**3GPP TSG-WG1 Meeting #106bR1-21xxxxx**

**e-meeting, October 11 – 19, 2021**

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| *CR-Form-v12.0* | | | | | | | | |
| **DRAFT CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.211** | **CR** | **xxx** | **rev** | **x** | **Current version:** | **16.7.0** |  |
|  | | | | | | | | |
| *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 NB-IoT/eMTC support in Non-Terrestrial Networks | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LTE\_NBIOT\_eMTC\_NTN-Core | | | | |  | ***Date:*** | | | 2021-11-02 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Introduction of support for eMTC/NB-IoT in NTN | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Adding NTN-specific timing-advance parameters | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Incomplete NTN support for eMTC/NB-IoT | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | 36.213 | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

# 8 Timing

## 8.1 Uplink-downlink frame timing

Transmission of the uplink radio frame number  from the UE shall start seconds before the start of the corresponding downlink radio frame at the UE.



Figure 8.1-1: Uplink-downlink timing relation

Except for the cases mentioned in Table 8.1-1, Table 8.1-2 and Table 8.1-3, the range of  is: .

For frame structure type 1  and for frame structure type 2  unless stated otherwise in [4]. Note that not all slots in a radio frame may be transmitted. One example hereof is TDD, where only a subset of the slots in a radio frame is transmitted.

 is defined in different ranges depending on the UE configuration according to Table 8.1-1, Table 8.1-2 and Table 8.1-3. In case of subslot based transmission (Table 8.1-2 and Table 8.1-3), the UE is configured by higher layer signalling a processing timeline and an associated range of timing advance.

The quantity is derived from the higher-layer parameters *TACommon*, *TACommonDrift*, and *TACommonDriftVariation* if configured, otherwise .

The quantity is computed by the UE.

Table 8.1-1: Ranges of for a UE configured with SCG, short processing time or slot-based transmission in both DL and UL

|  |  |
| --- | --- |
| Range of | Condition |
|  | if the UE is configured with a SCG |
|  | if the UE is configured with *shortProcessingTime* (see 3GPP TS 36.331 [9]) |
|  | if the UE is configured with *dl-STTI-Length* and *ul-STTI-Length* (see 3GPP TS 36.331 [9]) set to 'slot' for the serving cell |

Table 8.1-2: Ranges of for a UE configured with subslot-based transmission in both DL and UL (*dl-STTI-Length* and *ul-STTI-Length*, see 3GPP TS 36.331 [9]. set to 'subslot')

|  |  |
| --- | --- |
| Range of | proc-Timeline |
|  | nplus4set1 |
|  | nplus6set1 |
|  | nplus6set2 |
|  | nplus8set2 |
| NOTE 1: See 3GPP TS 36.331 [9] | |

Table 8.1-3: Ranges of for a UE configured with subslot-based transmission in DL and slot-based transmission in UL (*dl-STTI-Length* and *ul-STTI-Length*, see 3GPP TS 36.331 [9], set to 'subslot' and 'slot', respectively)

|  |  |
| --- | --- |
| Range of | proc-Timeline |
|  | nplus4set1 |
|  | nplus6set1 |
|  | nplus6set2 |
|  | nplus8set2 |
| NOTE 1: See 3GPP TS 36.331 [9] | |

In all other cases the range of  is: .