**3GPP TSG-RAN WG2 Meeting #113-bis-e update of *R2-2103034***

**E-meeting, 12th – 20th April 2021**

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| *CR-Form-v11.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.331** | **CR** | **2496** | **rev** | **1** | **Current version:** | **16.4.0** |  |
|  | | | | | | | | |
| *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:*** | CR on RRC processing delay | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE Corporation, Sanechips | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_newRAT-Core | | | | |  | | ***Date:*** | | 2021-04-20 |
|  |  | | | |  | | |  | |  |
| ***Category:*** | **A** |  | | | | | | ***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-12 (Release 12) Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Currently, TS 38.331 defines the following RRC processing delay for SCG establishment/ modification/ release. However, it is unclear whether it is related to NR-DC or NE-DC scenario. And it is unclear about the RRC processing delay of PCell handover together with SCG establishment/ modification/ release.  In addition, the RRC processing delay of inter-RAT mobility from NR to E-UTRAN, from NR to UTRAN are missing.  This CR is to clarify the RRC processing delay of above scenarios. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Clarify the row “RRC reconfiguration (SCG establishment/ modification/ release” applies to both LTE and NR SCG; 2. Add one row: “RRC reconfiguration (Intra-NR mobility with LTE/NR SCG establishment/ modification/ release)” with 16ms delay; 3. Add one row for “Handover from NR”, of which delay is specified in TS 38.133, clause 6.1.2.1.2 and clause 6.1.2.2.2.   **mpact analysis**  Impacted 5G architecture options:  NR SA, NE-DC, NR-DC  Impacted functionality:  RRC processing delay  Inter-operability:   1. If UE implementates according to the CR and the network is not, or if the network implementates according to the CR and the UE is not, UE and network may have different understanding of the RRC processing delay for indentified scenarios. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The RRC processing delay for following procedures are unclear:   * + - 1. SCG establishment/ modification/ release in case of NR-DC and NE-DC;       2. Intra-NR mobility together with SCG establishment/ modification/ release;       3. Inter-RAT mobility from NR; | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 12 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 | | | CR | | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

Start of change

12 Processing delay requirements for RRC procedures

The UE performance requirements for RRC procedures are specified in the following tables. The performance requirement is expressed as the time in [ms] from the end of reception of the network -> UE message on the UE physical layer up to when the UE shall be ready for the reception of uplink grant for the UE -> network response message with no access delay other than the TTI-alignment (e.g. excluding delays caused by scheduling, the random access procedure or physical layer synchronisation). In case the RRC procedure triggers BWP switching, the RRC procedure delay is the value defined in the following table plus the BWP switching delay defined in TS 38.133 [14], clause 8.6.3.

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**Figure 12.1-1: Illustration of RRC procedure delay**

**Table 12.1-1: UE performance requirements for RRC procedures for UEs**

| **Procedure title:** | **Network -> UE** | **UE -> Network** | **Value [ms]** | **Notes** |
| --- | --- | --- | --- | --- |
| **RRC Connection Control Procedures** | | | | |
| RRC reconfiguration | *RRCReconfiguration* | *RRCReconfigurationComplete* | 10 |  |
| RRC reconfiguration (scell addition/release) | *RRCReconfiguration* | *RRCReconfigurationComplete* | 16 |  |
| RRC reconfiguration (LTE/NR SCG establishment/ modification/ release) | *RRCReconfiguration* | *RRCReconfigurationComplete* | 16 |  |
| RRC reconfiguration (Intra-NR mobility with LTE/NR SCG establishment/ modification/ release) | *RRCReconfiguration* | *RRCReconfiguationComplete* | 16 |  |
| RRC reconfiguration | *DLDedicatedMessageSegment* | *RRCReconfigurationComplete* | 16+( Nseg  -1)\*10 | Nseg  is number of RRC segments |
| RRC setup | *RRCSetup* | *RRCSetupComplete* | 10 |  |
| RRC Release | *RRCRelease* |  | NA |  |
| RRC re-establishment | *RRCReestablishment* | *RRCReestablishmentComplete* | 10 |  |
| RRC resume | *RRCResume* | *RRCResumeComplete* | 6 or 10 | Value=6 applies for a UE supporting reduced CP latency for the case of RRCResume message only including MAC and PHY configuration, and no DRX, SPS, configured grant, CA or MIMO re-configuration will be triggered by this message. Further, the UL grant for transmission of *RRCResumeComplete* and the data is transmitted over common search space with DCI format 0\_0.  In this scenario, the RRC procedure delay [ms] can extend beyond the reception of the UL grant, up to 7 ms.  For other cases, Value = 10 applies. |
| RRC resume (MCG SCell addition/restoration/release) | *RRCResume* | *RRCResumeComplete* | 16 |  |
| RRC resume (SCG establishment/ restoration/release) | *RRCResume* | *RRCResumeComplete* | 16 |  |
| RRC resume | *DLDedicatedMessageSegment* | *RRCResumeComplete* | 16+( Nseg  -1)\*10 | Nseg  is number of RRC segments |
| Initial AS security activation | *SecurityModeCommand* | *SecurityModeComplete/SecurityModeFailure* | 5 |  |
| **Inter RAT mobility** | | | | |
| Handover from NR | *MobilityFromNRCommand* |  | NA | The performance of this procedure is specified in TS 38.133 [14], clauses 6.1.2.1.2 and 6.1.2.2.2. |
| Other procedures | | | | |
| UE assistance information |  | *UEAssistanceInformation* | NA |  |
| UE capability transfer | *UECapabilityEnquiry* | *UECapabilityInformation* | 80 |  |
| Counter check | *CounterCheck* | *CounterCheckResponse* | 5 |  |
| UE information | *UEInformationRequest* | *UEInformationResponse* | 15 |  |
| DL Information transfer MR-DC | *DLInformationTransferMRDC* |  | NA | The UE shall apply the performance requirements of the RRC message included within the DLInformationTransferMRDC message. |
| IAB other information |  | *IABOtherInformation* | NA |  |
| Sidelink UE information |  | *SidelinkUEInformationNR* | NA |  |

End of change