**3GPP TSG RAN WG1 Meeting #107-e R1-** **210xxxx**

**e-Meeting, 11th – 19th November 2021**

**Title: Preparation Summary of NR UE Power Saving [107-e-Prep-AI-7.2.7]**

**Agenda item: 7.2.7**

**Source: CATT**

**Document for: Discussion**

# Summary of Email Discussion during Preparation[107-e-Prep-AI-7.2.7]

**Both Issues 1 and 2 are editorial issues without further discussion in RAN1#107-e.**

For issue 1, the editorial change was agreed in RAN1#106-e without captured by Editor of TS38.214.

**Proposal:**

**Editor to capture the agreed editorial change agreed in RAN1#106-e as follows,**

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| 38.214 Clause 6.1.2.1 <omitted text>  When the UE is configured with *minimumSchedulingOffsetK2* in an active UL BWP it applies a minimum scheduling offset restriction indicated by the '*Minimum applicable scheduling offset indicator*' field in DCI format 0\_1 or DCI format 1\_1 if the same field is available. When the UE is configured with *minimumSchedulingOffsetK2* in an active UL BWP and it has not received '*Minimum applicable scheduling offset indicator*' field in DCI format 0\_1 or 1\_1, the UE shall apply a minimum scheduling offset restriction indicated based on '*Minimum applicable scheduling offset indicator*' value '0'. When the minimum scheduling offset restriction is applied the UE is not expected to be scheduled with a DCI in slot *n* to transmit a PUSCH scheduled with C-RNTI, CS-RNTI, MCS-C-RNTI or SP-CSI-RNTI with *K*2 smaller than, where *K*2min and are the applied minimum scheduling offset restriction and the numerology of the active UL BWP of the scheduled cell when receiving the DCI in slot *n*, respectively, and is the numerology of the new active UL BWP in case of active UL BWP change in the scheduled cell and is equal to , otherwise. The minimum scheduling offset restriction is not applied when PUSCH transmission is scheduled by RAR UL grant or fallbackRAR UL grant for RACH procedure, or when PUSCH is scheduled with TC-RNTI. The application delay of the change of the minimum scheduling offset restriction is determined in Clause 5.3.1. |

The editorial changes in issue 2 has been discussed with summary as follows,

* Correct that a search space set for monitoring DCI format 2\_6 is provided by a paramter of *searchSpace* with an indication by *dci-Format2-6*, which is the common usage in TS 38.213, e.g. in clause 10.1.
  + There is no consensus that this is an essential of error correction

**Proposal**

**There is no consensus of the essential correction by adding “*searchSpace* indicated by” in Clause 10.3 of TS38.213**

* Change “*size-DCI-2-6*” to “*sizeDCI-2-6*” in clause 10.3 to match the parameter name in TS 38.331.
  + The editorial changes in issue 2 to align RRC parameter *sizeDCI-2-6* was agreed in RAN1#104-e.

**Proposal:**

**Editor to capture the agreed editorial change agreed in RAN1#104-e as follows,**

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| TS38.213 10.3 PDCCH monitoring indication and dormancy/non-dormancy behaviour for SCells  A UE configured with DRX mode operation [11, TS 38.321] can be provided the following for detection of a DCI format 2\_6 in a PDCCH reception on the PCell or on the SpCell [12, TS 38.331]  - a PS-RNTI for DCI format 2\_6 by *ps-RNTI*  - a number of search space sets, by *dci-Format2-6*, to monitor PDCCH for detection of DCI format 2\_6 on the active DL BWP of the PCell or of the SpCell according to a common search space as described in clause 10.1  - a payload size for DCI format 2\_6 by *size~~-~~DCI-2-6*  - a location in DCI format 2\_6 of a Wake-up indication bit by *ps-PositionDCI-2-6*  - a '0' value for the Wake-up indication bit, when reported to higher layers, indicates to not start the *drx-onDurationTimer* for the next long DRX cycle [11, TS 38.321]  - a '1' value for the Wake-up indication bit, when reported to higher layers, indicates to start the *drx-onDurationTimer* for the next long DRX cycle [11, TS 38.321] |

* Change “a” to “the” in the sentence of “the physical layer of a UE reports the value of the Wake-up indication bit for the UE to higher layers [11, TS 38.321] for the next long DRX cycle”.
  + There is no consensus on the essential correction of the error in the current specification.

**Proposal**

* **There is no consensus of the essential correction by changing “a” to “the” in the sentence of “the physical layer of a UE reports the value of the Wake-up indication bit for the UE to higher layers [11, TS 38.321] for the next long DRX cycle” in Clause 10.3 of TS38.213.**

# Email Discussion during Preparation[107-e-Prep-AI-7.2.7]

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| **Company** | **Supporting Issues (1 and 2) and draft CRs** | **Comments** |
| Ericsson | See comments | Issue 1 (38.214) and Issue 2 (changes 1, 3 for 38.213) are not essential corrections - UE behavior would be same without any of these changes. Issue 2, change 2 for 38.213 is RRC parameter name alignment.  Overall, OK to inform the editors to consider these for alignment CRs - we do not see need for a dedicated email discussion for these. |
| Huawei, HiSilicon | Support Issue#2.  Issue#1 was endorsed in RAN1#106 already. | 1. For issue#1, the correction is OK but it was already endorsed in RAN1#106, as below. It was just forgotten to be captured in the editor CR after RAN1#106. Therefore, there is no need to endorse it again in RAN1. The editor of 214 can just refer to the endorsed draft CR in RAN1#106 in the cover sheet and implements it in the next alignment CR.   [**R1-2108473**](file:///C:\MyMeetings\TSGR1_106-e\Minutes\Docs\R1-2108473.zip) **Moderator summary of [106-e-NR\_UE\_Pow\_Sav-01] Moderator (Huawei, HiSilicon)**  **Decision:** As per email decision posted on Aug 20th, following recommendation to the spec editors:   * The editorial spec changes for 38.214 proposed in [R1-2108423](file:///C:\MyMeetings\TSGR1_106-e\Minutes\Docs\R1-2108423.zip) are endorsed in principle to improve clarity of RAN1 specifications. Please consider them in the next specification revision.  1. For issue#2, there are three changes:  * Correct the incorrect citing of parameter name. A search space set for monitoring DCI format 2\_6 should be provided by a paramter of *searchSpace* with an indication by *dci-Format2-6*, which is the common usage in TS 38.213, e.g. in clause 10.1. * Align the name of parameter with TS 38.331. Change “*size-DCI-2-6*” to “*sizeDCI-2-6*” in clause 10.3 to match the parameter name in TS 38.331. * Change “a” to “the” in the sentence of “the physical layer of a UE reports the value of the Wake-up indication bit for the UE to higher layers [11, TS 38.321] for the next long DRX cycle”.   We think they are essential changes. The first one and the second one are not editorial changes. They should be discussed by email for endorsement. |
| ZTE, Sanechips |  | Issue #1: it was agreed in RAN1#106bis to be included in editor CR.  Issue #2: we are okay to consider it in editor CR, dedicated discussion is not needed. |
| CATT | No discussion needed | Issue #1: it was agreed in RAN1#106-e and should inform editor.  Issue #2: the correction of *size-DCI-2-6* to *sizeDCI-2-6* was agreed in RAN1#104-e and should inform editor.  The current spec is correct and clear. The other 2 proposed changes in R1-2112410 are not needed. |
| MTK | Support to discuss Issue#2.  Issue#1 was endorsed in RAN1#106 already. | Issue #1: it was agreed in RAN1#106-e and should inform editor.  Issue #2: The three changes seem to make the spec more clear and consistent, so we support the changes. |
| Nokia | See comments.. | For issue#1, I prepared the CR just for awareness and book keeping purposes. If companies are OK this could be just accounted in editors CR based on endorsement in RAN1#106-e wo further discussion.  On issue #2, most seem also editorial. RRC parameter naming could be informed to specification editor to be accounted like typically done. Wording “by searchSpace with an indication” does not seem absolutely necessary thus, whether to account it or not could be left for specification editor. Correspondingly ‘the’ to ‘a’ does not change the functionality in my reading, thus may not be absolutely necessary either. |
| Vivo | Issue #1 and issue # 2 | We are supportive to the Issue #1 and #2 to be agreed. For issue#2, the term ‘by *searchSpace* with an indication by *dci-Format2-6*’ is better and aligned with the term used in other place in the spec. |

# Summary of Open Issues

* **Issues 1: Editorial change on missing “is” in TS 38.214**

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| 38.214 Clause 6.1.2.1 <omitted text>  When the UE is configured with *minimumSchedulingOffsetK2* in an active UL BWP it applies a minimum scheduling offset restriction indicated by the '*Minimum applicable scheduling offset indicator*' field in DCI format 0\_1 or DCI format 1\_1 if the same field is available. When the UE is configured with *minimumSchedulingOffsetK2* in an active UL BWP and it has not received '*Minimum applicable scheduling offset indicator*' field in DCI format 0\_1 or 1\_1, the UE shall apply a minimum scheduling offset restriction indicated based on '*Minimum applicable scheduling offset indicator*' value '0'. When the minimum scheduling offset restriction is applied the UE is not expected to be scheduled with a DCI in slot *n* to transmit a PUSCH scheduled with C-RNTI, CS-RNTI, MCS-C-RNTI or SP-CSI-RNTI with *K*2 smaller than, where *K*2min and are the applied minimum scheduling offset restriction and the numerology of the active UL BWP of the scheduled cell when receiving the DCI in slot *n*, respectively, and is the numerology of the new active UL BWP in case of active UL BWP change in the scheduled cell and is equal to , otherwise. The minimum scheduling offset restriction is not applied when PUSCH transmission is scheduled by RAR UL grant or fallbackRAR UL grant for RACH procedure, or when PUSCH is scheduled with TC-RNTI. The application delay of the change of the minimum scheduling offset restriction is determined in Clause 5.3.1. |

* **Issue 2:** **Correction on the wording “by Searchspace with indication by DCI format 2\_6” and editorial change**

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| TS38.21310.3 PDCCH monitoring indication and dormancy/non-dormancy behaviour for SCells A UE configured with DRX mode operation [11, TS 38.321] can be provided the following for detection of a DCI format 2\_6 in a PDCCH reception on the PCell or on the SpCell [12, TS 38.331]  - a PS-RNTI for DCI format 2\_6 by *ps-RNTI*  - a number of search space sets, by *searchSpace* with an indication by *dci-Format2-6*, to monitor PDCCH for detection of DCI format 2\_6 on the active DL BWP of the PCell or of the SpCell according to a common search space as described in clause 10.1  - a payload size for DCI format 2\_6 by *sizeDCI-2-6*  - a location in DCI format 2\_6 of a Wake-up indication bit by *ps-PositionDCI-2-6*  - a '0' value for the Wake-up indication bit, when reported to higher layers, indicates to not start the *drx-onDurationTimer* for the next long DRX cycle [11, TS 38.321]  - a '1' value for the Wake-up indication bit, when reported to higher layers, indicates to start the *drx-onDurationTimer* for the next long DRX cycle [11, TS 38.321]  ========================= Unchanged parts =========================  If a UE is provided search space sets to monitor PDCCH for detection of DCI format 2\_6 in the active DL BWP of the PCell or of the SpCell and the UE detects DCI format 2\_6, the physical layer of the UE reports the value of the Wake-up indication bit for the UE to higher layers [11, TS 38.321] for the next long DRX cycle.  ========================= Unchanged parts ========================= |

# Contributions summary and proposals

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| Nokia, Nokia Shanghai Bell[2] | * Editorial change with missing “is” in cross-slot scheduling in 38.214 |
| Huawei, HiSilicon [3] | * Correct that a search space set for monitoring DCI format 2\_6 is provided by a paramter of *searchSpace* with an indication by *dci-Format2-6*, which is the common usage in TS 38.213, e.g. in clause 10.1. * Change “*size-DCI-2-6*” to “*sizeDCI-2-6*” in clause 10.3 to match the parameter name in TS 38.331. * Change “a” to “the” in the sentence of “the physical layer of a UE reports the value of the Wake-up indication bit for the UE to higher layers [11, TS 38.321] for the next long DRX cycle”. |

# Reference

1. ~~R1-2112264 Remaining issues for Power Saving Qualcomm Incorporated~~
2. R1-2112375 Missed editorial on cross-slot scheduling based power saving Nokia, Nokia Shanghai Bell
3. R1-2112410 Maintenance on Rel-16 UE Power Saving Huawei, HiSilicon