**3GPP TSG RAN WG1 #104-e R1-210nnnn**

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

**Agenda item:** 7.1

**Source:** Moderator (CATT)

**Title:** Summary of [104-e-NR-7.1CRs-09] Correction on UE sounding procedure (round 2)

**Document for:** Discussion and Decision

# Introduction

The following proposal was endorsed during the discussion of draft CR on UE sounding procedure (c.f. [1]) in the first week of RAN1#104-e.

**Proposal:**

* Support collision handling between SRS and PUSCH with UCI per draft CR [R1-2100329].
* Further discuss the case of PUSCH without CSI next week.

**Agreement**

* The text proposal in R1-2100329 for TS 38.214 clause 6.2.1.3 is endorsed in R1-2101997 (TS38.214, Rel-16, CR#0159, Cat. F).

Per Mr. Chairman, RAN1 will further discuss the case of PUSCH without UCI in the second week of RAN1#104-e. This document is to collect company inputs on this issue.

# Company views

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| --- | --- |
| **Company** | **Comment** |
| CATT | In our opinion, this case related to the following two issues:  **1. Whether PUSCH is prioritized**  The two follow alternatives can be considered:  Alt 1: No matter what the priority index of PUSCH is, PUSCH without UCI is dropped.  Alt 2: If the priority index of PUSCH is 1, drop SRS; otherwise, drop PUSCH without UCI.  **2. Whether all PUSCH repetitions are dropped when PUSCH without UCI and with repetition should be dropped**  The two follow alternatives can be considered:  Alt 1: All PUSCH repetitions are dropped.  Alt 2: For PUSCH repetition Type A, only the PUSCH repetition(s) in the slot(s) that have overlapped symbols are dropped; for PUSCH repetition Type B, only the actual repetition(s) that have overlapped symbols are dropped.  For the first issue, alt 2 is slightly preferred. If alt 2 is adopted, the solution can be extended to the cases that SRS is overlapped with PUSCH with UCI, i.e. SRS is dropped if the priority index of PUSCH with UCI is 1. Alt 1 is also acceptable.  For the second issue, since even if some PUSCH repetitions are dropped, PUSCH might be correctly received by the residual repetition(s), alt 2 may have better performance. Both alternatives are acceptable. |
| Qualcomm | We prefer to keep the same priority rule of “PUSCH without UCI < SRS for CS” as it was the case in LTE (pasted the “otherwise” statement of LTE spec as a snapshot in this reply)    In the reply from CATT, in the first issue Alt. 1. In the second issue, our understanding is that only the PUSCH repetition/transmission that are overlapping are dropped; we don’t think that there needs to be a spec change for this, since this is considered the common understanding. There are many cases in the specification that PUSCH dropping vs another channel/signal is not clarified separately for typeA/typeB repetition and a generic term: “PUSCH is dropped”, or “PUSCH not transmitted” is enough to cover the intended behavior. |
| Apple | We share the same view with Qualcomm |
| Ericsson | The current specification is very narrow with respect to PUSCH dropping: PUSCH carrying only CSI is dropped. So not dropping ‘normal’ PUSCH looks on its face to be by design not aligned with LTE, although I don’t personally have the history to hand. So I wonder why we would change it now.  If we do drop ‘normal’ PUSCHs, this includes both dynamic and configured grant PUSCH. Therefore, the network could not override a periodically configured SRS carrier switch with a PUSCH transmission if it wished to do so. Precluding such an override seems undesirable to me.  Can proponents explain the need to drop PUSCH that does not carry CSI? |
| ZTE | We are fine with QC’s suggestion for simplicity.  For Ericsson’s concern, a perfect way is to prioritize PUSCH or CS SRS which corresponds to a later DCI. That is, the later DCI is the latest decision of gNB. So PUSCH or SRS which correspond to former DCI will be dropped. However, this solution will make spec a bit complicate. |
| Huawei | Somewhat we prefer a simpler solution so that PUSCH with or without UCI does not make a difference, from NW implementation perspective. I am not really convinced that whether NW needs or can benefit from different kinds of dropping rules. However from the UE perspective, introducing more differentiation of priority of dropping rules can be much less preferred in Rel-15. Therefore as long as solutions looks simple to make spec clearer, we are fine. So Alt 1 is preferred in issue 1.  For issue 2, we need to be careful although either way is fine, in general. “PUSCH is dropped” is not the same with “PUSCH transmission occasion(s) is dropped” as Alt 2. In my current reading of spec, it is closer to Alt 1 so that all transmission occasions are dropped, e.g. “A PUSCH transmission in a slot of a multi-slot PUSCH transmission is omitted according to the conditions in Clause 11.1 of [6, TS38.213].” |

# Conclusion

**To be determined**

# Reference

1. [R1-2100329](C:\\Users\\wanshic\\OneDrive - Qualcomm\\Documents\\Standards\\3GPP Standards\\Meeting Documents\\TSGR1_104\\Docs\\R1-2100329.zip) Correction on UE sounding procedure CATT