**3GPP TSG-RAN WG1 Meeting #114 R1-23xxxxx**

**Toulouse, France, 21-25 August, 2023**

**Agenda Item: 9.17**

**Source: Moderator (Huawei)**

**Title: Summary of email discussion [Post114-38.212-NR\_Mob\_enh2-Core]**

**Document for: Discussion and Decision**

# Introduction

This document summarizes the discussions on the 38.212 draft CR on NR mobility, and aims to stabilize the 38.212 draft CR.

[Post114-38.212-NR\_Mob\_enh2-Core] Email discussion on Rel-18 draft CRs by September 7 – Editors

# First round discussions

This section summarize the first round email discussions on draft CR v00. Companies are encouraged to provide the first round views by 09/05 (Tuesday), 6:00am UTC, then we can update the draft CR accordingly for the next step discussions.

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| *Company* | *View* |
| Editor | The changes are marked with author “Yan Cheng\_post RAN1#114” on top of the version R1-2306317 endorsed in RAN1#113, which are to reflect the agreements from RAN1#114. |
| vivo | To avoid ambiguities, following TPs are provided for the section 7.3.1.2.1:* The field of “PRACH retransmission indicator” is reserved if the cell indicated by Cell indicator field is a serving cell but not a candidate cell. However, there is no description about how to determine the cell indicated by Cell indicator field is a serving cell but not a candidate cell in the current version. To address this issue, following contents should be introduced to the description of Cell indicator.
	+ Cell indicator – bits indicating the cell for the corresponding PRACH transmission if the UE is configured with higher layer parameter EarlyUlSyncConfig, where C is the number of candidate cells configured with higher layer parameter EarlyUlSyncConfig; If the value of this field is 0, the cell indicated by Cell indicator field is not a candidate cell but a serving cell which transmits the PDCCH order;
	+ 0 bit if the UE is not configured with higher layer parameter EarlyUlSyncConfig.

[Chengyan]: Regarding the mapping from the bit field index to the candidate cells and serving cell, there is no any clear agreement yet. That’s why I didn’t touch it yet. For serving cell indication, what you proposed above seems straightforward, however it seems better to leave people to discuss first as Nokia commented below, including how to map the index to other candidate cell(s). Depending on the final decision, then I can see what the best way to reflect it in the text. For the 0 bit case, I think “otherwise” is sufficient, there should be no any other misunderstanding, similar as many cases on 38.212. * For the part of PRACH retransmission indicator, there is ambiguity about the corresponding criteria to the “otherwise”. To solve it, some modification is provided below:
	+ PRACH retransmission indicator – 0 or 1 bit
		- if the UE is configured with higher layer parameter EarlyUlSyncConfig,
			* 1bit indicating initial transmission or retransmission of PRACH according to Table 7.3.1.2.1-3, if the cell indicated by Cell indicator field is a candidate cell; this bit is reserved if the cell indicated by Cell indicator field is a serving cell but not a candidate cell;
		- 0 bit otherwise.

[Chengyan]: My original thinking is that “if the cell indicated by Cell indicator field is a candidate cell” already means that only when the RRC parameter is configured the 1 bit will exist, however I am fine to make it clearer. I will update as below in the next update. * For the part of reserved bit, “bits” is missed after the “” in the third sub-bullet.

[Chengyan]: Thanks. Will reflect in the next update.  |
| ZTE | **Regarding definition of M in Note of Table 6.3.1.1.2-8C, as in the yellow highlighted part below,** **Table 6.3.1.1.2-8C: Mapping order of CSI fields of one report for SSBRI/RSRP reporting for L1/L2-triggered mobility**

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| **CSI report number** | **CSI fields** |
| CSI report #n | SSBRI #1 as in Table 6.3.1.1.2-6, if reported |
| SSBRI #2 as in Table 6.3.1.1.2-6, if reported |
| … |
| SSBRI # $L×M$ as in Table 6.3.1.1.2-6, if reported |
| RSRP #1 as in Table 6.3.1.1.2-6, if reported |
| Differential RSRP #2 as in Table 6.3.1.1.2-6, if reported |
| … |
| Differential RSRP # $L×M$ as in Table 6.3.1.1.2-6, if reported |
| Note: *L* is the number of reported cells provided by higher layer parameter *noOfReportedCell* and *M* is the number of reported SSBRI/RSRP pairs per cell provided by higher layer parameter *nrofReportedRSPerCell.* |

* Comment #1: The definition of M should be aligned with the description of “*noOfReportedRSPerCell*” field to be captured in TS 38.331 or in RRC list provided by RAN1 to RAN2. where “*noOfReportedRSPerCell*” in RRC list or RAN1 agreements is used to describe the number of RSs per cell (e.g., SSBRI), not for the number of RSs and RSRP pairs per cell.

[Chengyan]: Yes the agreement is “the number of RSs per cell”, however I think directly say “the number of RSs” here is not clear, since in the table what matters is “the number of SSBRI/RSRP pairs”. Let me update as below to avoid the misunderstanding that the number of SSBRI/RSRP pairs is configured by the parameter. Note: *L* is the number of reported cells provided by higher layer parameter *noOfReportedCell* and*M* is the number of reported SSBRI/RSRP pairs per cell and equal to the value provided by higher layer parameter *nrofReportedRSPerCell.** Comment #2: Fix a typo to align para name between TS 38.212 and TS 38.331, “*nrofReportedRSPerCell” can be replaced with “noOfReportedRSPerCell”.*

[Chengyan]: What I see in the latest excel is “nrofReportedRSPerCell”, maybe you can double check. Regarding “Cell indicator” field in Clause 7.3.1.2.1 Format 1\_0, * Comment #3: According to the following agreement achieved in RAN2#123 meeting, RAN2 has agreed that the maximum number of candidate cell is 8, which means that the max value of C is 8 or at most 4 bits is needed for “Cell indicator” field. Besides, if bit size is determined, we think that we need to further specify the meaning represented by each codepoint indicated by this field.

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| * The size of “Target Configuration ID” field in the LTM Command MAC CE is 3-bits, and the maximum number of LTM candidate cells in RRC configuration is 8.
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[Chengyan]: In my understanding, the number of candidate cell may not always equal to the number of candidate cells configured with higher layer parameter *EarlyUlSyncConfig*, in addition RAN2 agreement is the maximum number of candidate cell which doesn’t mean always configure the maximum value to UE. Therefore, I think the current description is correct. Regarding the mapping of the field, please check my reply to vivo above.  |
| NOKIA | Thanks for the updates. We have the following comments:1. For the “PRACH retransmission indicator” description, as vivo mentioned, its better to directly link this field with EarlyUlSynchConfig too. vivo’s proposed changes look good to us.

[Chengyan]: Please check my reply to vivo above. 1. There is no agreement on the issue on how to determine the cell indicated by Cell indicator field is a serving cell but not a candidate cell. We are fine with vivo’s proposal (using value ‘0’), but we should wait for the RAN1 agreement on this.

[Chengyan]: As I replied to vivo above, let’s leave it to RAN1 discuss first.  |
| Ericsson | Thank you for the draft CR- PRACH retransmission indicator – 0 or 1 bit - 1bit indicating initial transmission or retransmission of PRACH according to Table 7.3.1.2.1-3, if the cell indicated by Cell indicator field is a candidate cell; this bit is reserved if the cell indicated by Cell indicator field is a serving cell but not a candidate cell; - 0 bit otherwise. It is not clear to us how the cell indicator could indicate a serving cell. But as already remarked, this will depend on how the cell indicator field is designed. For some reason, RAN1 thought it was sufficient just to state how many bits were needed. [Chengyan]: Please check my reply to vivo above on the mapping part. In addition, the field is updated in the latest version, please check. Note that it is not sufficient to just state the bit, since from DCI interpretation perspective, UE needs to know that case the bit is meaningful.  |

# Second round discussions

Please find the updated [draft CR v2](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Inbox/drafts/9.17%28Other%29/38.212%20draft%20CRs/%5BPost114-38.212-NR_Mob_enh2-Core%5D/R1-23xxxxx%20Introduction%20of%20Rel-18%20Further%20NR%20mobility%20enhancements_post%20RAN1%23114%20v2.docx) based on inputs from the first round. Companies are encouraged to provide the second round views by 09/06 (Wednesday), 16:00pm UTC if any.

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| *Company* | *View* |
| ZTE | Thanks to editor for your reply and clarification.Regarding description of M in Table 6.3.1.1.2-8C of Clause 6.3.1.1.2, **Table 6.3.1.1.2-8C: Mapping order of CSI fields of one report for SSBRI/RSRP reporting for L1/L2-triggered mobility**

|  |  |
| --- | --- |
| **CSI report number** | **CSI fields** |
| CSI report #n | SSBRI #1 as in Table 6.3.1.1.2-6, if reported |
| SSBRI #2 as in Table 6.3.1.1.2-6, if reported |
| … |
| SSBRI # $L×M$ as in Table 6.3.1.1.2-6, if reported |
| RSRP #1 as in Table 6.3.1.1.2-6, if reported |
| Differential RSRP #2 as in Table 6.3.1.1.2-6, if reported |
| … |
| Differential RSRP # $L×M$ as in Table 6.3.1.1.2-6, if reported |
| Note: *L* is the number of reported cells provided by higher layer parameter *noOfReportedCell* and *M* is the number of reported SSBRI/RSRP pairs per cell and equal to the value provided by higher layer parameter *nrofReportedRSPerCell.* |

we understand the motivation behind your description of parameter M in this way. But it is still unclear for us. In order to make the text of spec clearer and not only align with RAN1 agreement without ambiguity and also match field description of RRC para corresponding to M that have been sent to RAN2, we think that M should maintain its original definition as much as possible, such as “M is the number of reported SSBRI per cell provided higher layer parameter *nrofReportedRSPerCell*”, but an additional description to clarify “the number of reported RSRP is same as that of reported SSBRI ” needs to be added.**Proposed change:****Table 6.3.1.1.2-8C: Mapping order of CSI fields of one report for SSBRI/RSRP reporting for L1/L2-triggered mobility**

|  |  |
| --- | --- |
| **CSI report number** | **CSI fields** |
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| RSRP #1 as in Table 6.3.1.1.2-6, if reported |
| Differential RSRP #2 as in Table 6.3.1.1.2-6, if reported |
| … |
| Differential RSRP # $L×M$ as in Table 6.3.1.1.2-6, if reported |
| Note: *L* is the number of reported cells provided by higher layer parameter *noOfReportedCell* and *M* is the number of reported SSBRI~~/RSRP pairs~~ per cell ~~and equal to the value~~ provided by higher layer parameter *nrofReportedRSPerCell~~.~~ , where the number of reported RSRP is same as the number of reported SSBRI.* |

[Chengyan]: Thanks for the further comment. I think what you updated above is not aligned with the RRC parameter description also if your concern is on the alignment, since the RRC parameter configure the number of RSs. In addition, I think SSBRI-RSRP pair is already used in many places, e.g. the MIMO FG 23-1-2 and mobility FG, it is not something new and can align the terminology. Using the SSBRI-RSRP pair is very clear to show the relationship of SSBRI and RSRP to reflect the reporting content as captured in the table, while your suggestion above cannot show it.In the updated CR, it already just says M equal to the value provide by xxx, which doesn’t mean the description should be exactly the same as what captured in the RRC parameter. Personally I really think the current wording is clearer. Let’s keep it as it is for now, if in the future we can figure out some better wording, we can update accordingly.  |
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