**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 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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***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 | | | | | | | | |
|  | |  | | | | | | | | |
| ***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. | | | | | | | | |
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| ***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

- and

- 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 >