**3GPP TSG-RAN4 Meeting # 116bis *R4-2514041***

**Prague, Czech Republic, Oct 13th – 17th, 2025**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **38.133** | **CR** | **draftCR** | **rev** | **–** | **Current version:** | **19.2.0** |  |
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| *For* ***[HE](http://www.3gpp.org/3G_Specs/CRs.htm%22%20%5Cl%20%22_blank)******[LP](http://www.3gpp.org/3G_Specs/CRs.htm%22%20%5Cl%20%22_blank)*** *on using this form: comprehensive instructions can be found at <http://www.3gpp.org/Change-Requests>.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network |  |

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| ***Title:***  | Draft CR on RACH impact of SBFD |
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| ***Source to WG:*** | ZTE Corporation, Sanechips |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_duplex\_evo-Core |  | ***Date:*** | 2025-10-01 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-19 |
|  | *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:*** | Change 1: Based on RAN2 progress, the RO-type change is allowed for SSB based CBRA, i.e. for the PRACH re-transmission, UE is allowed to switch between legacy RO and SBFD RO. This should be reflected in 38.133.Change 2: Based on RAN2 progress, the RO-type change is allowed for SSB and CSI-RS based CFRA, i.e. for the PRACH re-transmission, UE is allowed to switch between legacy RO and SBFD RO. This should be reflected in 38.133. |
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| ***Summary of change:*** | Change 1: Based on RAN2 progress, the RO-type change is allowed for SSB based CBRA, i.e. for the PRACH re-transmission, UE is allowed to switch between legacy RO and SBFD RO. This should be reflected in 38.133.Change 2: Based on RAN2 progress, the RO-type change is allowed for SSB and CSI-RS based CFRA, i.e. for the PRACH re-transmission, UE is allowed to switch between legacy RO and SBFD RO. This should be reflected in 38.133. |
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| ***Consequences if not approved:*** | The RACH impact of SBFD is missing |
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| ***Clauses affected:*** | 6.2.2.2.1.1, 6.2.2.2.2.1 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** | **X** |  |  Test specifications | TS 38.533 |
| ***(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>

##### 6.2.2.2.1 Contention based random access

###### 6.2.2.2.1.1 Correct behaviour when transmitting Random Access Preamble

With the UE selected SSB with SS-RSRP above *rsrp-ThresholdSSB*, UE shall have the capability to select a Random Access Preamble randomly with equal probability from the Random Access Preambles associated with the selected SSB if the association between Random Access Preambles and SSB is configured, as specified in clause 5.1.2 in TS 38.321 [7].

For a UE not configured with *sbfd-RACH-Config-r19,*with the UE selected SSB with SS-RSRP above *rsrp-ThresholdSSB*, UE shall have the capability to transmit Random Access Preamble on the next available PRACH occasion from the PRACH occasions corresponding to the selected SSB permitted by the restrictions given by the *ra-ssb-OccasionMaskIndex* if configured, if the association between PRACH occasions and SSBs is configured, and PRACH occasion shall be randomly selected with equal probability amongst the selected SSB associated PRACH occasions occurring simultaneously but on different subcarriers, as specified in clause 5.1.2 in TS 38.321 [7].

For a UE supports *supportSBFD* and SBFD is configured by network, either *sbfd-RACH-SingleConfig* or *sbfd-RACH-DualConfig* is configured by RRC for the Random Access procedure, the selection of available PRACH occasion is specified in clause 5.1 in TS 38.321 [7].

# <End of Change #1>

# <Start of Change #2>

##### 6.2.2.2.2 Non-Contention based random access

###### 6.2.2.2.2.1 Correct behaviour when transmitting Random Access Preamble

For a UE not configured with *sbfd-RACH-Config-r19*, if the contention-free Random Access Resources and the contention-free PRACH occasions associated with SSBs is configured, with the UE selected SSB with SS-RSRP above *rsrp-ThresholdSSB* amongst the associated SSBs, UE shall have the capability to select the Random Access Preamble corresponding to the selected SSB, and to transmit Random Access Preamble on the next available PRACH occasion from the PRACH occasions corresponding to the selected SSB permitted by the restrictions given by the *ra-ssb-OccasionMaskIndex* if configured, and PRACH occasion shall be randomly selected with equal probability amongst the selected SSB associated PRACH occasions occurring simultaneously but on different subcarriers, as specified in clause 5.1.2 in TS 38.321 [7].

For a UE not configured with *sbfd-RACH-Config-r19*, if the contention-free Random Access Resources and the contention-free PRACH occasions associated with CSI-RSs is configured, with the UE selected CSI-RS with CSI-RSRP above *rsrp-ThresholdCSI-RS* amongst the associated CSI-RSs, UE shall have the capability to select the Random Access Preamble corresponding to the selected CSI-RS, and to transmit Random Access Preamble on the next available PRACH occasion from the PRACH occasions in *ra-OccasionList* corresponding to the selected CSI-RS, and PRACH occasion shall be randomly selected with equal probability amongst the selected CSI-RS associated PRACH occasions occurring simultaneously but on different subcarriers, as specified in clause 5.1.2 in TS 38.321 [7].

For a UE supports *supportSBFD* and SBFD is configured by network, either *sbfd-RACH-SingleConfig* or *sbfd-RACH-DualConfig* is configured by RRC for the Random Access procedure, the selection of available PRACH occasion is specified in clause 5.1 in TS 38.321 [7].

If the random access procedure is initialized for beam failure recovery and if the contention-free Random Access Resources and the contention-free PRACH occasions for beam failure recovery request associated with any of the SSBs and/or CSI-RSs is configured, UE shall have the capability to select the Random Access Preamble corresponding to the selected SSB with SS-RSRP above *rsrp-ThresholdSSB* amongst the associated SSBs or the selected CSI-RS with CSI-RSRP above *rsrp-ThresholdCSI-RS* amongst the associated CSI-RSs, and to transmit Random Access Preamble on the next available PRACH occasion from the PRACH occasions corresponding to the selected SSB permitted by the restrictions given by the *ra-ssb-OccasionMaskIndex* if configured, or from the PRACH occasions in *ra-OccasionList* corresponding to the selected CSI-RS, and PRACH occasion shall be randomly selected with equal probability amongst the selected SSB associated PRACH occasions or the selected CSI-RS associated PRACH occasions occurring simultaneously but on different subcarriers, as specified in clause 5.1.2 in TS 38.321 [7].

# <End of Change #2>