**3GPP TSG RAN WG1 #101 R1-200xxxx**

**e-Meeting, May 25th – June 5th, 2020**

Source: moderator (vivo)

Title: Feature lead summary on [101-e-NR-unlic-NRU-CG-01] week2

Agenda Item: 7.2.2.2.4

Document for: Discussion and Decision

1. Introduction

Following is agreed in RAN1#101e

Agreement:

* Value range of the RRC parameter cg-COT-SharingList-r16 is 1709
* The value range of the RRC parameters *cg-StartingFullBW-InsideCOT-r16, cg-StartingFullBW-OutsideCOT-r16* is 7
  + cg-StartingFullBW-InsideCOT-r16  SEQUENCE (SIZE (1..7)) OF INTEGER (0..6)
  + cg-StartingFullBW-OutsideCOT-r16  SEQUENCE (SIZE (1..7)) OF INTEGER (0..6)
* The value range of the RRC parameter cg-COT-SharingOffset-r16 has been agreed in RAN1#100b-e, it is confirmed that the step size is 14 symbols.

Agreement:

The maximum configurable value for *cg-nrofPUSCH-InSlot-r16* can be set as 7

Agreement:

For a given shared COT, UE should provide consistent COT sharing information in multiple consecutive PUSCHs in the same UE-initiated COT.

Discuss TP(s) needed for above agreements and TPs for HARQ-ACK for CBG based PUSCH (Issue 8) until 6/3.

Further discuss TP for 3rd agreement above, and the two alternatives under issue#8.

1. Remaining issues
   1. TP for the agreement under issue6

TP for 38.212

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**6.3.2.1.3 CG-UCI**

For CG-UCI bits transmitted on a CG PUSCH, the CG-UCI bit sequence is determined as follows:

- set for and , where the CG-UCI bit sequence is given by Table 6.3.2.1.3-1, mapped in the order from upper part to lower part.

Table 6.3.2.1.3-1: Mapping order of CG-UCI fields

|  |  |
| --- | --- |
| **Field** | **Bitwidth** |
| HARQ process number | 4 |
| Redundancy version | 2 |
| New data indicator | 1 |
| Channel Occupancy Time (COT) sharing information | if both higher layer parameter *ULtoDL-CO-SharingED-Threshold-r16* and higher layer parameter *cg-COT-SharingList-r16* are configured, where *C* is the number of combinations configured in *cg-COT-SharingList-r16;*  1 if higher layer parameter *ULtoDL-CO-SharingED-Threshold-r16* is not configured and higher layer parameter *cg-COT-SharingOffset-r16* is configured;  0 otherwise;  For a given shared COT, UE should provide consistent COT sharing information in multiple consecutive PUSCHs in the same UE-initiated COT. |

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| Company | Comments |
| Intel | We are Ok with the proposed TP, with the following minor edits:  For a given shared COT, a UE should provide consistent COT sharing information in multiple consecutive PUSCHs occurring within ~~in~~ the same UE’s initiated COT. |
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* 1. Issue 8: HARQ-ACK for CBG based PUSCH

Proposal:

* Agree to introduce the first correction in TP#1 as below

================= Start of TP#1 for TS 38.213 ====================

10.5 HARQ-ACK information for PUSCH transmissions

< Unchanged Texts Omitted >

For a PUSCH transmission scheduled by a DCI format, if a UE is provided *PUSCH-CodeBlockGroupTransmission* for a serving cell, a value of HARQ-ACK information for a transport block of a corresponding HARQ process number is ACK if at least one of CBGs for the PUSCH is ACK; otherwise, a value of HARQ-ACK information is NACK

For a PUSCH transmission scheduled by a DCI format, HARQ-ACK information for a transport block of a corresponding HARQ process number is valid if a first symbol of the PDCCH reception is after a last symbol of the PUSCH transmission or, if the PUSCH transmission is over multiple slots,

- after a last symbol of the PUSCH transmission in a first slot from the multiple slots by a number of symbols provided by *cg-minDFIDelay-r16*, if a value of the HARQ-ACK information is ACK.

- after a last symbol of the PUSCH transmission in a last slot from the multiple slots by a number of symbols provided by *cg-minDFIDelay-r16*, if a value of the HARQ-ACK information is NACK.

< Unchanged Texts Omitted >

========================== End of TP#1 for TS 38.213 =========================

* Down select between 2 alternatives below:
  + Alt1: second correction in TP#1

================= Start of TP#1 for TS 38.213 ====================

For an initial PUSCH transmission configured by *ConfiguredGrantConfig*, if a UE is provided *PUSCH-CodeBlockGroupTransmission* for a serving cell, a value of HARQ-ACK information for a transport block of a corresponding HARQ process number is ACK if the transport block ~~all of CBGs for the PUSCH are~~ is ACK; otherwise, a value of HARQ-ACK information is NACK.

For a PUSCH transmission scheduled by a DCI format, HARQ-ACK information for a transport block of a corresponding HARQ process number is valid if a first symbol of the PDCCH reception is after a last symbol of the PUSCH transmission or, if the PUSCH transmission is over multiple slots,

- after a last symbol of the PUSCH transmission in a first slot from the multiple slots by a number of symbols provided by *cg-minDFIDelay-r16*, if a value of the HARQ-ACK information is ACK.

- after a last symbol of the PUSCH transmission in a last slot from the multiple slots by a number of symbols provided by *cg-minDFIDelay-r16*, if a value of the HARQ-ACK information is NACK.

< Unchanged Texts Omitted >

======================== End of TP#1 for TS 38.213 =========================

* + Alt2: TP#2

=================== Start of TP for TS 38.213 =======================

10.5 HARQ-ACK information for PUSCH transmissions

< Unchanged Texts Omitted >

For a PUSCH transmission scheduled by a DCI format, if a UE is provided *PUSCH-CodeBlockGroupTransmission* for a serving cell, a value of HARQ-ACK information for a transport block of a corresponding HARQ process number is ACK if the transport block for all of CBGs for the PUSCH is ACK; otherwise, a value of HARQ-ACK information is NACK.

For a PUSCH transmission scheduled by a DCI format, HARQ-ACK information for a transport block of a corresponding HARQ process number is valid if a first symbol of the PDCCH reception is after a last symbol of the PUSCH transmission or, if the PUSCH transmission is over multiple slots,

- after a last symbol of the PUSCH transmission in a first slot from the multiple slots by a number of symbols provided by *cg-minDFIDelay-r16*, if a value of the HARQ-ACK information is ACK.

- after a last symbol of the PUSCH transmission in a last slot from the multiple slots by a number of symbols provided by *cg-minDFIDelay-r16*, if a value of the HARQ-ACK information is NACK.

< Unchanged Texts Omitted >

================ End of TP for TS 38.213 ==========================

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| Company | Comments |
| Intel | Our understanding is that for the TPs listed above, we should break the discussion as follows:   1. HARQ interpretation for CGB based retransmissions for DG PUSCH received over a DFI: for this topic we should down-select between the first correction in TP#1 and Alt2. Among them we prefer Alt2. 2. HARQ interpretation for an initial CBG-based CG PUSCH transmission: in this case we are OK with Alt1. |
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* Agree to introduce TP#3

=================== Start of TP for TS 37.213 =======================

\*\*\* Unchanged text is omitted \*\*\*

**4.2.2.2 Contention window adjustment procedures for UL transmissions scheduled/configured by gNB**

If a UE transmits transmissions using Type 1 channel access procedures that are associated with channel access priority class on a channel, the UE maintains the contention window value and adjusts for those transmissions before step 1 of the procedure described in subclause 4.2.1.1, using the following steps:

1) For every priority class , set ;

2) If HARQ-ACK feedback is available after the last update of , go to step 3. Otherwise, if the UE transmission after procedure described in subclause 4.2.1.1 does not include a retransmission or is transmitted within a duration from the end of the *reference duration* corresponding to the earliest UL transmission burst after the last update of transmitted after the procedures described in subclause 4.1.1, go to step 5; otherwise go to step 4.

3) The HARQ-ACK feedback(s) corresponding to PUSCH(s) in the *reference duration* for the latest UL transmission burst for which HARQ-ACK feedback is available is used as follows:

a. If at least one HARQ-ACK feedback is 'ACK' for PUSCH(s) with transport block (TB) based feedback or at least 10% of HARQ-ACK feedbacks is 'ACK' for PUSCH(s) with code block group (CBG) based feedback go to step 1; otherwise go to step 4.

4) Increase for every priority class to the next higher allowed value;

5) For every priority class , maintain as it is; go to step 2.

\*\*\* Unchanged text is omitted \*\*\*

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# References

[1] R1-2004796, “Feature lead summary on [101-e-NR-unlic-NRU-CG-01]”, vivo, RAN1#101e