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| **3GPP TSG RAN WG1 Meeting #102-e R1-200xxxx****e-Meeting, August 17th – 28th, 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **38.213** | **CR** | **DRAFT** | **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 (Rel-16, A) on determining P0 for a Msg3 PUSCH retransmission in TS 38.213 |
|  |  |
| ***Source to WG:*** | ZTE |
| ***Source to TSG:*** |  R1 |
|  |  |
| ***Work item code:*** | NR\_newRAT-Core |  | ***Date:*** | 2020-08-21 |
|  |  |  |  |  |
| ***Category:*** | **A** |  | ***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 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-12 (Release 12)Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | In TS38.213, there is no specific description for Msg3 PUSCH retransmission regarding PO\_UE\_PUSCH. Msg3 PUSCH retransmission may have different PO\_UE\_PUSCH value from Msg3 PUSCH first transmission in RRC CONNECTED mode. If PO\_UE\_PUSCH value for Msg3 PUSCH retransmission is lower than for Msg3 PUSCH first transmission, it may impact Msg3 PUSCH retransmission. Furthermore, if the difference of two PO\_UE\_PUSCH values is large, it may break the power continuity for a plurality of Msg3 PUSCH transmissions and one TPC command may be not enough to compensate the gap. Therefore, we suggest to clarify in the spec that there is the same PO\_UE\_PUSCH value between Msg3 PUSCH retransmission and Msg3 PUSCH first transmission. |
| ***-*** |  |
| ***Summary of change:*** | Modifiy the j value for PUSCH re-transmission to be the same as that for the corresponding RAR scheduled PUSCH transmission, i.e., j=0.  |
|  |  |
| ***Consequences if not approved:*** | This is wrongly configured power setting parameters will let the actual power level of PUSCH re-transmission may be much lower than the power level of initial transmission. It will cause the frequent random access failure in the system. |
|  |  |
| ***Clauses affected:*** | 7.1.1 |
|  |  |
|  | **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 ...  |
|  |  |
| ***Other comments:*** | Isolated impact analysis:The CR is aiming to clarify the UE action for a Msg3 PUSCH retransmission when determining PO\_UE\_PUSCH value. It is expected UEs and networks are implemented with the same understanding and therefore no change is required on UE and network implementation. |
|  |  |
| ***This CR's revision history:*** | This is the first version for this CR. |

 |

<Unchanged part omitted>

### UE behaviour

If a UE transmits a PUSCH on active UL BWP  of carrier  of serving cell  using parameter set configuration with index  and PUSCH power control adjustment state with index , the UE determines the PUSCH transmission power  in PUSCH transmission occasion  as

 [dBm]

where,

- is the UE configured maximum output power defined in [8-1, TS 38.101-1], [8-2, TS38.101-2] and [8-3, TS38.101-3] for carrier  of serving cell  in PUSCH transmission occasion .

-  is a parameter composed of the sum of a component  and a component  where .

- If a UE established dedicated RRC connection using a Type-1 random access procedure, as described in Clause 8, and is not provided *P0-PUSCH-AlphaSet* or for a PUSCH (re)transmission corresponding to a RAR UL grant as described in Clause 8.3,

 , , and ,

where $P\_{O\\_PRE}$ is provided by *preambleReceivedTargetPower* [11, TS 38.321] and $Δ\_{PREAMBLE\\_Msg3}$ is provided by *msg3-DeltaPreamble*, or  dB if *msg3-DeltaPreamble* is not provided, for carrier  of serving cell 

- 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,

 $j=0$, $P\_{O\\_UE\\_PUSCH,b,f,c}(0)=0$, and $P\_{O\\_NOMINAL\\_PUSCH,f,c}(0)=P\_{O\\_PRE}+Δ\_{MsgA\\_PUSCH}$,

where $P\_{O\\_PRE}$ is provided by *preambleReceivedTargetPower* and $Δ\_{MsgA\\_PUSCH}$ is provided by *msgADeltaPreamble*, or $Δ\_{MsgA\\_PUSCH}=Δ\_{PREAMBLE\\_Msg3}$ dB if *msgADeltaPreamble* is not provided, for carrier $f$ of serving cell $c$

- For a PUSCH (re)transmission configured by *ConfiguredGrantConfig*, ,  is provided by *p0-NominalWithoutGrant*, or  if *p0-NominalWithoutGrant* is not provided, and  is provided by *p0* obtained from *p0-PUSCH-Alpha* in *ConfiguredGrantConfig* that provides an index *P0-PUSCH-AlphaSetId* to a set of *P0-PUSCH-AlphaSet* for active UL BWP  of carrier  of serving cell 

- For , a  value, applicable for all , is provided by *p0-NominalWithGrant,* or  if *p0-NominalWithGrant* is not provided, for each carrier  of serving cell  and a set of values are provided by a set of *p0* in *P0-PUSCH-AlphaSet* indicated by a respective set of *p0-PUSCH-AlphaSetId* for active UL BWP  of carrier  of serving cell 

- If the UE is provided by *SRI-PUSCH-PowerControl* more than one values of *p0-PUSCH-AlphaSetId* and if a DCI format scheduling the PUSCH transmission includes a SRI field, the UE obtains a mapping from *sri-PUSCH-PowerControlId* in *SRI-PUSCH-PowerControl* between a set of values for the SRI field in the DCI format [5, TS 38.212] and a set of indexes provided by *p0-PUSCH-AlphaSetId* that map to a set of *P0-PUSCH-AlphaSet* values and determines the value of  from the *p0-PUSCH-AlphaSetId* value that is mapped to the SRI field value. If the DCI format also includes a open-loop power control parameter set indication field and a value of the open-loop power control parameter set indication field is '1', the UE determines a value of  from a first value in *P0-PUSCH-Set-r16* with a *p0-PUSCH-SetId-r16* value mapped to the SRI field value.

- If the PUSCH transmission except for the PUSCH retransmission corresponding to a RAR UL grant is scheduled by a DCI format that does not include an SRI field, or if *SRI-PUSCH-PowerControl* is not provided to the UE, ,

- If *P0-PUSCH-Set-r16* is provided to the UE and the DCI format includes an open-loop power control parameter set indication field, the UE determines a value of  from

- a first *P0-PUSCH-AlphaSet* in *p0-AlphaSets* if a value of the open-loop power control parameter set indication field is '0' or '00'

- a first value in *P0-PUSCH-Set-r16* with the lowest *p0-PUSCH-SetID* value if a value of the open-loop power control parameter set indication field is '1' or '01'

- a second value in *P0-PUSCH-Set-r16* with the lowest *p0-PUSCH-SetID* value if a value of the open-loop power control parameter set indication field is '10'

- else, the UE determines  from the value of the first *P0-PUSCH-AlphaSet* in *p0-AlphaSets*

- For 

- For ,

- if $P\_{O\\_NOMINAL\\_PUSCH,f,c}(0)=P\_{O\\_PRE}+Δ\_{MsgA\\_PUSCH}$ and *msgA-Alpha* is provided, $α\_{b,f,c}(0)$ is the value of *msgA-Alpha*

- elseif $P\_{O\\_NOMINAL\\_PUSCH,f,c}(0)=P\_{O\\_PRE}+Δ\_{PREAMBLE\\_Msg3}$ or *msgA-Alpha* is not provided, and *msg3-Alpha* is provided,  is the value of *msg3-Alpha*

- else, 

- For ,  is provided by *alpha* obtained from *p0-PUSCH-Alpha* in *ConfiguredGrantConfig* providing an index *P0-PUSCH-AlphaSetId* to a set of *P0-PUSCH-AlphaSet* for active UL BWP  of carrier  of serving cell 

- For , a set of  values are provided by a set of *alpha* in *P0-PUSCH-AlphaSet* indicated by a respective set of *p0-PUSCH-AlphaSetId* for active UL BWP  of carrier  of serving cell 

- If the UE is provided *SRI-PUSCH-PowerControl* and more than one values of *p0-PUSCH-AlphaSetId*, and if a DCI format scheduling the PUSCH transmission includes a SRI field, the UE obtains a mapping from *sri-PUSCH-PowerControlId* in *SRI-PUSCH-PowerControl* between a set of values for the SRI field in the DCI format [5, TS 38.212] and a set of indexes provided by *p0-PUSCH-AlphaSetId* that map to a set of *P0-PUSCH-AlphaSet* values and determines the values of  from the *p0-PUSCH-AlphaSetId* value that is mapped to the SRI field value

- If the PUSCH transmission except for the PUSCH retransmission corresponding to a RAR UL grant is scheduled by a DCI format that does not include a SRI field, or if *SRI-PUSCH-PowerControl* is not provided to the UE, , and the UE determines  from the value of the first *P0-PUSCH-AlphaSet* in *p0-AlphaSets*

<Unchanged part omitted>