**3GPP TSG RAN WG1 #114** **R1-230xxxx**

**Toulouse, France, August 21st – 25th, 2023**

**Agenda item:** 9.17

**Source:** Samsung

**Title:** Summary of email discussions [114-R18-38.213-NR\_mob\_enh2]

**Document for:** Discussion and decision

# Introduction

The purpose of this document is to collect inputs/comments on the draft CR for TS 38.213 [draftCR\_38213 Mobility](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Inbox/drafts/9.17%28Other%29/%5B38.213%20draft%20CRs%5D/NR_mob_enh2/R1-230xxxx%20draftCR_38213%20Mobility.docx) on the introduction of further mobility enhancements for NR. If a comment on a particular aspect has been made by another company, please do not repeat it until, if needed, after a response.

The first checkpoint is on September 5, UTC 13:00.

# First Round Discussion

Please provide your comments on the draft CR for TS 38.213 [draftCR\_38213 Mobility](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Inbox/drafts/9.17%28Other%29/%5B38.213%20draft%20CRs%5D/NR_mob_enh2/R1-230xxxx%20draftCR_38213%20Mobility.docx).

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| Company | Comments |
| vivo | In RAN1#114 meeting, SSB or TRS can be configured in a TCI state for the candidate cell(s) before/during cell switch command was agreed. Therefore, TRS should be added into the TCI state activation as below:For section 21, following parts need be revised:A UE can be indicated, by LTM-Config, cells and SS/PBCH blocks per cell for the UE to obtain synchronization and measure corresponding L1-RSRPs [10, TS 38.133]. A MAC CE command can activate TCI states associated with SS/PBCH blocks or TRSs of corresponding cells. The UE is provided configurations by LTM-CSI-ReportConfigToAddModList for reporting L1-RSRP measurements [6, TS 38.214] that include a number of cells and a number of SS/PBCH blocks per cell from the number of cells. |
| ZTE | **Clause 21****Comment for the following paragragh is as below:**

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| A UE can be indicated, by *LTM-Config*, cells and SS/PBCH blocks per cell for the UE to obtain synchronization and measure corresponding L1-RSRPs [10, TS 38.133]. A MAC CE command can activate TCI states associated with SS/PBCH blocks of corresponding cells. The UE is provided configurations by *LTM-CSI-ReportConfigToAddModList* for reporting L1-RSRP measurements [6, TS 38.214] that include a number of cells and a number of SS/PBCH blocks per cell from the number of cells.  |

* Comment #1: according to the latest agreement in RAN1#114 meeting, in addition to SSB, TRS (e.g., CSI-RS resource in a *NZP-CSI-RS-ResourceSet* configured with higher layer parameter *trs-Info*) can be used as a QCL source RS in a TCI state. For the case of TCI state before CSC, we think that such TCI state is from activated TCI state list by MAC CE. With this consideration, we propose the following change for reference:

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| **Agreement**In R18 LTM, on the QCL source of the TCI state before/during the cell switch command, * SSB or TRS can be configured in a TCI state for the candidate cell(s) before/during cell switch command
	+ Whether the TRS can be used for the candidate cell(s) before/during cell switch command is up to UE capability
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 **Proposed change:**

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| A UE can be indicated, by *LTM-Config*, cells and SS/PBCH blocks per cell for the UE to obtain synchronization and measure corresponding L1-RSRPs [10, TS 38.133]. A MAC CE command can activate TCI states associated with SS/PBCH blocks or CSI-RS of corresponding cells. The UE is provided configurations by *LTM-CSI-ReportConfigToAddModList* for reporting L1-RSRP measurements [6, TS 38.214] that include a number of cells and a number of SS/PBCH blocks per cell from the number of cells.  |

**Comment for the following paragragh are as below:**

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| A UE can be provided configurations for PRACH transmission parameters by *EarlyUlSyncConfig* for cells. The UE can be triggered a PRACH transmission on a cell by a PDCCH order that the UE receives on a serving cell and includes an indication of the cell for the PRACH transmission [4, TS 38.212]. If the serving cell and the candidate cell operate in a same frequency range and the UE would have simultaneous transmissions on the serving cell and the candidate cell, the UE - drops the transmissions on the serving cell when the UE does not support simultaneous transmissions on the serving cell and the candidate cell- prioritizes power allocation to the PRACH transmission on the candidate cell when the UE supports simultaneous transmissions on the serving cell and the candidate cell, and a total UE transmit power in the frequency range would exceed  |

* Comment #2: In order to avoid ambiguity and reduplication with subsequent text, the yellow highlighted part above should be removed.
* Comment #3: Considering whether UE supports simultaneous/parallel transmissions depends on UE capability, such information on capability should be captured in the text.

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| **Agreement(RAN1#113)*** For PDCCH-order based PRACH for candidate cell, **If UE capability does not support simultaneous/parallel transmissions**, when the PRACH transmission to a candidate cell other than current serving cell(including any interruption due to processing time to build the PRACH transmission, carrier or/and BWP switching time if any, UL or DL RF retuning time if any, additional preparation time if any) happen to overlap over one or more symbols or have a time gap below a certain threshold (e.g., N symbols, FFS: the value of N) with following UL transmission to one of the serving cells
* PRACH transmission
* PUCCH/PUSCH transmission carrying HARQ-ACK, SR, P/SP CSI, aperiodic CSI
* SRS transmission
* Any other PUCCH/PUSCH transmission
* Down-select the UE behavior in this case
* Alt 1: Dropping rule is needed
* Alt 2: up to UE implementation

**Agreement(RAN1#114)**When the UE does not support simultaneous/parallel transmissions of PRACH in candidate cell and UL channels and signals in serving cell, support* + serving cell UL TX is dropped.

**Agreement(RAN1#114)**If the UE supports simultaneous/parallel transmissions of PRACH in candidate cell and UL channels and signals in serving cell in the same frequency range, support:* A PRACH transmission to a LTM candidate cell has the highest priority for power allocation

Note: up to UE whether performs power scale-down or drop of UL transmission with lower priority when UL transmission power is insufficient. |

* Comment #4: For the case of supporting simultaneous/parallel transmissions, RAN1 has agreed that UE can determine power allocation with highest priority for PRACH transmission for candidate cell. But these information has not been fully captured in the current spec, especially for the meaning of “highest priority”.
* Comment #5: There is no any discussion and consensus on “a total UE transmit power in the frequency range would exceed ”

Based on the above comments, we propose the following change for reference:**Proposed change:**

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| A UE can be provided configurations for PRACH transmission parameters by *EarlyUlSyncConfig* for cells. The UE can be triggered a PRACH transmission on a cell by a PDCCH order that the UE receives on a serving cell and includes an indication of the cell for the PRACH transmission [4, TS 38.212]. If the serving cell and the candidate cell operate in a same frequency range ~~and the UE would have simultaneous transmissions on the serving cell and the candidate cell~~, the UE - drops ~~the~~ UL transmission~~s~~ on the serving cell when the UE indicates a capability ~~does~~ not to support simultaneous transmissions on the serving cell and the candidate cell- determines ~~prioritizes~~ power allocation with the highest priority to the PRACH transmission on the candidate cell in Clause 7.5, otherwise. ~~when the UE supports simultaneous transmissions on the serving cell and the candidate cell, and a total UE transmit power in the frequency range would exceed~~  |

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| Ericsson | Thank you for the draft CR.**Section 21:**The text could be made clearer if the term “candidate cell” was introduced. All the operations are provided for candidate cells.Note that the TCI states that are activated/applied are different from the serving cell TCI states. The RRC parameter list talks about LTM-Candidate-Tci-States and LTM-Candidate-TCI-UL-States. In the last two paragraphs, italics is used, which shows these are RRC parameters. This is somewhat misleading.We still think the paragraph starting with “A UE can indicated a capability..” is strange. It would be clearer to write:If the UE is provided ueMeasuredTA for a candidate cell, the UE estimates the TA for that candidate cell, and applies the TA at the reception of the LTM cell.switch command.We think there is no need to mention TRS for the LTM TCI states.The procedures related to timing adjustments would fit nicely in section 4,2:A timing advance command [11, TS 38.321] in case of random access response or in an absolute timing advance command MAC CE, or in an LTM cell switch command |
| NOKIA | Thanks for the updated CR. We have the following comments:1. Section 21: As mentioned above by vivo and ZTE, based on the latest agreements, TRS needs to be added for a TCI state’s associated RS.
2. Section 21: For the power allocation prioritization, a reference to section 7.5 needs to be added for complete description. ZTE’s proposed change looks good.
3. Section 21: As Ericsson mentioned, for the TCI states, it is better to clarify that these are associated with LTM operation. We propose the following highlighted updates:

A MAC CE command can activate TCI states associated with SS/PBCH blocks of corresponding cells given by *LTM-Candidate-TCI-State-r18* or/and *LTM-Candidate-TCI-UL-State-r18*.………A UE can be provided by a MAC CE in a PDSCH reception on the serving cell [11, TS 38.321] a LTM-Candidate-TCI-State-r18 *~~TCI-State~~* in LTM-dl-OrJointTCI-StateToAddModList *~~dl-OrJointTCI-StateList~~* and/or LTM-Candidate-TCI-UL-State-r18 in LTM-ul-TCI-ToAddModList *~~TCI-UL-State~~* indicating a unified TCI state [6, TS 38.214] for applicable receptions or transmissions on a cell from the number of cells. |
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