**3GPP TSG-RAN WG4 Meeting #112**

**, , 19 Aug – 23 Aug, 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  |  | **CR** |  | **rev** | **-** | **Current version:** |  |  |
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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:***  | (NR\_newRAT) CR on NR-E-UTRAN HO requirement |
|  |  |
| ***Source to WG:*** | Nokia |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_newRAT |  | ***Date:*** | 2024-08-21 |
|  |  |  |  |  |
| ***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 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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
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| ***Reason for change:*** | In RAN4 meeting 110 in Athens, Greece, RAN4 agreed on CR 4018 in Tdoc R4-2403410 [1] which was a revision of a CR submitted in R4-2400470 [2]. The issue had been discussed for several meetings. The agreed change was as originally proposed in [2] however with bracket ([]) around the added wording. The added wording allowed UE additional time for an NR to E-UTRAN HO under certain conditions, while the additional delay was left open and for further discussion.Details discussed in R4-2411952 |
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| ***Summary of change:*** | 3 changes are proposed:* Allow UE an additional HO delay of one MIB reception attempt when the given conditions are fulfilled
* Define the delay requirement as part of PRACH acquisition delay in Tinterrrupt under TIU.
* Clarifying the wording.
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| ***Consequences if not approved:*** | Unclear requirements, in which case the reason for the unclear requirements should be removed. Hence, the text within the [] agreed in R4-2403410 should be removed. |
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| ***Clauses affected:*** | 6.1.2.1 |
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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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

**<Start of Change #1>**

6.1.2 NR Handover to other RATs

6.1.2.1 NR – E-UTRAN Handover

6.1.2.1.1 Introduction

The purpose of inter-RAT handover from NR to E-UTRAN is to change the radio access mode of PCell from NR to E-UTRAN. The handover procedure is initiated from NR with a RRC message that implies a handover as described in TS 38.331 [2]. The requirements in this clause are applicable to SA NR, NE-DC and NR-DC.

6.1.2.1.2 Handover delay

When the UE receives a RRC message implying handover to E-UTRAN the UE shall be ready to start the transmission of the uplink PRACH channel in E-UTRA within Dhandover ms from the end of the last TTI containing the RRC command. Dhandover is defined as

Dhandover = TRRC\_procedure\_delay + Tinterrupt

Where:

TRRC\_procedure\_delay: it is the RRC procedure delay, which is 50ms

Tinterrupt: it is the time between end of the last TTI containing the RRC command on the NR PDSCH and the time the UE starts transmission of the PRACH in E-UTRAN, excluding TRRC\_procedure\_delay. Tinterrupt is defined in clause 6.1.2.1.3.

6.1.2.1.3 Interruption time

When the inter-RAT handover to E-UTRAN is commanded, the interruption time shall be less than Tinterrupt

 Tinterrupt =Tsearch + TIU + 20 ms

Where:

 Tsearch is the time required to search the target cell when the target cell is not already known when the handover command is received by the UE. If the target cell is known, then Tsearch = 0 ms. If the target cell is unknown and signal quality is sufficient for successful cell detection on the first attempt, then Tsearch = 80 ms. Regardless of whether DRX is in use by the UE, Tsearch shall still be based on non-DRX target cell search times.

 TIU is the interruption uncertainty in acquiring the first available PRACH occasion in the new cell. TIU can be up to 30 ms. If PRACH occasion is configured in radio frames with even SFN and the relative time difference between radio frame *i* in the current cell and the target cell is larger than or equal to 153600⋅Ts, the UE is allowed an additional MIB reception delay of [50]ms.

NOTE: The actual value of TIU shall depend upon the PRACH configuration used in the target cell.

 In the interruption requirement a cell is known if it has been meeting the relevant cell identification requirement during the last 5 seconds otherwise it is unknown. Relevant E-UTRAN cell identification requirements are described in clause 9.4.1.

**<End of Changes>**