**3GPP TSG RAN WG1 #103-e R1-20xxxxx**

**e-Meeting, October 26th – November 13th, 2020**

**Agenda Item:** **7.2.3**

**Source: Moderator (AT&T)**

**Title: Feature Lead Summary of [103-e-NR-IAB-01] Corrections for DCI Format 2\_5 monitoring**

**Document for:** **Discussion/Approval**

# Introduction

This contribution provides a summary of the following email discussion:

[103-e-NR-IAB-01] Corrections for DCI Format 2\_5 monitoring – Thomas (AT&T)

-       Harmonize proposals in R1-2008328, R1-2008409, R1-2008742 to approve a single CR for 38.213.

-       Discussion and decision by 10/29, TPs by 11/4

# Corrections for DCI Format 2\_5 monitoring

**Source**: R1-2008328, R1-2008409, R1-2008742

**Background:** It is currently not captured in 38.213 that an IAB-MT monitors PDCCH candidates in Type-3-PDCCH CSS (all cell types) and USS sets for DCI formats with CRC scrambled by AI-RNTI in addition to the candidates/formats already captured in Section 10.1 of 38.213. This was previously discussed in RAN1#102-e but no CR was approved. Three different proposals are put forward in contributions (R1-2008328, R1-2008409, R1-2008742) so there is a need for discussion during the meeting to harmonize and approve a single CR.

**Alt 1 (R1-2008328):**

# 14 Integrated access-backhaul operation

\*\*\* Unchanged text is omitted \*\*\*

If a PDCCH monitoring periodicity for DCI format 2\_5is smaller than a duration of an availability combination of soft symbols over a number of slots that the IAB-MT obtains at a PDCCH monitoring occasion for DCI format 2\_5 by a corresponding AI index field value, and the IAB-MT detects more than one DCI formats 2\_5 indicating an availability combination of soft symbols in a slot, the IAB-MT expects that each of the more than one DCI formats 2\_5 indicates a same value for the availability combination of the soft symbols in the slot. An IAB-MT monitors PDCCH candidates in a Type3-PDCCH CSS set configured by *SearchSpace* in *PDCCH-Config* with *searchSpaceType* = *common* and a USS set configured by *SearchSpace* in *PDCCH-Config* with *searchSpaceType* = *ue-Specific* for DCI formats with CRC scrambled by AI-RNTI.

**Alt 2 (R1-2008409)**

10.1   UE procedure for determining physical downlink control channel assignment

A set of PDCCH candidates for a UE to monitor is defined in terms of PDCCH search space sets. A search space set can be a CSS set or a USS set. A UE monitors PDCCH candidates in one or more of the following search spaces sets

-     a Type0-PDCCH CSS set configured by *pdcch-ConfigSIB1* in *MIB* or by *searchSpaceSIB1* in *PDCCH-ConfigCommon* or by *searchSpaceZero* in *PDCCH-ConfigCommon* for a DCI format with CRC scrambled by a SI-RNTI on the primary cell of the MCG

-     a Type0A-PDCCH CSS set configured by *searchSpaceOtherSystemInformation* in *PDCCH-ConfigCommon* for a DCI format with CRC scrambled by a SI-RNTI on the primary cell of the MCG

-     a Type1-PDCCH CSS set configured by *ra-SearchSpace* in *PDCCH-ConfigCommon* for a DCI format with CRC scrambled by a RA-RNTI, a MsgB-RNTI, or a TC-RNTI on the primary cell

-     a Type2-PDCCH CSS set configured by *pagingSearchSpace* in *PDCCH-ConfigCommon* for a DCI format with CRC scrambled by a P-RNTI on the primary cell of the MCG

-     a Type3-PDCCH CSS set configured by *SearchSpace* in *PDCCH-Config* with *searchSpaceType* = *common* for DCI formats with CRC scrambled by INT-RNTI, SFI-RNTI, TPC-PUSCH-RNTI, TPC-PUCCH-RNTI, TPC-SRS-RNTI, CI-RNTI, PS-RNTI, or AI-RNTI and, only for the primary cell, C-RNTI, MCS-C-RNTI, or CS-RNTI(s), and

-     a USS set configured by *SearchSpace* in *PDCCH-Config* with *searchSpaceType* = *ue-Specific* for DCI formats with CRC scrambled by C-RNTI, MCS-C-RNTI, SP-CSI-RNTI, CS-RNTI(s), SL-RNTI, SL-CS-RNTI, SL-L-CS-RNTI, or AI-RNTI.

--------------- Unchanged parts omitted -------------

**Alt 3 (R1-2008742):**

**14 Integrated access-backhaul operation**

<text omitted>

If a PDCCH monitoring periodicity for DCI format 2\_5is smaller than a duration of an availability combination of soft symbols over a number of slots that the IAB-MT obtains at a PDCCH monitoring occasion for DCI format 2\_5 by a corresponding AI index field value, and the IAB-MT detects more than one DCI formats 2\_5 indicating an availability combination of soft symbols in a slot, the IAB-MT expects that each of the more than one DCI formats 2\_5 indicates a same value for the availability combination of the soft symbols in the slot.

The IAB-MT monitors PDCCH candidates in one or more search space sets as described in Clause 10.1, and additionally monitors PDCCH candidates for a DCI format 2\_5 with CRC scrambled by AI-RNTI in one or both of the following search spaces sets

- a Type3-PDCCH CSS set configured by *SearchSpace* in *PDCCH-Config* with *searchSpaceType* = *common*

- a USS set configured by *SearchSpace* in *PDCCH-Config* with *searchSpaceType* = *ue-Specific*.

<text omitted>

**FL Observation 2.1:** All three alternative candidate TPs make the necessary changes, but while Alt 2 has the smallest spec impact, it makes the change in a section outside of Section 14, which goes against the principle of keeping all IAB-specific functionality self-contained in a single section of 38.213. Alt 1 and Alt 3 are almost identical, but Alt 1 is slightly more concise and only references monitoring for 2\_5 which is the context of the paragraph where the text is added. So the FL has a slight preference for Alt 1, but discussion is welcome on the alternatives and any changes which may be needed to capture the issue correctly in a single CR.

**FL Proposal 2.1:** **Take Alt 1 (R1-2008328) as the starting point for the 38.213 CR to address necessary** **corrections for DCI Format 2\_5 monitoring.**

**Discussion:**

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| **Company**  | **Do you agree with FL Proposal 2.1?** | **Comments**  |
| Ericsson | Slight preference to Alt. 3. | Both Alt. 1 and Alt. 3 are acceptable. We have a preference to Alt. 3 since it refers to 10.1 and lists the two search spaces in bullet form making it a bit clearer. |
| Qualcomm | Slight preference for Alt. 3. | Same view as Ericsson. Both Alt. 1 and Alt 3 are agreeable, however Alt. is in our view a clearer version. |
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# Summary

TBD