Passengers using 2Ku service experienced an enhanced user experience, due to the modem's high throughput.

In November, Gogo reached an important milestone as 150 airplanes belonging to four different airlines are now flying with Gilat's aero modem. Gogo continues to ramp up their 2Ku service, which is planned to cover approximately 2,000 aircraft serving 13 airlines.

To support the planned expansion, Gilat's baseband equipment is being deployed worldwide in one of the world's largest IFC networks, which is expected to utilize bandwidth capacity from more than 20 satellites. Gilat's global reach coupled with local expertise is supporting the

installation of the ground segment equipment in multiple locations around the globe.

As the plane travels along its route, Gilat's IFC solution uses advanced algorithms for beam selection, ensuring transparent switchover between beams, satellites and gateways, while maintaining user application sessions. This provides for seamless coverage regardless of the plane's location, enabling passengers to enjoy the highest quality experience throughout their journey.

Gilat's distributed X-Architecture is at the heart of this massive deployment. The scalable hub platform is uniquely suited to support global mobility across multiple satellites and beams. Its TotalNMS management system lets IFC service providers manage their services independent of the satellite operator, including real-time location and status monitoring for all airborne terminals.

To further optimize the space segment utilization, Gilat is using a combination of state-of-the-art DVB-S2X waveform and an innovative LDPC based fast adaptive return access scheme. This unique solution, and smart bandwidth management, optimizes the space segment efficiency by 20 to 30 percent when compared to other prevalent technologies in the market.

Gilat Innovating with Aero Terminal Technology

On the IFC antenna front, Gilat has also made remarkable progress with its dual-band Ku-/Ka-band antenna. This high performance IFC antenna was unveiled this year and development and STC certification is expected next year.

A significant advantage of Gilat's antenna offering is that it is agnostic to the underlying VSAT/modem technology, enabling complete flexibility for true global connectivity. The dual band capability enables continuous broadband connectivity for commercial aircraft that require a combination of Ka- and Ku-band coverage to serve the full air route. The antenna further meets the volume requirements for radome line-fit installations on both Airbus and Boeing aircraft, while optimizing its aperture size under the available volume.



Looking toward 2018 and beyond, particularly with the emergence of LEO and MEO constellations, Gilat is actively working on a next-generation airborne antenna that consists of electronically steered array/phased-array antenna (ESA/PAA) with no moving parts. A major advantage of this design is to meet airlines' size and weight requirements and to support the IFC capabilities without affecting aircraft performance. The fast, electronically steerable beam capabilities of ESA/PAA better accommodate the intensive and robust multi-beams and satellite tracking required in the lower and medium orbit constellations.

CBH over Satellite is the Solution of Choice

Another hot SATCOM trend in 2017 is related to LTE cellular networks.



According to NSR, satellite backhauling is expected to be one of the fundamental growth pillars in the satellite industry. Gone are the days when satellite backhauling was the last resort. Today, satellite backhauling is often the preferred choice for various 3G and LTE mobile backhaul applications — not just the fallback option when terrestrial solutions are not feasible. Satellite communication is a technology that is now going through a major shift from being a niche play to becoming a prime time technology.

NSR further discussed satellite backhaul as crossing the chasm from early adopters, such as Gilat customers SoftBank and EE, to mainstream MNO customers. Indeed, during 2017, Gilat experienced substantial interest from MNOs worldwide in the firm's cellular backhaul solution. This is also attributed to the proven performance of Gilat's solution, which delivers an unprecedented, true LTE user experience and bandwidth efficiency.

At the heart of Gilat's satellite backhauling solution is the Capricorn VSAT, which features a multi-core processor, extended memory, protocol optimization and application acceleration. This best-in-class VSAT enables the world's fastest broadband for LTE backhaul over satellite, measured at a remarkable speed of 150Mbps of TCP traffic to the handset.

Patented Acceleration Technique for a True LTE User Experience

For satellite backhaul to provide the required user experience, the VSAT platform must be capable of overcoming the inherent satellite delay. Gilat does this using a patented acceleration technique that mitigates the latency effects. This joint patent of Gilat and SoftBank enables true LTE speed through acceleration of traffic inside the LTE GTP tunnel.

Another significant advantage is that Gilat integrates the acceleration functionality into the VSAT, rather than having an external card. The embedded acceleration reduces complexity by using a single NMS, while the QoS is maintained with end-to-end bandwidth management. The integrated solution guarantees maximum traffic efficiency in any weather by eliminating sync delay between cards, which is critical in order to avoid packet loss during fade conditions.

End-to-End CBH Projects with Tier-1 MNOs Around the Globe

In 2017, Gilat scope of LTE satellite backhauling projects was enriched to include T-Mobile and Sprint in the U.S., Globe Telecom in the Philippines and a major telco in Latin America. These new contracts reflected an expanded offering to include an end-to-end multi-year solution to increase the MNO's network footprint.

Gilat significantly reduces project complexity by taking full responsibility for building and operating the satellite backhaul network, based on the company's leading technology. This business model allows the MNO to focus on their core competencies, while leaving the satellite backhaul as a "black box" for us — the satellite experts.

Using this model, the MNO needs to specify three basic requirements: 1) the service level agreement and key performance indicators; 2) the required site locations, and; 3) the schedule that needs to be put in place

Once these requirements are defined, the satellite backhaul can be considered a black box.

Technical Innovation Continuance

In 2017, Gilat demonstrated the firm's technological innovation in key industry segments for the benefit of the company's broad customer base worldwide.

Looking ahead, Gilat is committed to additional cutting-edge achievements to further enhance the competitive advantage of the company partners.

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