**3GPP TSG RAN WG1 Meeting #104e R1-2100xxx**

**e-Meeting, January 25th – February 5th, 2021**

**Agenda Item: 6.2.1**

**Source: Lenovo, Motorola Mobility**

**Title: TP for multicast gap in Multiple TB**

**Document for: Discussion and decision**

# Introduction

For multiple transport block transmission in multicast transmission, a scheduling gap is agreed among TBs in RAN1-99. In current TS36.213g40, text “the scheduling gap is inserted between TBs” is captured in section 7.1.11.

However，the subframes mapping for the transport blocks are not correct considering the scheduling gap. Furthermore, it is agreed that the scheduling gap counted by absolute subfame in RAN1-104e. TP(s) proposal for TS36.213 corresponding to the scheduling gap counted with absolute subframe(s) are in section 2.

**Agreement**

For multicast, a scheduling gap can be inserted after each TB, where the gap length is configurable between {0, 2, 4, 8, 16, 32, 64, 128} subframes. The configuration is per cell.

Agreement

* Proposal 1.3: In 36.213 Tables 9.2-1B/C, in the DCI format 6-1A columns, ‘HARQ process number’ is changed to ‘Set to all ‘0’s’.
* Proposal 2.2: RAN1 confirms that the scheduling gap for multi-TB multicast transmission is in terms of absolute subframes.

# Text proposals on scheduling gap in multiple TBs of multicast

***TP #1***

**<Unchanged parts are omitted>**

### 7.1.11 PDSCH subframe assignment for BL/CE UE

A BL/CE UE shall upon detection of a MPDCCH with DCI format 6-1A/6-1B/6-2 intended for the UE, decode the corresponding PDSCH in subframe(s) *n+ki* with *i = 0, 1, …, NTBN-1* according to the MPDCCH, where

- subframe *n* is the last subframe in which the MPDCCH is transmitted and is determined from the starting subframe of MPDCCH transmission and the DCI subframe repetition number field in the corresponding DCI;

- the value of is the number of scheduled TB determined in the corresponding DCI if present, otherwise;

- subframe(s) *ni* = *n+ki* with *i=0,1,…, NTBN-1* are *NTBN* consecutive BL/CE DL subframe(s) (excluding subframes used for scheduling gaps if any) where,  , the value of  is determined by the repetition number field in the corresponding DCI, where  are given in Table 7.1.11-1, Table 7.1.11-2 and Table 7.1.11-3, respectively. subframe *n+x* is the second BL/CE DL subframe after subframe *n,* and for , subframe is the first BL/CE DL subframe after subframe , is given by higher layer parameter *multiTB-Gap*, if configured and the PDSCH corresponds to an MPDCCH with DCI CRC scrambled by G-RNTI, and is zero otherwise, and .

- for ,

- if the UE is configured with higher layer parameter *interleaving* in *ce-PDSCH-MultiTB-Config*, and PDSCH corresponding to a MPDCCH with DCI CRC scrambled by C-RNTI and where  for BL/CE UE configured with CEModeA,  for BL/CE UE configured with CEModeB,

- BL/CE DL subframes  with  are associated with TB*r+*1 ,

- otherwise,

- BL/CE DL subframes  with  are associated with TB*r+*1 ,.

**<Unchanged parts are omitted>**

***TP2***

**<Unchanged parts are omitted>**

### 7.1.11 PDSCH subframe assignment for BL/CE UE

A BL/CE UE shall upon detection of a MPDCCH with DCI format 6-1A/6-1B/6-2 intended for the UE, decode the corresponding PDSCH in subframe(s) *n+ki* with *i = 0, 1, …, NTBN-1* according to the MPDCCH, where

- subframe *n* is the last subframe in which the MPDCCH is transmitted and is determined from the starting subframe of MPDCCH transmission and the DCI subframe repetition number field in the corresponding DCI;

- the value of is the number of scheduled TB determined in the corresponding DCI if present, otherwise;

- the value of  is determined by the repetition number field in the corresponding DCI, where  are given in Table 7.1.11-1, Table 7.1.11-2 and Table 7.1.11-3, respectively

- if the UE is configured with higher layer parameter *multiTB-Gap* and the PDSCH corresponds to an MPDCCH with DCI CRC scrambled by G-RNTI,

- subframe(s) *ni* = *n+ki* with *i=0,1,…, NTBN-1* are *NTBN* BL/CE DL subframe(s), where, subframe *n+x* is the second BL/CE DL subframe after subframe *n* and for , subframe is the first BL/CE DL subframe after subframe , is given by higher layer parameter *multiTB-Gap*, and .

- otherwise,

- subframe(s) *ni* = *n+ki* with *i=0,1,…, NTBN-1* are *NTBN* consecutive BL/CE DL subframe(s), where, , and subframe *n+x* is the second BL/CE DL subframe after subframe *n*.

- for ,

- if the UE is configured with higher layer parameter *interleaving* in *ce-PDSCH-MultiTB-Config*, and PDSCH corresponding to a MPDCCH with DCI CRC scrambled by C-RNTI and where  for BL/CE UE configured with CEModeA,  for BL/CE UE configured with CEModeB,

- BL/CE DL subframes  with  are associated with TB*r+*1 ,

- otherwise,

- BL/CE DL subframes  with  are associated with TB*r+*1 ,.

*Proposal: adopt the one of the TP above in TS36.213.*

# References

1. 3GPP TS 36.213 g30