



3GPP NTN Technology

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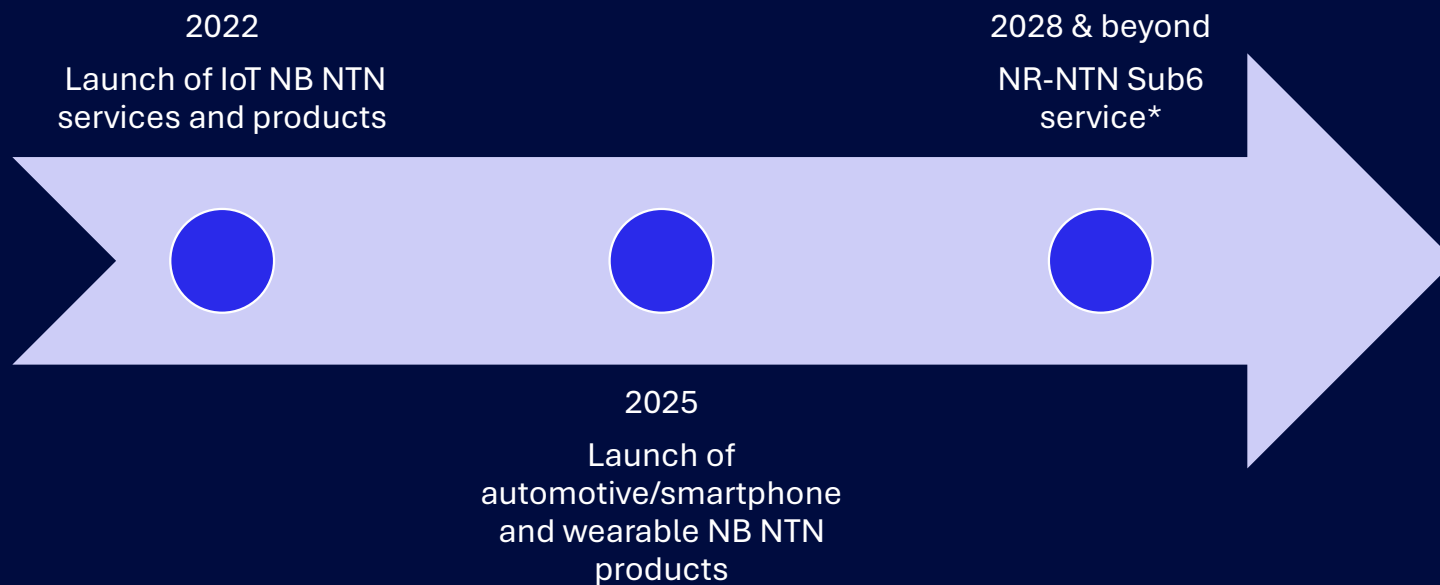


A world where everything is connected everywhere - Satellite connectivity ushers an era of ubiquitous connectivity across multiple use cases in consumer, automotive and IoT.

Why Satellite Connectivity?

- **Seamless Connectivity, Everywhere:** Plug coverage gaps without infrastructure costs. Deliver emergency access and resilient connectivity.
- **Always-On Emergency Connectivity:** Ensure critical communications for first responders and disaster zones—anytime, anywhere.
- **Track and Manage Everything:** Deploy secure, scalable solutions to monitor fleets, logistics, and assets in real time.
- **Powering Remote Industries:** Connect remote mines, oil rigs, and industrial operations with reliable broadband and low-latency links.
- **Edge AI + Ubiquitous Connectivity:** Accelerate digital transformation and operational awareness with Edge AI and satellite-enabled supply chains.
- **Recreational & Consumer Reach:** Support outdoor sports, connected vehicles, and last-mile delivery with uninterrupted coverage.

3GPP NTN Evolution



Future of Satellite Communications is 3GPP NTN

- Tested, trusted and seamless standards that run cellular networks.
- Interoperability between cellular and satellite for the first time using same hardware.
- Spectrally very efficient technology.
- Democratized ecosystem of SNOs and MNOs.
- Scales to use cases ranging from Narrow band to wide band.
- Specification compliant test equipment
- Global MSS spectrum-based deployment.



Sub-6 Ghz NR-NTN – A glimpse

Same 3GPP Ecosystem

- A natural evolution from 180Khz narrow band to 5Mhz wide band NR based solution.
- Highly complementary to NB-NTN, both technologies will co-exist. NB-NTN will be used as a fallback technology when the RF conditions are challenging for NR NTN.
- Seamless interworking between NR5G Terrestrial and Non-Terrestrial using a single chip solution.

Next-Generation Technology

- Delivers downlink speeds in the tens of Mbps and uplink rates of 5–10 Mbps → ideal for broadband-grade performance
- Supports full duplex transmission, enabling simultaneous voice and data with minimal latency.
- Features a waveform engineered specifically for satellite environments, ensuring robust performance even under dynamic conditions.
- The most advanced satellite technology of our time—designed to scale effortlessly and democratize access for users worldwide.

Built for cellular components

- NR NTN can leverage existing 5G NR cellular antennas for Sub 6 Ghz frequencies like L and S band.
- Existing technologies for satellite communication involves expensive front end.
- No requirement for active antenna arrays or other expensive designs.



- Reliable connectivity beyond cellular coverage
- Scales well
- Expands use cases for edge AI and edge compute
- Lower operating costs with time
- Industry wide alignment on next gen satellite technology
- First step in convergence of terrestrial, satellite and 6G networks

Sub-6 NR-NTN is going to redefine satellite broadband by making it accessible on everyday devices 🔊

Thank you

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