**3GPP TSG RAN WG1 #118bis R1-24xxxxx**

**Hefei, China, October 14th – 18th, 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **38.213** | **CR** | **-** | **rev** | **-** | **Current version:** | **18.4.0** |  |
|  |
| *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 SSB-RO mapping for LTM |
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| ***Source to WG:*** | Moderator (Fujitsu), Google, Nokia, Ericsson, Huawei, ZTE, Samsung, Docomo |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | NR\_Mob\_enh2-Core |  | ***Date:*** | 2024-10-14 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-18 |
|  | *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 current TS 38.213, SSB-RO mapping is missed for LTM. This results in that UE is unable to find valid PRACH occasions for performing RA to an LTM candidate cell based on LTM SSB.  |
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| ***Summary of change:*** | Add descriptions on how LTM SSB is mapped to valid PRACH occasions.  |
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| ***Consequences if not approved:*** | RA procedure for an LTM candidate cell is not functioned.  |
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| ***Clauses affected:*** | 8.1 |
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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:*** | **Isolated Impact Analysis:**This CR has no isolated impact on network and UE behavior. |
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| ***This CR's revision history:*** | This is the first version of this CR. |

8.1 Random access preamble

< Unchanged parts are omitted >

SS/PBCH block indexes provided by *ssb-PositionsInBurst* in *SIB1* or in *ServingCellConfigCommon* or in *SSB-MTC-AdditionalPCI* or in *LTM-SSB-Config* are mapped to valid PRACH occasions in the following order where the parameters are described in [4, TS 38.211].

- First, in increasing order of preamble indexes within a single PRACH occasion

- Second, in increasing order of frequency resource indexes for frequency multiplexed PRACH occasions

- Third, in increasing order of time resource indexes for time multiplexed PRACH occasions within a PRACH slot

- Fourth, in increasing order of indexes for PRACH slots

An association period, starting from frame 0, for mapping SS/PBCH block indexes to PRACH occasions is the smallest integer number in the set determined by the PRACH configuration period according Table 8.1-1 such that $N\_{Tx}^{SSB}$ SS/PBCH block indexes are mapped at least once to the PRACH occasions within the association period, where a UE obtains $N\_{Tx}^{SSB}$ from the value of *ssb-PositionsInBurst* in *SIB1* or in *ServingCellConfigCommon* or in *SSB-MTC-AdditionalPCI* or in *LTM-SSB-Config.* If after an integer number of SS/PBCH block indexes to PRACH occasions mapping cycles within the association period there is a set of PRACH occasions or PRACH preambles that are not mapped to $N\_{Tx}^{SSB}$ SS/PBCH block indexes, no SS/PBCH block indexes are mapped to the set of PRACH occasions or PRACH preambles. An association pattern period includes one or more association periods and is determined so that a pattern between PRACH occasions and SS/PBCH block indexes repeats at most every 160 msec. PRACH occasions not associated with SS/PBCH block indexes after an integer number of association periods, if any, are not used for PRACH transmissions.

< Unchanged parts are omitted >