**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-Netw\_Energy\_NR-Core]**

**Document for: Discussion and Decision**

# Introduction

This document summarizes the discussions on the 38.212 draft CR on network energy saving for NR, and aims to stabilize the 38.212 draft CR.

[Post114-38.212-Netw\_Energy\_NR-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](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Inbox/drafts/9.17%28Other%29/38.212%20draft%20CRs/%5BPost114-38.212-Netw_Energy_NR-Core%5D/R1-23xxxxx%20Introduction%20of%20Rel-18%20network%20energy%20saving%20for%20NR.docx). 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* |
| vivo | **Comment #1:**It would be better to write clearly regarding which CSI report #n can be replaced with CSI sub-report #n, so the CR can be modified as the following,**Suggested text change in section 6.3.1.1.2**: If csi-ReportSubConfig is configured, for a corresponding CSI sub-report, the mapping order of CSI fields of one CSI CSI sub-report is determined following the procedure in this clause 6.3.1.1.2, by replacing CSI report #n in the following ~~applicable tables~~ Table 6.3.1.1.2-7, Table 6.3.1.1.2-9, Table 6.3.1.1.2-10 with CSI sub-report #n.**Suggested text change in section 6.3.2.1.2**: If *csi-ReportSubConfig* is configured, for a corresponding CSI sub-report, the mapping order of CSI fields of one CSI CSI sub-report is determined following the procedure in this clause 6.3.2.1.2, by replacing CSI report #n in the following ~~applicable tables~~ Table 6.3.2.1.2-3, Table 6.3.2.1.2-4 with CSI sub-report #n.Further discussion is needed regarding whether NCJT CSI report can be combined with multi-CSI report. For subband CSI, please see Comment #2.**Comment #2:**1. Regarding the mapping order of multiple CSI sub-reports in one CSI report, subband CSI of even subbands of all CSI sub-reports are prioritized over subband CSI of odd subbands of all CSI sub-reports within one CSI report configuration as shown in the following agreement:

**Agreement@114**For CSIs across multiple sub-configurations in one CSI reportConfig map different sub-configurations based on RAN1#114 agreement in 9.7.1* For Part 2 priority reporting level
	+ Option 1: for a given band type from {wideband, even subband, odd subband}, the omission order follows the priority order determined by sub-configuration index

But in current version of CR as shown in the following is not matched with the above agreement.Table 6.3.1.1.2-14: Mapping order of CSI reports to UCI bit sequence , with two-part CSI report(s)

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| UCI bit sequence | CSI report number |
|  | CSI report #1, CSI part 2 wideband, as in Table 6.3.1.1.2-10/10A/10Bif CSI part 2 exists for CSI report #1 |
| CSI report #2, CSI part 2 wideband, as in Table 6.3.1.1.2-10/10A/10Bif CSI part 2 exists for CSI report #2 |
| … |
| CSI report #n, CSI part 2 wideband, as in Table 6.3.1.1.2-10/10A/10Bif CSI part 2 exists for CSI report #n |
| CSI report #1, CSI part 2 subband, as in Table 6.3.1.1.2-11/11A/11Bif CSI part 2 exists for CSI report #1 |
| CSI report #2, CSI part 2 subband, as in Table 6.3.1.1.2-11/11A/11Bif CSI part 2 exists for CSI report #2 |
| … |
| CSI report #n, CSI part 2 subband, as in Table 6.3.1.1.2-11/11A/11Bif CSI part 2 exists for CSI report #n |
| Note: For a CSI report #i containing CSI sub-reports, where i=1,2,…,n,* all the CSI part 2 widebands of CSI sub-reports are mapped to the corresponding part of UCI bit sequence of CSI report #i, from upper part to lower part in increasing order of CSI sub-report priority values;
* after the mapping of all the CSI part 2 widebands of CSI sub-reports, all the CSI part 2 subbands of CSI sub-reports are mapped to the corresponding part of UCI bit sequence of CSI report #i, from upper part to lower part in increasing order of CSI sub-report priority values.
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In the current spec, mapping order of odd subbands and even subbands within each CSI report should refer to a Table 6.3.1.1.2-11/11A/11B, in which the even subbands of each report are mapped before the odd subbands of one CSI report. Table 6.3.1.1.2-11: Mapping order of CSI fields of one CSI report, CSI part 2 subband, *pmi-FormatIndicator=* *subbandPMI* or *cqi-FormatIndicator=subbandCQI*

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| CSI report #nPart 2 subband | Subband differential CQI for the second TB of all even subbands with increasing order of subband number, as in Tables 6.3.1.1.2-3/4/5, if *cqi-FormatIndicator=subbandCQI* and if reported |
| PMI subband information fields  of all even subbands with increasing order of subband number, from left to right as in Tables 6.3.1.1.2-1/2, or codebook index for 2 antenna ports according to Clause 5.2.2.2.1 in [6, TS38.214] of all even subbands with increasing order of subband number, if *pmi-FormatIndicator=* *subbandPMI* and if reported |
| Subband differential CQI for the second TB of all odd subbands with increasing order of subband number, as in Tables 6.3.1.1.2-3/4/5, if *cqi-FormatIndicator=subbandCQI* and if reported |
| PMI subband information fields  of all odd subbands with increasing order of subband number, from left to right as in Tables 6.3.1.1.2-1/2, or codebook index for 2 antenna ports according to Clause 5.2.2.2.1 in [6, TS38.214] of all odd subbands with increasing order of subband number, if *pmi-FormatIndicator=* *subbandPMI* and if reported |

Note: Subbands for given CSI report *n* indicated by the higher layer parameter *csi-ReportingBand* are numbered continuously in the increasing order with the lowest subband of *csi-ReportingBand* as subband 0.Taking CSI report#1 as an example, if CSI report#1 has 3 CSI sub-reports, and if the CR is written as it is now, the mapping order of multiple CSI sub-reports would be{even subbands of CSI sub-report#1, odd subbands of CSI sub-report#1, even subbands of CSI sub-report#2, odd subbands of CSI sub-report#2, even subbands of CSI sub-report#3, odd subbands of CSI sub-report#3}, which is clearly not consistent with the current agreement. To explicitly describe the mapping order of the CSI sub-reports, then the mapping table would need to be modified like the NCJT, e.g., by adding a new Table 6.3.1.1.2-11CTable 6.3.1.1.2-11C: Mapping order of CSI fields of one CSI report, CSI part 2 subband, *pmi-FormatIndicator=* *subbandPMI* or *cqi-FormatIndicator=subbandCQI*

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| --- | --- |
| CSI report #nPart 2 subband | Subband differential CQI for the second TB of all even subbands with increasing order of subband number for CSI sub-report#1, as in Tables 6.3.1.1.2-3/4/5, if *cqi-FormatIndicator=subbandCQI* and if reported |
| PMI subband information fields  of all even subbands with increasing order of subband number for CSI sub-report#1, from left to right as in Tables 6.3.1.1.2-1/2, or codebook index for 2 antenna ports according to Clause 5.2.2.2.1 in [6, TS38.214] of all even subbands with increasing order of subband number, if *pmi-FormatIndicator=* *subbandPMI* and if reported |
| …… |
| Subband differential CQI for the second TB of all even subbands with increasing order of subband number for CSI sub-report#n, as in Tables 6.3.1.1.2-3/4/5, if *cqi-FormatIndicator=subbandCQI* and if reported |
| PMI subband information fields  of all even subbands with increasing order of subband number for CSI sub-report#n, from left to right as in Tables 6.3.1.1.2-1/2, or codebook index for 2 antenna ports according to Clause 5.2.2.2.1 in [6, TS38.214] of all even subbands with increasing order of subband number, if *pmi-FormatIndicator=* *subbandPMI* and if reported |
| Subband differential CQI for the second TB of all odd subbands with increasing order of subband number for CSI sub-report#1, as in Tables 6.3.1.1.2-3/4/5, if *cqi-FormatIndicator=subbandCQI* and if reported |
| PMI subband information fields  of all odd subbands with increasing order of subband number for CSI sub-report#1, from left to right as in Tables 6.3.1.1.2-1/2, or codebook index for 2 antenna ports according to Clause 5.2.2.2.1 in [6, TS38.214] of all odd subbands with increasing order of subband number, if *pmi-FormatIndicator=* *subbandPMI* and if reported |
| …… |
| Subband differential CQI for the second TB of all odd subbands with increasing order of subband number for CSI sub-report#n, as in Tables 6.3.1.1.2-3/4/5, if *cqi-FormatIndicator=subbandCQI* and if reported |
| PMI subband information fields  of all odd subbands with increasing order of subband number for CSI sub-report#n, from left to right as in Tables 6.3.1.1.2-1/2, or codebook index for 2 antenna ports according to Clause 5.2.2.2.1 in [6, TS38.214] of all odd subbands with increasing order of subband number, if *pmi-FormatIndicator=* *subbandPMI* and if reported |

Note: Subbands for given CSI report *n* indicated by the higher layer parameter *csi-ReportingBand* are numbered continuously in the increasing order with the lowest subband of *csi-ReportingBand* as subband 0.1. The same problem also exists in Table 6.3.2.1.2-7 and a new table similar to Table 6.3.1.1.2-11C should be added as well.
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# Second round discussions

TBD