**3GPP TSG-RAN WG2 Meeting #113-e *R2-2102067***

**Online, 25th January - 5th February 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **36.331** | **CR** | **4483** | **rev** | **3** | **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 | **X** | Core Network |  |

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| ***Title:*** | Clarification to the DRX cycle in RRC\_IDLE and RRC\_INACTIVE | | | | | | | | | |
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| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
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| ***Work item code:*** | LTE\_eMTC5-Core, NB\_IOTenh3-Core, TEI16 | | | | |  | ***Date:*** | | | 2021-02-04 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | Section 5.2.2.9 specifies the DRX cycle used by the UE. Originally, this did represent the DRX cycle used for all paging monitoring, system information change monitoring and RRM measurements.  However, the description in TS 36.331 is incomplete as it does not incorporate the agreements related to RRC\_IDLE eDRX and related to RRC\_INACTIVE for eMTC. The description in TS 36.304 is complete.  It is not described that the UE shall also derive the UE DRX cycle upon reception of the ran paging cycle at transition to RRC\_INACTIVE. | | | | | | | | |
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| ***Summary of change:*** | | In sections 5.2.2.9 and 5.3.8.7, replace the derivation of the UE DRX cycle by a reference to TS 36.304.  **Impact Analysis**  Impacted functionality:  UE DRX cycle in RRC\_IDLE and RRC\_INACTIVE  Inter-operability:  The description in TS 36.304 for DRX derivation is complete hence no inter-operability issue is foreseen. | | | | | | | | |
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| ***Consequences if not approved:*** | | The description of UE DRX cycle is not correct for eMTC UE in RRC\_INACTIVE and contradicts TS 36.304 for paging monitoring potentially leading to different interpretations/implementations. | | | | | | | | |
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| ***Clauses affected:*** | | 5.2.2.9, 5.3.8.7 | | | | | | | | |
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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 ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

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| First change |

#### 5.2.2.9 Actions upon reception of *SystemInformationBlockType2*

Upon receiving *SystemInformationBlockType2*, the UE shall:

1> apply the configuration included in the *radioResourceConfigCommon*;

1> derive the DRX cycle as specified in TS 36.304 [4], clause 7.1;

1> if the *mbsfn-SubframeConfigList* is included:

2> consider that DL assignments may occur in the MBSFN subframes indicated in the *mbsfn-SubframeConfigList* under the conditions specified in TS 36.213 [23], clause 7.1;

1> apply the specified PCCH configuration defined in 9.1.1.3;

1> not apply the *timeAlignmentTimerCommon*;

1> if in RRC\_CONNECTED and UE is configured with RLF timers and constants values received within *rlf-TimersAndConstants*:

2> not update its values of the timers and constants in *ue-TimersAndConstants* except for the value of timer T300;

1> if in RRC\_CONNECTED while T311 is not running; and the UE supports multi-band cells as defined by bit 31 in *featureGroupIndicators* or *multipleNS-Pmax*:

2> disregard the *additionalSpectrumEmission* and *ul-CarrierFreq*, ifreceived, while in RRC\_CONNECTED;

1> if *attachWithoutPDN-Connectivity* is received for the selected PLMN:

2> forward a*ttachWithoutPDN-Connectivity* to upper layers;

1> else:

2> indicate to upper layers that *attachWithoutPDN-Connectivity* is not present;

1> if *cp-CIoT-EPS-Optimisation* is received for the selected PLMN:

2> forward *cp-CIoT-EPS-Optimisation* to upper layers;

1> else:

2> indicate to upper layers that *cp-CIoT-EPS-Optimisation* is not present;

1> if *up-CIoT-EPS-Optimisation* is received for the selected PLMN:

2> forward *up-CIoT-EPS-Optimisation* to upper layers;

1> else:

2> indicate to upper layers that *up-CIoT-EPS-Optimisation* is not present;

1> if *SystemInformationBlockType26a* is not present:

2> to upper layers either forward *upperLayerIndication*, if present for the selected PLMN, or otherwise indicate absence of this field;

NOTE: *upperLayerIndication* is an indication to upper layers that the UE has entered a coverage area that offers 5G capabilities.

1> to upper layers either forward *rlos-Enabled*, if present, or otherwise indicate absence of this field;

Upon receiving *SystemInformationBlockType2-NB*, the UE shall:

1> apply the configuration included in the *radioResourceConfigCommon*;

1> derive the DRX cycle as specified in TS 36.304 [4], clause 7.1;

1> if *SystemInformationBlockType22-NB* is scheduled:

2> read and act on information sent in *SystemInformationBlockType22-NB*;

1> apply the specified PCCH configuration defined in 9.1.1.3.

1> if in RRC\_CONNECTED and UE is configured with RLF timers and constants values received within *rlf-TimersAndConstants*:

2> not update its values of the timers and constants in *ue-TimersAndConstants* except for the value of timer T300;

Upon receiving *SystemInformationBlockType2* (*SystemInformationBlockType2-NB* in NB-IoT), the UE shall:

1> if *up-PUR-5GC* is not included and the UE connected to 5GC in RRC\_IDLE with a suspended RRC connection is configured with *pur-Config*; or

1> if *up-PUR-EPC* is not included and the UE connected to EPC in RRC\_IDLE with a suspended RRC connection is configured with *pur-Config*; or

1> if *cp-PUR-5GC* is not included and the UE connected to 5GC in RRC\_IDLE without a suspended RRC connection is configured with *pur-Config*; or

1> if *cp-PUR-EPC* is not included and the UE connected to EPC in RRC\_IDLE without a suspended RRC connection is configured with *pur-Config*:

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

2> release *pur-Config*;

2> discard previously stored *pur-Config*.

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| Next change |

#### 5.3.8.7 UE actions upon entering RRC\_INACTIVE

Upon entering RRC\_INACTIVE, the UE shall:

1> reset MAC and release the default MAC configuration if any;

1> stop all timers that are running except T302, T309, T320, T323 and T325;

1> re-establish RLC entities for all SRBs and DRBs;

1> if the *RRCConnectionRelease* message is including the *waitTime*:

2> start timer T302, with the timer value set according to the *waitTime*;

2> inform the upper layer that access barring is applicable for all access categories except categories '0' and '2';

1> if T309 is running:

2> stop timer T309 for all access categories;

2> perform the actions as specified in 5.3.16.4.

1> apply the received *rrc-InactiveConfig*;

1> derive the DRX cycle as specified in TS 36.304 [4], clause 7.1;

1> if the *RRCConnectionRelease* message was received in response to an *RRCConnectionResumeRequest*:

2> in the stored UE Inactive AS context:

3> replace the KeNB and KRRCint keys with the current KeNB and KRRCint keys;

3> replace the C-RNTI with the temporary C-RNTI which the UE has used to receive the *RRCConnectionRelease* message;

3> replace the *cellIdentity* with the *cellIdentity* of the PCell at the time the UE has received the *RRCConnectionRelease* message;

3> replace the previously stored physical cell identitywith the physical cell identity of the PCell at the time the UE has received the *RRCConnectionRelease* message;

1> else:

2> store in the UE Inactive AS Context, the current KeNB and KRRCint keys, the ROHC state, the stored QoS flow to DRB mapping rules, the C-RNTI used in the source PCell, the *cellIdentity* and the physical cell identity of the source PCell, the *spCellConfigCommon* within *ReconfigurationWithSync* of the PSCell (if configured), and all other parameters configured;

1> if the *periodic-RNAU-timer* is included:

2> start timer T380, with the timer value set to the *periodic-RNAU-timer*;

1> suspend all SRB(s) and DRB(s), except SRB0;

1> indicate PDCP suspend to lower layers of all DRBs;

1> indicate the suspension of the RRC connection to upper layers;

1> enter RRC\_INACTIVE and perform procedures as specified in TS 36.304 [4], clause 5.2.7;

Upon selecting to an inter-RAT cell or switching to another CN type, the UE shall:

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