**3GPP TSG-RAN WG2** **Meeting #116-e *R2-21xxxxx***

**Electronic, 1st - 12th November 2021**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **36.306** | **CR** | **draft** | **rev** | **-** | **Current version:** | **16.6.0** |  |
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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:*** | Correction on PO determination for UE in inactive state | | | | | | | | | |
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| ***Source to WG:*** | ZTE corporation,Sanechips | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI-17 | | | | |  | ***Date:*** | | | 2021-10-20 |
|  |  | | | |  | |  | | |  |
| ***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 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)* | |
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| ***Reason for change:*** | | The PF and PO for paging are determined by the following formulae:  PF is given by following equation:  SFN mod T= (T div N)\*(UE\_ID mod N)  Index i\_s pointing to PO from subframe pattern will be derived from following calculation:  i\_s = floor(UE\_ID/N) mod Ns  - T: DRX cycle of the UE. Except for NB-IoT, if a UE specific extended DRX value of 512 radio frames is configured by upper layers according to 7.3, T =512. Otherwise, T is determined by the shortest of the UE specific DRX value, if allocated by upper layers, and a default DRX value broadcast in system information. If UE specific DRX is not configured by upper layers, the default value is applied. UE specific DRX is not applicable for NB-IoT. In RRC\_INACTIVE state, T is determined by the shortest of the RAN paging cycle, the UE specific paging cycle, and the default paging cycle, if allocated by upper layers.  - nB: 4T, 2T, T, T/2, T/4, T/8, T/16, T/32, T/64, T/128, and T/256, and for NB-IoT also T/512, and T/1024.  - N: min(T,nB)  For a UE, it is possible that the T used in inactive state is different from the T used in idle mode as NW is allowed to configure a RAN paging cycle different from the UE specific paging cycle configured by upper layer or the default value in system information while the N used in calculation is still the one broadcast in candidate value T, T/2, T/4, T/8, T/16, T/32, T/64, T/128, or T/256.  As a result, the index of the PO (i.e. the i\_s) would be different for inactive state and idle state as the N is a value related to the T while the T has different value in idle and inactive state, which deviates from the intention that the POs of a UE for CN-initiated and RAN-initiated paging should be overlapped.  To solve this PO mismatch for CN paging and RAN paging, the UE in inactive mode shall use the same i\_s as in idle mode. And a UE capability should be introduced to show UE support for such behavior. | | | | | | | | |
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| ***Summary of change:*** | | Introduce a UE capability to indicate support for UE in inactive mode to use the same i\_s in PO determination as in idle mode.  **Impact Analysis**  Impacted 5G architecture options:  SA, NR-DC, EUTRA/5GC    Impacted functionality:  Paging    Inter-operability:  This CR can be implemented by earlier release UE.  If the UE is implemented according to this CR while the NW is not, there is no interoperability issue.  If the NW is implemented according to this CR while the UE is not, there is no interoperability issue. | | | | | | | | |
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| ***Consequences if not approved:*** | | NW is not aware of whether a UE supports to use the same i\_s in both inactive and idle mode to determine the index of PO. | | | | | | | | |
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| ***Clauses affected:*** | | 4.3.36 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **x** |  | Other core specifications | | | | TS/TR36.331 CR 4695  TS/TR36.304 CR 0831 | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

# Alternative-1

Start of change

4.3.36 E-UTRA/5GC Parameters

4.3.36.1 *eutra-5GC-r15*

This field indicates whether the UE supports E-UTRA/5GC.

4.3.36.2 *eutra-EPC-HO-EUTRA-5GC-r15*

This field indicates whether the UE supports handover between E-UTRA/EPC and E-UTRA/5GC. It is mandatory for UEs of this release of the specification if the UE supports the associated core networks.

4.3.36.3 Void

4.3.36.4 *ho-EUTRA-5GC-FDD-TDD-r15*

This field indicates whether the UE supports handover between E-UTRA/5GC FDD and E-UTRA/5GC TDD. It is mandatory for UEs of this release of the specification if the UE supports *eutra-5GC-r15* and the associated RATs.

4.3.36.5 *ho-InterfreqEUTRA-5GC-r15*

This field indicates whether the UE supports inter frequency handover within E-UTRA/5GC. It is mandatory for UEs of this release of the specification.

4.3.36.6 *IMS-VoiceOverMCG-BearerEUTRA-5GC-r15*

This field indicates whether the UE supports IMS voice over NR PDCP for MCG bearer for E-UTRA/5GC. It is mandated to the IMS voice capable UE if the UE supports *eutra-5GC-r15*.

4.3.36.7 *inactiveState-r15*

This field indicates whether the UE supports RRC\_INACTIVE. It is mandatory for UEs of this release of the specification if the UE supports *eutra-5GC-r15*.

4.3.36.X *inactiveStatePODetermination-r17*

This field indicates whether the UE supports to use the same i\_s in RRC\_INACTIVE as in RRC\_IDLE for PO determination as specified in TS 36.304 [14]. A UE indicating support of *inactiveStatePODetermination-r17* shall also indicate support of *inactiveState-r15*.

4.3.36.8 *reflectiveQoS-r15*

This field indicates whether the UE supports AS reflective QoS.

End of change

# Alternative-2

Start of change

4.3.36 E-UTRA/5GC Parameters

4.3.36.1 *eutra-5GC-r15*

This field indicates whether the UE supports E-UTRA/5GC.

4.3.36.2 *eutra-EPC-HO-EUTRA-5GC-r15*

This field indicates whether the UE supports handover between E-UTRA/EPC and E-UTRA/5GC. It is mandatory for UEs of this release of the specification if the UE supports the associated core networks.

4.3.36.3 Void

4.3.36.4 *ho-EUTRA-5GC-FDD-TDD-r15*

This field indicates whether the UE supports handover between E-UTRA/5GC FDD and E-UTRA/5GC TDD. It is mandatory for UEs of this release of the specification if the UE supports *eutra-5GC-r15* and the associated RATs.

4.3.36.5 *ho-InterfreqEUTRA-5GC-r15*

This field indicates whether the UE supports inter frequency handover within E-UTRA/5GC. It is mandatory for UEs of this release of the specification.

4.3.36.6 *IMS-VoiceOverMCG-BearerEUTRA-5GC-r15*

This field indicates whether the UE supports IMS voice over NR PDCP for MCG bearer for E-UTRA/5GC. It is mandated to the IMS voice capable UE if the UE supports *eutra-5GC-r15*.

4.3.36.7 *inactiveState-r15*

This field indicates whether the UE supports RRC\_INACTIVE. It is mandatory for UEs of this release of the specification if the UE supports *eutra-5GC-r15*.

4.3.36.X *inactiveStatePODetermination-r17*

Indicates whether the UE supports to use the shortest of the UE specific DRX values configured by upper layers and a default value broadcast in system information or the default value if UE specific DRX is not configured by upper layers for RRC\_INACTIVE state without considering the UE specific DRX value configured by RRC when determining the index of the PO.

4.3.36.8 *reflectiveQoS-r15*

This field indicates whether the UE supports AS reflective QoS.

End of change