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 the agreemetns in [100b-e-NR-5G\_V2X\_NRSL-Mode-1-02]

Document for: Endorsement

# 1 Introduction

This document contains the text proposal for the following agreements made in [100b-e-NR-5G\_V2X\_NRSL-Mode-1-02]:

|  |
| --- |
| Agreements:* A UE does not expect to be scheduled to transmit the UL report corresponding to a PSFCH reception earlier than Tprep after the end of the PSFCH.
	+ This includes the effect of time advance.
	+ Tprep = (N+X) ∙ (2048+144) ∙ k ∙ 2 –μ ∙ T\_c where:
		- Working assumption: N is 14, 18, 28 and 32 corresponds to the SCS configuration μ of 0, 1, 2 and 3, μ = min(μ\_SL, μ\_UL)
		- k = T\_s / T\_c (parameters as defined in 38.211)
		- FFS X (including the possibility of value 0)

Agreements:* In the determination of the UL slot used for SL HARQ-ACK reporting to the gNB:
	+ k=0 corresponds to a last slot for a PUCCH transmission that would overlap with the last PSFCH reception occasion assuming that the starting time of the frame for sidelink transmission is given by the starting time of the frame for the downlink reception.
		- FFS: corrections to cover the asynchronous case
 |

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:
	+ Clarification on the meaning of k = 0 for slot determination for SL HARQ-ACK reporting in UL.
	+ Clarification that the UE does not expect to report earlier than the corresponding processing and preparation time.
* 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

TP for TS 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.

A UE does not expect to be provided PUCCH resources or PUSCH resources to report HARQ-ACK information starting earlier than after the end of the last symbol of the last PSFCH based on the reception of which or based on the absence of the reception of which the UE generates the HARQ-ACK information, where

- and are defined in [4.1, TS 38.211]

- , where is the SCS configuration of the SL BWP and is the SCS configuration of the active UL BWP.

- is determined from using Table 16.5-1.

**Table 16.5-1. Values of**

|  |  |
| --- | --- |
|  |  |
| 0 | 14 |
| 1 | 18 |
| 2 | 28 |
| 3 | 32 |

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 , as determined in Clause 16.3, for every identity 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 , the UE provides the generated HARQ-ACK information in a PUCCH transmission within slot , subject to the overlapping conditions in Clause 9.2.5, where is a number of slots indicated by a PSFCH-to-HARQ\_feedback timing indicator field, if present, in a DCI format indicating a slot for PUCCH transmission to report the HARQ-ACK information, or is provided by *sl-ACKToUL-ACK*. corresponds to a last slot for a PUCCH transmission that would overlap with the last PSFCH reception occasion assuming that the starting time of the sidelink frame for transmission is given by the starting time of the downlink, described in Clause 4.3.1 of [4, 38.211] .

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. 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.

<Unchanged parts omitted>

---------------------------------- End of Text Proposal ---------------------------------