



IoT Connectivity Reaches above the Skies

Skylo, Sony Semiconductor Israel (Sony) and Murata combine cellular and satellite connectivity to expand the Internet of Things

Highlights

- Sony's ALT1250 chipset supports standard 3GPP Release 17 NTN as well as the LTE-M/NB-IoT/2G connectivity for globally ubiquitous coverage.
- ALT1250 NTN feature is working over the air with only SW upgrade- no HW change.
- Murata's ISC module supports a combined LTE M/NB-IoT Terrestrial and Non terrestrial connectivity for any IoT device
- Skylo's NTN (Non Terrestrial Network) connectivity opens the door to a wide range of IoT applications in rural areas, as well as real-time tracking of devices ensuring no loss of coverage
- The proposed combined Cellular + NTN solution on the same chipset, enables significantly lower total cost of ownership for NTN solutions

Enabling ubiquitous connectivity globally

While terrestrial cellular networks cover more than 80% of the world's population, they reach less than 40% of the land and less than 20% of the earth (source: GSMA). Many rural communities lack coverage, while ships and people

travelling in remote areas have had to turn to expensive, proprietary satellite hardware and connectivity.

Berg Insight has projected that the global satellite IoT subscriber base will grow by a CAGR of 40% a year from 4.5 million connections in 2022 to reach 23.9 million connections in 2027.

The Problem

Historically, the high costs involved and a reliance on custom-built protocols tended to limit the usage of non-terrestrial network (NTN) connectivity to satellite television broadcasts and specialized communications. In the Internet of Things (IoT) domain, satellite connectivity had been considered a last resort option where there were no other options exist. Now, it is becoming economically feasible to use NTN connectivity as an alternative for private networks and mainly for IoT devices, enabling them to be deployed anywhere across a wide range of IoT applications in rural areas, such as agricultural monitoring, heavy machinery, vehicle trackers and logistics tracking, as well as maritime operations and mining, while not impacting battery life.

The Solution

Skylo Technologies, an NTN solution provider, has enabled a standard, 3GPP R17- based NTN global network. It enables millions of connections for currently unconnected devices, machines, and sensors - across an enterprise and consumer device base.

“The partnership between Skylo, Murata, and Sony marks a significant milestone in the IoT industry, bringing combined Cellular and Satellite IoT connectivity for the first time from a single chip-set and module with just a software upgrade,” says Igor Tovberg Director of Product Marketing at Sony Semiconductor Israel. “For industries with assets deployed worldwide, such as logistics and vehicle trackers, agriculture, and personal monitoring, the availability of carrier-grade, affordable IoT connectivity, enabled by all parties, is a game-changer.”

Based in California, Skylo has launched its initial service, connecting smartphones and IoT cellular devices directly to existing satellites, across the US, Canada, and Europe. Devices connected over satellite are managed and served by Skylo’s commercial NTN virtual radio access network,

featuring a 3GPP standards-based cloud-native base station and core. In February 2024, Skylo secured an additional US\$37 million in funding, co-led by Intel Capital and Innovation Endeavors. New investors also include BMW i Ventures, Next47, Samsung Catalyst Fund, and Seraphim Space.

As well as providing the infrastructure necessary for the functioning of the NTN network, Skylo has established partnerships with multiple terrestrial cellular network operators, including Deutsche Telekom, and more. These partnerships are designed to enable a seamless ecosystem where devices can effortlessly switch between NTN and terrestrial networks using a single SIM, enhancing connectivity and accessibility for end users.

Sony designed its highly integrated ALT1250 chipset for use in miniature modules, the chipset is equipped with a LTE-M and NB-IoT modem with 2G fallback, alongside an integrated low-power Cortex M4 MCU, dedicated for user application. MNO’s (Mobile Network Operator) subscription credentials and profile are stored in the Integrated SIM (iSIM), eliminating the need for external SIM, while the integrated GNSS functionality is used to pinpoint the device’s location. All above has been enhanced now with NTN connectivity as well.

Sony Altair is expecting commercial availability of the ALT1250 for NTN deployments in 2024.

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Igor Tovberg - Director of Product Marketing at Sony Semiconductor Israel

About the GSMA

The GSMA is a global organisation unifying the mobile ecosystem to discover, develop and deliver innovation foundational to positive business environments and societal change. Our vision is to unlock the full power of connectivity so that people, industry, and society thrive. Representing mobile operators and organisations across the mobile ecosystem and adjacent industries, the GSMA delivers for its members across three broad pillars: Connectivity for Good, Industry Services and Solutions, and Outreach. This activity includes advancing policy, tackling today's biggest societal challenges, underpinning the technology and interoperability that make mobile work, and providing the world's largest platform to convene the mobile ecosystem at the MWC and M360 series of events.

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About the GSMA Foundry

The GSMA Foundry is the go-to place for cross-industry collaboration and making positive change happen, supported by leading technology organisations and companies. By bringing together members and key industry players, engaging, and unifying the end-to-end connectivity ecosystem, the GSMA is solving real-world industry challenges.

Our vision is to unlock the full power of connectivity so that people, industry, and society thrive. This enables the mobile industry's mission: to connect everyone and everything to a better future.

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About Sony Semiconductor Israel

Sony Semiconductor Israel is a leading provider of cellular IoT chipsets. The company's cellular IoT chipsets are the smallest and most highly integrated LTE CAT-M and NB-IoT chipsets on the market, featuring ultra-low power consumption, hardware-based security, and a carrier-grade integrated SIM (iSIM), all 5G ready. With a commitment to the highest quality and end-to-end security approach, the company's Altair all-inclusive cellular IoT chipsets offer long battery life and fast time to market.

Sony Semiconductor Israel provides low-power and cost-efficient chipsets for a range of industrial and consumer IoT applications such as trackers, smart meters, mHealth, wearables, and vehicle telematics. The company's cellular IoT chipsets are commercially deployed on the world's most advanced cellular networks.

About Skylo

Skylo has been developed by a passionate group of engineers and scientists from MIT and Stanford in the US, and an experienced deployment team in Finland and India. The team invented an entirely new way of networking communications using existing geostationary satellites for affordable and continuous coverage, anywhere on Earth. Skylo is backed by some of the largest, most well-known organisations in the world.

About Murata

Murata Manufacturing Co., Ltd. manufactures and sells electronic modules and components. The Company produces communication modules, power supply modules, multilayer ceramic capacitors, noise countermeasure components, timing devices, sensor devices, high-frequency components, batteries, and other products.

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