3GPP TSG-RAN WG1 Meeting #101-e R1- 20xxxxx

e-Meeting, May 25th – June 5th, 2020

Agenda Item: 6.2.1.3

Source: Qualcomm Incorporated

Title: TP for TDD HARQ-ACK bundling

Document for: Discussion/Decision

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| ***Reason for change:*** | HARQ-ACK bundling mechanism is not defined for multi-TB in TDD. |
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| ***Summary of change:*** | For TDD, when multiple TBs are scheduled from the same DCI, follow the same procedure as FDD HARQ-ACK bundling, with the additional constraint that HARQ-ACKs for different set of PDSCH (or SPS release) do not overlap in the same subframe(s). |
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| ***Consequences if not approved:*** | HARQ-ACK bundling is not supported for multi-TB in TDD. |
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| ***Clauses affected:*** | 5.3.3.1.12 (TS 36.212), 7.3.1, 10.1.3 (TS 36.213) |

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| **--------------------------------------------Start of Text Proposal for 36.212-----------------------------------------** 5.3.3.1.12 Format 6-1A **<Unchanged parts are omitted>**  - Downlink Assignment Index – number of bits as specified in Table 5.3.3.1.2-2. This field is reserved when *multi-TB-DL-config* is enabled and multiple TBs are scheduled, or when the configured maximum repetition number is larger than 1 for MPDCCH, and not present when the format 6-1A CRC is scrambled with G-RNTI, or when the higher layer parameter *csi-NumRepetitionCE-r13* indicates more than one subframe.  **<Unchanged parts are omitted>**  **--------------------------------------------End of Text Proposal for 36.212-----------------------------------------**  **--------------------------------------------Start of Text Proposal for 36.213-----------------------------------------** 7.3.2.1 TDD HARQ-ACK reporting procedure for same UL/DL configuration **<Unchanged parts are omitted>**  For TDD and a BL/CE UE,  - if the UE is configured with *multi-TB-DL-config*, and multiple TBs are scheduled by a single DCI  - the UE is not expected to receive any other PDSCH transmission(s) or MPDCCH indicating downlink SPS release, corresponding to which the UE shall report HARQ-ACK in any subframe(s) in which HARQ-ACKs are reported for the multiple TBs scheduled by the single DCI, according to subclause 10.2  - The UE behaviour for HARQ-ACK reporting is the same as that of a BL/CE UE with FDD, except:  - PUCCH resource(s) is (are) determined according to Subclause 10.1.3.1; and  - PUCCH(s) is (are) transmitted in a set of BL/CE UL subframe(s) according to Subclause 10.2 for TDD and BL/CE UEs.- else if, the UE is configured with *csi-NumRepetitionCE* equal to 1 and *mPDCCH-NumRepetition* equal to 1,  - the UE behaviour for HARQ-ACK reporting is the same as that of a non-BL/CE UE with TDD, except:  - PDCCH/EPDCCH is replaced by MPDCCH; and  - DCI format 1/1A/1B/1D/2/2A/2B/2C/2D is replaced by DCI format 6-1A; and  - DCI format 0/4 is replaced by DCI format 6-0A; and  - PUCCH is transmitted in a set of BL/CE UL subframe(s) according to Subclause 10.2 for TDD and BL/CE UEs;  - else  - the UE is not expected to receive more than one PDSCH transmission, or more than one of PDSCH and MPDCCH indicating downlink SPS releases, with transmission ending within subframe(s) , where  and  is defined in Table 10.1.3.1-1 intended for the UE;  - The UE behavior for HARQ-ACK reporting is the same as that of a BL/CE UE with FDD, except:  - PUCCH resource is determined according to Subclause 10.1.3.1; and  - PUCCH is transmitted in a set of BL/CE UL subframe(s) according to Subclause 10.2 for TDD and BL/CE UEs.  **<Unchanged parts are omitted>** 10.1.3 TDD HARQ-ACK feedback procedures **<Unchanged parts are omitted>**  For TDD and a BL/CE UE,  - if multiple TBs are not scheduled by a single DCI  - if the UE is configured with *csi-NumRepetitionCE* equal to 1 and *mPDCCH-NumRepetition* equal to 1,  - the UE may be configured with HARQ-ACK bundling or HARQ-ACK multiplexing;  - HARQ-ACK multiplexing can be configured only if *pucch-NumRepetitionCE-format1* equal 1 and HARQ-ACK multiplexing is performed according to the set of Tables 10.1.3-5/6/7  - else  - the UE is not expected to receive more than one PDSCH transmission, or more than one of PDSCH and MPDCCH indicating downlink SPS releases, with transmission ending within subframe(s) , where  and  is defined in Table 10.1.3.1-1 intended for the UE;  **<Unchanged parts are omitted>**  **--------------------------------------------End of Text Proposal for 36.213-----------------------------------------** |