**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** |
|  |
|  | **38.133** | **CR** |  | **rev** |  | **Current version:** | **17.4.0** |  |
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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 |  | Core Network |  |

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| ***Title:***  | DraftCR on DCI based DL and UL TCI switching delay requirements |
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| ***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 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:*** | 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 |
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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:*** |  |

==========================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 =============================