**3GPP TSG-RAN WG2 Meeting # 131 *R2-25xxxx***

**Bangalore, India, 25 - 29 August 2025**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.300** | **CR** | **DRAFT** | **rev** | **-** | **Current version:** | **18.5.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:*** | Introduction of IoT NTN TDD mode | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Iridium Satellite | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | | 2025-08-15 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
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| ***Reason for change:*** | | Introduction of Rel-19 IoT NTN TDD mode into TS 36.300. | | | | | | | | |
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| ***Summary of change:*** | | Introduction of Rel-19 IoT NTN TDD mode calls for changes/additions in a few clauses of TS 36.300. | | | | | | | | |
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| ***Consequences if not approved:*** | | IoT NTN TDD has no stage 2 description. | | | | | | | | |
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| ***Clauses affected:*** | | 3.1, 5.0, 23.21.1 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 36.331 CRxxxx, TS 36.321 CRyyyy, TS 36.304 CRzzzz, TS 36.300, 36.306, CR… | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| START OF CHANGE |

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

**A2X communication:** A communication to support A2X services leveraging PC5 reference points. A2X services are realized by various types of A2X applications, e.g. BRID or DAA.

**Access Control:** the process that checks whether a UE is allowed to access and to be granted services in a closed cell.

**Aerial UE communication**: functionality enabling Aerial UE function as defined in 23.17.

**Anchor carrier**: in NB-IoT, a carrier where the UE assumes that NPSS/NSSS/NPBCH/SIB-NB for FDD *and IoT-NTN TDD* or NPSS/NSSS/NPBCH for TDD are transmitted.

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## 5.0 Frame structures and channels

Downlink and uplink transmissions are organized into radio frames with 10 ms duration. Three radio frame structures are supported:

- Type 1, applicable to FDD;

- Type 2, applicable to TDD;

- Type 3, applicable to LAA secondary cell operation only.

Frame structure Type 1 is illustrated in Figure 5.1-1. Each 10 ms radio frame is divided into ten equally sized sub-frames. Each sub-frame consists of two equally sized slots. Each slot can further be divided into three subslots that may have different sizes. For FDD, 10 subframes, 20 slots, or up to 60 subslots are available for downlink and uplink transmission in each 10 ms interval. Uplink and downlink transmissions are separated in the frequency domain.



Figure 5.1-1: Frame structure type 1

Frame structure Type 2 is illustrated in Figure 5.1-2. Each 10 ms radio frame consists of two half-frames of 5 ms each. Each half-frame consists of eight slots of length 0.5 ms and three special fields: DwPTS, GP and UpPTS. The length of DwPTS and UpPTS is configurable subject to the total length of DwPTS, GP and UpPTS being equal to 1ms. Both 5ms and 10ms switch-point periodicity are supported. Subframe 1 in all configurations and subframe 6 in configuration with 5ms switch-point periodicity consist of DwPTS, GP and UpPTS. Subframe 6 in configuration with 10ms switch-point periodicity consists of DwPTS only. All other subframes consist of two equally sized slots.

*For IoT-NTN TDD mode, Frame Structure Type-1 is used where uplink and downlink transmissions are separated in the time domain and consist of a set of D non-overlapping usable contiguous DL subframes and a set of U usable contiguous UL subframes separated by a fixed guard period (GP). This pattern is repeated every N radio frames. IoT-NTN TDD mode is applicable for the IoT-NTN TDD band* (1616-1626.5 MHz) *specified in [36.102].*

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23.21.1 General

Support for BL UEs, UEs in enhanced coverage and NB-IoT UEs over Non-Terrestrial Networks (see clause 4.12) is only applicable to E-UTRA connected to EPC. UEs not supporting NTN are barred from accessing an NTN cell.

In NTN, only BL UEs, UEs in enhanced coverage and NB-IoT UEs with GNSS capability are supported in this release of the specification.

To accommodate long propagation delays in NTN, increased timer values and window sizes, or delayed starting times are supported for the physical layer and for higher layers.

UL segmented transmission is supported for UL transmission with repetitions. The UE shall apply UE pre-compensation per segment of UL transmission of PUSCH/PUCCH/PRACH for BL UEs or UEs in enhanced coverage and NPUSCH/NPRACH for NB-IoT UEs from one segment to the next segment.

In this release of the specification, NTN is only applicable to FDD *and IoT-NTN TDD* system.

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| END OF CHANGE |