**3GPP T****SG-RAN WG2 Meeting #126 R2-240xxxx**

**Fukuoka, Japan, May 20th – 24th, 2024**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **36.306** | **CR** | **1889** | **rev** | **1** | **Current version:** | **18.1.0** |  |
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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 | **X** | Core Network |  |

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| ***Title:***  | Miscellaneous correction for IoT NTN capabilities |
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| ***Source to WG:*** | Qualcomm Inc. |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | IoT\_NTN\_enh-Core |  | ***Date:*** | 2024-06-06 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-18 |
|  | *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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* *Rel-19 (Release 19)* |
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| ***Reason for change:*** | To capture the agreements from RAN2#125bis:* change “fixed cell” and “moving cell” to “quasi-Earth fixed cell” and “Earth moving cell” respectively.
* Support location-based measurement initiation for earth fixed cell in TS 36.304 (in addition to quasi-earth fixed cell).

To capture the agreement from RAN2#126:* We modify the field description in 36.306 to indicate that if the feature (HARQ / GNSS enhancements) is supported, support for GSO is mandatory with capability signalling (IODT bit).
* To further clarify the agreement, the existing *ntn-ScenarioSupport-r17* is to differentiate the support of NTN features in GSO and NGSO. The existing *ntn-HarqEnhScenarioSupport-r18* and *ntn-GNSS-EnhScenarioSupport-r18* are to differentiate the Rel-18 HARQ and GNSS enhancements in GSO and NGSO scenarios.
* With the new agreement, the change is needed to clarify that if the UE indicates the support of Rel-18 HARQ and GNSS enhancements then it is mandatory to support them in GSO scenario and optional to support in NGSO scenario.
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| ***Summary of change:*** | * “fixed cell” is changed to “(quasi-)earth fixed cell”.
* Update the field description of *ntn-HarqEnhScenarioSupport-r18* that If the UE indicates support of GSO and NGSO scenarios and support of the Rel-18 HARQ enhancements, it is mandatory to be applicable in GSO scenario.
* Update the field description of *ntn-GNSS-EnhScenarioSupport-r18* that if the UE indicates support of GSO and NGSO scenarios and support of the Rel-18 GNSS enhancements, it is mandatory to be applicable in GSO scenario.

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| ***Consequences if not approved:*** | New agreements on UE capabilities for Rel-18 IoT NTN features will not be captured.  |
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| ***Clauses affected:*** | 4.3.38, 6.19 |
|  |  |
|  | **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 ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

START OF CHANGE

### 4.3.38 IoT NTN parameters

#### 4.3.38.1 *ntn-Connectivity-EPC-r17*

This field indicates whether the UE supports NTN access. This field is only applicable if the UE supports *ce-ModeA-r13* or any *ue-Category-NB*. If the UE indicates this capability the UE shall support the following enhancements:

- General:

- handling of *cellBarred-NTN-r17* and *trackingAreaList-r17* in *SystemInformationBlockType1(-NB)* as specified in TS 36.331 [5];

- reception of *SystemInformationBlockType31(-NB)* as specified in TS 36.331 [5];

- derivation of its position based on its GNSS measurements;

- reporting of the remaining GNSS validity duration as specified in TS 36.331 [5];

- PDCP:

- if the UE supports *ce-ModeA-r13, discardTimerExt-r17* as specified in TS 36.331 [5];

- RLC:

- *t-ReorderingExt-r17* as specified in TS 36.331 [5];

- MAC:

- estimation of UE-gNB RTT as specified in TS 36.321 [4];

- delaying the start of the RA response window as specified in TS 36.321 [4];

*-* delaying the start of the *mac-ContentionResolutionTimer* as specified in TS 36.321 [4];

- if the UE supports *ce-ModeA-r13* orif the UE supports any *ue-Category-NB* and supports *sr-WithoutHARQ-ACK-r15,* handling of *sr-ProhibitTimerOffset-r17* as specified in TS 36.331 [5];

- extending the length of the (UL) HARQ RTT timer as specified in TS 36.321 [4];

- Physical layer:

- calculation of the UE specific TA in RRC\_IDLE and RRC\_CONNECTED state based on its GNSS-acquired position and the serving satellite ephemeris as specified in TS 36.211 [17];

- calculation of the common TA in RRC\_IDLE and RRC\_CONNECTED as specified in TS 36.213 [22];

- for TA update in RRC\_CONNECTED state, support of combination of both open (i.e. UE specific TA estimation, and common TA calculation) and closed (i.e., received TA commands) control loops;

- frequency pre-compensation to counter shift the Doppler experienced on the service link;

- timing relationship enhancements using higher layer parameters *k-Offset-r17* and *k-Mac-r17* as specified in TS 36.213 [22];

- segmented UL transmission using higher layer parameters *prach-TxDuration-r17*, *nprach-TxDurationFmt01-r17, nprach-TxDurationFmt2-r17, pucch-TxDuration-r17* and *(n)pusch-TxDuration-r17* as specified in TS 36.331 [5] except for UEs indicating support of *ue-Category-NB* and *ntn-ScenarioSupport-r17* with value GSO.

A UE indicating support of *ce-ModeA-r13* and *ntn-Connectivity-EPC-r17* shall also indicate support of *standaloneGNSS-Location*. A UE indicating support for any *ue-Category-NB* and *ntn-Connectivity-EPC-r17* is assumed to have GNSS location capability*.*

#### 4.3.38.2 *ntn-TA-Report-r17*

This field indicates whether the UE supports Timing advance reporting in NTN cell as specified in TS 36.321 [4]. This feature is only applicable if the UE supports *ntn-Connectivity-EPC-r17*.

#### 4.3.38.3 *ntn-PUR-TimerDelay-r17*

This field indicates whether the UE supports delaying the start of the *pur-ResponseWindowTimer* for NTN operation as specified in TS36.321 [4]. This feature is only applicable if the UE supports *ntn-Connectivity-EPC-r17*. A UE indicating support of *ntn-PUR-TimerDelay-r17* shall also indicate support of *pur-CP-EPC-CE-ModeA-r16* or *pur-UP-EPC-CE-ModeA-r16* or *pur-CP-EPC-r16* or *pur-UP-EPC-r16.*

#### 4.3.38.4 *ntn-OffsetTimingEnh-r17*

This field indicates whether the UE supports timing relationship enhancements using Differential Koffset as specified in TS 36.321 [4] and TS 36.213 [22]. This feature is only applicable if the UE supports *ntn-Connectivity-EPC-r17*.

#### 4.3.38.5 *ntn-ScenarioSupport-r17*

This field indicates whether the UE supports NTN features in GSO or NGSO scenario. The UE indicating support of *ntn-ScenarioSupport-r17* shall also indicate support of *ntn-Connectivity-EPC-r17*. If a UE does not include this field but includes *ntn-Connectivity-EPC-r17*, the UE supports the NTN features for both GSO and NGSO scenarios.

#### 4.3.38.6 *ntn-SegmentedPrecompensationGaps-r17*

This field indicates the supported gap length between segments for PUSCH and PUCCH required by a UE supporting *ce-ModeA-r13* or for NPUSCH required by a UE supporting *ue-category-NB*, for TA pre-compensation. This feature is only applicable if the UE supports either *ue-category-NB* or *ce-ModeA-r13* and also supports *ntn-Connectivity-EPC-r17*. If a UE does not include this field but includes *ntn-Connectivity-EPC-r17*, in case of overlapped transmission between successive uplink segments, UE shall follow the procedure specified in TS 36.213 [22]. This field is not applicable for UEs indicating support of *ue-Category-NB* and *ntn-ScenarioSupport-r17* with value GSO.

#### 4.3.38.7 *ntn-EventA4BasedCHO-r18*

This field indicates whether the UE supports Event A4-based conditional handover, i.e., *CondEvent A4* as specified in TS 36.331 [5]. A UE supporting this feature shall also indicate the support of *cho-r16* and *ntn-Connectivity-EPC-r17.*

#### 4.3.38.8 *ntn-LocationBasedCHO-EFC-r18*

This field indicates whether the UE supports location-based conditional handover for (quasi-)earth fixed cell, i.e., *CondEvent D1* as specified in TS 36.331 [5]. A UE supporting this feature shall also indicate the support of *cho-r16* and *ntn-Connectivity-EPC-r17.*

#### 4.3.38.9 *ntn-LocationBasedCHO-EMC-r18*

This field indicates whether the UE supports location-based conditional handover for earth moving cell, i.e., *CondEvent D1* as specified in TS 36.331 [5]. A UE supporting this feature shall also indicate the support of *cho-r16* and *ntn-Connectivity-EPC-r17.*

#### 4.3.38.10 *ntn-TimeBasedCHO-r18*

This field indicates whether the UE supports time-based conditional handover, i.e., *CondEvent T1* as specified in TS 36.331 [5]. A UE supporting this feature shall also indicate the support of *cho-r16* and *ntn-Connectivity-EPC-r17.*

#### 4.3.38.11 *ntn-LocationBasedMeasTrigger-EFC-r18*

This field indicates whether the UE supports location-based measurement trigger in RRC\_CONNECTED in (quasi-)earth fixed cell as specified in TS 36.331 [5]. A UE supporting this feature shall also indicate the support of *ntn-Connectivity-EPC-r17*.

#### 4.3.38.12 *ntn-LocationBasedMeasTrigger-EMC-r18*

This field indicates whether the UE supports location-based measurement trigger in RRC\_CONNECTED in earth moving cell as specified in TS 36.331 [5]. A UE supporting this feature shall also indicate the support of *ntn-Connectivity-EPC-r17*.

#### 4.3.38.13 *ntn-TimeBasedMeasTrigger-r18*

This field indicates whether the UE supports time-based measurement trigger in RRC\_CONNECTED as specified in TS 36.331 [5]. A UE supporting this feature shall also indicate the support of *ntn-Connectivity-EPC-r17*.

#### 4.3.38.14 *ntn-RRC-HarqDisableSingleTB-r18*

This field indicates whether the UE supports HARQ feedback disabling per HARQ process for downlink transmission by RRC configuration. This feature is only applicable if the UE supports *ue-category-NB.* A UE supporting this feature shall also indicate the support of *ue-category-NB* and *ntn-Connectivity-EPC-r17*.

#### 4.3.38.15 *ntn-OverriddenHarqDisableSingleTB-r18*

This field indicates whether the UE supports DCI-based HARQ feedback disabling for downlink transmission by overriding the RRC configuration. A UE supporting this feature shall also indicate the support of *ntn-RRC-HarqDisableSingleTB-r18*.

#### 4.3.38.16 *ntn-DCI-HarqDisableSingleTB-r18*

This field indicates whether the UE supports DCI-based HARQ feedback disabling for downlink transmission when HARQ feedback disabling per HARQ process for downlink transmission is not configured by RRC. This feature is only applicable if the UE supports *ue-category-NB.* A UE supporting this feature shall also indicate the support of *ntn-Connectivity-EPC-r17*.

#### 4.3.38.17 *ntn-RRC-HarqDisableMultiTB-r18*

This field indicates whether the UE supports HARQ feedback disabling per HARQ process for downlink transmission by RRC configuration when scheduled with downlink transmission of multiple TBs. This feature is only applicable if the UE supports *ue-category-NB.* A UE supporting this feature shall also indicate the support of *npdsch-MultiTB-r16* and *ntn-Connectivity-EPC-r17*.

#### 4.3.38.18 *ntn-OverriddenHarqDisableMultiTB-r18*

This field indicates whether the UE supports DCI-based HARQ feedback disabling for downlink transmission by overriding the RRC configuration when scheduled with downlink transmission of multiple TBs. A UE supporting this feature shall also indicate the support of *ntn-RRC-HarqDisableMultiTB-r18*.

#### 4.3.38.19 *ntn-DCI-HarqDisableMultiTB-r18*

This field indicates whether the UE supports DCI-based HARQ feedback disabling for downlink transmission when HARQ feedback disabling per HARQ process for downlink transmission is not configured by RRC and when scheduled with downlink transmission of multiple TBs. This feature is only applicable if the UE supports *ue-category-NB.* A UE supporting this feature shall also indicate the support of *npdsch-MultiTB-r16* and *ntn-Connectivity-EPC-r17*.

#### 4.3.38.20 *ntn-RRC-HarqDisableSingleTB-CE-ModeA-r18*

This field indicates whether the UE supports HARQ feedback disabling per HARQ process for downlink transmission by RRC configuration when operating in coverage enhancement mode A. This feature is only applicable if the UE supports *ce-ModeA-r13.* A UE supporting this feature shall also indicate the support of *ntn-Connectivity-EPC-r17*.

#### 4.3.38.21 *ntn-RRC-HarqDisableSingleTB-CE-ModeB-r18*

This field indicates whether the UE supports HARQ feedback disabling per HARQ process for downlink transmission by RRC configuration when operating in coverage enhancement mode B. This feature is only applicable if the UE supports *ce-ModeB-r13.* A UE supporting this feature shall also indicate the support of *ntn-Connectivity-EPC-r17*.

#### 4.3.38.22 *ntn-OverriddenHarqDisableSingleTB-CE-ModeB-r18*

This field indicates whether the UE supports DCI-based HARQ feedback disabling for downlink transmission by overriding the RRC configuration when operating in coverage enhancement mode B. A UE supporting this feature shall also indicate the support of *ntn-RRC-HarqDisableSingleTB-CE-ModeB-r18*.

#### 4.3.38.23 *ntn-DCI-HarqDisableSingleTB-CE-ModeB-r18*

This field indicates whether the UE supports DCI-based HARQ feedback disabling for downlink transmission when HARQ feedback disabling per HARQ process for downlink transmission is not configured by RRC and operating in coverage enhancement mode B. This feature is only applicable if the UE supports *ce-ModeB-r13.* A UE supporting this feature shall also indicate the support of *ntn-Connectivity-EPC-r17*.

#### 4.3.38.24 *ntn-RRC-HarqDisableMultiTB-CE-ModeA-r18*

This field indicates whether the UE supports HARQ feedback disabling per HARQ process for downlink transmission by RRC configuration when operating in coverage enhancement mode A and when scheduled with downlink transmission of multiple TBs. This feature is only applicable if the UE supports *ce-ModeA-r13.* A UE supporting this feature shall also indicate the support of *pdsch-MultiTB-CE-ModeA-r16* and *ntn-Connectivity-EPC-r17*.

#### 4.3.38.25 *ntn-RRC-HarqDisableMultiTB-CE-ModeB-r18*

This field indicates whether the UE supports HARQ feedback disabling per HARQ process for downlink transmission by RRC configuration when operating in coverage enhancement mode B and when scheduled with downlink transmission of multiple TBs. This feature is only applicable if the UE supports *ce-ModeB-r13.* A UE supporting this feature shall also indicate the support of *pdsch-MultiTB-CE-ModeB-r16* and *ntn-Connectivity-EPC-r17*.

#### 4.3.38.26 *ntn-OverriddenHarqDisableMultiTB-CE-ModeB-r18*

This field indicates whether the UE supports DCI-based HARQ feedback disabling for downlink transmission by overriding the RRC configuration when operating in coverage enhancement mode B and when scheduled with downlink transmission of multiple TBs. A UE supporting this feature shall also indicate the support of *ntn-RRC-HarqDisableMultiTB-CE-ModeB-r18*.

#### 4.3.38.27 *ntn-DCI-HarqDisableMultiTB-CE-ModeB-r18*

This field indicates whether the UE supports DCI-based HARQ feedback disabling for downlink transmission when HARQ feedback disabling per HARQ process for downlink transmission is not configured by RRC and operating in coverage enhancement mode B and when scheduled with downlink transmission of multiple TBs. This feature is only applicable if the UE supports *ce-ModeB-r13.* A UE supporting this feature shall also indicate the support of *pdsch-MultiTB-CE-ModeB-r16* and *ntn-Connectivity-EPC-r17*.

#### 4.3.38.28 *ntn-SemiStaticHarqDisableSPS-r18*

This field indicates whether the UE supports HARQ feedback transmission for the first SPS PDSCH transmission after activation when operating in coverage enhancement mode A. A UE supporting this feature shall also indicate the support of *ce-ModeA-r13* and *ntn-Connectivity-EPC-r17*.

#### 4.3.38.29 *ntn-UplinkHarq-ModeB-SingleTB-r18*

This field indicates whether the UE supports HARQ Mode B. A UE supporting this feature shall also indicate the support of *ntn-Connectivity-EPC-r17*. For a UE indicating support of *ce-ModeA-r13*, this field also indicates whether the UE supports the corresponding LCP restrictions for uplink transmission.

#### 4.3.38.30 *ntn-HarqEnhScenarioSupport-r18*

This field indicates whether the UL and DL HARQ process enhancements that are indicated as supported are applicable in GSO or NGSO scenarios for UE indicating support of GSO and NGSO scenarios. If this field is not included, the UL and DL HARQ process enhancements that are indicated as supported are applicable in both GSO and NGSO scenario. This field is only applicable if the UE supports at least one of *ntn-RRC-HarqDisableSingleTB-r18*, *ntn-OverriddenHarqDisableSingleTB-r18*, *ntn-DCI-HarqDisableSingleTB-r18*, *ntn-RRC-HarqDisableMultiTB-r18*, *ntn-OverriddenHarqDisableMultiTB-r18*, *ntn-DCI-HarqDisableMultiTB-r18*, *ntn-RRC-HarqDisableSingleTB-CE-ModeA-r18*, *ntn-RRC-HarqDisableSingleTB-CE-ModeB-r18*, *ntn-OverriddenHarqDisableSingleTB-CE-ModeB-r18*, *ntn-DCI-HarqDisableSingleTB-CE-ModeB-r18*, *ntn-RRC-HarqDisableMultiTB-CE-ModeA-r18*, *ntn-RRC-HarqDisableMultiTB-CE-ModeB-r18*, *ntn-OverriddenHarqDisableMultiTB-CE-ModeB-r18*, *ntn-DCI-HarqDisableMultiTB-CE-ModeB-r18,* *ntn-UplinkHarq-ModeB-SingleTB-r18* and *ntn-UplinkHarq-ModeB-MultiTB-r18*. It is mandatory to be applicable in GSO scenario if the UE indicates support of GSO and NGSO scenarios and support of the UL and DL HARQ process enhancements.

#### 4.3.38.31 *ntn-Triggered-GNSS-Fix-r18*

This field indicates whether the UE supports network triggered GNSS position fix in RRC\_CONNECTED as specified in TS 36.331 [5]. A UE supporting this feature shall also indicate the support of *ntn-Connectivity-EPC-r17*. If the UE indicates this capability, the UE shall support the following enhancements:

- UE reports GNSS position fix time duration for measurement in *RRCConnectionSetupComplete (-NB)*, *RRCConnectionResumeComplete (-NB)*, and *RRCConnectionReestablishmentComplete (-NB)* and *RRCConnectionReconfigurationComplete* messages;

- UE receives GNSS measurement trigger from eNB;

- UE re-acquires GNSS position fix within a configured gap;

- UE reports the remaining GNSS validity duration with MAC CE in RRC\_CONNECTED.

#### 4.3.38.32 *ntn-Autonomous-GNSS-Fix-r18*

This field indicates whether the UE supports autonomous GNSS position fix in RRC\_CONNECTED as specified in TS 36.331 [5]. A UE supporting this feature shall also indicate the support of *ntn-Connectivity-EPC-r17*. If the UE indicates this capability, the UE shall support the following enhancements:

- UE reports GNSS position fix time duration for measurement in *RRCConnectionSetupComplete (-NB)*, *RRCConnectionResumeComplete (-NB)*, and *RRCConnectionReestablishmentComplete (-NB)* and *RRCConnectionReconfigurationComplete* messages;

- UE re-acquires GNSS autonomously (when configured by the network) if it does not receive eNB GNSS measurement trigger;

- UE reports the remaining GNSS validity duration with MAC CE in RRC\_CONNECTED.

#### 4.3.38.33 *ntn-UplinkTxExtension-r18*

This field indicates whether the UE supports to perform UL transmission in a duration after original GNSS validity duration expires without GNSS re-acquisition as specified in TS 36.331 [5]. A UE supporting this feature shall also indicate the support of *ntn-Connectivity-EPC-r17*.

#### 4.3.38.34 *ntn-GNSS-EnhScenarioSupport-r18*

This field indicates whether the GNSS measurement and UL transmission extension enhancements in RRC\_CONNECTED that are indicated as supported are applicable in GSO or NGSO scenario for UE indicating support of GSO and NGSO scenarios. If this field is not included, the GNSS measurement enhancements in RRC\_CONNECTED that are indicated as supported are applicable in both GSO and NGSO scenario. This field is only applicable if the UE supports at least one of *ntn-Triggered-GNSS-Fix-r18,* *ntn-Autonomous-GNSS-Fix-r18* and *ntn-UplinkTxExtension-r18*. It is mandatory to be applicable in GSO scenario if the UE indicates support of GSO and NGSO scenarios and support of the GNSS measurement and UL transmission extension enhancements in RRC\_CONNECTED.

#### 4.3.38.35 *ntn-UplinkHarq-ModeB-MultiTB-r18*

This field indicates whether the UE supports HARQ Mode B when scheduled with uplink transmission of multiple TBs. A UE supporting this feature shall also indicate the support of *ntn-Connectivity-EPC-r17* and one of *npdsch-MultiTB-r16*, *pdsch-MultiTB-CE-ModeA-r16* and *pdsch-MultiTB-CE-ModeB-r16*. For a UE indicating support of *ce-ModeA-r13*, this field also indicates whether the UE supports the corresponding LCP restrictions for uplink transmission.

#### 4.3.38.36 *eventD1-MeasReportTrigger-r18*

This field indicates whether the UE supports location-based measurement report trigger in RRC\_CONNECTED in (quasi-)earth fixed cell (i.e., event D1) as specified in TS 36.331 [5]. This feature is only applicable if the UE supports *ce-ModeB-r13.* A UE supporting this feature shall also indicate the support of *ntn-Connectivity-EPC-r17*.

#### 4.3.38.37 *eventD2-MeasReportTrigger-r18*

This field indicates whether the UE supports location-based measurement report trigger in RRC\_CONNECTED in earth moving cell (i.e., event D2) as specified in TS 36.331 [5]. This feature is only applicable if the UE supports *ce-ModeB-r13.* A UE supporting this feature shall also indicate the support of *ntn-Connectivity-EPC-r17*.

5 Void

6 Optional features without UE radio access capability parameters

Unchanged part skipped

## 6.19 IoT NTN Features

### 6.19.1 Cell reselection measurements triggering based on service time

It is optional for UE camped on NTN cell to support triggering of early cell reselection measurements based on the service time broadcasted by the cell as specified in TS 36.304 [14]. This feature is only applicable if the UE supports *ntn-Connectivity-EPC-r17*.

### 6.19.2 Discontinuous coverage

It is optional for a UE camped on NTN cell to support discontinuous coverage as specified in TS 36.304 [14]. This feature is only applicable if the UE supports *ntn-Connectivity-EPC-r17*.

### 6.19.3 Early RLF triggering based on service time

It is optional for UE in RRC\_CONNECTED in an NTN cell to support triggering of RLF upon reaching the service time broadcasted for the serving cell as specified in TS 36.331 [5]. This feature is only applicable if the UE supports *ntn-Connectivity-EPC-r17*.

### 6.19.4 Neighbour cell measurements based on service start time of the neighbour cell

It is optional for UE camped on NTN cell to support NTN neighbour cell measurements based on the service start time of the neighbour cell broadcasted by the serving cell as specified in TS 36.304 [14]. This feature is only applicable if the UE supports *ntn-Connectivity-EPC-r17*.

### 6.19.5 UE autonomous release based on service time

It is optional for UE in RRC\_CONNECTED in an NTN cell to go to RRC\_IDLE after RLF is triggered if the UE determines by implementation there is not enough time to finish the procedure of reestablishment due to the discontinuous coverage as specified in TS 36.331 [5]. This feature is only applicable if the UE supports *ntn-Connectivity-EPC-r17*.

### 6.19.6 Cell reselection measurements triggering based on location for (quasi-)fixed cell

It is optional for UE camped on NTN (quasi-)earth fixed cell to support triggering of early cell reselection measurements based on the reference location broadcasted by the cell as specified in TS 36.304 [14]. This feature is only applicable if the UE supports *ntn-Connectivity-EPC-r17*.

### 6.19.7 Cell reselection measurements triggering based on location for earth moving cell

It is optional for UE camped on NTN earth moving cell to support triggering of early cell reselection measurements based on the reference location and associated reference time and ephemeris broadcasted by the cell as specified in TS 36.304 [14]. This feature is only applicable if the UE supports *ntn-Connectivity-EPC-r17*.

### 6.19.8 GNSS measurements during inactive time

It is optional for UE in RRC\_CONNECTED in an NTN cell to perform GNSS measurements during inactive time of a C-DRX cycle. This feature is only applicable if the UE supports *ntn-Connectivity-EPC-r17*.

END OF CHANGE