**3GPP TSG RAN WG1 #102-e R1-200xxxx**

**e-Meeting, August 17th – 28th, 2020**

**Agenda Item:** 7.2.5.7

**Source:** Moderator (LG Electronics)

**Title:** Text proposals on agreements from [102-e-NR-L1enh-URLLC-IIoTenh-01]

**Document for:** Discussion and decision

# Introduction

From the discussion [102-e-NR-L1enh-URLLC-IIoTenh-01] in RAN1#102-e, text proposals are agreed for corrections to UE behavior related to SPS release and SPS PDSCH receptions.

# Text proposals

* 1. TP#1: UE behavior for HARQ-ACK for SPS PDSCH

**Agreement**

**The following TP for section 9.1.2 in TS 38.213 to capture UE behavior for HARQ-ACK for SPS PDSCH correctly is endorsed for the editor’s CR.**

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| ----------------------------------------------------- Start of text proposal -----------------------------------------------------  9.1.2         Type-1 HARQ-ACK codebook determination  <unchanged text omitted>  Set to the number of serving cells configured to the UE  Set to the number of SPS PDSCH configuration configured to the UE for serving cell  Set to the number of DL slots for SPS PDSCH reception on serving cell with HARQ-ACK information multiplexed on the PUCCH  Set – HARQ-ACK information bit index  Set – serving cell index: lower indexes correspond to lower RRC indexes of corresponding cell  while  Set – SPS PDSCH configuration index: lower indexes correspond to lower RRC indexes of corresponding SPS configurations  while  Set – slot index  while  if {  a UE is configured to receive at least one SPS PDSCH from slot to slot for SPS PDSCH configuration on serving cell , excluding SPS PDSCH that is not required to be received among overlapping SPS PDSCHs in any slot, if any according to [6, TS 38.214], or based on a UE capability for a number of PDSCH receptions in a slot according to [6, TS 38.214], or due to overlapping with a set of symbols indicated as uplink by *tdd-UL-DL-ConfigurationCommon* or by *tdd-UL-DL-ConfigurationDedicated* where is provided by the *pdsch-AggregationFactor*, in *sps-Config* if configured or in *pdsch-config* otherwise, and  HARQ-ACK information for the SPS PDSCH is associated with the PUCCH  }  ----------------------------------------------------- End of text proposal ----------------------------------------------------- |

Reason for changes

According to previous specification description, UE constructs HARQ-ACK codebook only based on the last SPS PDSCH occasion per period per configuration. In this case, if the last SPS PDSCH occasion is cancelled by semi-static TDD configuration, UE may lose HARQ-ACK bit for the SPS PDSCH reception over multiple slots.

Summary of changes

Modify the pseudo code, to consider SPS PDSCH receptions in slots where is the configured number of repetitions.

Specs/Sections impacted

TS 38.213 Clause 9.1.2

Consequences if not approved

UE may lose HARQ-ACK bit for the SPS PDSCH reception over multiple slots if the last SPS PDSCH occasion is cancelled by semi-static TDD configuration.

# TP#2: PUCCH resource determination for SPS PDSCH receptions

**Agreement**

**The following TP for section 9.2.1 in TS 38.213 to accurately describe the PUCCH resource determination for SPS PDSCH receptions is endorsed for the editor’s CR.**

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| ----------------------------------------------------- Start of text proposal -----------------------------------------------------  9.2.1         PUCCH Resource Sets  <unchanged text omitted>  If the UE is provided *SPS-PUCCH-AN-List-r16* and transmits UCI information bits that include only HARQ-ACK information bits in response to one or more SPS PDSCH receptions, the UE determines a PUCCH resource to be  - a PUCCH resource provided by *sps-PUCCH-AN-ResourceID* obtained from the first entry in *sps-PUCCH-AN-List-r16* if , or  - a PUCCH resource provided by *sps-PUCCH-AN-ResourceID*, obtained from the second entry in *sps-PUCCH-AN-List-r16* if provided, if where is either provided by *maxPayloadSize* obtained from the second entry in *sps-PUCCH-AN-List-r16* or is otherwise equal to 1706, or  - a PUCCH resource provided by *sps-PUCCH-AN-ResourceID* obtained from the third entry in *sps-PUCCH-AN-List-r16*, if provided, if where is either provided by *maxPayloadSize* obtained from the third entry in *sps-PUCCH-AN-List-r16* or is otherwise equal to 1706, or  - a PUCCH resource provided by *sps-PUCCH-AN-ResourceID* obtained from the fourth entry in *sps-PUCCH-AN-List-r16*, if provided, if where is equal to 1706.  ----------------------------------------------------- End of text proposal ----------------------------------------------------- |

Reason for changes

Since each PUCCH resource ID is unique per UL BWP, it is not possible to configure PUCCH resource having ID {0,1,2,3} for both of two HARQ-ACK codebooks.

Summary of changes

Modify text to use PUSCH resource provided in sps-PUCCH-AN-List-r16 without restriction on values of *sps-PUCCH-AN-ResourceID.*

Specs/Sections impacted

TS 38.213 Clause 9.2.1

Consequences if not approved

It is not possible to support two HARQ-ACK codebooks for the case of SPS PDSCH receptions only.