**3GPP TSG-RAN WG4 Meeting #102-e *R4-2206948***

**Electronic meeting, Feb. 21 – Mar.03, 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.133** | **CR** |  | **rev** |  | **Current version:** | **17.4.0** |  |
|  | | | | | | | | |
| *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 |  | Core Network |  |

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| ***Title:*** | DraftCR on DCI based DL and UL TCI switching delay requirements | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_feMIMO-Core | | | | |  | ***Date:*** | | | 2022-02-14 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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:*** | | Rel-17 feMIMO has introduced UL TCI switching under Rel-17 unified TCI framework supporting DCI-based DL and UL TCI state switching. RAN1 also defines a new parameter of a beam application time (*BeamAppTime\_r17*) indicating the TCI switching time. This CR defines a new DL and UL TCI switching delay requirement based on TS38.214 updates. | | | | | | | | |
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| ***Summary of change:*** | | For DCI-based downlink and uplink TCI switching delay under Rel-17 unified TCI framework, a new delay requirement is applied. | | | | | | | | |
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| ***Consequences if not approved:*** | | The DCI-based DL/UL TCI switching delay requirement is new in Rel-17 unified TCI framework. | | | | | | | | |
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| ***Clauses affected:*** | | 8.15.4 and 8.16.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

==========================Start of first change =============================

8.15.4 DCI based downlink TCI state switch delay

When a UE is configured with the higher layer parameter with [*tci-StateId\_r17*] for *unified TCI switching* and receives DCI format 1\_1/1\_2 with or without DL assignment providing indicated TCI-State with [*tci-StateId\_r17*] for a CC or all CCs in the same CC list configured by *simultaneousTCI-UpdateList1 or simultaneousTCI-UpdateList2*, the UE transmits a PUCCH with HARQ-ACK information corresponding to the DCI carrying the TCI-State indication.

If the target TCI state is known, the downlink TCI switching to the indicated TCI-State in the DCI format shall be completed starting from the first slot that is at least *BeamAppTime\_r17* symbols after the last symbol of the PUCCH carrying acknowledgement in response to the DCI triggering TCI state activation. The first slot and the *BeamAppTime\_r17* symbols are both determined on the carrier with the smallest SCS among the carrier(s) applying the beam indication. The value of *BeamAppTime\_r17* is defined in TS 38.331 [2]. The known condition for TCI state defined in clause [8.15.2] is applied.

==========================End of first change =============================

==========================Start of second change =============================

8.16.4 DCI based uplink TCI state switch delay

When a UE is configured with the higher layer parameter with [*tci-StateId\_r17*] for *unified TCI switching* and receives DCI format 1\_1/1\_2 with or without DL assignment providing indicated TCI-State with [*tci-StateId\_r17*] for a CC or all CCs in the same CC list configured by *simultaneousTCI-UpdateList1 or simultaneousTCI-UpdateList2*, the UE transmits a PUCCH with HARQ-ACK information corresponding to the DCI carrying the TCI-State indication.

If the target TCI state is known, the uplink TCI switching to the indicated TCI-State in the DCI format shall be completed starting from the first slot that is at least *BeamAppTime\_r17* symbols after the last symbol of the PUCCH carrying acknowledgement in response to the DCI triggering TCI state activation. The first slot and the *BeamAppTime\_r17* symbols are both determined on the carrier with the smallest SCS among the carrier(s) applying the beam indication. The value of *BeamAppTime\_r17* is defined in TS 38.331 [2]. The known condition for TCI state defined in clause [8.16.2] is applied.

==========================End of second change =============================