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Ensuring your IoT devices are REL 17 NTN NB-IoT ready

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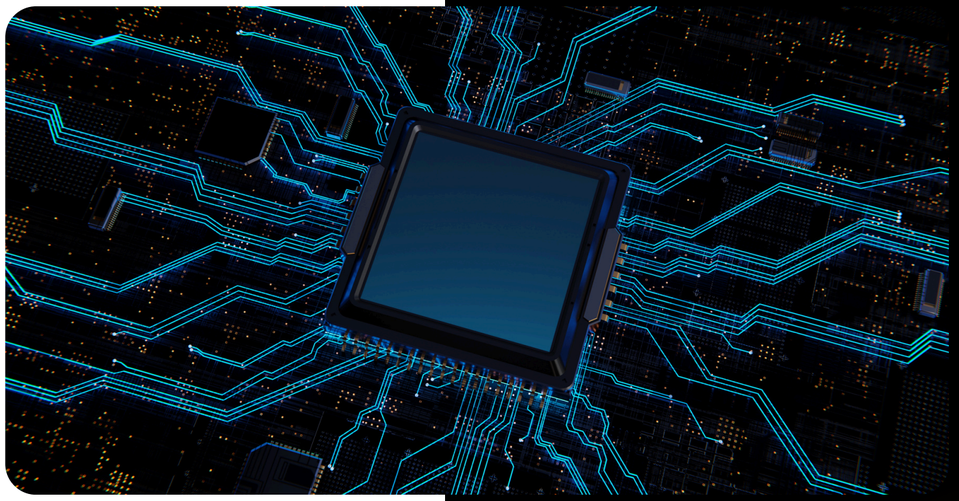
Introduction



The Internet of Things (IoT) has rapidly evolved, connecting billions of devices across the globe and transforming industries by enabling smarter operations, predictive analytics, and more efficient processes. However, the success of IoT heavily relies on robust and widespread connectivity. The latest development in this space, 3GPP's Release 17 (Rel. 17), introduces Non-Terrestrial Networks (NTN) with Narrowband IoT (NB-IoT) capabilities, promising to revolutionize IoT connectivity by extending coverage beyond traditional terrestrial networks.

This paper outlines the significance of Rel. 17 for IoT devices, focusing on how to ensure your devices are ready for this new era without requiring hardware changes, the key players in the cellular IoT space, cost considerations, and the certification process with the Sateliot network.

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Rel. 17 and Its Impact on the IoT Device Ecosystem

What is Rel. 17?

Release 17 is a crucial update in the 3GPP standards, introducing NTN NB-IoT capabilities that extend IoT connectivity via satellite networks. This advancement addresses the significant challenge of limited coverage by terrestrial networks, which currently cover only about 20% of the Earth's surface. With NTN NB-IoT, devices can now maintain connectivity in remote, rural, and underserved areas, ensuring continuous data transmission and reliable communication.

Firmware Over Hardware: The Key Update

One of the most remarkable aspects of Rel. 17 is that it enables IoT devices to connect to satellite networks without the need for any hardware modifications. This is achieved through a simple firmware update, making it incredibly easy for existing devices to become NTN ready. By leveraging the existing NB-IoT RF chipsets and modules with a 23dBm, 0dBi omnidirectional antenna, devices can seamlessly transition to satellite communication, thus future-proofing IoT deployments.

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Emerging Solutions and Key Players in the Cellular IoT Landscape

The cellular IoT ecosystem is supported by a diverse range of companies providing chips, modules, and connectivity solutions. These key players are crucial in selecting the right components and ensuring compatibility with Rel. 17 NTN NB-IoT. While solutions for GEO (Geostationary Earth Orbit) constellations are still relatively new, they are progressing steadily. For LEO (Low Earth Orbit) constellations, the industry is on the brink of exciting advancements. Initial tests with LEO-compatible chipsets and modules are set to begin with Sateliot at the end of this year, with commercial availability anticipated by 2025. This optimistic trajectory suggests that robust solutions for LEO constellations are just around the corner, making it an exciting time for the cellular IoT space.

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Certification on the Sateliot Network

THE CERTIFICATION PROCESS

1. ***Pre-Collaboration Work:*** Initial discussions align all parties on requirements, proposals, development, testing, and validation.
2. ***Certification Request & Requirement Discussion:*** Requirements and compliance exchange between Sateliot and manufacturers.
3. ***Technical Proposal:*** Manufacturers submit a technical proposal with features, compliance, timelines, and agreement.
4. ***Development:*** Manufacturers develop and align pre-certification test plan with Sateliot.
5. ***Pre Certification Lab/Field Testing:*** Lab and field testing with Sateliot and manufacturers collaborating on execution.
6. ***Validation & Compliance:*** Sateliot to validate requirements against test results.
7. ***Certification approval:*** Certification approval for qualified chipset/module for its network.

The Sateliot certification process is designed to facilitate manufacturers in certifying their chipsets, modules, and devices for seamless integration into the Sateliot NB-IoT NTN LEO Network, which features Discontinuous Coverage, Store & Forward capabilities, and the latest 3GPP Release 17 NTN-related functionalities. The primary objectives of this certification process are to ensure the interoperability between Sateliot's network and the manufacturers' chipsets or modules, to provide support in the configuration design and application for optimal utilization of the Sateliot network, and to assist manufacturers in the timely commercialization of NTN LEO-compliant products. This process ultimately aims to enhance the market reach of these certified products by ensuring they meet the stringent requirements necessary for effective operation within the Sateliot network and interoperability with their local provider.

Click on the following button to get in contact with Sateliot's product team and get all the details on the Certification Process

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Price Comparison

Traditionally, satellite modules and devices have been significantly more expensive than standard IoT devices, limiting their adoption. Proprietary satellite technologies often require specialized hardware, which drives up costs and complexity. However, with Rel. 17, the landscape is changing.

Comparative Analysis

- ***Traditional Satellite Modules:*** Often require specialized hardware, leading to higher costs and limited compatibility with existing networks.
- ***Rel. 17 Compatible Devices:*** Utilize standard NB-IoT modules with a firmware update, significantly reducing costs while ensuring broad compatibility and scalability.
- ***GEO VS LEO:*** LEO satellites are preferred for IoT due to their lower energy consumption and cost-effectiveness.

FEATURE	GEO	LEO
COVERAGE	Broad coverage with fewer satellites	Scalable infrastructure with many satellites
DEPLOYMENT COSTS	High deployment costs	Lower deployment costs
SATELLITE TRACKING	Antenna alignment required	Antenna alignment not required
LATENCY	Higher latency due to greater distance	Low latency due to proximity to Earth
PREFERRED USE CASE	Ideal for broad, high-bandwidth applications	Preferred for afforable and scalable IoT connectivity

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In a nutshell

In conclusion, the advent of 3GPP Release 17 with NTN NB-IoT capabilities is set to revolutionize the IoT landscape, offering unprecedented opportunities for seamless global connectivity. The following key points summarize the major takeaways:

1. ***Rel. 17 NTN NB-IoT:*** A major milestone in IoT, unlocking global connectivity and scalability.
2. ***Firmware Update Advantage:*** Enables IoT devices to connect to satellite networks without the need for costly hardware changes.
3. ***Accessibility & Affordability:*** Satellite IoT solutions become more accessible and affordable due to reduced upgrade costs.
4. ***Support from Key Players:*** Cellular IoT leaders are supporting this transition, driving the industry's growth.
5. ***Sateliot Network Certification:*** Certification is now available on networks like Sateliot, ensuring readiness for the future of IoT.
6. ***Beyond Terrestrial Networks:*** Rel. 17 expands IoT connectivity beyond terrestrial limitations, fostering innovation across industries.
7. ***Maximizing IoT Potential:*** Ensuring Rel. 17 readiness means unlocking IoT's full potential in a globally connected world.


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