**3GPP TSG RAN WG1 #117 R1-2405716**

**Fukuoka City, Fukuoka, Japan, May 20th – 24th, 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  | **38.214** | **CR** | **0586** | **rev** | **-** | **Current version:** | **18.2.0** |  |
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| *For* [***HELP***](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:***  | Correction on QCL assumption after LTM cell switch command |
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| ***Source to WG:*** | Moderator (Fujitsu), Nokia, Ericsson, Google, Huawei, HiSilicon, Langbo, Lenovo, New H3C, Samsung, ZTE |
| ***Source to TSG:*** | R1 |
|  |  |
| ***Work item code:*** | NR\_mob\_enh2-Core |  | ***Date:*** | 2024-05-23 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***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 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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
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| ***Reason for change:*** | The TCI states (*CandidateTCI-State-r18*) for LTM are designed based on Rel-17 unified TCI framework. However, this does not require any relation between the LTM TCI states and the TCI states of the target cell. In other words, the application of LTM TCI states should not be dependent on that the target cell is configured with Rel-17 or Rel-15 TCI states. In RAN1-116bis, changes were made in section 5.1.5 to make exception for LTM where before the application of an indicated TCI state from the configured unified TCI states in the target cell, the UE uses the TCI state(s) indicated in the LTM cell switch command for applicable DL and UL channels/signal. However, this was done only for unified TCI state framework in the target cell. Similar exception needs to be specified for the scenarios when *tci-PresentInDCI* is set to 'enabled' or *tci-PresentDCI-1-2* is configured for the CORESET scheduling the PDSCH, and the time offset between the reception of the DL DCI and the corresponding PDSCH is equal to or greater than *timeDurationForQCL* if applicable, after a UE receives an initial higher layer configuration of TCI states and before reception of the activation command.  |
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| ***Summary of change:*** | Clarify the UE assumptions of using indicated TCI state in the cell switch command after the execution of an LTM cell switch procedure when *tci-PresentInDCI* is set to 'enabled' or *tci-PresentDCI-1-2* is configured for the CORESET scheduling the PDSCH, and the time offset between the reception of the DL DCI and the corresponding PDSCH is equal to or greater than *timeDurationForQCL* if applicable, after a UE receives an initial higher layer configuration of TCI states and before reception of the activation command. |
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| ***Consequences if not approved:*** | Conflicting behaviors in 38.213 and 38.214 on the QCL assumptions after an LTM cell switch. |
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| ***Clauses affected:*** | 5.1.5 |
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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 ...  |
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| ***Other comments:*** | **Isolated Impact Analysis:**This CR has no isolated impact on network and UE behavior. |
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| ***This CR's revision history:*** | This is the first version of this draft CR  |

5.1.5 Antenna ports quasi co-location

<unchanged part omitted>

When the UE would transmit a PUCCH with HARQ-ACK information in slot *n* corresponding to the PDSCH carrying the activation command, the indicated mapping between TCI states and codepoints of the DCI field *'Transmission Configuration Indication'* should be applied starting from the first slot that is after slot$ n+3N\_{slot}^{subframe,µ}+\frac{2^{μ}}{2^{μ\_{K\_{mac}}}}∙k\_{mac}$ where ** is the SCS configuration for the PUCCH and $μ\_{K\_{mac}} $is the subcarrier spacing configuration for $k\_{mac}$ with a value of 0 for frequency range 1, and $k\_{mac}$ is provided by *K-Mac* or $k\_{mac}=0$ if *K-Mac* is not provided. If *tci-PresentInDCI* is set to 'enabled' or *tci-PresentDCI-1-2* is configured for the CORESET scheduling the PDSCH, and the time offset between the reception of the DL DCI and the corresponding PDSCH is equal to or greater than *timeDurationForQCL* if applicable, after a UE receives an initial higher layer configuration of TCI states and before reception of the activation command,

* the UE assumes that DM-RS of ports of PDSCH of a serving cell are quasi co-located with the reference signal(s) in the *CandidateTCI-State* indicated in the LTM Cell Switch Command MAC CE [10, 38.321], except during RACH procedure for RACH-based LTM, if applicable, otherwise
* the UE may assume that the DM-RS ports of PDSCH of a serving cell are quasi co-located with the SS/PBCH block determined in the initial access procedure with respect to *qcl-Type* set to 'typeA', and when applicable, also with respect to *qcl-Type* set to 'typeD'.

<Unchanged part omitted>

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