**3GPP TSG-RAN WG1 Meeting #102-e *R1-200xxxx***

**e-Meeting, August 17th – 28th, 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **DRAFT CHANGE REQUEST** | | | | | | | | |
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|  | **38.213** | **CR** |  | **rev** | **-** | **Current version:** | **16.2.0** |  |
|  | | | | | | | | |
| *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:*** | Draft CR on 2-step RACH for 38.213 | | | | | | | | | |
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| ***Source to WG:*** | Moderator (ZTE) | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_2step\_RACH-Core | | | | |  | ***Date:*** | | | 2020-08-21 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***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)* | |
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| ***Reason for change:*** | | The following updates and corrections are required:   1. Align the RRC parameter names for 2-step RACH between the RAN1 specs and RRC spec in Clause 7.1.1 and 8.1 (TP#2 in [102-e-NR-2step-RACH-01]) 2. Capture the missing condition in the description of subset RO sharing in Clauses 8.1 (TP#3 in [102-e-NR-2step-RACH-01]) 3. Correct the description of TDRA for MsgA PUSCH in Clause 8.1A (TP#4 in [102-e-NR-2step-RACH-01]) 4. Capture the missing default TDRA table 6.1.2.1.1-3 of extended CP for MsgA PUSCH in Clause 8.1A (TP#2 in [102-e-NR-2step-RACH-02]) | | | | | | | | |
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| ***Summary of change:*** | | Implement the above updates and corrections. | | | | | | | | |
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| ***Consequences if not approved:*** | | Incomplete/incorrect support for 2-step RACH. | | | | | | | | |
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| ***Clauses affected:*** | | 7.1.1, 8.1, 8.1A | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 38.202, 38.211, 38.212, 38.214 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

## 7.1.1 UE behavior

\*\*\* Unchanged text is omitted \*\*\*

- If a UE established dedicated RRC connection using a Type-2 random access procedure, as described in Clause 8, and is not provided *P0-PUSCH-AlphaSet*,or for a PUSCH transmission for Type-2 random access procedure as described in Clause 8.1A,

, , and ,

where is provided by *msgA-preambleReceivedTargetPower*, or by *preambleReceivedTargetPower* if *msgA-preambleReceivedTargetPower* isnot provided, and is provided by *msgADeltaPreamble*, or dB if *msgADeltaPreamble* is not provided, for carrier of serving cell

\*\*\* Unchanged text is omitted \*\*\*

## 8.1 Random access preamble

\*\*\* Unchanged text is omitted \*\*\*

For Type-2 random access procedure with common configuration of PRACH occasions with Type-1 random access procedure, a UE is provided a number of SS/PBCH block indexes associated with one PRACH occasion by *ssb-perRACH-OccasionAndCB-PreamblesPerSSB* and a number of contention based preambles per SS/PBCH block index per valid PRACH occasion by  *msgA-CB-PreamblesPerSSB-PerSharedRO*. The PRACH transmission can be on a subset of PRACH occasions associated with a same SS/PBCH block index within an SSB-RO mapping cycle for a UE provided with a PRACH mask index by *msgA-SSB-SharedRO-MaskIndex* according to [11, TS 38.321].

For Type-2 random access procedure with separate configuration of PRACH occasions with Type-1 random access procedure, a UE is provided a number of SS/PBCH block indexes associated with one PRACH occasion and a number of contention based preambles per SS/PBCH block index per valid PRACH occasion by *msgA-SSB-PerRACH-OccasionAndCB-PreamblesPerSSB* when provided; otherwise, by *ssb-perRACH-OccasionAndCB-PreamblesPerSSB*.

For Type-1 random access procedure, or for Type-2 random access procedure with separate configuration of PRACH occasions from Type 1 random access procedure, if , one SS/PBCH block index is mapped to consecutive valid PRACH occasions and contention based preambles with consecutive indexes associated with the SS/PBCH block index per valid PRACH occasion start from preamble index 0. If , contention based preambles with consecutive indexes associated with SS/PBCH block index , , per valid PRACH occasion start from preamble index where is provided by *totalNumberOfRA-Preambles* for Type-1 random access procedure, or by *msgA-TotalNumberOfRA-Preambles* for Type-2 random access procedure with separate configuration of PRACH occasions from a Type 1 random access procedure, and is an integer multiple of .

\*\*\* Unchanged text is omitted \*\*\*

A UE determines a first interlace or first RB for a first PUSCH occasion in an active UL BWP respectively from *interlaceIndexFirstPO-MsgA-PUSCH* or from *frequencyStartMsgA-PUSCH* that provides an offset, in number of RBs in the active UL BWP, from a first RB of the active UL BWP. A PUSCH occasion includes a number of interlaces or a number of RBs provided by *nrofInterlacesPerMsgA-PO* or by *nrofPRBs-perMsgA-PO*, respectively. Consecutive PUSCH occasions in the frequency domain of an UL BWP are separated by a number of RBs provided by *guardBandMsgA-PUSCH*. A number of PUSCH occasions in the frequency domain of an UL BWP is provided by  *nrofMsgA-PO-FDM*.

\*\*\* Unchanged text is omitted \*\*\*

Consecutive PUSCH occasions within each slot are separated by *guardPeriodMsgA-PUSCH* symbols and have same duration. A number of time domain PUSCH occasions in each slot is provided by *nrofMsgA-PO-perSlot* and a number of consecutive slots that include PUSCH occasions is provided by *nrofSlotsMsgA-PUSCH*.

A UE is provided a DMRS configuration for a PUSCH transmission in a PUSCH occasion in an active UL BWP by *msgA-DMRS-Config*.

\*\*\* Unchanged text is omitted \*\*\*

A PUSCH occasion for PUSCH transmission is defined by a frequency resource and a time resource, and is associated with a DMRS resource. The DMRS resources are provided by  *msgA-DMRS-Config*.

\*\*\* Unchanged text is omitted \*\*\*

where , is a total number of valid PRACH occasions per association pattern period multiplied by the number of preambles per valid PRACH occasion provided by *rach-ConfigCommonTwoStepRA*, and is a total number of valid PUSCH occasions per PUSCH configuration per association pattern period multiplied by the number of DMRS resource indexes per valid PUSCH occasion provided by *msgA-DMRS-Config*.

\*\*\* Unchanged text is omitted \*\*\*

## 8.1A PUSCH for Type-2 random access procedure

\*\*\* Unchanged text is omitted \*\*\*

If a UE does not have dedicated RRC configuration, or has an initial UL BWP as an active UL BWP, or is not provided *startSymbolAndLengthMsgA-PO*, *msgA-PUSCH-timeDomainAllocation* provides a SLIV and a PUSCH mapping type for a PUSCH transmission by indicating

- one of the first *maxNrofUL-Allocations* values from *PUSCH-TimeDomainResourceAllocationList*, if *PUSCH-TimeDomainResourceAllocationList* is provided in *PUSCH-ConfigCommon*

- one of the entries from table 6.1.2.1.1-2 or table 6.1.2.1.1-3 in [6, TS 38.214], if *PUSCH-TimeDomainResourceAllocationList* is not provided in *PUSCH-ConfigCommon*

else, the UE is provided a SLIV by *startSymbolAndLengthMsgA-PO*, and a PUSCH mapping type by *mappingTypeMsgA-PUSCH* for a PUSCH transmission.

For mapping one or multiple preambles of a PRACH slot to a PUSCH occasion associated with a DMRS resource, a UE determines a first slot for a first PUSCH occasion in an active UL BWP from *msgA-PUSCH-TimeDomainOffset* that provides an offset, in number of slots in the active UL BWP, relative to the start of a PUSCH slot including the start of each PRACH slot. The UE does not expect to have a PRACH preamble transmission and a PUSCH transmission with a msgA in a PRACH slot or in a PUSCH slot, or to have overlapping msgA PUSCH occasions for a MsgA PUSCH configuration. The UE expects that a first PUSCH occasion in each slot has a same SLIV for a PUSCH transmission that is provided by *startSymbolAndLengthMsgA-PO* or *msgA-PUSCH-timeDomainAllocation* [6, TS 38.214].

\*\*\* Unchanged text is omitted \*\*\*