**3GPP TSG RAN WG1 Meeting #105-e R1-** **210xxxx**

**e-Meeting, 10th – 27th May 2021**

**Title: Summary of NR UE Power Saving**

**Agenda item: 7.2.7**

**Source: CATT**

**Document for: Discussion**

# Final Summary of Email Discussions and Agreements

# Email Discussion [104b-e-NR\_UE\_Pow\_Sav\_01]

# Email Discussion during Preparation[104b-e-Prep\_NR\_UE\_Pow\_Sav]

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| **Company** | **Supporting Issues and draft CR** | **Comments** |
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# Summary of Open Issues

* **Issue 1: The proposed CR for applicable K2min in TS 38.214 when SUL is configured [1]**

If SUL is configured, both UL and SUL belongs to the same serving cell with separate BWP configurations. K2min is also configured separately for UL and SUL. , K2min needs to be clarified when DCI schedules a PUSCH on either UL or SUL.

 **Prospoal for email discussion with the draft CR.**

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| 6.1.2.1 Resource allocation in time domain======skipped part=======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 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$\left⌈K\_{2min}⋅\frac{2^{μ^{'}}}{2^{μ}}\right⌉$, where *K*2min and $μ$ 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 $μ^{'}$ is the numerology of the new active UL BWP in case of active UL BWP change in the scheduled cell and is equal to $μ$, otherwise. If the UE is configured with *supplementaryUplink* in *ServingCellConfig* in the cell, *K*2min and $μ$ are the applied minimum scheduling offset restriction and the numerology of the active UL BWP of the scheduled UL or the scheduled SUL carrier for the PUSCH transmission when receiving the DCI in slot *n*, respectively, and $μ^{'}$ is the numerology of the new active UL BWP in case of active UL BWP change in the scheduled UL or SUL carrier of the scheduled cell and is equal to $μ$, 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.======skipped part======= |

* **Issue 2:** **Restrict A-CSI-RS trigger by SRS request field for non-codebook based MIMO without cross-slot scheduling. [2]**

The issue of A-CSI-RS trigger for Non-codebook based UL MIMO and the cross slot scheduling with K > 0 was discussed in RAN1#104b-e with no consensus in change the specification.

**Proposal: No further discussion in RAN1#105e**

* **Issue 3:** **The condition of default A-CSI-RS offset value 0 is “or” or “and” when the UE is not configured with minimumSchedulingOffsetK0 for any DL BWP or/and** **minimumSchedulingOffsetK2 for any UL BWP [3]**

**Proposal: Email discussion the condition is “or” or “and” for minimumSchedulingOffsetK0, minimumSchedulingOffsetK2**

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| **TP for Clause 5.2.1.5.1 of TS38.214**<omit unchanged text>When aperiodic CSI-RS is used with aperiodic reporting, the CSI-RS offset is configured per resource set by the higher layer parameter *aperiodicTriggeringOffset* or *aperiodicTriggeringOffset-r16*. The CSI-RS triggering offset has the values of {0, 1, 2, 3, 4, 5, 6, …, 15, 16, 24} slots. If the UE is not configured with *minimumSchedulingOffsetK0* for any DL BWP ~~or~~ and *minimumSchedulingOffsetK2* for any UL BWP and if all the associated trigger states do not have the higher layer parameter *qcl-Type* set to 'typeD' in the corresponding TCI states, the CSI-RS triggering offset is fixed to zero.<omit unchanged text> |

# Contributions summary and proposals

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| Huawei, HiSilicon [1] | * Proposal 1: The proposed CR for applicable K2min in TS 38.214 when SUL is configured.
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| Apple [2] | * Proposal 1: Explicitly specify that A-CSI-RS is located in the same slot as the SRS request field to the case where cross-slot scheduling is not configured, or when current applicable K0min = 0.
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| Ericsson[3] | * Proposal : Adopt below TP for 38.214-g50, subclause 5.2.1.5.1 when A-CSI-RS for non-codebook-based MIMO and cross-slot scheduling is configured
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# Reference

1. R1-2104254 Remaining issues for Rel-16 UE power saving Huawei, HiSilicon
2. R1-2105086 Maintenace of UE power saving for NR Apple
3. R1-2105788 Maintenance for Rel-16 UE power savings Ericsson