**3GPP TSG RAN WG1 #107-eR1-211xxxx**

**e-Meeting, November 11th – 19th, 2021‎**

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| *CR-Form-v12.1* |
|  **DRAFT CHANGE REQUEST** |
|  |
|  | **38.212** | **CR** |  | **rev** | **-** | **Current version:** | **16.7.0** |  |
|  |
| *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:***  | Corrections on CG-UCI multiplexing in TS38.212 |
|  |  |
| ***Source to WG:*** | Moderator (Huawei) |
| ***Source to TSG:*** | R1 |
|  |  |
| ***Work item code:*** | NR\_unlic-Core |  | ***Date:*** | 2021-11-05 |
|  |  |  |  |  |
| ***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 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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | CG-UCI is always together with UL-SCH. So sub-conditional of “or if both HARQ-ACK and CG-UCI are present on the same PUSCH with UL-SCH,” of condition “if HARQ-ACK, CSI part 1 and CSI part 2 are present for transmission on the PUSCH without UL-SCH” is contraditory with each other. The multiplexing mechanism defined under conditon of “if CG-UCI is present for transmission on the PUSCH with UL-SCH and without HARQ-ACK” leaves no room for PUSCH carrying UL-SCH. On the other side, the combination of multiplexing mechanism defined with the following two conditions are sufficient to cover the above condition: - if CSI is present for transmission on the PUSCH with UL-SCH- if CG-UCI is present for transmission on the PUSCH with UL-SCH and without HARQ-ACK |
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| ***Summary of change:*** | Delete the sub condition of “or if both HARQ-ACK and CG-UCI are present on the same PUSCH with UL-SCH,” under the condition of “if HARQ-ACK, CSI part 1 and CSI part 2 are present for transmission on the PUSCH without UL-SCH,”Delete the multiplexing mechanism for condition “if CG-UCI is present for transmission on the PUSCH with UL-SCH and without HARQ-ACK.  |
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| ***Consequences if not approved:*** | Error calculation of CSI-part-1 and CSI-part-2 when multiplexed with CG-UCI and UL-SCH. |
|  |  |
| ***Clauses affected:*** | 6.2.7 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  |  |
| ***affected:*** |  | **X** |  Test specifications |  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications |   |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

### 6.2.7 Data and control multiplexing

< Unchanged part is omitted >

If frequency hopping is configured for the PUSCH,

- denote  as the OFDM symbol index of the first OFDM symbol after the first set of consecutive OFDM symbol(s) carrying DMRS in the first hop;

- denote  as the OFDM symbol index of the first OFDM symbol after the first set of consecutive OFDM symbol(s) carrying DMRS in the second hop.

- denote  as the OFDM symbol index of the first OFDM symbol that does not carry DMRS in the first hop;

- denote  as the OFDM symbol index of the first OFDM symbol that does not carry DMRS in the second hop;

- if HARQ-ACK is present for transmission on the PUSCH with UL-SCH or if both HARQ-ACK and CG-UCI are present on the same PUSCH with UL-SCH, let

-  and ;

- if CSI is present for transmission on the PUSCH with UL-SCH, let

- ;

- ;

- ; and

- ;

- if CG-UCI is present for transmission on the PUSCH with UL-SCH and without HARQ-ACK, let

- $G^{CG-UCI}\left(1\right)=N\_{L}∙Q\_{m}∙\left⌊{G^{CG-UCI}}/{\left(2∙N\_{L}∙Q\_{m}\right)}\right⌋$ and $G^{CG-UCI}\left(2\right)=N\_{L}∙Q\_{m}∙\left⌈{G^{CG-UCI}}/{\left(2∙N\_{L}∙Q\_{m}\right)}\right⌉$

- if only HARQ-ACK and CSI part 1 are present for transmission on the PUSCH without UL-SCH, let

- ;

- ;

- ; and

- ;

- if HARQ-ACK, CSI part 1 and CSI part 2 are present for transmission on the PUSCH without UL-SCH, let

- ;

- ;

- if the number of HARQ-ACK information bits is more than 2,; otherwise, 

- ;

-  if the number of HARQ-ACK information bits is no more than 2, and  otherwise; and

-  if the number of HARQ-ACK information bits is no more than 2, and  otherwise;

- if only CSI part 1 and CSI part 2 are present for transmission on the PUSCH without UL-SCH, let

- ;

- ;

- ; and

- ;

- let , and denote ,  as the number of OFDM symbols of the PUSCH in the first and second hop, respectively;

-  is the number of transmission layers of the PUSCH;

-  is the modulation order of the PUSCH;

- ;

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< Unchanged part is omitted >