**3GPP TSG-RAN WG2 Meeting #121 R2-230xxxx**

**Athens, Greece, 27th Feb. – 3rd Mar. 2023**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  | **38.331** | **CR** | **3800** | **rev** | **1** | **Current version:** | **17.3.0** |  |
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| *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:***  | Correction on RACH configuration for RedCap |
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| ***Source to WG:*** | vivo, Qualcomm, ZTE Corporation, Intel Corporation, Guangdong Genius |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_redcap-Core |  | ***Date:*** | 2023-02-17 |
|  |  |  |  |  |
| ***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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | The following agreement for RedCap has not been captured in specification. **RedCap-specific two-step RACH, if configured, and four-step RACH are always configured in the same BWP.**The intention for this agreement is avoid the UE switch back to initial BWP when fallback from 2-step RACH to 4-step RACH in the case that there is 2-step RACH configuration in RedCap specific initial BWP, while there is no 4-step RACH configuration. In this way, for RedCap-specific initial uplink BWP, the field *rach-ConfigCommon* should be mandatory present when *msgA-ConfigCommon* is configured in this BWP. |
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| ***Summary of change:*** | In the field description of “*rach-ConfigCommon*”, clarify that for RedCap-specific initial uplink BWP, the field *rach-ConfigCommon* is mandatory present when *msgA-ConfigCommon* is configured in this BWP**Impact analysis**Impacted 5G architecture options: NR SAImpacted functionalityRedCap specific initial BWPInter-operability: 1. If the network is implemented according to the CR and the UE is not, there is no impact.
2. If the UE is implemented according to the CR and the network is not, 2-step RACH would not fallback to 4-step RACH as there is no RACH configuration.
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| ***Consequences if not approved:*** | Network may not configure the field “*rach-ConfigCommon*” in RedCap-specific initial uplink BWP.  |
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| ***Clauses affected:*** | 6.3.2 |
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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

– *BWP-UplinkCommon*

The IE *BWP-UplinkCommon* is used to configure the common parameters of an uplink BWP. They are "cell specific" and the network ensures the necessary alignment with corresponding parameters of other UEs. The common parameters of the initial bandwidth part of the PCell are also provided via system information. For all other serving cells, the network provides the common parameters via dedicated signalling.

***BWP-UplinkCommon* information element**

-- ASN1START

-- TAG-BWP-UPLINKCOMMON-START

BWP-UplinkCommon ::= SEQUENCE {

 genericParameters BWP,

 rach-ConfigCommon SetupRelease { RACH-ConfigCommon } OPTIONAL, -- Need M

 pusch-ConfigCommon SetupRelease { PUSCH-ConfigCommon } OPTIONAL, -- Need M

 pucch-ConfigCommon SetupRelease { PUCCH-ConfigCommon } OPTIONAL, -- Need M

 ...,

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 rach-ConfigCommonIAB-r16 SetupRelease { RACH-ConfigCommon } OPTIONAL, -- Need M

 useInterlacePUCCH-PUSCH-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

 msgA-ConfigCommon-r16 SetupRelease { MsgA-ConfigCommon-r16 } OPTIONAL -- Cond SpCellOnly2

 ]],

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 enableRA-PrioritizationForSlicing-r17 BOOLEAN OPTIONAL, -- Cond RA-PrioSliceAI

 additionalRACH-ConfigList-r17 SetupRelease { AdditionalRACH-ConfigList-r17 } OPTIONAL, -- Cond SpCellOnly2

 rsrp-ThresholdMsg3-r17 RSRP-Range OPTIONAL, -- Need R

 numberOfMsg3-RepetitionsList-r17 SEQUENCE (SIZE (4)) OF NumberOfMsg3-Repetitions-r17 OPTIONAL, -- Cond Msg3Rep

 mcs-Msg3-Repetitions-r17 SEQUENCE (SIZE (8)) OF INTEGER (0..31) OPTIONAL -- Cond Msg3Rep

 ]]

}

AdditionalRACH-ConfigList-r17 ::= SEQUENCE (SIZE(1..maxAdditionalRACH-r17)) OF AdditionalRACH-Config-r17

AdditionalRACH-Config-r17 ::= SEQUENCE {

 rach-ConfigCommon-r17 RACH-ConfigCommon OPTIONAL, -- Need R

 msgA-ConfigCommon-r17 MsgA-ConfigCommon-r16 OPTIONAL, -- Need R

 ...

}

NumberOfMsg3-Repetitions-r17::= ENUMERATED {n1, n2, n3, n4, n7, n8, n12, n16}

-- TAG-BWP-UPLINKCOMMON-STOP

-- ASN1STOP

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| ***BWP-UplinkCommon* field descriptions** |
| ***additionalRACH-ConfigList***List of feature or feature combination-specific RACH configurations, i.e. the RACH configurations configured in addition to the one configured by *rach-ConfigCommon* and by *msgA-ConfigCommon*. The network associates all possible preambles of an additional RACH configuration to one or more feature(s) or feature combination(s). The network does not configure this list to have more than 16 entries. If both *rach-ConfigCommon* and *msgA-ConfigCommon* are configured for a specific *FeatureCombination*, the network always provides them in the same *additionalRACH-Config*. |
| ***enableRA-PrioritizationForSlicing***Indicates whether or not the *ra-PrioritizationForSlicing/ra-PrioritizationForSlicingTwoStep* should override the *ra-PrioritizationForAccessIdentity*. The field is applicable only when the UE is configured by upper layers with both NSAG and Access Identity 1 or 2. If value *TRUE* is configured, the UE should only apply the *ra-PrioritizationForSlicing/ra-PrioritizationForSlicingTwoStep*. If value *FALSE* is configured, the UE should only apply *ra-PrioritizationForAccessIdentity*. If the field is absent, whether to use *ra-PrioritizationForSlicing/ra-PrioritizationForSlicingTwoStep* or *ra-PrioritizationForAccessIdentity* is up to UE implementation. |
| ***mcs-Msg3-Repetitions***Configuration of eight candidate MCS indexes for PUSCH transmission scheduled by RAR UL grant and DCI format 0\_0 with CRC scrambled by TC-RNTI. Only the first 4 configured or default MCS indexes are used for PUSCH transmission scheduled by RAR UL grant. This field is only applicable when the UE selects Random Access resources indicating Msg3 repetition in this BWP. If this field is absent when the set(s) of Random Access resources with MSG3 repetition indication are configured in the *BWP-UplinkCommon*, the UE shall apply the values {0, 1, 2, 3, 4, 5, 6, 7} (see TS 38.214 [19], clause 6.1.4). |
| ***msgA-ConfigCommon***Configuration of the cell specific PRACH and PUSCH resource parameters for transmission of MsgA in 2-step random access type procedure. The NW can configure *msgA-ConfigCommon* only for UL BWPs if the linked DL BWPs (same bwp-Id as UL-BWP) are the initial DL BWPs or DL BWPs containing the SSB associated to the initial BL BWP  |
| ***numberOfMsg3-RepetitionsList***The number of repetitions for PUSCH transmission scheduled by RAR UL grant and DCI format 0\_0 with CRC scrambled by TC-RNTI. This field is only applicable when the UE selects Random Access resources indicating Msg3 repetition in this BWP. If this field is absent when the set(s) of Random Access resources with MSG3 repetition indication are configured in the *BWP-UplinkCommon*, the UE shall apply the values {n1, n2, n3, n4} (see TS 38.214 [19], clause 6.1.2.1). |
| ***pucch-ConfigCommon***Cell specific parameters for the PUCCH of this BWP.  |
| ***pusch-ConfigCommon***Cell specific parameters for the PUSCH of this BWP. |
| ***rach-ConfigCommon***Configuration of cell specific random access parameters which the UE uses for contention based and contention free random access as well as for contention based beam failure recovery in this BWP. The NW configures SSB-based RA (and hence *RACH-ConfigCommon*) only for UL BWPs if the linked DL BWPs (same *bwp-Id* as UL-BWP) are the initial DL BWPs or DL BWPs containing the SSB associated to the initial DL BWP or for RedCap UEs DL BWPs associated with *nonCellDefiningSSB* or the RedCap-specific initial downlink BWP. The network configures *rach-ConfigCommon*, whenever it configures contention free random access (for reconfiguration with sync or for beam failure recovery). For RedCap-specific initial uplink BWP, *rach-ConfigCommon* is always present when *msgA-ConfigCommon* is configured in this BWP. |
| ***rach-ConfigCommonIAB***Configuration of cell specific random access parameters for the IAB-MT. The IAB specific IAB RACH configuration is used by IAB-MT, if configured. |
| ***rsrp-ThresholdMsg3***Threshold used by the UE for determining whether to select resources indicating Msg3 repetition in this BWP, as specified in TS 38.321 [3]. The field is mandatory if both set(s) of Random Access resources with MSG3 repetition indication and set(s) of Random Access resources without MSG3 repetition indication are configured in the BWP. It is absent otherwise. |
| ***useInterlacePUCCH-PUSCH***If the field is present, the UE uses uplink frequency domain resource allocation Type 2 for cell-specific PUSCH, e.g., PUSCH scheduled by RAR UL grant (see TS 38.213 [13] clause 8.3 and TS 38.214 [19], clause 6.1.2.2) and uses interlaced PUCCH Format 0 and 1 for cell-specific PUCCH (see TS 38.213 [13], clause 9.2.1). |

End of change