3GPP TSG-RAN WG1 Meeting #102-e R1-2005913

e-Meeting, 17th – 28th August, 2020

Agenda Item: 7.2.2.1.3

Source: Moderator (Ericsson)

Title: Feature lead summary for Maintenance of UL Signals and Channels

Document for: Discussion, Decision

# 1 Introduction

This document contains a high level summary of the contributions made under the “UL Signals and Channels” sub-agenda item for 7.2.2 Rel-16 Maintenance of NR-based Access to Unlicensed Spectrum. According to the Chairman’s guidance, only one email thread has been assigned to this agenda item.

The first phase of discussion until 8/14 will be used to select topic(s) for the single email thread.

# 2 Identified Issues

|  |  |  |  |
| --- | --- | --- | --- |
| **Issue**  **#** | **Description** | **Tdoc**  **References** | **Classification** |
| 1 | Corrections for frequency domain resource allocation for PUSCH scheduled by RAR UL grant and DCI 0\_0 addressed to TC-RNTI when UL resource allocation Type 2 (Interlacing) is configured   * VRB-to-PRB mapping * UE assumptions on guard bands | R1-2005332, O1, P1  R1-2006554, P1, P2 | Essential |
| 2 | Clarifications on PRACH configuration for BWP with more than one RB-set | R1-2005808, O2  R1-2006371, O2  R1-2006019, P2  R1-2006094, P1 – P3  R1-2005599, P2 | Moved to AI 7.2.2.1.1 |
| 3 | Addition of UL Resource Allocation Type 2 to definition of special values in DCI 0\_1 for semi-persistent CSI deactivation | R1-2005332, P3 |  |
| 4 | Clarification of initial UL BWP for SUL | R1-2005808, O1  R1-2006371, O1  R1-2005599, P1 |  |
| 5 | Editorial corrections to 38.212, 38.213, 38.214 | R1-2006300, Section 2.2  R1-2006094, P6  R1-2005912, P2, P3 | Editorial |
| 6 | Whether or not clarification is needed to DCI size matching rules for DCI 0\_0 when UL Resource Allocation Type 2 (Interlacing) is configured | R1-2006300, P1,P2  R1-2006554, P3, P4  R1-2005912, P1 | Low |
| 7 | Whether or not UL resource allocation Type 2 (interlacing) for DCI Format 0\_2 | R1-2006554, P5  R1-2005599, P3 | Low |
| 8 | Bundling of aperiodic SRS/PUCCH/PUSCH in same slot | R1-2006019, P4 | Low |
| 9 | Clarifications on UCI multiplexing in PUSCH accounting for LBT outcome | R1-2005826, P1, P2  R1-2006094, P5 | Better suited to AI 7.2.2.2.1 |

Since there is only a single email thread allocated to UL, it is important to be quite selective in the issues that are treated to keep the scope manageable. The recommendation of the moderator is to consider at least Issues #1 which is deemed essential. Without corrections, it appears that PUSCH allocation would have some flaws.

FL Proposal

* Consider at least Issue #1
* Address some non-controversial editorial issues

Based on company views from the prior meeting, Issues #7, 8, 9 were considered low priority. Issue #10 was discussed without consensus, and in hindsight, it would have been more appropriate to be discussed within the AI 7.2.2.2.1 Channel Access.

FL Proposal

* Do not consider Issues #6 – 9.

Please share your views on the priority of the remainder of the issues (3 – 5) in the first table below. If you have additional comments, please provide them in the additional table.

* H: High priority
* L: Low priority
* N: Not needed/disagree that this is an issue

|  |  |  |  |
| --- | --- | --- | --- |
| **Company** | **Issue #** | | |
| 3 | 4 | 5 |
| ZTE | H | N | L |
| Samsung | H | N | L |
| HUAWEI | H | N | L |
| Lenovo, Motorola Mobility | H | N | L |
| vivo | H | N | L |
| Sharp | H | L | L |
| Nokia, NSB | H | L/N | L |
| LGE | H | N | H |
| OPPO | H | N | N |

Please provide additional comments (if any) in the following table:

|  |  |
| --- | --- |
| **Company** | **View/Position** |
| ZTE | Agree with FL Proposal on Issue #1, and #6-9. |
| Samsung | Agree with FL Proposal on Issue #1, and #6-#8.  For issue #9, we already had several round of discussion in last meeting, and we almost converged to the conclusion Alt-1 (Transmission(s) that do not occur since the UE fails to access the channel still count as a transmission), though we didn’t have time to discuss the detailed TP. It would be more efficient to conclude this issue in this AI rather than moving to 7.2.2.2.1 (it would lead to repeated discussions by channel access guys, and they also have very heavy burden of many issues in one email thread). |
| HUAWEI | Agree with FL proposal on Issue #1 and #6-8  For issue #9, we share similar view as Samsung, we can try to make the conclusion in this meeting. |
| Lenovo, Motorola Mobility | Agree with FL Proposal on Issue #1, and #6-#8.  Regarding Issue 9, we think it is better to discuss that in this session since we spent much time in previous meeting. Moreover, issue 9 is more related to UL transmission than channel access. We suggest completing this issue in this session and in this meeting. |
| vivo | Agree with FL Proposal on Issue #1, and #6-9.  We think issue 3 is not a controversial issue and would be easy to be converged. If it is not handled, SP-CSI on PUSCH can’t be supported well when UL Resource Allocation Type 2 is configured. |
| Sharp | For issue#6, we are fine not to discuss the issue. On the other hand, the current specification is not complete in terms of size determination of FDRA in DCI format 0\_0. For example, for DCI format 0\_0 with C-RNTI, the current spec. only specifies FDRA size determination if neither of the higher layer parameters *useInterlacePUCCH-PUSCH* in *BWP-UplinkCommon* and *useInterlacePUCCH-PUSCH* in *BWP-UplinkDedicated* is configured. The condition above should be deleted.  When we do not consider Issue#7 anymore, what’s the UE behaviour in a case that the UE is configured with both interlace allocation and DCI format 0\_2? We need to decide which is the common understanding among options listed below.  1) The UE is not expected to be configured with both interlace allocation and DCI format 0\_2.  2) Even when the UE is configured with both, FDRA type of the DCI format 0\_2 is given based on resourceAllocation IE.  3) FDRA type of the DCI format 0\_2 follows interlace configuration. |
| Nokia, NSB | Agree with FL proposal on Issue #1 and #6-8  Issue #9 is in our view best to conclude in this AI. There is no time for related discussion under AI 7.2.2.2.1. |
| LGE | Agree with FL’s suggestion except for Issue #6, which seems be necessary to clarify the group’s understanding on the determination of DCI size for DCI 0\_0 with UL RA type 2. |
| OPPO | Agree with FL’s suggestion. |

## **2.1 <Summary of Discussion>**

* There is consensus (or close to consensus) on the following:
  + Discuss Issue #1 and #3
  + Do NOT discuss Issue #4, 6, 7, 8
* Regarding Issue #5
  + All companies have indicated low priority since these are editorial (but still needed) corrections. One company indicated high priority. They should be non-controversial
* Regarding Issue #9
  + There is an even split of companies who propose to discuss this issue further and those who prefer to not discuss.
  + The full background is contained in Section 2 of R1-2004997 (FL summary from last meeting)
* Regarding Issues #6,7
  + Addressing Sharp and LGE's comment on Issue #6, it is the understanding of the moderator, that even when interlacing is configured, the Rel-15 size matching rules for DCI 0\_0 in a CSS still work transparently. If there is still disagreement on this issue it can be discussed in a future meeting; for now the thread is full.
  + Addressing Sharp's comment on Issue #7, the FDRA field of DCI 0\_2 is undefined for UL resource allocation Type 2; hence, it is the moderators understanding that it is a misconfiguration if interlacing is configured and DCI 0\_2 is used. In general, it is not desirable to list misconfigurations in the spec.

Based on the above, the following is recommended by the moderator for discussion in the single email thread allocated to this AI:

1. Discuss the following issues:

* Issue #1 (Essential corrections)
* Issue #3 (Simple spec update – non-controversial)
* Issue #5 (Editorial corrections – non-controversial)

1. Discuss Issue #9 and agree on whether or not a conclusion is needed

# References

1. R1-2005332 Remaining issues on physical UL channel design in unlicensed spectrum vivo
2. R1-2005599 Remaining issues on the UL channels for NR-U ZTE, Sanechips
3. R1-2005808 Maintenance on UL signals and channels Huawei, HiSilicon
4. R1-2005826 Text proposals for UL signals and channels for NR-U Lenovo, Motorola Mobility
5. R1-2005912 UL signals and channels Ericsson
6. R1-2006019 Discussion on the remaining issues of UL signals and channels OPPO
7. R1-2006094 UL signals and channels for NR-U Samsung
8. R1-2006300 Remaining issues of UL signals and channels for NR-U LG Electronics
9. R1-2006371 Remaining Issues on UL Signals & Channels for NR-U Nokia, Nokia Shanghai Bell
10. R1-2006554 Remaining issues on UL signals/channels for NR-U Sharp