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

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

**Agenda item: 9.17**

**Source: Nokia, Nokia Shanghai Bell**

**Title: Summary on email discussion on Netw\_Energy\_NR**

**Document for: Discussion and Decision**

# 1 Introduction

This thread will discuss the draft CR to 38.214 for the Netw\_Energy\_NR.

First checkpoint for this discussion: **September 5th, 6:00 am UTC**!

# 2 Discussion – first round

The comments in this section are based on version 0 of the the draft CR available in the **Post RAN1#114 discussion. Version 00r01 contains some further updates!**

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| Company | Comments | Editor reply/Notes |
| Lenovo | 1. Regarding the added text in 5.1.6.1 (P3), is it possible to modify to:

“During non-active periods of cell DTX, the UE supporting cell DTX is not expected to receive the periodic CSI-RS and semi-persistent CSI-RS configured in CSI report configuration in *CSI-ReportConfig* ~~for CSI reporting~~ associated with the higher layer parameter reportQuantity comprising at least ‘RI’”In our understanding the intention of the corresponding agreement was to mute P/SP CSI-RS associated with CSI reporting (but not BM reporting). One way to differentiate between CSI and BM reporting is the presence of the ‘RI’ field in the report quantity, which is never combined with RSRP/SINR quantities. We are also unaware if “*CSI-ReoortConfig* for CSI reporting” suffices since the notion of beam/BM reporting never shows up in TS 38.214. We also welcome any other suggestions on how this is to be captured in the spec. Thank you 1. Regarding the comment on powerOffset at the end of Section 5.2.2.5 (P21), we share the same understanding as the editor that the word ‘difference’ is more precise. We also suggest to capture two other aspects in the same agreement, which are (1) “Only legacy values are applicable for the resulted power control offset values”, and (2) “Only legacy values are applicable for the resulted power control offset values”. In light of that, we suggest the following:

“if a sub-configuration indicates a power offset *[powerOffset]*,for CQI calculation, the UE shall assume the corresponding PDSCH signals transmitted on the antenna ports of a CSI-RS resource would have a ratio of EPRE to CSI-RS EPRE equal to the ~~[~~difference~~]~~ between *powerControlOffset* of the CSI-RS resource, given in Clause 5.2.2.3.1, and *[powerOffset], where* the difference between *powerControlOffset* of the CSI-RS resource *[powerOffset] is expected to take the same range of values as powerControlOffset* of the CSI-RS resource, given in Clause 5.2.2.3.1, and is also expected to take on a value that is no larger than the value of *powerControlOffset*”We would also welcome alternative wording that captures the same meaning. 1. Regarding the last paragraph in P23, Clause 5.2.3, the corresponding agreement states that “Follow legacy dropping rules for a CSI report containing multiple CSIs”. To the best of our knowledge, the only CSI report containing multiple CSIs, i.e., multiple values of the same CSI report quantity, is Rel-17 NCJT (CSI report configured with two Resource Groups and 𝑁 Resource Pairs). For Rel-17 NCJT CSI reporting, the entries in Table 5.2.3-1 are unchanged, whereas the content of each entry is captured only in TS38.212 (Clauses 6.3.1.1.2 and 6.3.2.1.2). We therefore respectfully suggest that the same styling of NCJT CSI reporting is adopted for NES.
2. For the first paragraph in Clause 5.2.4 (P25), we suggest replacing “in each corresponding reporting instance” to “in the same corresponding reporting instance”, since CSI corresponding to all reported sub-configurations is expected to be included in the same CSI report.
3. For the last paragraph in Clause 5.2.4 (P26), we suggest removing “one or more CSIs” since it is not needed. We therefore suggest the following

“For a Reporting Setting for which the *CSI-ReportConfig* contains a list of sub-configurations~~, for a given CSI report which contains one or more CSIs~~, omission of Part 2 CSI is defined in Clause 5.2.3.” |  |
| **Editor 02/09** | **I have made some further updates in v00r01, please consider this version in your review! I kindly ask Lenovo colleagues to take a look also at this updated version!**  |  |
| Huawei, HiSilicon | **We have the following initial comments.****Comment#1**Generally, with introduction of “csi-ReportSubConfig” or “csi-ReportSubConfigID”, the terminology of ‘sub-configuration’ is not necessary anymore in RAN1 specifications.For example, we can simply sayand additionally one or more [*csi-ReportSubConfigID*] if configured for a *CSI-ReportConfig* ~~if multiple sub-configurations are contained in the~~ *~~CSI-ReportConfig~~*, as described in Clause 5.2.1.1or, A *CSI-ReportConfig* can contain a list of ~~sub-configurations, provided by the higher layer parameter~~ [*csi-ReportSubConfigID~~List~~]*Or,Each [*CSI-ReportSubConfig*] ~~sub-configuration~~ can be configured with an antenna port subset…**Comment#2****5.2.3/5.2.4****(Depending on discussion among editors,)** perhaps it could be aligned across specs for the CSI report containing multiple CSIs. For example, it might be easier to take each CSI as a sub-report corresponding to a sub-configuration/CSI-ReportSubConfig. This could help avoid the interpretation of “one or more CSIs” as “one or more CSI parameters” of one CSI, and “sub-configuration level” may not be very accurate for reporting omission/dropping, since omission is for report, instead of for configuration.With this, an example for omission could be:For a Reporting Setting for which the *CSI-ReportConfig* contains a list of *CSI-ReportSubConfig*(s)*,* for a corresponding CSI report $n$ which contains one or more CSI sub-report(s), omission of Part 2 CSI(s) for a given priority level of the CSI report $n$ is done at a sub-report ~~sub-configuration~~ level where a sub-report ~~sub-configuration~~ with an index, provided by [*csi-ReportSubConfigID*], with lower value has higher priority. |  |
| Apple1 | Please find our comments for the first roundComment #1 We agree with Lenovo’s comment 1 that for the text in 5.1.6.1 the intention of the corresponding agreement was to mute P/SP CSI-RS associated with CSI reporting (but not BM reporting). We suggest the following modification: Suggested Text in 5.1.6.1 (Comment #1)During non-active periods of cell DTX, the UE supporting cell DTX is not expected to receive the periodic CSI-RS and semi-persistent CSI-RS configured in CSI report configuration in CSI-*ReportConfig* ~~for CSI reporting~~ with reportQuantity including RI.Comment #2 According to our understanding, the number of sub-configurations L can still be 1, although multiple may be the more typical case. We suggest the adding “one or” to the text in 5.2.1 to also cover the single sub-configuration case. **Agreement**For a CSI report config with *L* sub-configuration(s), support a framework that enables a UE to report *N* CSI(s) in one reporting instance where the *N* CSI(s) are associated with *N* sub-configuration(s) from *L* (where ) and each CSI corresponds to one sub-configuration.Suggested Text #2 in 5.2.1 (Comment #2)and additionally one or more [*csi-ReportSubConfigID*] for a *CSI-ReportConfig* if one or multiple sub-configurations are contained in the *CSI-ReportConfig*, as described in Clause 5.2.1.1, Comment #3For the CPU counting in 5.2.1.6, for AP and SP CSI report, the current wording counts the resources from the sub-configurations from 1 to N while they may not be the actually triggered sub-configuration, therefore, we suggest the following modification to the text. Suggested Text #2 in 5.2.1.6 (Comment #3)- If a *CSI-ReportConfig* contains a list of sub-configurations, for a CSI report ~~for~~ with *N or L CSIs* ~~sub-configurations~~ out of *L* sub-configurations contained in a *CSI-ReportConfig*, where $N\leq L$ and $N\geq 1$,- $O\_{CPU}=\sum\_{i=1}^{ L}K\_{s}^{i}$ for periodic CSI report, ~~and~~ $O\_{CPU}=\sum\_{i=1}^{N}K\_{s}^{i}$ ~~for aperiodic and semi-persistent CSI report,~~ where $K\_{s}^{i}$ is the total number of CSI-RS resources corresponding to the *i*-th sub-configuration which are in the *NZP-CSI-RS-ResourceSet* of the *CSI-ResourceConfig* for channel measurement.- $O\_{CPU}=\sum\_{i=1}^{N}K\_{s}^{i}$ for aperiodic and semi-persistent CSI report, where N is the number of indicated sub-configurations by the DCI or MAC CE, $K\_{s}^{i}$ is the total number of CSI-RS resources corresponding to the *i*-th indicated sub-configuration which are in the *NZP-CSI-RS-ResourceSet* of the *CSI-ResourceConfig* for channel measurement. |  |
| vivo | **Comment#1:****Current CR**: - If a *CSI-ReportConfig* contains a list of sub-configurations, for a CSI report for *N* sub-configurations out of *L* sub-configurations contained in a *CSI-ReportConfig*, where $N\leq L$ and $N\geq 1$,- $O\_{CPU}=\sum\_{i=1}^{ L}K\_{s}^{i}$ for periodic CSI report, and $O\_{CPU}=\sum\_{i=1}^{N}K\_{s}^{i}$ for aperiodic and semi-persistent CSI report, where $K\_{s}^{i}$ is the total number of CSI-RS resources corresponding to the *i*-th sub-configuration which are in the *NZP-CSI-RS-ResourceSet* of the *CSI-ResourceConfig* for channel measurement.**Reasons for modification**: The understanding of *i*-th sub-configuration is not clear in the CPU calculation formula.**Proposed CR**:If a *CSI-ReportConfig* contains a list of sub-configurations, ~~for a CSI report for~~ *~~N~~* ~~sub-configurations out of~~ *~~L~~* ~~sub-configurations contained in a~~ *~~CSI-ReportConfig~~*~~, where~~ $N\leq L$ ~~and~~ $N\geq 1$~~,~~- $O\_{CPU}=\sum\_{i=1}^{ L}K\_{s}^{i}$ for periodic CSI report, ~~and~~ $O\_{CPU}=\sum\_{i=1}^{N}K\_{s}^{i}$ ~~for aperiodic and semi-persistent CSI report,~~ where $K\_{s}^{i}$ is the total number of CSI-RS resources corresponding to the *i*-th sub-configuration from *L* configured sub-configurations ~~which are in the~~ *~~NZP-CSI-RS-ResourceSet~~* ~~of the~~ *~~CSI-ResourceConfig~~* ~~for channel measurement~~.* $O\_{CPU}=\sum\_{i=1}^{N}K\_{s}^{i}$ for aperiodic and semi-persistent CSI report, where $K\_{s}^{i}$ is the total number of CSI-RS resources corresponding to the *i*-th sub-configuration from N indicated sub-configurations out of L configured sub-configurationswhere $N\leq L$ and $N\geq 1$~~which are in the~~ *~~NZP-CSI-RS-ResourceSet~~* ~~of the~~ *~~CSI-ResourceConfig~~* ~~for channel measurement~~.

**Comment #2:****Current CR**: [For a Reporting Setting for which the *CSI-ReportConfig* contains a list of sub-configurations, CSI reporting is provided for all the sub-configurations in each corresponding reporting instance.]**Reasons for modification**: Only periodic sub-config CSI report would report all CSI sub-reports.**Proposed CR**: For a periodic Reporting Setting for which the *CSI-ReportConfig* contains a list of sub-configurations, CSI reporting is provided for all the sub-configurations in each corresponding reporting instance. |  |
| ZTE, Sanechips |

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| comment#1For the following text, in the case the UE reports supporting cell DTX doesn’t mean NW has to configure DTX for this UE. We suggest to update “ UE supporting cell DTX/DRX” as “UE configured with cell DTX/DRX”Original text 1: During non-active periods of cell DTX, the UE supporting cell DTX is not expected to receive the periodic CSI-RS and semi-persistent CSI-RS configured in CSI report configuration in CSI-*ReportConfig* for CSI reporting.During non-active periods of cell DRX, the UE supporting cell DRX is not expected to transmit the periodic SRS, or semi-persistent SRS for channel acquisition. SRS for positioning is not impacted by cell DRX operation.Suggested text 1: During non-active periods of cell DTX, the UE configured with ~~supporting~~ cell DTX is not expected to receive the periodic CSI-RS and semi-persistent CSI-RS configured in CSI report configuration in CSI-*ReportConfig* for CSI reporting.During non-active periods of cell DRX, the UE configured with ~~supporting~~ cell DRX is not expected to transmit the periodic SRS, or semi-persistent SRS for channel acquisition. SRS for positioning is not impacted by cell DRX operation. |
| comment#2(2.1) For the following text, the configured list of CSI-RS resource, or power offset, or antenna port subset doesn’t have to be “different”. For example, in the case of joint design, the CSI report configuration can be :Sub-config-1: CSI-RS resource list 1;Sub-config-2: power offset 1;Sub-config-3: CSI-RS resource list 1+ power offset 1.In the example above, the the configured list of CSI-RS resource, or power offset, or antenna port subset can be the same in different sub-configurations. We can remove “different” to allow potential gNB implementation flexibility.(2.2 )In the following text of mixed sub-configurations, we suggest to put “s” of “sub-configurations” in the bracket to preclude the case that ONE　sub-configuration responding to type 1 SD while another ONE　sub-configuration responding to type 2 SDOriginal text #2:. A *CSI-ReportConfig* can contain a list of sub-configurations, provided by the higher layer parameter [*csi-ReportSubConfigList],* where each sub-configuration is identified by [*csi-ReportSubConfigID*] and corresponds to a different list of one or more CSI-RS resources or corresponds to a different CSI-RS antenna port subset, and/or corresponds to a different power offset for PDSCH relative to CSI-RS. A UE is not expected to be configured with a *CSI-ReportConfig* that contains a mix of sub-configurations each corresponding to a different list of one or more CSI-RS resources and some other sub-configurations each corresponding to different CSI-RS antenna port subset.Suggested text 2 : . A *CSI-ReportConfig* can contain a list of sub-configurations, provided by the higher layer parameter [*csi-ReportSubConfigList],* where each sub-configuration is identified by [*csi-ReportSubConfigID*] and corresponds to a ~~different~~ list of one or more CSI-RS resources or corresponds to a ~~different~~ CSI-RS antenna port subset, and/or corresponds to a ~~different~~ power offset for PDSCH relative to CSI-RS. A UE is not expected to be configured with a *CSI-ReportConfig* that contains a mix of sub-configuration (s) each corresponding to a ~~different~~ list of one or more CSI-RS resources and some other sub-configuration (s) each corresponding to ~~different~~ CSI-RS antenna port subset. |
| Comment #3In our understanding, the “subsets of resources” is provided by the “ a list of one or more CSI-RS resources”. So we suggest a minor update to be clear and consistent with other paragraphs.Original text #3: Different subsets of resources, where a subset contains one or more resources, of a NZP CSI-RS Resource Set for channel measurement can correspond to different sub-configurations contained in a *CSI-ReportConfig,* or all the resources of a NZP CSI-RS Resource Set for channel measurement can correspond to each of the sub-configurations contained in a *CSI-ReportConfig*, as described in Clause 5.2.1.4.2.Proposed text #3:Different subsets of resources, where a subset contains a list of one or more resources, of a NZP CSI-RS Resource Set for channel measurement can correspond to different sub-configurations contained in a *CSI-ReportConfig,* or all the resources of a NZP CSI-RS Resource Set for channel measurement can correspond to each of the sub-configurations contained in a *CSI-ReportConfig*, as described in Clause 5.2.1.4.2. |
| Comment #4We agree with the suggestion from vivo Comment#1 to make it clear. Moreover, we also prefer to use another symbolic for “N” and “L” in *N* sub-configurations out of *L* sub-configurations since “N” and “L” have different meanings in the same subclause.  |
| Comment #5Not sure why transposition operation is needed. The following update is suggested to be consistent with the previous paragraphs.Original text #5:  for CQI calculation for the sub-configuration with the antenna port subset represented by vector [3000 + *p*(*0*), …, 3000 + *p*(*P* – 1)]*T* of size *P*, the UE should assume that PDSCH signals on antenna ports in the set [1000,…, 1000+ν-1] for ν layers would result in signals equivalent to corresponding symbols transmitted on antenna ports [3000 + *p*(*0*), …, 3000 + *p*(*P* – 1)] *T*,Proposed text #5:for CQI calculation for the sub-configuration with the antenna port subset represented by ~~vector~~ [3000 + *p*(*0*), …, 3000 + *p*(*P* – 1)]*~~T~~* of size *P*, the UE should assume that PDSCH signals on antenna ports in the set [1000,…, 1000+ν-1] for ν layers would result in signals equivalent to corresponding symbols transmitted on antenna ports [3000 + *p*(*0*), …, 3000 + *p*(*P* – 1)] *~~T~~*, |

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