3GPP TSG RAN WG1 #104-e R1-21xxxxx

e-Meeting, January 25th – February 5th, 2021

**Agenda item: 7.1**

**Source: Moderator (Nokia)**

**Title:** **Moderator summary of [104-e-NR-7.1CRs-17]  
38.213 CR on DCI ordering in a search space**

**Document for: Discussion and Decision**

# 1 Introduction

Draft CR [R1-2101134](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104-e/Docs/R1-2101134.zip) 38.213 CR on DCI ordering in a search space set, Nokia, Nokia Shanghai Bell noted that there are two possible interpretations in two parts of 38.213 related to how the DCI ordering is counted.

1. When the UE is e.g. configured with 1-symbol CORESET with the fist 3 symbols in a slot as a search space set, and the UE scheduled with a PUSCH in a DCI on an earlier symbol and a PDSCH in a later symbol in the same search space set, the current specification could be interpreted as if the UE may drop the DCI scheduling the PDSCH according to the yellow highlighted text of clause 9.

A UE does not expect to detect a DCI format scheduling a PDSCH reception or a SPS PDSCH release and indicating a resource for a PUCCH transmission with corresponding HARQ-ACK information in a slot if the UE previously detects a DCI format scheduling a PUSCH transmission in the slot and if the UE multiplexes HARQ-ACK information in the PUSCH transmission.

1. When a UE configured with two CCs, it is not clear how the cDAI/tDAI are counted as the yellow highlighted in the paragraph in subclause 9.1.3.1 can be interpreted in two ways when e.g. 1 symbol CORESET with first 3 symbols of the slot are configured to contain a search space. This is because it is not clear what constitutes as a start of a search space set.

The set of PDCCH monitoring occasions for DCI format 1\_0 or DCI format 1\_1 for scheduling PDSCH receptions or SPS PDSCH release is defined as the union of PDCCH monitoring occasions across active DL BWPs of configured serving cells, ordered in ascending order of start time of the search space set associated with a PDCCH monitoring occasion. The cardinality of the set of PDCCH monitoring occasions defines a total number  of PDCCH monitoring occasions.

**Interpretation 1: Even tough there are 3 symbols where PDCCH could be transmitted, they are all part of just one search space set, so the “start time of the search space set” is symbol 0 regardless of where DCI is actually transmitted**



**Interpretation 2: The start time of the search space set is the symbol of the search space in which DCI is transmitted**



# 2 Discussion

# 2.1 Issue #1

Possible interpretation 1: The word ‘previously’ refers to a previous set of search spaces (not counting symbol-wise), and the UE is expected to process both DCIs regardless of their order in time if they are in the same group of search spaces.

Possible interpretation 2: The word ‘previously’ refers to any previous symbol, and the UE may drop the DCI scheduling the PDSCH unless gNB ensures that the PUSCH-scheduling DCI is in an overlapping or in a later symbol than the PDSCH-scheduling DCI.

Possible actions:

1. Draft a CR
2. Capture a RAN1 conclusion in the chairman’s notes

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| **Company** | **Comment** |
| Nokia, NSB | **Interpretation 1:** The previously should refer to an earlier set of search spaces.  **Action a):** a CR should be drafted and agreed together with issue #2 |
| CATT | We have a different understanding on the definition of search space set. For the case when UE is configured with a search space associated with 1-symbol CORESET and configured to monitor PDCCH in the first 3 symbols in a slot, they are three search space sets instead of one according to our understanding. With this understanding, we do not see any issue here. |
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# 2.2 Issue #2

Possible interpretation 1: The start of a search space set is understood as the first symbol of any CORESET in the search space configuration. See the 1st figure in the introduction.

Possible interpretation 2: The start of a search space set is understood as the first symbol of that CORESET in which the DCI is in. See the 2nd figure in the introduction.

Possible actions:

1. Draft a CR
2. Capture a RAN1 conclusion in the chairman’s notes

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| **Company** | **Comment** |
| Nokia, NSB | **Interpretation1:** The previously should refer to any CORESET so that the location of the DCI does not alter the cDAI/tDAI ordering.  **Action a):** a CR should be drafted and agreed together with issue #1 |
| CATT | Same as comments to Issue #1. The DAI ordering should be as shown for interpretation 2. |
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# 3 Conclusions

To be written