**3GPP TSG-RAN WG2 Meeting #113-e *R2-2101034***

**Online, 25th Jan. - 5th Feb. 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **36.331** | **CR** | **4480** | **rev** | **2** | **Current version:** | **16.3.0** |  |
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| *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 |  | Core Network |  |

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| ***Title:*** | Clarification on the (N)RSRP reference for TA validation for PUR | | | | | | | | | |
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| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
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| ***Work item code:*** | NB\_IOTenh3-Core, LTE\_eMTC5-Core | | | | |  | ***Date:*** | | | 2021-01-14 |
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| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | In section 5.3.3.19, it is specified that the UE validates the TA for PUR by checking the serving cell (N)RSRP variation since the last TA validation. However, it is not clear in which case the (N)RSRP reference should be updated. | | | | | | | | |
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| ***Summary of change:*** | | Clarify that if (N)RSRP based TA validation for PUR is configured, the (N)RSRP reference should be updated in the following cases:   * When *pur-RSRP-ChangeThreshold* is configured for the first time * When *pur-RSRP-ChangeThreshold* is re-configured (FFS) * When *pur-TimeAlignmentTimer* is (re)-started * When the lower layer has indicated TA update due to TAC MAC CE or PDCCH indicates timing advance adjustment as specified in TS 36.212   **Impact Analysis**  Impacted functionality:  Transmission using PUR  Inter-operability:  The CR only impacts the UE, no inter-operability issue is foreseen. | | | | | | | | |
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| ***Consequences if not approved:*** | | For (N)RSRP based TA validation for PUR, when to update the (N)RSRP reference is not clear. | | | | | | | | |
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| ***Clauses affected:*** | | 5.3.3.3d, 5.3.3.19, 5.3.8.3 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **Y** |  | Other core specifications | | | | TS36.321 CR 1518 | | |
| ***affected:*** | |  | **N** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **N** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

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| First change |

5.3.3.3d UE actions upon receiving PUR indications from lower layers

The UE shall:

1> if repetition adjustment is indicated by lower layers:

2> update *numRepetitions* (*npusch-NumRepetitionsIndex* in NB-IoT) in previously stored *pur-Config* in accordance with the received indication;

1> if *pur-RSRP-ChangeThreshold* (*pur-NRSRP-ChangeThreshold* in NB-IoT) is configured and timing alignment value update is indicated by lower layers:

2> replace the serving cell reference (N)RSRP value with the current serving cell (N)RSRP value (see 5.3.3.19);

For CP transmission using PUR, upon indication from lower layers that transmission using PUR is successfully completed, the UE shall perform the actions as specified in 5.3.3.4b as if an empty *RRCEarlyDataComplete* message was received.

Upon reception of PUR fallback or PUR failure indication from lower layers, the procedure ends.

NOTE: For transmission using PUR, further UE actions upon reception of PUR fallback or PUR failure indication from lower layers (see TS 36.321 [6]) is left up to implementation.

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| Next change |

#### 5.3.3.19 Timing alignment validation for transmission using PUR

The UE shall consider the timing alignment value for transmission using PUR to be valid when all of the following conditions are fulfilled:

1> either *pur-TimeAlignmentTimer* is not configured or *pur-TimeAlignmentTimer* is running as confirmed by lower layers; and

1> either *pur-RSRP-ChangeThreshold* (*pur-NRSRP-ChangeThreshold* in NB-IoT) is not configured or the following conditions are fulfilled:

2> compared to the stored serving cell reference (N)RSRP value, the serving cell (N)RSRP has not increased by more than *increaseThresh*; and

2> compared to the stored serving cell reference (N)RSRP value, the serving cell (N)RSRP has not decreased by more than *decreaseThresh*;

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| Next change |

#### 5.3.8.3 Reception of the *RRCConnectionRelease* by the UE

The UE shall:

1> except for NB-IoT, BL UEs or UEs in CE, delay the following actions defined in this subclause 60 ms from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

1> for BL UEs or UEs in CE, delay the following actions defined in this subclause 1.25 seconds from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

1> for NB-IoT, delay the following actions defined in this subclause 10 seconds from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier.

NOTE 0: For BL UEs, UEs in CE and NB-IoT, when STATUS reporting, as defined in TS 36.322 [7], has not been triggered and the UE has sent positive HARQ feedback (ACK), as defined in TS 36.321 [6], the lower layers can be considered to have indicated that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged.

1> stop T380, if running;

1> if timer T316 is running;

2> stop timer T316;

2> clear the information included in *VarRLF-Report*, if any;

1> for NB-IoT:

2> if the UE has reported *anr-InfoAvailable*, clear *VarANR-MeasConfig-NB* and *VarANR-MeasReport-NB*;

2> if the UE has reported *rlf-InfoAvailable*, clear *VarRLF-Report-NB*;

1> if the *RRCConnectionRelease* message is received in response to an *RRCConnectionResumeRequest* for EDT or for UP transmission using PUR:

2> indicate to upper layers that the suspended RRC connection has been resumed;

2> discard the stored UE AS context and *resumeIdentity*;

2> stop timer T300;

2> stop timer T302, if running;

2> stop timer T303, if running;

2> stop timer T305, if running;

2> stop timer T306, if running;

2> stop timer T308, if running;

2> perform the actions as specified in 5.3.3.7;

2> stop timer T320, if running;

2> stop timer T322, if running;

2> stop timer T323, if running;

1> except for UEs using the Control Plane CIoT 5GS optimisation, if ASsecurity is not activated and if UE is connected to 5GC:

2> ignore any field included in *RRCConnectionRelease* message except *waitTime*;

2> perform the actions upon leaving RRC\_CONNECTED or RRC\_INACTIVE as specified in 5.3.12 with the release cause '*other'* upon which the procedure ends;

1> if the *RRCConnectionRelease* message includes *redirectedCarrierInfo* indicating redirection to *geran*; or

1> if the *RRCConnectionRelease* message includes *idleModeMobilityControlInfo* including *freqPriorityListGERAN*:

2> if AS security has not been activated; and

2> if upper layers indicate that redirect to GERAN without AS security is not allowed:

3> ignore the content of the *RRCConnectionRelease*;

3> perform the actions upon leaving RRC\_CONNECTED or RRC\_INACTIVE as specified in 5.3.12, with release cause 'other', upon which the procedure ends;

1> if AS security has not been activated:

2> ignore the content of *redirectedCarrierInfo*, if included and indicating redirection to *nr*;

2> ignore the content of *idleModeMobilityControlInfo*, if included and including *freqPriorityListNR*;

2> ignore the *altFreqPriorities* and T323, if included;

2> if the UE ignores the content of *redirectedCarrierInfo* or of *idleModeMobilityControlInfo*,or of *altFreqPriorities* and T323:

3> perform the actions upon leaving RRC\_CONNECTED as specified in 5.3.12, with release cause 'other', upon which the procedure ends;

1> if the *RRCConnectionRelease* message includes *redirectedCarrierInfo* indicating redirection to *eutra* and if UE is connected to 5GC:

2> if *cn-Type* is included:

3> after the cell selection, indicate the available CN Type(s) and the received *cn-Type* to upper layers;

NOTE 1: Handling the case if the E-UTRA cell selected after the redirection does not support the core network type specified by the *cn-Type,* is up to UE implementation.

1> if the *RRCConnectionRelease* message includes the *idleModeMobilityControlInfo*:

2> store the cell reselection priority information provided by the *idleModeMobilityControlInfo*;

2> if the *t320* is included:

3> start timer T320, with the timer value set according to the value of *t320*;

1> else if the *RRCConnectionRelease* message includes the *altFreqPriorities*:

2> store the received *altFreqPriorities*;

2> for E-UTRA frequency, apply the alternative cell reselection priority information broadcast in the system information if available, otherwise apply the cell reselection priority broadcast in the system information;

2> for inter-RAT frequency, apply the cell reselection priority broadcast in the system information;

2> if the *t323* is included:

3> start timer T323, with the timer value set according to the value of *t323*;

1> else:

2> apply the cell reselection priority information broadcast in the system information;

1> if the *RRCConnectionRelease* message includes the *releaseMeasIdleConfig*:

2> if timer T331 is running:

3> stop timer T331;

3> perform the actions as specified in 5.6.20.3;

1> if the *RRCConnectionRelease* message includes the *measIdleConfig*:

2> clear *VarMeasIdleConfig* and *VarMeasIdleReport*;

2> store the received *measIdleDuration* in *VarMeasIdleConfig*;

2> start or restart T331 with the value of *measIdleDuration*;

2> if the *measIdleConfig* contains *measIdleCarrierListEUTRA*:

3> store the received *measIdleCarrierListEUTRA* in *VarMeasIdleConfig*;

2> if the *measIdleConfig* contains *measIdleCarrierListNR*:

3> store the received *measIdleCarrierListNR* in *VarMeasIdleConfig*;

2> if the *measIdleConfig* contains *validityAreaList*:

3> store the received *validityAreaList* in *VarMeasIdleConfig*;

NOTE 2: If the *measIdleConfig* contains neither *measIdleCarrierListEUTRA* nor *measIdleCarrierListNR*, UE may receive *measIdleCarrierListEUTRA* and/or *measIdleCarrierListNR* as specified in 5.6.20.1a.

1> for NB-IoT, if the *RRCConnectionRelease* message includes the *anr-MeasConfig*:

2> clear *VarANR-MeasConfig-NB* and *VarANR-MeasReport-NB*;

2> store the received *anr-QualityThreshold* in *VarANR-MeasConfig-NB*;

2> if the *anr-MeasConfig* contains *anr-CarrierList*:

3> store the received *anr-CarrierList* in *VarANR-MeasConfig-NB*;

2> set *plmn-IdentityList* in *VarANR-MeasReport-NB* to include the list of EPLMNs stored by the UE (i.e. includes the RPLMN);

2> set *servCellIdentity* in *VarANR-MeasReport-NB* to the global cell identity of the Pcell;

2> start performing ANR measurements as specified in 5.6.24;

1> if the *RRCConnectionRelease* message includes the *pur-Config*:

2> if *pur-Config* is set to *setup*:

3> store or replace the PUR configuration provided by the *pur-Config*;

3> if *pur-TimeAlignmentTimer* is included in the received *pur-Config*:

4> configure lower layers in accordance with *pur-TimeAlignmentTimer*;

3> else:

4> if *pur-TimeAlignmentTimer* is configured, indicate to lower layers that *pur-TimeAlignmentTimer* is released;

3> if *pur-RSRP-ChangeThreshold* (*pur-NRSRP-ChangeThreshold* in NB-IoT) is included in the received *pur-Config* and set to *setup*; or

3> if *pur-RSRP-ChangeThreshold* (*pur-NRSRP-ChangeThreshold* in NB-IoT) is configured and *pur-TimeAlignmentTimer* is included in the received *pur-Config*:

4> store or replace the serving cell reference (N)RSRP value with the current serving cell (N)RSRP value (see 5.3.3.19);

3> start maintenance of PUR occasions as specified in 5.3.3.20;

2> else:

3> if *pur-TimeAlignmentTimer* is configured, indicate to lower layers that *pur-TimeAlignmentTimer* is released;

3> release *pur-Config*, if configured;

3> discard previously stored *pur-Config*;

1> for NB-IoT, if the *RRCConnectionRelease* message includes the *redirectedCarrierInfo*:

2> if the *redirectedCarrierOffsetDedicated* isincluded in the *redirectedCarrierInfo*:

3> store the dedicated offsetfor the frequency in *redirectedCarrierInfo*;

3> start timer T322, with the timer value set according to the value of *T322* in *redirectedCarrierInfo*;

1> if the *releaseCause* received in the *RRCConnectionRelease* message indicates *loadBalancingTAURequired*:

2> perform the actions upon leaving RRC\_CONNECTED as specified in 5.3.12, with release cause 'load balancing TAU required';

1> else if the *releaseCause* received in the *RRCConnectionRelease* message indicates *cs-FallbackHighPriority*:

2> perform the actions upon leaving RRC\_CONNECTED as specified in 5.3.12, with release cause 'CS Fallback High Priority';

1> else:

2> if the *extendedWaitTime* is present; and

2> if the UE supports delay tolerant access or the UE is a NB-IoT UE:

3> forward the *extendedWaitTime* to upper layers;

2> if the *extendedWaitTime-CPdata* is present and the NB-IoT UE only supports the Control Plane CIoT EPS optimisation:

3> forward the *extendedWaitTime-CPdata* to upper layers;

2> if the *releaseCause* received in the *RRCConnectionRelease* message indicates *rrc-Suspend*:

3> perform the actions upon leaving RRC\_CONNECTED as specified in 5.3.12, with release cause 'RRC suspension';

2> else if *rrc-InactiveConfig* is included:

3> perform the actions upon entering RRC\_INACTIVE as specified in 5.3.8.7;

2> else:

3> perform the actions upon leaving RRC\_CONNECTED or RRC\_INACTIVE as specified in 5.3.12, with release cause 'other';