3GPP TSG RAN WG1 #100bis-e R1-200xxxx

e-Meeting, April 20th – 30th, 2020

Agenda Item: 7.2.4.2.1

Source: Moderator (Ericsson)

Title: Text proposal for TS 38.213 related to [100b-e-NR-5G\_V2X\_NRSL-Mode-1-03]

Document for: Endorsement

# 1 Introduction

This document contains a text proposal for TS 38.213 implementing the following agreements:

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| --- |
| Agreements:* Higher layer signaling is used to configure the values of the PSFCH to PUCCH gap (NOTE: this is referred to as sl-FeedbackToUL-ACK in the following)
* The field PSFCH-to-HARQ\_feedback timing indicator:
	+ Selects one of the configured values of the PSFCH to PUCCH gap, except in the case that, together with PUCCH resource indicator, it indicates that no PUCCH resource is provided.
	+ FFS Presence in DCI format 3\_0 and size (0-3 bits).
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The motivation of the TP is as follows:

* Reasons for change: clarification on the determination of slot for SL HARQ-ACK reporting in UL.
* Summary of changes:
	+ The use of PSFCH-to-HARQ\_feedback timing indicator is specified.
	+ Values are given for PSFCH-to-HARQ\_feedback timing indicator and PUCCH resource indicator corresponding to the indication that no PUCCH resource is provided.
* Specs/Sections impacted: TS 38.213 Section 16.5
* Consequences if not approved: SL HARQ-ACK reporting to the gNB does not work correctly

# 2 Text Proposal for 38.213

---------------------------------- Start of Text Proposal ---------------------------------

<Unchanged parts omitted>

## 16.5 UE procedure for reporting HARQ-ACK on uplink

A UE can be provided PUCCH resources or PUSCH resources [12, TS 38.331] to report HARQ-ACK information that the UE generates based on HARQ-ACK information that the UE obtains from PSFCH receptions, or from absence of PSFCH receptions.

For SL configured grant Type 1 or Type 2 PSSCH receptions by a UE within a time period provided by *periodSlCG*, the UE generates one HARQ-ACK information bit in response to the PSFCH receptions to multiplex in a PUCCH transmission occasion that is after a last time resource, in a set of time resources.

For each PSFCH reception occasion, from a number of PSFCH reception occasions that the UE generates HARQ-ACK information to report in a PUCCH or PUSCH transmission, the UE can be indicated by higher layers to perform one of the following and the UE constructs a HARQ-ACK codeword with HARQ-ACK information, when applicable.

- generate HARQ-ACK information with same value as a value of HARQ-ACK information the UE determines from a PSFCH reception in the PSFCH reception occasion and, if the UE determines that a PSFCH is not received at the PSFCH reception occasion, generate NACK

- generate ACK when the UE determines ACK from each PSFCH reception for the number of PSFCH reception occasions; otherwise, generate NACK if the UE determines absence of PSFCH reception or determines a NACK value from a PSFCH reception at a corresponding PSFCH reception occasion

- generate ACK when the UE determines absence of PSFCH reception for each PSFCH reception occasion from the number of PSFCH reception occasions; otherwise, generate NACK

- generate ACK when the UE determines ACK from at least one PSFCH reception for the number of PSFCH reception occasions of a PSFCH resource with an index with $M\_{ID}$, as determined in Clause 16.3, for every identity $M\_{ID}$ of the UEs expected to receive the PSSCH, as indicated by higher layers; otherwise, generate NACK.

The UE generates NACK when, due to prioritization, as described in Clause 16.2.4, the UE does not receive PSFCH in any PSFCH reception occasion associated with a PSSCH transmission in a resource provided by a DCI format 3\_0 with CRC scrambled by a SL-RNTI or, for a configured grant, in a resource provided in a single period and for which the UE is provided a PUCCH resource to report HARQ-ACK information.

The UE generates NACK when, due to prioritization as described in Clause 16.2.4, the UE does not transmit a PSSCH in any of the resources provided by a DCI format 3\_0 with CRC scrambled by SL-RNTI or, for a configured grant, in any of the resources provided in a single period and for which the UE is provided a PUCCH resource to report HARQ-ACK information. The UE generates ACK if the UE does not transmit a PSCCH with a SCI format 0\_1 scheduling a PSSCH in any of the resources provided by a configured grant in a single period and for which the UE is provided a PUCCH resource to report HARQ-ACK information.

With reference to slots for PUCCH transmissions and for a number of PSFCH reception occasions ending in slot $n$, the UE provides the generated HARQ-ACK information in a PUCCH transmission within slot $n+k$, subject to the overlapping conditions in Clause 9.2.5, where $k$ is a number of slots determined from the PSFCH-to-HARQ\_feedback timing indicator field in a DCI format indicating a slot for PUCCH transmission to report the HARQ-ACK information using Table 16.5-1. $k=0$ corresponds to a last slot for a PUCCH transmission that would overlap with the last PSFCH reception occasion.

For a PSSCH reception by a UE that is scheduled by a DCI format, or for a SL configured grant Type 2 PSCCH reception activated by a DCI format, the DCI format can indicate to the UE that a PUCCH resource is not provided by setting PSFCH-to-HARQ feedback timing indicator to ‘000’ and setting PUCCH resource indicator to ‘000’. For a SL configured grant Type 1 PSSCH reception, a PUCCH resource can be provided *PUCCH-SL-Config*. If a PUCCH resource is not provided, the UE does not transmit a PUCCH with generated HARQ-ACK information from PSFCH reception occasions.

Table 16.5-1: Mapping of PSFCH-to-HARQ\_feedback timing indicator field values to numbers of slots

|  |  |
| --- | --- |
| PSFCH-to-HARQ\_feedback timing indicator  | Number of slots  |
| FFS: 1-3 bits |  |
|  | 1st value provided by *sl-FeedbackToUL-ACK*  |

<Unchanged parts omitted>