**3GPP TSG-WG Meeting #113 R1-230xxxxx**

**Incheon, South Korea, May 22 - 26, 2023**

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| *CR-Form-v12.0* | | | | | | | | |
| **DRAFT CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.202** | **CR** | **xxx** | **rev** | **x** | **Current version:** | **17.3.0** |  |
|  | | | | | | | | |
| *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 |  | Radio Access Network |  | Core Network |  |

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| ***Title:*** | Release 18 TS38.202 Editor CR for MIMO | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_MIMO\_evo\_DL\_UL | | | | |  | ***Date:*** | | | 2023-06-04 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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:*** | | Introduction of simultaneous transmission of 2 PUSCH in multi-DCI based system in Rel-18. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Introduce of simultaneous transmission of 2 PUSCH in multi-DCI based system in Rel-18. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Not support of simultaneous transmission of 2 PUSCH in multi-DCI based system in Rel-18. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | 38.212, 38.213, 38.214 | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

# 6 Simultaneous transmission and reception of physical channels and physical signals

This clause describes the requirements from the UE to send and receive multiple physical channels and physical signals simultaneously depending on the capabilities and service requirements. The following notation is used between both the uplink and downlink clauses below.

*- p* is the number of uplink carriers configured for the UE on which physical channels can be transmitted

*- p'* is the number of uplink carriers configured for the UE on which SRS can be transmitted

*- q* is the number of downlink carriers configured for the UE

*- j* is the number of cell groups configured for the UE.

*- k* is the number of PUCCH groups configured for the UE.

## 6.1 Uplink

The tables 6.1-1 and 6.1-2 describe the possible combinations of physical channels and SRS that can be sent in simultaneously in the uplink by one UE. Table 6.1-1 introduces notation for a "Transmission Type" which represents a physical channel or sounding reference signal, and any associated transport channel. Table 6.1-2 describes the combinations of these "Transmission Types" which are supported by the UE depending on capabilities [8, TS 38.306], and enumerates how many of each can be transmitted simultaneously.

Table 6.1-1: Uplink "Transmission Types"

|  |  |  |  |
| --- | --- | --- | --- |
| "Transmission Type" | Physical Channel or SRS | Associated Transport Channel | Comment |
| A | PRACH | RACH | Note 1, Note 3 |
| B | PUCCH | N/A |  |
| C | PUSCH | UL-SCH | Note 2, Note 3 |
| D | SRS | N/A |  |
| Note 1: RACH corresponds to contention based.  Note 2: UCI on PUSCH without UL-SCH is possible.  Note 3: For SCell, MsgA PRACH and MsgA PUSCH is not supported. | | | |

Table 6.1-2: Uplink "Transmission Type" combinations

|  |  |
| --- | --- |
| Supported Combinations | Comment |
| *j* x A | Note 1 |
| *k* x B | Note 2 |
| (x C | Note 3, Note 4, Note 10 |
| *p'* x D | Note 3, Note 5 |
| A + B | Note 6 |
| A + C | Note 6, Note 10 |
| A + D | Note 6 |
| B + (C | Note 8, Note 10 |
| B + C | Note 9, Note 10 |
| B + D | Note 7 |
| C + D | Note 7, Note 10 |
| Note 1: The number of cell groups *j* in the supported combination is subject to UE capability.  Note 2: The number of PUCCH groups *k* in the supported combination is subject to UE capability.  Note 3: The number of carriers *p,* and *p'* in the supported combinations are subject to UE capability.  Note 4: In the case there is one SUL carrier, then *p*-1 would be supported.  Note 5: UE may be configured with *p'* but may also have capability to simultaneously sound less than this number.  Note 6: Simultaneous PRACH with PUCCH (or PUSCH or SRS) is supported only in the case of inter-band CA, with , , , and ' depending on the configuration, and subject to UE capability for parallel transmission.  Note 7: Simultaneous SRS with PUCCH (or PUSCH) is supported only in the case of inter-band CA, with , , and ' depending on the configuration, and subject to UE capability for parallel transmission.  Note 8: Simultaneous PUCCH and PUSCH(s) for the case that multiple PUCCH groups are configured and the respective PUCCH and PUSCH(s) are transmitted in the different PUCCH groups, with and . and are subject to UE capability for supported number of PUCCH groups and UL carriers, respectively. and depend on configuration.  Note 9: Simultaneous PUCCH and PUSCH(s) within the same PUCCH group in the case of inter-band CA, depending on the configuration, and subject to UE capability for parallel transmission of PUCCH and PUSCH within the same PUCCH group.  Note 10: Simultaneous transmission of up to 2 PUSCHs within the same active UL BWP, with depending on the configuration, equal to 1 or 2, subject to UE capability for parallel transmission of PUSCH and PUSCH within the same active UL BWP. | |