**3GPP TSG-RAN WG2 Meeting #127 *R2-2407661***

**Maastricht, Netherlands, August 19th– 23rd, 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  | **38.331** | **CR** | **4877** | **rev** | **1** | **Current version:** | **17.9.0** |  |
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| *For* [***HELP***](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 |  | Core Network |  |

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| ***Title:***  | Clarification on Validity Duration |
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| ***Source to WG:*** | vivo, Ericsson |
| ***Source to TSG:*** | R2 |
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| ***Work item code:*** | NR\_NTN\_solutions-Core |  | ***Date:*** | 2024-08-21 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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 canbe 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:*** | In the RAN2#119e meeting, it was agreed that RAN2 does not need to capture T430 for neighbour cells in all RRC states (i.e. only the UE behavior of RRC\_CONECTED UE is captured), and it is up to UE implementation on how to re-acquire SIB19 for neighbour cells (e.g. maintain one or multiple timers for serving cell and neighbour cells). To avoid any potential misunderstanding on IDLE UE behavior on validity duration acquisition, the sentence (i.e. This parameter applies to both connected and idle mode UEs) in the FD part of ntn-UlSyncValidityDuration should be removed.  |
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| ***Summary of change:*** | In the field description of ntn-UlSyncValidityDuration, the sentence that This parameter applies to both connected and idle mode UEs is removed.**Impact analysis**Inter-operability:1. if the network supports the change and the UE does not, there is no inter-operability issue foreseen.2. if the UE supports the change and the network does not, there is no inter-operability issue foreseen.Impacted functionality: NR NTN |
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| ***Consequences if not approved:*** | It is unclear whether the ntn-UlSyncValidityDuration can apply to the RRC\_INACTIVE UE. |
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| ***Clauses affected:*** | 6.3.2 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
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| ***This CR's revision history:*** |  |

Start of change

– *NTN-Config*

The IE *NTN-Config* provides parameters needed for the UE to access NR via NTN access.

***NTN-Config* information element**

-- ASN1START

-- TAG-NTN-CONFIG-START

NTN-Config-r17 ::= SEQUENCE {

 epochTime-r17 EpochTime-r17 OPTIONAL, -- Need R

 ntn-UlSyncValidityDuration-r17 ENUMERATED{ s5, s10, s15, s20, s25, s30, s35,

 s40, s45, s50, s55, s60, s120, s180, s240, s900} OPTIONAL, -- Cond SIB19

 cellSpecificKoffset-r17 INTEGER(1..1023) OPTIONAL, -- Need R

 kmac-r17 INTEGER(1..512) OPTIONAL, -- Need R

 ta-Info-r17 TA-Info-r17 OPTIONAL, -- Need R

 ntn-PolarizationDL-r17 ENUMERATED {rhcp,lhcp,linear} OPTIONAL, -- Need R

 ntn-PolarizationUL-r17 ENUMERATED {rhcp,lhcp,linear} OPTIONAL, -- Need R

 ephemerisInfo-r17 EphemerisInfo-r17 OPTIONAL, -- Need R

 ta-Report-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

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}

EpochTime-r17 ::= SEQUENCE {

 sfn-r17 INTEGER(0..1023),

 subFrameNR-r17 INTEGER(0..9)

}

TA-Info-r17 ::= SEQUENCE {

 ta-Common-r17 INTEGER(0..66485757),

 ta-CommonDrift-r17 INTEGER(-257303..257303) OPTIONAL, -- Need R

 ta-CommonDriftVariant-r17 INTEGER(0..28949) OPTIONAL -- Need R

}

-- TAG-NTN-CONFIG-STOP

-- ASN1STOP

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| ***NTN-Config* field descriptions** |
| ***EphemerisInfo***This field provides satellite ephemeris either in format of position and velocity state vector or in format of orbital parameters. This field is excluded when determining changes in system information, i.e. changes to ephemerisInfo should neither result in system information change notifications nor in a modification of *valueTag* in *SIB1*. |
| ***epochTime***Indicate the epoch time for the NTN assistance information. When explicitly provided through SIB, or through dedicated signaling, the *EpochTime* is the starting time of a DL sub-frame, indicated by a SFN and a sub-frame number signaled together with the assistance information. For serving cell, the field *sfn* indicates the current SFN or the next upcoming SFN after the frame where the message indicating the *epochTime* is received. For neighbour cell, the *sfn* indicates the SFN nearest to the frame where the message indicating the *epochTime* is received. The reference point for epoch time of the serving or neighbour NTN payload ephemeris and Common TA parameters is the uplink time synchronization reference point. If this field is absent for the serving cell, the epoch time is the end of SI window where this SIB19 is scheduled. This field is mandatory present when *ntn-Config* is provided in dedicated configuration. If this field is absent in *ntn-Config* provided via *NTN-NeighCellConfig* the UE uses epoch time of the serving cell, otherwise the field is based on the timing of the serving cell, i.e. the SFN and sub-frame number indicated in this field refers to the SFN and sub-frame of the serving cell. In case of handover or conditional handover, this field is based on the timing of the target cell, i.e. the SFN and sub-frame number indicated in this field refers to the SFN and sub-frame of the target cell. For the target cell the UE considers epoch time, indicated by the SFN and sub-frame number in this field, to be the frame nearest to the frame in which the message indicating the epoch time is received. This field is excluded when determining changes in system information, i.e. changes to *epochTime* should neither result in system information change notifications nor in a modification of *valueTag* in *SIB1*. |
| ***cellSpecificKoffset***Scheduling offset used for the timing relationships that are modified for NTN (see TS 38.213 [13]). The unit of the field K\_offset is number of slots for a given subcarrier spacing of 15 kHz. If the field is absent UE assumes value 0. |
| ***kmac***Scheduling offset provided by network if downlink and uplink frame timing are not aligned at gNB. If the field is absent UE assumes value 0. In FR1, the unit of *kmac* is number of slots for a given subcarrier spacing of 15 kHz. |
| ***ntn-PolarizationDL***If present, this parameter indicates polarization information for downlink transmission on service link: including Right hand, Left hand circular polarizations (RHCP, LHCP) and Linear polarization. |
| ***ntn-PolarizationUL***If present, this parameter indicates Polarization information for uplink service link.If not present and ntn-PolarizationDL is present, UE assumes the same polarization for UL and DL. |
| ***ntn-UlSyncValidityDuration***A validity duration configured by the network for assistance information (i.e. Serving and/or neighbour satellite ephemeris and Common TA parameters) which indicates the maximum time duration (from *epochTime*) during which the UE can apply assistance information without having acquired new assistance information.The unit of *ntn-UlSyncValidityDuration* is second. Value *s5* corresponds to 5 s, value *s10* indicate 10 s and so on. If this field is absent in *ntn-Config* provided via *NTN-NeighCellConfig,* the UE uses validity duration from the serving cell assistance information. This field is excluded when determining changes in system information, i.e. changes of *ntn-UlSyncValidityDuration* should neither result in system information change notifications nor in a modification of *valueTag* in *SIB1*. *ntn-UlSyncValidityDuration* is only updated when at least one of *epochTime*, *ta-Info*, *ephemerisInfo* is updated. |
| ***ta-Common***Network-controlled common timing advanced value and it may include any timing offset considered necessary by the network. *ta-Common* with value of 0 is supported. The granularity of *ta-Common* is 4.072 × 10^(-3) μs. Values are given in unit of corresponding granularity. This field is excluded when determining changes in system information, i.e. changes of *ta-Common* should neither result in system information change notifications nor in a modification of *valueTag* in SIB1. |
| ***ta-CommonDrift***Indicate drift rate of the common TA. The granularity of ta-CommonDrift is 0.2 × 10^(-3) μs⁄s. Values are given in unit of corresponding granularity.This field is excluded when determining changes in system information, i.e. changes of *ta-CommonDrift* should neither result in system information change notifications nor in a modification of *valueTag* in SIB1. |
| ***ta-CommonDriftVariant***Indicate drift rate variation of the common TA. The granularity of *ta-CommonDriftVariant* is 0.2×10^(-4) μs⁄s^2. Values are given in unit of corresponding granularity. This field is excluded when determining changes in system information, i.e. changes of *ta-CommonDriftVariant* should neither result in system information change notifications nor in a modification of *valueTag* in SIB1. |
| ***ta-Report***When this field is included in SIB19, it indicates reporting of timing advanced is enabled during Random Access due to RRC connection establishment or RRC connection resume, and during RRC connection reestablishment. When this field is included in *ServingCellConfigCommon* within dedicated signalling, it indicates TA reporting is enabled during Random Access due to reconfiguration with sync (see TS 38.321 [3], clause 5.4.8). |

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| **Conditional Presence** | **Explanation** |
| *SIB19* | The field is mandatory present for the serving cell in SIB19. The field is optionally present, Need R, otherwise. |

End of change