



OVERVIEW AND UPDATES · NON-TERRESTRIAL NETWORKS (NTN)

Non-Terrestrial Networks in 5G Systems

Expanding network connectivity via satellite and HAPS for content delivery

3GPP

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About the project

The documents the project rests on

3GPP TR 38.811

Technical Report

The foundational NTN study item: the study on NR access to non-terrestrial networks, completed in Release 15.

3GPP TR 38.821

Technical Report

Solutions for NR to support non-terrestrial networks, the outcome of the Release 16 study on solutions for NR for NTN.

3GPP TS 38.300

Technical Specification

The NR overall description. Its NTN aspects define the feeder and service links, the payload types and the cell types.

FIND OUT MORE

Technical Analysis

Specifications

What NTN changes

NTN reuses the 5G system and the NR protocol stack; the differences are in the radio and in a few architecture roles

System model where the NTN payload sits

Service link

Feeder link

NTN Gateway

Transparent payload

Regenerative payload

GNSS-capable UE

Cells three types of service link

Earth-fixed

Quasi-Earth-fixed

Earth-moving

Radio long delay and large Doppler shift

Timing advance

Common timing advance

Doppler pre-compensation

k-offset

Adapted HARQ, RRC and MAC timers

System information assistance for the UE

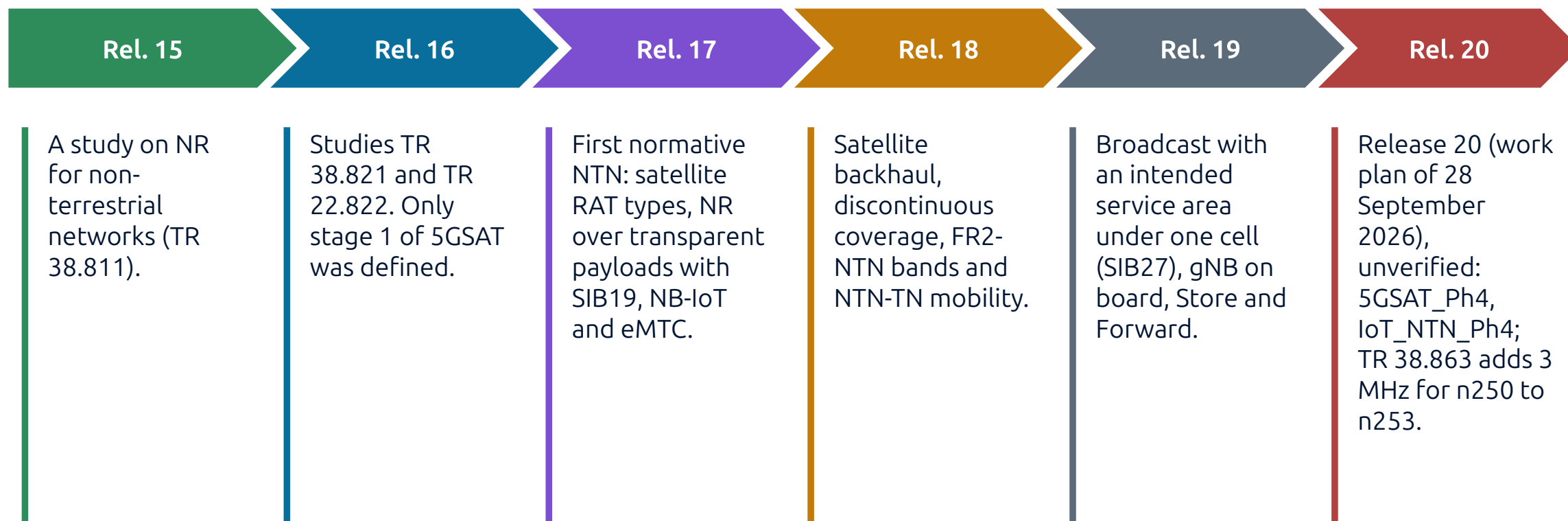
SIB19: satellite assistance

SIB27: intended service areas of MBS broadcast

The NTN payload is on board a satellite or a high altitude platform station. SIB19 comes from the Release 17 NTN work and SIB27 from Release 19.

How it grew

The 3GPP work on non-terrestrial networks, release by release



Mobility and MBS over NTN

What Release 19 specifies, as analysed on the Technical Analysis pages

Mobility in a single NTN operator

Time- and location-based measurement initiation

Conditional handover: A4, T1, D1, D2

Satellite switch with re-synchronization

Feeder link switchover

Deployment models the analysis's own grouping

Single NTN operator

Common NTN and TN operator

Independent NTN and TN operators

MBS broadcast the Intended Service Area

5G Core to NG-RAN

SIB27

MCCH

UE behaviour

MBS multicast NG-RAN decides

PTP and PTM switching

Multicast DRX HARQ timer for NTN

Mobility of receivers

MBS multicast has no NTN-specific part in TS 23.247. For independent operators, MBS roaming is not supported in Release 19; Release 20 supports services of the visited network only.



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