**3GPP T****SG-RAN WG1 Meeting #106-e R1-2108453**

**e-Meeting, August 16th – 27th, 2021**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.213** | **CR** | **0254** | **rev** | **-** | **Current version:** | **16.6.0** |  |
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| *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:*** | Corrections on Sub-slot Based HARQ-ACK Feedback for MAC CE Activation/deactivation | | | | | | | | | |
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| ***Source to WG:*** | Moderator (Ericsson), CATT, vivo, Ericsson, Apple | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
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| ***Work item code:*** | [NR\_L1enh\_URLLC-Core](http://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=830174) | | | | |  | ***Date:*** | | | 2021-08-24 |
|  |  | | | |  | |  | | |  |
| ***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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In RAN1#106-e, the following agreement and conclusion were made to address the issue of HARQ-ACK timing corresponding to a PDSCH carrying MAC commands. For all relevant MAC CE, this avoids a ‘slot’ being mis-interpreted as ‘subslot’ in determining the HARQ-ACK timing when *subslotLengthForPUCCH* is configured.  **Agreement**  For the purpose of determining the HARQ-ACK timing corresponding to a PDSCH carrying MAC commands [38.321], a slot with PUCCH transmission carrying HARQ-ACK information is considered as a slot with symbols as defined in [TS 38.211], irrespective of presence or absence of *subslotLengthForPUCCH* configuration.  **Conclusion**  Outside of TS 38.213 Clause 9, a “slot” consists of  symbols as defined in TS 38.211, even if the “slot” is described to have PUCCH transmission carrying HARQ-ACK information, and *subslotLengthForPUCCH* is configured. | | | | | | | | |
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| ***Summary of change:*** | | * 38.213 section 4.3 is edited to reflect the understanding described by the Conclusion. Thus, MAC CE for secondary cell activation / deactivation is treated the same as all other MAC CEs, i.e., no need to explicitly state that a slot is composed of  symbols. * For 38.213 section 9 and 9.2.2, it’s clarified that for the MAC CE of PUCCH spatial setting, a slot related to HARQ-ACK timing is composed of  symbols, not *subslotLengthForPUCCH* symbols. | | | | | | | | |
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| ***Consequences if not approved:*** | | Mismatch in interpetion of HARQ-ACK timing of all relevant MAC CE. Risk of different interpretation of the specification between UE and network vendors. | | | | | | | | |
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| ***Clauses affected:*** | | 4.3, 9, 9.2.2 | | | | | | | | |
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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 ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

4.3 Timing for secondary cell activation / deactivation

With reference to slots for PUCCH transmissions, when a UE receives in a PDSCH an activation command [11, TS 38.321] for a secondary cell ending in slot *n*, the UE applies the corresponding actions in [11, TS 38.321] no later than the minimum requirement defined in [10, TS 38.133] and no earlier than slot , except for the following:

- the actions related to CSI reporting on a serving cell that is active in slot 

- the actions related to the *sCellDeactivationTimer* associated with the secondary cell [11, TS 38.321] that the UE applies in slot 

- the actions related to CSI reporting on a serving cell which is not active in slot that the UE applies in the earliest slot after  in which the serving cell is active.

The value of  is where slot *n*+*m* is a slot indicated for PUCCH transmission with HARQ-ACK information for the PDSCH reception as described in clause 9.2.3 and  is a number of slots per subframe for the SCS configuration  of the PUCCH transmission as defined in [4, TS 38.211].



With reference to slots for PUCCH transmissions, if a UE receives a deactivation command [11, TS 38.321] for a secondary cell ending in slot , the UE applies the corresponding actions in [11, TS 38.321] no later than the minimum requirement defined in [10, TS 38.133], except for the actions related to CSI reporting on an activated serving cell which the UE applies in slot *.*

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

9 UE procedure for reporting control information

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

In the remaining of this clause, if a UE is provided *subslotLengthForPUCCH*, a slot for an associated PUCCH resource of a PUCCH transmission with HARQ-ACK information includes a number of symbols indicated by *subslotLengthForPUCCH*, unless stated otherwise.

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

9.2.2 PUCCH Formats for UCI transmission

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

A spatial setting for a PUCCH transmission is provided by *PUCCH-SpatialRelationInfo* if the UE is configured with a single value for *pucch-SpatialRelationInfoId*; otherwise, if the UE is provided multiple values for *PUCCH-SpatialRelationInfo*, the UE determines a spatial setting for the PUCCH transmission as described in [11, TS 38.321]. The UE applies corresponding actions in [11, TS 38.321] and a corresponding setting for a spatial domain filter to transmit PUCCH in the first slot that is after slot  where  is the slot where the UE would transmit a PUCCH with HARQ-ACK information with ACK value corresponding to a PDSCH reception providing the *PUCCH-SpatialRelationInfo*, each slot consists of symbols as defined in [4, TS 38.211], and  is the SCS configuration for the PUCCH

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