**3GPP TSG- RAN4 Meeting #** **111 *R4-2410307***

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

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.133** | **CR** | **-** | **rev** | **1** | **Current version:** | **18.5.0** |  |
|  | | | | | | | | |
| *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:*** | Correction on LTM TCI state activation delay | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_Mob\_enh2-Core | | | | |  | ***Date:*** | | | 2024-5-23 |
|  |  | | | |  | |  | | |  |
| ***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 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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | On top of Big CR [R4-2406513] endorsed in RAN4#110bis, the following changes are made further (please find the content with “Huawei\_RAN4#111” change mark). | | | | | | | | |
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| ***Summary of change:*** | | Correction on TCI state activation for LTM candidate cell | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | 8.X | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **x** |  | Test specifications | | | | TS38.533 | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

<End of Change 1>

### 8.X TCI state activation for LTM candidate cell

8.x.1 Introduction

The requirements in this clause apply for a UE configured with one or more TCI state configurations on LTM candidate cell. UE shall complete the activation of TCI state within the delay defined in this clause after receiving a MAC CE indicating LTM candidate cell TCI state activation before cell switch command as specified in clause 6.1.3.75 of TS 38.321.

The requirements in this clause apply for

- Known TCI state in FR1 and FR2 specifed in clause 8.x.2, and

- Unknown TCI state in FR1 specifed in clause 8.x.2, provided the following conditions are met:

* + UE has reported L3 measurement result with the associated SSB index of the TCI state within [1280ms or 5 seconds] before the LTM TCI state activation command.

SNR of the associated SSB is above -3dB.8.x.2 Known TCI state conditions

The candidate TCI state in the TCI state activation list is known if the following conditions are met:

- During the period from the last transmission of the RS resource used for the L1-RSRP measurement reporting for the target downlink TCI state to the completion of active downlink TCI state activation, where the RS resource for L1-RSRP measurement is the RS in target downlink TCI state or QCLed to the target downlink TCI state

- The MAC CE command indicating the activation of downlink TCI state is received within 1280 ms upon the last transmission of the RS resource for beam reporting or measurement

- The UE has sent at least 1 valid L1-RSRP report for the target downlink TCI state before the MAC CE command is received.

- The target downlink TCI state remains detectable during the downlink TCI state activation period

- The SSB associated with the downlink TCI state remain detectable during the downlink TCI activation period

- SNR of the downlink TCI state ≥ -3dB

Otherwise, the candidate TCI state is unknown.

8.x.3 SSB based TCI state activation delay

In FR1, when the UE receives LTM candidate cell TCI state activation command at slot n, the UE shall have completed the LTM TCI state list update in slot n + THARQ + + [ TOk\*(Tfirst-SSB\_List or Tfirst-SSB + TSSB-proc) / *NR slot length]*.In FR2, when all the target TCI states in the active TCI state list are known, when the UE receives TCI state activation command at slot n, UE shall have completed the LTM TCI state list update in slot n + THARQ + + [ TOk\*(Tfirst-SSB\_List or Tfirst-SSB + TSSB-proc) / *NR slot length]*.

Editor’s Note: FFS the definition of Tfirst-SSB\_List or Tfirst-SSB

Editor’s Note: FFS whether and how to consider unknown TCI state in FR2

Where:

- THARQ is the timing between DL data transmission and acknowledgement as specified in TS 38.213 [3].

- TOk = 1 if the target TCI state is not in the serving cell active TCI state list or LTM candidate cell active TCI state list, 0 otherwise.

- Tfirst-SSB is the time to first SSB occasion after slot n + THARQ + when the target SSB is within active BWP, upon receiving PDSCH carrying MAC-CE activation command in slot n;

- Tfirst-SSB is the time to first SSB occasion overlapping with MG after slot n + THARQ + + [2ms] if the SSB needs to be measured with MG, upon receiving PDSCH carrying MAC-CE activation command in slot n;

* + - FFS: this is only applicable to UE supporting inter-frequency L1 measurement with MG.

- TSSB-proc = 2 ms;

<End of Change 1>